This book was written based on ongoing undergraduate research targeted at solving the problem common between contractors and clients in building construction projects in the Nigerian construction industry. The authors of the book are both undergraduate research student (main author) and lecturers (co-authors), who have special interest in addressing issues confronting the health, safety and welfare of stakeholders and visitors to construction sites. The book is therefore recommended to construction stakeholders across the globe to tap from the wealth of experience of the authors in addressing related problems that may be experienced.

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Contribution of Insurance Policy in Safety Risks at Construction Sites

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CONTRIBUTION OF INSURANCE POLICY IN SAFETY RISKS AT CONSTRUCTION SITES (Impact of Insurance Policy on Workplace Safety in Construction Projects in Minna, Niger State, Nigeria)

BY

SHITTU, ABDULLAHI, OKOSUN BLESSING ODIANOSEN AND SHITTU, ABDULLATEEF ADEWALE

2022

FOREWORD

This book was written based on ongoing undergraduate research targeted at solving the problem common between contractors and clients in building construction projects in the Nigerian construction industry. The authors of the book are both undergraduate research student (main author) and lecturers (co-authors), who have special interest in addressing issues confronting the health, safety and welfare of stakeholders and visitors to construction sites. The book is therefore recommended to construction stakeholders across the globe to tap from the wealth of experience of the authors in addressing related problems that may be experienced.

Dr. A. A. Shittu (PhD; RQS)

PREFACE

This book is a product of an undergraduate research undertaken to address the problem of construction workers continuously liable to safety issues which pose major concerns to productivity in the construction industry in spite of the availability of policy with specific insurance and risk management considerations. Therefore, the study the evaluated the effect of insurance policy on the safety performance of workers on construction sites in Minna, Niger State, Nigeria. Based on the outcome of this evaluation, this book was written in seven (7) chapters.

The first chapter gives an introductory background to the research concept, context, problem and outline of how to go about the research to solve the identified problem. The second chapter gives an extant review of literature related to the theme of the aim and objectives of the study. This brough out the research variables required for the study as well as some conceptual issues requiring further investigation. The third chapter undertakes a review of some theories surrounding the aim and objectives of the study. Based on the outcome of the theories reviewed in the third chapter, the fourth chapter comes up with the conceptual framework of the study which gives directions to the research objectives and how the variables in the research objectives will interplay to give the required outcome. The fifth chapter gives a detailed methodological procedure followed to gather required information from the custodian of such information and how to properly manage and utilize the information in order to obtain the required results. The sixth chapter gives a detailed account of the analytical approaches undertaken as well as the results obtained in relation to findings from past studies reviewed.

Finally, the seventh chapter gives a summary of findings from the results obtained, conclusions reached and recommendations suggested for effectively addressing the research problem identified in the light of the findings and conclusions. The last chapter also clearly spells out the contributions of the research to the body of knowledge as well as areas identified and suggested for further studies in view of the limitations of the study. This book will serve as a guide to policy makers and stakeholders in the construction industry to make better decisions in making construction workplaces safer for all stakeholders involved.

DEDICATION

This book is dedicated to the glory of God and all academic and non-academic staff members of the Department of Quantity Surveying, Federal University of Technology, Minna, Niger State, Nigeria.

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We wish to express our sincere gratitude to God almighty who has spared our lives and made it possible for the successful completion of this work. Our sincere appreciation goes to all academic staff members of the Department of Quantity Surveying, Federal University of Technology, Minna, Niger State, Nigeria, for their great contributions and constructive criticism towards the quality and successful completion of this work. The Head of Quantity Surveying Department, Dr. Y. D. Mohammed, has been very helpful in making the atmosphere very conducive for learning and research. Thanks a lot Sir.

For the ease of data collection for this research, we are very grateful to the management and staff of Niger State Ministry of Housing and Infrastructural Development, Niger State Housing Corporation, the construction firms visited and insurance firms visited. The execution of this research would not have been successful without the data given by these organisations. Thanks a lot for your support. We will not forget to thank Lambert Academic Publishing Group, especially Dr. Wolfgang Philipp Müller, Christine Cateaux and Anna Haritonova, for providing a user-friendly forum and platform for academics and scholars to disseminate their brilliant ideas to the general public. Finally, we thank all readers for going through this book.

EXECUTIVE SUMMARY

Studies have shown that construction workers are continuously liable to health and safety (H&S) issues which pose major problems and concerns to productivity in the construction industry. Despite the availability of H&S policy with specific insurance and risk management considerations; injuries, fatalities and death from construction related activities appear unabated, which suggests possible non-compliance of contractors to established H&S regulations. The study therefore evaluated the impact of insurance policy on the safety performance of workers on construction sites in Minna, Niger State with a view to enhancing the safety performance of construction workers on site. The study adopted a mixed methods research approach through the use of questionnaire, interview and data collection checklist. The study's population was made up of 67 professionals from Niger State Ministry of Works and Infrastructural Development (NSMWID), 48 from Niger State Housing Corporation (NSHC) and 15 safety officers of construction firms actively involved in the projects executed by NSMWID and NHSC (i.e., population size of 130) with a response rate of 82.31%. Analysis of data was carried out with the use of frequency counts, percentage, Frequency count, percentage, Relative Importance Index (RII), Mean Item Score (MIS), content analysis and Spearman Rank correlation. Results of analysis revealed that the most important barrier to the implementation of insurance policy by construction firms is "Delay in payment of insurance claims" (MIS = 4.361); the most important driver of the implementation of insurance policy by construction firms is "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk" (MIS = 4.430); and all the areas of H&S relevant to insurance policy implementation have an average level of compliance by construction firms in Minna, Niger State (average MIS = 2.313). It was also found that the relationship between the level of implementing insurance policy in construction projects and costs of accidents is significant (p = 0.000 – 0.001); and the most effective strategy for improving compliance with insurance policy in construction projects is "Designation of safety responsibilities to trained personnel" (MIS = 4.682). Hence, it was concluded that the impact of insurance policy on the safety performance of workers on construction sites in Minna, Niger State, Nigeria is significant. This led to a major recommendation that in order to improve the level of compliance with insurance policy in construction projects, construction stakeholders should develop a mechanism that will adequately take cognizance of the proposed strategies of this study.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

One of the basic needs of man in life is shelter and the quest for the provision of adequate housing has led to an increase in the activities of the building construction industry in Nigeria and all over the world. The construction industry which is charged with responsibility of the housing construction is characterised with hazardous activities (Samuel, 2014). Therefore, construction workers experience various forms of uncertainties as work progresses on construction project sites. Furthermore, construction operations do not always take place according to plans, mistakes occur, workers suffer injuries, property is damaged, and acts of God or other mishaps can impede or halt progress on a construction project (Queen & Satheesh, 2018). Most of these accidents are avoidable and the possibilities of its occurrence could be reduced to the barest minimum. One of the ways these accidents and its associated injuries could be reduced is through insurance (Odeyinka, 2000).

Insurance can be defined as the business of transferring risk by means of contract. It is regarded as a contractual arrangement whereby an insurer, in return for a predetermined premium, undertakes to meet the cost of any loss which the policy holder may incur due to some specified uncertainty events occurring during the period of the insurance. According to Dada (2010), insurance is a more than requirement needed for any business that is exposed to risk. Insurance cover ranked second in the index of tools for mitigating the effects of risk in a study conducted by Dada (2010).

The Insurance Companies Act of 1961 classified insurance businesses into various classes for registration and provided forms for record keeping. The Insurance Decree of 1976 provided for the authorization of insurers, modes of operation, organization and transfers, administrative and enforcement guidelines, and penalties. The National Insurance Commission was established in 1997 with the responsibility of regulating and supervising insurance in Nigeria. The commission has since been the main insurance regulator in Nigeria. However, according to the National Insurance Act 2003, the following insurances are made compulsory directly by appropriate sections of the law: Builders Liability Insurance – Section 64; Occupiers Liability

Insurance – Section 65; and Motor Third Party Liability Insurance – Section 68. All of these Sections of the National Insurance Act 2003 are relevant to the business of any Builder who runs a contracting company and employs more than four (4) persons (Okolie *et al*., 2017).

In spite of the above, construction workers are continuously liable to health and safety (H&S) issues which pose major problems and concerns to productivity in the construction industry. Despite availability of H&S policy with specific insurance and risk management considerations; injuries, fatalities and death from construction related activities appear unabated, which suggests possible non-compliance of contractors to established H&S regulations (Ameh & Farinde, 2020). Hence, the need for this study.

1.2 Statement of the Research Problem

The construction industry which is charged with responsibility of housing constructions boasts of an infamous characteristic of being hazardous in nature (Samuel, 2014; Queen & Satheesh, 2018). Consequently, construction workers face many uncertainties as they go about these construction projects. Construction operations do not always take place according to plans, mistakes occur, workers suffer injuries, property is damaged, and acts of God or other mishaps can impede or halt progress on a construction project (Queen & Satheesh, 2018).

It has therefore been established that construction workers are frequently exposed to various types of injury-inducing hazards. There are a number of injury prevention interventions, yet their effectiveness is uncertain (van der Molen & Hoving, 2019)). Recent studies have suggested that one of the ways these accidents and its associated injuries could be reduced is through insurance (Odeyinka, 2000; Okongwu *et al*., 2021). Unfortunately, construction firms do not seem to understand the implication of not taking up employees' insurance (Okongwu *et al*., 2021). This is because it has also been established that compulsory insurance of buildings under construction revolve around poor compliance structure, ineffective implementation strategy by the insurance regulator and lack of awareness on the part of the Nigerian public (Jimoh *et al*., 2019).

In addition, the pilot study carried out for this research revealed that most of the client's organisations (81.82%) in Minna do not take part in the implementation of

insurance policy in construction projects being executed mainly due to lack of awareness and unwillingness. Therefore, in most cases the responsibility of taking up insurance policy in construction projects being executed in Minna is solely left for the contractor to bear (Shittu *et al*., 2022). This may give the contractor the liberty to treat the implementation of insurance policy in construction projects being executed as a less important issue. Hence, the need to assess the impact of insurance policy on the safety performance of workers on construction sites.

1.3 Research Questions

In order to address the problem identified, this study provided answers to the following research questions:

i. What is the relative importance of the types of insurance policy provisions in the safety of construction site activities?
ii. What are the basic roles of employees' insurance policy in construction projects?
iii. What are the barriers to the implementation of insurance policy by construction firms in Minna, Niger State?
iv. What are the drivers of the implementation of insurance policy by construction firms?
v. What is the level of compliance with the implementation of insurance policy by construction firms?
vi. What is the effect of insurance policy on the cost of site accidents to construction firms?
vii. What are the strategies for the strategies for improving compliance with insurance policy in construction projects for improved safety performance of construction firms?

1.4 Aim and Objectives of the Study

The aim of this study is to evaluate the impact of insurance policy on the safety performance of workers on construction sites in Minna, Niger State with a view to enhancing the safety performance of construction workers on site. This study addressed the following objectives in order to achieve the aim:

i. To identify relative importance of the types of insurance policy provisions in the safety of construction site activities.

ii. To determine the basic roles of employees' insurance policy in construction projects.
iii. To examine the barriers to the implementation of insurance policy by construction firms in Minna, Niger State.
iv. To examine the drivers of the implementation of insurance policy by construction firms.
v. To determine the level of compliance with the implementation of insurance policy by construction firms.
vi. To determine the effect of insurance policy on the cost of site accidents to construction firms.
vii. To propose strategies for the strategies for improving compliance with insurance policy in construction projects for improved safety performance of construction firms.

1.5 Justification for the Study

There is dearth of literature on construction insurance in relation to safety of workers at construction sites in the context of the Nigerian construction industry. Most of these studies focused more on the general rules and benefits of insurance policy with respect contractors or owners of construction businesses. For instance, Odeyinka (2000) evaluated the use of insurance in managing construction risks. This study focused generally on construction insurance policy such as on-site security, construction risk, and health and welfare requirements. However, the outcome of the study cannot be applied to address specific issue like construction health and safety at project sites.

Some of the studies that related construction insurance policy with construction site safety are also few. An example of such is the study of Ameh and Farinde (2020) which assessed construction contractors' level of compliance to health and safety insurance policies in Lagos State with the use of professionals' perception through questionnaire survey. In addition, Okongwu *et al*. (2021) also studied the impact of insurance in improving the safety of construction workers in the Nigerian construction industry using a case study of Anambra State, also using respondents' perception with the aid of questionnaire survey. It was discovered from these studies that despite the availability of health and safety policies with specific insurance and risk management considerations; injuries, fatalities and death from construction

related activities appear unabated, which suggests possible non-compliance of contractors to established health and safety regulations. These studies therefore only focused on the perception of respondents and did not collect archival records on the costs of accidents (rate of accidents; amount of compensation to victim; amount of loss time due to accidents occurrence) in relation to construction firms' compliance to insurance policy.

In order to fill the gap identified from the previous studies, the study evaluated the impact of insurance policy on the safety performance of workers on construction sites with the combination of data from respondents' perception and archival records of construction firms on the costs of accidents. The outcome of this study will be beneficial to contractors, owners of construction businesses and construction firms to be able to reduce the cost of accidents in the event of accidents that are not preventable. The study will also enlighten construction firms on the ways for better protecting site workers from incurring unnecessary burden due to accidents and fatalities. Finally, the outcome of this study will enable the construction industry to make a move towards developing a mechanism that will serve as a uniform basis for easing the adoption and implementation of construction insurance policy to the advantage of employers and employees as well as all stakeholders involved in construction site activities.

1.6 Scope and Limitations of the Study

The study area is Minna. The study covered the professionals in Niger State Housing Corporation (NSHC) and Niger State Ministry of Works and Infrastructural Development (NMWID) in Minna, Niger State. The Safety Officers of construction firms engaged in the active sites of NSHC and NSMWID were also considered for the study. The professionals of selected insurance companies in Minna Niger State were also considered for this study. Issues concerning employees' insurance with respect to construction sites activities and the cost of site accidents to construction firms were addressed.

The limitations of this study are time and financial constraints. Due to the limited amount of time available for the study, only projects executed by two Ministries in Minna, Niger State were considered. As a result of financial constraints, the study concentrated on Niger State where there the construction industry id dominated by small and medium sized firms and projects.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Health and Safety Management in the Construction Sector

The construction industry (CI) contributes significantly to national economic growth and offers substantial opportunities for job creation; however, the industry has continually been plagued by workplace accidents (Pillay, 2014). The CI plays a vital role in achieving socio-economic development goals, providing shelter, infrastructure and employment, thus contributing significantly to the overall Gross Domestic Product (GDP) of a nation (Agyekum *et al.*, 2018). The CI relies heavily on labour-intensive methods (Ameh & Farinde, 2020). Coupled with the fact that construction work is carried out in constantly changing working environments, this poses significant health and safety (H&S) risks such as injuries, accidents, and loss of skilled workers (Agyekum *et al.*, 2018; Ameh & Farinde, 2020).

Moreover, employers may not realize the economic magnitude of workplace injury and ill health arising from construction activities. These accidents represent a considerable economic and social burden to employers, employees and to society as a whole. Despite governments and organisations worldwide maintaining an on-going commitment towards establishing a working environment free of injury and disease, a great deal of construction accidents continues to frequent our society (Pillay, 2014).

Given the high rate of construction accidents experienced in the CI, employers are not entirely mindful of the actual costs of construction accidents, especially when considering the hidden or indirect costs of accidents. Various safety research efforts have attempted to quantify the true costs of worker injuries (Pillay, 2014), however localised systematic information on cost of construction accidents at work is not readily available from administrative statistical data sources, therefore this study was carried out in order to estimate the costs, like lost workdays or lost income, are clearly visible and can readily be expressed in monetary value; for a large part however, economic consequences of accidents are somewhat hidden. Acceding to Pillay (2014), indirect costs following an accident may be disregarded, damage to the company image is difficult to quantify and pricing human suffering and health damage is subject to discussion. Nevertheless, it is possible to get an adequate insight

into the costs of accidents and the potential benefits of accident prevention. In view of this, Pillay (2014) classified the cost of accidents into Direct Costs and Indirect Costs as highlighted thus:

a) Direct Costs

Pillay (2014) broke down Direct Costs as follows: Medical (ambulance, doctor, medical, hospital); and Wages for injured person(s)/Compensation.

b) Indirect Costs

On the other hand, Indirect Costs was broken down by Pillay (2014) as thus: Overtime costs; Time lost by injured employees and co-workers; Injured employees productivity loss costs; Supervision and Management lost time; Incident investigation costs; Training of replacement employee; Additional medical costs; Damage to equipment, plant, tools, or other property; Idle plant and equipment; and Others (including Consumables, Legal and Funeral Costs).

In the light of the above background on safety management in the CI, the importance of providing safe workplace cannot be over-emphasized because of the intrinsic hazard and risk factors that undoubtedly underlie every work situation and their negative impact on a company's overall performance. However, Nigerian construction firms especially the multinationals which seem to have inherited safety policies and systems from their parent companies still record repeated cases of accidents and injuries some of which include falls from height, trapped by something collapsing or overturning, struck by a moving vehicle, contact with electricity or electrical discharge, struck by flying/falling object during machine lifting of materials, contact with operating machinery or material being machined, exposure to hot or harmful substance or fire outbreak that engulfed their entire office premises (Consultnet Ltd, 2011). In most instances, the problem is not the level of awareness of importance of safety neither is a safety policy absent but it is more related to poor or lack of implementation of safety programmes and systems, as it is with many other key players in the Nigerian construction industry (Olutuase, 2014). In line with this, Ameh and Farinde (2020) reported that construction workers are continuously liable to H&S issues which pose major problems and concerns to productivity in the construction industry. Despite availability of health and safety policies with specific insurance and risk management considerations; injuries, fatalities and death from construction related activities appear unabated, which suggests possible non-

compliance of contractors to established health and safety regulations. It is therefore pertinent for construction firms and all stakeholders to adhere strictly to safety and health procedures required for working safely at workplaces for enhanced safety performance in the construction sector.

2.2 Construction Site Safety Management and Insurance Policy

This section discusses issues relating to general concept of insurance policies with respect to the construction sector. The section also discusses the types of insurance policies and the benefits of insurance policies.

2.2.1 Risk and insurance in the construction industry

Risks in construction projects could be transferred to a third party which are by the law the insurance companies so as to cut the losses that could arise in the case of any eventuality (Samuel & Muhammed, 2021). Insurance is a contract between the Insured (the first party) and the Insurer (the second party) that sets out the Insurer's promise to pay a specified amount at a future time if a defined event occurs. These events broadly break down into the following groups (MARSH, 2019). Insurance can also be referred to as a form of risk management primarily used to hedge against the risk of a contingent or uncertain loss (Wikipedia, 2019 cited in Samuel & Muhammed, 2021). It further states that an entity which provides insurance is known as insurer, insurance company, insurance carrier or underwriter. Furthermore, it describes the person or entity who buys the insurance as an insured or a policy holder. Insurance can also be defined as an arrangement by which one party (the insurer) promises to pay another party (the insured) a sum of money if something should happen which causes the insured to suffer financial loss (National Open University of Nigeria (NOUN), 2021). By so doing, the responsibility for paying for such losses is then transferred from the insured to the insurer. In return for accepting the burden of paying for losses when they occur, the insurer charges the insured a price called premium.

The National Insurance Commission (NAICOM) said that in the pursuance of the provision of the Nigeria Insurance Act (2003), and in a renewed attempt to negotiate insurance use, practice and regulations, fixed the end of March 2011 as the cut-off date from when all compulsory insurance policies under various Nigerian statutes will be fully enforced and penalties applied to this legal alert. In line with the construction sector, construction insurance is a practice of exchanging a contingent

claim for a fixed payment to protect the interests of parties involved in a construction project (Samuel & Muhammed, 2021). Construction insurance is therefore a major method of managing risks in the construction industry.

Building construction activities in most developing countries is labour intensive and involves working at heights, underground, confined spaces, handling loads manually, handling hazardous substances, exposure to noises, dusts, power/electrical cables and use of plants and equipment (Farooqui *et al*., 2008). Apart from providing employment for those directly involved with construction and other economic benefits offered by the building industry, the activities nonetheless pose severe H&S hazards to the workers (Farooqui *et al*., 2008). Studies have shown that there is disparity between developed and developing countries in the recorded cases of occupational accident rates, and therefore, there are three times as many fatalities on construction sites in developing countries than in the industrialized ones (Ameh & Farinde, 2020).

In addition, Idoro (2011) reported that contractors with the best safety records in Nigeria also record substantially high number of injuries on sites. A survey of 42 Nigerian contractors revealed such poor performance rate of five injuries per worker and 2 accidents per 100 workers even among some of the best performing firms (Idoro, 2011). Other studies have further highlighted a high prevalence of non-compliance with safety regulations that require organisations to report accidents (Diugwu *et al*., 2012). In spite of the fact that there have been occupational H&S legislations governing work and workplaces in Nigeria (e.g., Factories Act of 1990 and Employee's Compensation Act of 2011), some have attributed the poor safety performance to dysfunctional H&S laws and regulations (Diugwu *et al*., 2012). In view of this, H&S which is an inevitable aspect of construction, should be a primary concern to building contractors.

In order to address this safety issues in the CI, Ameh and Farinde (2020) reported that the high risks of hazards occurrence in building construction need to be well prepared for before actual occurrence. To achieve this, insurance policies play a significant role in instilling H&S consciousness in the building sector, insuring against liability for injury arising out of hazardous nature of building construction. H&S consciousness will compel contractors to comply with policies and regulations that will significantly help in controlling the rate at which hazardous events unfold,

while violation of laid down rules as established by policies has its contributory effect towards increased rate of hazardous event during a construction process.

2.2.2 Types of insurance policy on construction site activities

Construction insurance is a practice of exchanging a contingent claim for a fixed payment to protect the interests of parties involved in a construction project (Ameh & Farinde, 2020). Construction insurance is therefore a major method of managing risks in the construction industry. Ameh and Farinde (2020) reported that the primary function of insurance is to transfer certain risks from clients, contractors, subcontractors and other parties involved in the construction project to insurers in order to provide contingent funding in time of difficulty. Purchasing the proper insurance can be one of the most important administrative decisions a contractor will make. Odeyinka (2000) therefore classified insurance policies employed in managing construction risks as: all-risk policies, road traffic act policies, multi-risk policies and specified peril policies.

In line with the above background, NOUN (2009) identified construction insurance as Engineering Insurance. Based on this, NOUN (2009) reported the common types of engineering insurance policies include: i) Contractors All Risks; ii) Erection All Risks; iii) Machinery Breakdown; iv) Boiler and Pressure Vessel; v) Electronic Equipment; and vi) Plant All Risks.

i. Contractors All Risks (CAR)

This type of insurance can be taken up for all building and civil engineering projects, such as residential and office buildings, hospitals, schools, stadiums, factories, roads/bridges, dams, tunnels, water supply systems, etc.

ii. Erection All Risks (EAR)

This is basically the same as CAR but with erection or installation of mechanical or electrician plants. Items usually covered under EAR are: generators, steam boilers, compressors, transformers and switch gas, elevators and cranes. Also included are complete production plants such as, power stations, steel works, chemical plants, paper and textile machinery, furnaces or plants producing consumer goods that are being erected. Civil engineering work necessary for the project to be erected may be included but this should not be more than 50% of the total value of the contract. The

scope of cover and period of cover are the same as in contractors "ALL RISKS" (CAR)

iii. Machinery Breakdown Insurance

Machinery Breakdown Insurance covers plant, machinery and mechanical equipment at work, at rest or during maintenance operations. It is a material damage policy which covers accidental breakdown to mechanical, lifting and electrical machinery. It is an accident insurance on machinery.

iv. Boiler and Pressure Vessel (BP)

This is a combined material damage and third-party liability policy that covers material damage to the insured boiler Surrounding property Liability to the public for personal injuries or property damage arising out of the explosion of the boiler. The boiler must of necessity be satisfactorily inspected before cover can be granted. Items usually covered under Boiler and Pressure Vessel are steam boilers, economizers, super heaters Steam/feed pipes, steam pressure vessels Air receivers, auto claves, hot water heating boilers Steam ovens and presses, piping and radiators.

v. Electronic Equipment

Electronic Equipment Insurance is a material damage "ALL RISKS" policy specifically covering all types of electronic equipment such as computer installations and data media telecommunications, medical, security and process control etc. It also includes additional cost of working for continuation of operation after loss.

vi. Plant All Risks

Plant All Risks Insurance is designed for contractors' plants and machinery on an annual basis. It covers construction equipment, heavy mobile plant against any loss or damage from any cause whatsoever occurring at work, at rest, during maintenance operations, in transit by road, rail or inland waterways. Items could be moveable and non-moveable plant which may include – bulldozers, scrappers, cranes, hoists etc.

In addition to the above, Ameh and Farinde (2020) identified the various insurance brands that are purchased in the construction marketplace as Builder's Liability Insurance; Builder's Risk Insurance; Equipment Floater Insurance; Key Man Insurance; Automobile Insurance; and Worker's Compensation Insurance.

i. Builder's Liability Insurance

Section 64 of the Insurance Act requires that every owner or contractor of any building under construction with more than two floors must take out an Insurance Policy to cover liability against construction risks caused by his or her negligence or that of his or her workers, agents or consultants which may result in death, bodily injury or property damage to workers on site or members of the public. This insurance policy also covers liability for collapse of buildings under construction.

ii. Builder's Risk Insurance

Builder's Risk Insurance is a form of property insurance that protects the building or project against physical loss or damage from external causes during construction. The protection provided depends upon the terms of the written policy, but usually includes materials and supplies to be used on the project. These items are insured while held in temporary storage before delivery, during transit to the jobsite, and after delivery while awaiting installation (Clough, 1981). The hazards covered by this insurance vary. The policy may protect against loss due to fire, vandalism and miscellaneous mischief, lightning, wind, smoke, explosion, and other types of physical damage (this is the primary purpose of this insurance). Some common exclusion stated within the policy are damages due to freezing, explosion of steam boilers or pipes, glass breakage, subsidence and settling, earthquake and floods (Stokes, 1990).

iii. Equipment Floater Insurance

Construction equipment and machinery used on the project is subject to damage and can be protected by what is known as an equipment floater policy. This policy covers equipment that moves from job to job (the equipment "floats"). The equipment covered, often referred to as off-road vehicles, is not licensed and includes dozers, scrapers, power shovels, loaders, cranes, pumps, and pavers. The major losses that typically occur are due to theft and vandalism. No liability component is attached as the policy only covers damage to the equipment (Hinze, 1990).

iv. Key Man Insurance

Key Man Insurance is essentially a life insurance policy written on company principals. It will protect the company from heavy losses that may result from the death of one or more principals (key men) of the firm. There may also be a clause that will provide benefit if a principal is disabled and unable to work (Hinze, 1990).

v. Automobile Insurance

There are two broad categories of risk involved when a contractor operates automobiles. First, there is loss or damage to the contractor's own vehicles caused by collision, fire, theft, vandalism, or other hazards. Second, there is liability for bodily injury to third parties or damage to their property caused in some way by the operation of the contractor's licensed vehicles. Automobile liability coverage will cover any vehicle fitting into one of three categories -owned automobiles, hired or rented automobiles, and non-owned automobiles such as employees' personal automobiles used in conjunction with official business. The coverage will provide for legal defence and payment of damages resulting from damage to persons or property due to the operation of vehicles fitting into one of the categories listed above (Stokes, 1990).

vi. Worker's Compensation Insurance

Worker's compensation law was enacted to give statutory protection to employees injured on the job. Worker's compensation insurance provides medical care and other benefits for the contractor's employees in the event that they are injured on the job. The principle behind worker's compensation is that on-the-job injury or death of a worker is a cost of doing business and should be borne by the industry. The fundamental objective is for injured workers to receive prompt medical attention and monetary assistance. Another principle behind worker's compensation is that of strict liability of the employer, regardless of any fault by the employee. Contributory negligence of the employee will not affect the employer's liability, except in cases where the worker was under the influence of drugs or alcohol (Clough, 1981). The insurance is required for most employees, i.e., exemptions include domestic servants, farm labour, casual employees, independent contractors, and workers in religious or charitable organizations. Also exempted in some states are businesses that employ less than a specified number of employees (Stokes, 1990).

In the study of Okongwu *et al*. (2021), it was stated that in line with the provisions of the National Insurance Act 2003, the following Insurances are made compulsory directly by appropriate sections of the law: Builders Liability Insurance – Section 64; Occupiers Liability Insurance – Section 65; and Motor Third Party Liability Insurance – Section 68. It was further reported by Okongwu *et al*. (2021) that all of these insurance products mentioned are relevant to the business of any Builder who

runs a contracting company and employs more than four (4) persons. Therefore, according to Okolie *et al*. (2017), Section 64 of the National Insurance Act 2003 – Builders Liability Insurance states that: No person shall cause to be constructed any building of more than two floors without insuring with a registered insurer his liability in respect of construction risks caused by his negligence or the negligence of his servants, agents or consultants which may result in bodily injury or loss of life to or damage to property of any workman on the site or any member of the public. However:

i. The duty to insure under subsection (1) of this section shall arise when a building is under construction.
ii. A person who contravenes subsection (1) of this section commits an offence and on conviction shall be liable to a fine of N250.000 or imprisonment for three years or both.

2.2.3 Benefits of insurance policy in construction projects

One of the major methods of managing construction risks in the Nigerian construction industry is the insurance method. Therefore, one of the major methods of managing construction risks in the Nigerian construction industry is through transfer to insurance companies (Odeyinka, 2000). According to clause 2.1 of JCT (1980), 'the contractor shall upon and subject to the conditions carry out and complete the Works in compliance with the Contract Documents, using materials and workmanship of the quality and standards therein specified'. It was observed that if there is any damage to such work as described in clause 2.1 of JCT (1980), which must have been included in the work item rate calculation and/or contingency sum, the contractor will make it good at his own expense. This entails some risk-bearing responsibilities by the contractor. However, the Standard Form of Building Contract (JCT, 1980) in clauses 18,19,20,12 and 22 provided avenues whereby the risk-bearing responsibility can be transferred by the contractor to the insurance company.

The purpose of insurance policy, according to NOUN (2009), is to offer comprehensive and adequate financial protection against loss or damage in respect of the contract work; construction plant and equipment/machinery; and third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract.

Odeyinka (2000) have identified insurance employed in managing construction risks to include all-risk policies, road traffic act policies, multi-risk policies and specified peril policies. All-risk policies cover all the risks in construction except those specified by exclusion clauses. Multi-risk policies on the other hand specify a catalogue of an extensive number of perils such as fire, lightning, windstorm, explosion, death of workers, health, safety, welfare, and so on. Unlike all-risk policies, only specific risks stated under multi-risk policies are covered, whereas the unspecified ones are not. Specified peril policies state the peril covered but the insured absorbs any losses incurred from unspecified perils. These differ from multi-risk policies in that the peril covered may be only one. Road Transport Act (RTA) policies are meant to protect items of plant which normally are expected to be on site only but which may quite unintentionally end up in circumstances to which the RTA applies. For instance, a labourer who, deciding to learn to drive a dumper on site, may lose control and injure a passer-by. It has also been reported that adequate insurance cover will compel the insurance companies to strictly monitor the contractors' operations and enforce compliance thereby averting hazards to the workers and the projects and liabilities to the insurer (Ameh & Farinde, 2020).

In addition, Samuel and Muhammed (2021) reported that the primary function of construction insurance is to transfer certain risks from clients, contractors, subcontractors and other parties involved in the construction project to insurers to provide contingent funding in time of difficulty. Construction insurance is reported to also play an increasingly important role in guaranteeing the success of projects, with insurers. Insurance industry is the backbone of a country`s risk management system, since it ensures financial security, serves as an important component in the financial intermediation chain, and offers a ready source of long-term capital for infrastructural projects.

2.3 Barriers to the Implementation of Implementation of Insurance Policy in Construction Projects

Health and safety (H&S) insurance facilities truly attract additional cost to the contractor while such cost is categorized as sunk cost and are irrecoverable. The challenge of poor leadership is more so identified; when the leadership lack the ability to provide direction, and motivation for compliance with H&S, compliance naturally becomes difficult. Leadership input is considered a significant factor in

ensuring contractors comply with health and safety insurance policies. Idubor and Oisamoje (2013) reported that compliance to and enforcement of occupational H&S legislations have generally been described as poor having link with issues such as lack of concern, lack of accurate records and poor statutory regulations. According to Foo (2006), the financial aspect is of utmost importance as nothing is free of charge in implementation of safety practices at construction sites and that someone has to pay for it. Patrick (2008) highlighted that there is an urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects.

Jimoh *et al*. (2019) reported that compliance with legislation and regulations is one of the basic requirements of both the ISO 14001 and OHSAS 18001 standards. A compliance process enables a company to be proactive and systematic in handling allegations of non- compliance. Unfortunately, there are various factors that could lead to non-compliance as identified by Jimoh *et al*. (2020). These factors are: Inadequate legal framework; Ineffective implementation strategy; Cultural factors; Low awareness level; and Lack of proper enforcement of the Act. These factors are further discussed as thus:

i. Inadequate Legal Framework

The legislative framework for insurance practice in Nigeria is inadequate and ineffective. The inadequacy makes it impossible to meet the needs of the fast-growing insurance industry. Often times, the law contains many unenforceable provisions.

ii. Ineffective Implementation Strategy

Implementation is typically a critical step toward compliance, but compliance can occur without implementation; that is, without any effort or action by a government or regulated entity. There is no gainsaying the fact that economic wastages will reduce in the country if the insuring public complies with the provisions of the law on compulsory insurance covers.

iii. Cultural Factors

Nigerians have no trust in the available insurance companies especially on claims payment which has largely resulted into low patronage. This tradition of defaulting in claims translated to some form of bad publicity for the industry and consequently,

confidence in the industry is eroded significantly. In spite of the fact that the world we live is daily prone to risks, both to individual and corporate institutions, it is a matter for regret that only few Nigerians understand the value of insurance not to talk of undertaking it.

iv. Low Awareness Level

There is no co-coordinated effort on insurance education, customer help line and consumer awareness. The legislation of compulsory building insurance requires serious awareness among the target users of the product. So, government assistance is needed with the help of the regulatory body in order to create awareness and sensitization programme to keep the users informed of the stipulation and to educate them.

v. Lack of Proper Enforcement of the Act

The compulsory building insurance has been suffering from low enforcement by the regulatory body - NAICOM and this is not the same way the government has made compliance with the provisions of Pension Reform Act 2004, a pre-condition for every supplier, contractor or consultant bidding or soliciting for contract or business from any Federal Government Ministries, Departments and Agencies.

Furthermore, according to Ameh and Farinde (2020), the thought of continuity in business therefore could become a barrier if the contractor is skeptical about continuity in business or have the future plan of quitting operation and shifting towards other lines of business. Investing into H&S facilities in such situation may not appeal to the instinct of the contractor. Time to time replacement of H&S facilities is another area of barrier while this cannot be overruled as facilities are been put to use from time to time. The continuous use of facilities would result in facilities losing value or depreciating and overtime facilities may not perform intended purpose any more, requiring that the facilities be replaced. The need for replacement of H&S facilities therefore poses barrier for contractors complying with H&S insurance policies. Of critical issue is the challenge of lack of awareness of the various insurance policies and the imperatives of complying with the policies. Contractors seem not aware of the importance of the need for complying with H&S insurance policies. However, Odeyinka (2000) stated that it is the principal responsibility of contractors in the building industry to be at the fore front of compliance with the laid down H&S policies established by insurance. Following

from this background, Ameh and Farinde (2020) summarised the major barriers to the implementation of implementation of employees' insurance in construction projects to include: Cost implication of health and safety policies; Poor management commitment; Fear of not recouping investment in health and safety facilities; Poor leadership; Absence of health and safety plan; Poor safety discipline; Absence of clearly stated safety rules; Continuity in business; Time to time replacement of health and safety facilities; and Lack of awareness.

In addition to the above, Samuel and Muhammed (2021) identified the following barriers to implementation of employees' insurance in construction projects as follows: Financial strength of the construction firm; Lack of awareness; Excessive premium charged by insurance companies; Lack of trust for the insurance companies; Difficulty in getting the insurance companies to compensate in the case of any eventuality; Bureaucratic processes involved in purchasing these policies; Governments non implementation of existing insurance act; and Believe in quality and safety measures put in place by firms.

Samuel and Muhammed (2021) concluded that the overall level of barriers to the adoption of these insurance policies is moderately significant. In the same light, Oknogwu *et al*. (2021) added that there are lots of irregularities amongst construction firms in terms of compliance of insurance and theses irregularities can be traced to some barriers. These barriers are: Nonchalant attitude of construction firms towards insurance policies; Lack of enforcement of provisions of the insurance Act; and Delay in payment of insurance claims.

2.4 Drivers of the Implementation of Insurance Policy in Construction Projects

The implementation of employees' insurance is very important in a construction project in order to ensure that injured workers or participants on site are adequately and promptly catered for. The enforcement of this insurance policies, according to Health and Safety Executive (2012), can be significantly driving with the use of Employers' Liability Insurance which is compulsory for employers to undertake for the H&S of their employees while they are at work. This is because employees may be injured at work or they, or former employees, may become ill as a result of their work while being employed. These employees might try to claim compensation from the employers if they believe the employers are responsible. The Employers'

Liability (Compulsory Insurance) Act 1969 ensures that the employers have at least a minimum level of insurance cover against any such claims. Furthermore, Ameh and Farinde (2020) reported that Section 64 of the Insurance Act requires that every owner or contractor of any building under construction with more than two floors must take out an Insurance Policy to cover liability against construction risks caused by his or her negligence or that of his or her workers, agents or consultants which may result in death, bodily injury or property damage to workers on site or members of the public. This insurance policy also covers liability for collapse of buildings under construction. Therefore, Employers' Liability Insurance will enable the employer to meet the cost of compensation for the employees' injuries or illness whether they are caused on or off site.

Ijigah *et al*. (2015) reported that the implementation of employees' insurance can be enhanced by construction firms making provision for plan for setting aside replacement cost for plant and equipment, engaging in research and development, and having clearly written down H&S policy. Agyekum *et al*. (2018) identified several driving forces that can lead to the effective implementation of employees' insurance in construction projects. These drivers are: Upper management support; Involvement of employee in safety and evaluation; Written and comprehensive safety and health plan; Emergency response planning; and Safety and health committees.

i. Upper management support

The upper management must be committed to ensuring worker safety and health as the primary aim of a firm. Such commitments must be demonstrated through the participation in regular safety meetings, serving on committees, and providing funding for other safety and health programme elements.

ii. Involvement of employee in safety and evaluation

This entails the inclusion of all employees in the formulation and execution of other programme elements. With respect to health and safety activities, employees can perform job hazard analysis, participate in tools box talks, or perform inspections. Evaluating employees' safety performance includes considering safety metrics during regular employee performance evaluations.

iii. Written and comprehensive safety and health plan

A plan that documents project-specific safety and health objectives, goals and methods for achieving success.

iv. Emergency response planning

A plan that documents a firm's policies and procedures in case of a serious incident such as fatality.

v. Safety and health committees

Committees that have the power to effect changes and set policies consist of a diverse group such as supervisors, labourers, representatives of key subcontractors, among others.

The study of Samuel and Muhammed (2021) identified proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency, encouraging ethical practices by all stakeholders and ensuring that construction companies subscribe to one type of insurance in order to reduce risk as major drivers of the implementation of implementation of employees' insurance in construction projects.

2.5 Level of Compliance with the Implementation of insurance Policy in Construction Projects

According to Lingard and Rowlinson (2005), compliance with insurance policy focus on applying measures designed to comply with legal requirements with the regulator being primarily more concerned with improved outcomes than prosecution results. Contractor compliance therefore deals with actions that contractors take to create a platform on which H&S is ensured fostering a construction setting in which workers will be trained and motivated to perform safe and productive construction work (Taylor, 2012). In view of this, Ameh and Farinde (2020) identified 15 variables pertaining to H&S insurance policies which can be used to measure level of contractors' compliance to employees' insurance policies. These measures are:

i. Provision for a written H&S procedure in the organization
ii. Availability of H&S plan before the commencement of any construction project in the organisation
iii. Organising H&S briefing before commencement of any day work
iv. Adequately training of workers are in H&S
v. Making H&S procedure accessible to employees in the organisation

vi. Ensuring strict monitoring of H&S policy and proper keeping of safety records in the organisation
vii. Making available safety plan specifically for each job, outlining how the safety aspects of the particular job will be managed
viii. Organisation always ensure the adequate provision of standardised H&S devices for workers
ix. Provision of notices on H&S at conspicuous position in the organisation
x. Observing that standing H&S rules and regulations on site is enforced during construction
xi. Ensuring that suggestions and contribution made by employees on H&S issues are promptly responded to
xii. Scheduled reviews of H&S standards at work site
xiii. Organising continuous basic training and education in H&S for workers in the organisation
xiv. Organisation carries out H&S evaluations and surveillance
xv. Ensuring that attention is given to prompt and adequate communication of H&S issues to key players

It has been established in literature that in many of the countries where safety legislation exists, the regulatory authority is weak or non-existent and employers 'pay lip service' to regulation (Lee & Halpin, 2003). Compliance of the contractors on what norms the policies postulates is most imperative in ensuring H&S in the construction industry of developing countries. In a bid to comply with insurance policies to avoid conflict with the law, contractors put in place measures which engender safety consciousness on construction sites (Lingard & Rowlinson, 2005). Such measures include holding H&S training, having an up-to-date accident register, and ensuring that hazards are prevented (Idoro, 2007). Previous researches on H&S in the construction industry are focused around identifying prevailing types of accidents on construction sites (Abdul Rahim *et al*. 2008, Ohdo *et al*., 2011) and causes of accidents on construction sites (Ali *et al*., 2010; Hosseinian & Torghabeh, 2012). However, issues on contractors' compliance to H&S insurance policies in the Nigerian construction sector has not been adequately addressed. It is against this background that this research sets out to examine the level of compliance of contractors with H&S insurance policies for construction projects among other key and related issues.

2.6 Effects of Insurance Policy on the Safety Performance of Construction Firms

The effect of employees' insurance on the performance of construction firms or construction projects is positive and significant as established by past studies. In view of this, Odeyinka (2000) reported that actual replacement cost has a significant relationship with the claim settled in a construction project. Therefore, there is a significant correlation between the actual cost of replacement and the claim settled. Hence, the use of insurance is effective in managing construction risks in construction projects. In the same line of thought, Ijigah *et al*. (2015) identified five (5) major effects of employees' insurance on the safety performance of construction project performance**.** These effects are: risk elimination resulting to high morale of management; Risk avoidance/reduction reducing accidents rate and amount of compensation; Risk monitoring ensuring that accidents are avoided; Risk transfer ensuring that the cost of hazards is shared among parties to the contract; and Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts.

Employees' insurance is very significant to reducing the influence of risks on construction project performance to the barest minimum and boost the economy of the country (Okongwu *et al*., 2021; Samuel & Muhammed, 2021). In view of this Okongwu *et al.* (2021) identified the following effect of employees' insurance on the safety performance of construction firms

i. Business Risk

The success of any business is based on mitigation and controlling risk it encounters. Insurance therefore allows businesses to take necessary risks without fear of huge financial loss.

ii. Safety by Awareness

Insurance is not just about paying losses that occur but also preventing losses in the first place from occurring. Insurers are better educated and aware of the causes of various losses and they can offer professional assistance for avoiding the most common causes of losses (Okongwu *et al*., 2021). Insurance companies generally require assessments as part of the process for getting coverage. This helps to bring awareness of the risks you have and help you plan ahead to mitigate those risks.

iii. Economic Stimulation

The monies provided by the insurance companies fund many things, from new construction to scholarships. Local, state, federal and international economies are all bolstered by insurance companies when they use their pooled capital to fund other projects until it is needed to cover a loss.

iv. Providing Security

Insurance helps in decreasing the likelihood of financial hardship in case of a disaster or loss. Life as well as businesses today faces lot of uncertainties. There is always a fear of sudden loss. There may be a fire in factory, storm in the sea or loss of life. In all these cases it becomes difficult to bear the loss. Insurance provides a cover against any sudden loss.

v. Planning and Peace of Mind

Insurance encourages the behaviour to plan in advance for life stage needs. Not having insurance sometimes means you have to dip into investments or assets to meet expenses, such as legal bills, medical costs, fire loss, burglary loss etc. In some cases, a lack of insurance you're your dependents at risk.

vi. Spreading Risk

The basic principle of insurance is to spread risk among a large number of peoples. A large number of persons get the insurance policies and pay premium to the insurer whenever a loss occurs, it is compensated out of fund to the insurer. This helps in spreading risk from one individual to society at large.

vii. Health and Wellness

Given the increasing incidence of lifestyle diseases and escalating medical costs, Insurance provides the benefits of protection against critical diseases and hospitalization expenses.

In summary, the identified effect of employees' insurance on the safety performance of construction firms as identified by Okongwu *et al.* (2021) are: insurance improves safety through creation of awareness; Insurance helps in management of business risk; Insurance helps in economic stimulation; Insurance encourages the holder to plan in advance for life stage (Planning and peace of mind); Insurance provides security (decreasing of financial hardship in case of disaster or loss); Insurance

encourages investment by showing lenders that they have some guarantee of getting money back in the event of disaster; Spreading risk; insurance provides the benefits of protection against diseases and hospital expenses; and Insurance encourages savings.

In the light of the effects discussed so far, it is established that contractor compliance deals with actions that contractors take to create a platform on which H&S is ensured fostering a construction setting in which workers will be trained and motivated to perform safe and productive construction work. Therefore, adequate insurance cover will compel the insurance companies to strictly monitor the contractors' operations and enforce compliance thereby averting hazards to the workers and the projects and liabilities to the insurer; thus, improving the safety performance of construction firms.

2.7 Strategies for Improving Compliance with Insurance Policy in Construction Projects for Improved Safety Performance

In order that the use of insurance is effective in managing risks in construction projects, it has been suggested that considerable care should be taken in determining the insured sum. In addition to this, Odeyinka (2000) recommended that contractors should study the exclusion clauses carefully before entering into any contract of insurance. The benefit of this is to assist in ensuring an awareness of uninsured risk exposure and to motivate contractors to seek avenues of protection other than insurance. It has also been established that in order to provide room for improving compliance with employees' insurance in construction projects for improved safety performance, the safety management system of a construction firm should make provision for the following: Designation of safety responsibilities to trained personnel; Direct safety talks with workers; Regular safety audit; Systematic hazard identification; Assessment of risk level; Safety orientation for new/transferred workers; Pre-project safety trainings received; Safety trainings received; Scheduled in-house inspections; and Resident safety officer at sites (Olutuase. 2014).

In a study conducted by Cesarini and Kupiec (2016), safety has been viewed as an investment that provides real benefits in a high-hazard industry like construction. A safe work environment helps to keep skilled employees on the job and projects on track by reducing accidents that result in injuries and schedule delays, while also

reducing the risks of litigation and regulatory action. A strong safety record enhances a company's reputation and requires commitment and participation from the chief executive to project managers, superintendents, foremen and individual workers on the job site. That commitment should extend to the selection of subcontractors who also embrace a strong safety ethic, particularly when a company is using a construction wrap-up insurance program. In the light of this, Cesarini and Kupiec (2016) identified twelve (12) steps that construction companies can take to help make the job site safer, keep projects on track and manage insurance costs. These steps are: Start at the top; Make safety committees and safety managers a part of the job; Recognize success, but hold everyone accountable; Prequalify subcontractors for safety; Plan safety into the project; Train workers for safety; Focus on fall management; Combat substance abuse; Evaluate each project phase for safety; Make safety an everyday topic; Review accidents and near misses; Work with your insurer and risk management experts; and Work toward zero injuries. In addition to these steps, it is also good for project planners to also work with their insurers to determine the most effective risk management strategies before a project begins and while it is being executed (Cesarini & Kupiec, 2016).

In addition, in order to increase employees' insurance level of compliance by construction firms, construction firms should ensure that injured workers have access to the health-care facilities, goods and services they need, and that cash benefits reach injured workers or their survivors without delay. This will bring about improved safety performance (Okongwu *et al.*, 2021). Safety in construction is therefore a very critical issue that requires the devotion and commitment of all people involved towards preventing accidents from happening and improving the working conditions within construction sites and particularly, the construction workers. The importance attached to the safety of workers on building construction sites can never be overemphasized. This is because they are the majority amongst other stakeholders in the project site and are the manpower required to harness the materials and method together for the purpose of delivering a building project (Okongwu *et al.*, 2021). While the long quest of bringing a total stop to the case of accidents in building site continues, it is important that we find a way to cushion the effects of these accidents when they occur. Since the National Insurance Act 3003 was promulgated to cover those to whom others might be caused to be injured by other people's actions or inactions, this study calls for a wakeup call among the

stakeholders responsible for ensuring safety in sites. This study therefore concludes that insurance is a necessary tool and should be viewed as one especially in the area of safety of construction workers.

In view of the challenges confronting the adoption of insurance policies by construction firms in Nigeria, Samuel and Muhammed (2021) recommended several measures that can be employed to address these challenges thereby leading to improved safety performance in construction projects. These measures are: proper contracts reviewed by a knowledgeable attorney and read contracts for consistency should be carried out; ethical practices by all stakeholders should be encouraged; and construction companies should ensure to subscribe to one type of insurance in order to reduce risk. This will go a long way in reducing the influence of risks on construction project performance to the barest minimum and boost the economy of the country.

2.8 Summary of Literature Review

The review of literature carried out in this chapter is in line with the theme of the aim and objectives in the study. As a result of this, the research constructs required to address the key problem of the study in order to achieve the aim and objectives of the study have been identified and discussed extensively. This section gives a summary of these research constructs in order to aid the data collection process.

2.8.1 Summary of types of insurance policy on construction site activities

The research constructs based on the types of insurance policy related to construction site activities as reviewed from literature are summarised in Table 2.1.

Table 2.1: Types of Insurance Policy on Construction Site Activities

S/No.	Types of Insurance Policy on Construction Site Activities	Source(s)
1	All-Risk Policies (Contractors All Risks; Erection All Risks; Plant All Risks)	Odeyinka (2000); NOUN (2009)
2	Road Traffic Act Policies (Automobile Insurance/ Motor Third Party Liability Insurance)	NOUN (2009); Ameh and Farinde (2020); Okongwu *et al*. (2021)
3	Multi-Risk Policies	NOUN (2009)
4	Specified Peril Policies	NOUN (2009)
5	Machinery Breakdown	NOUN (2009)
6	Boiler and Pressure Vessel	NOUN (2009)
7	Equipment Floater Insurance	NOUN (2009); Ameh and Farinde (2020)
8	Builder's Liability Insurance	Ezeokoli (2017); Ameh and Farinde (2020); Okongwu *et al*. (2021)
9	Key Man Insurance	Ameh and Farinde (2020)
10	Worker's Compensation Insurance.	Ameh and Farinde (2020)
11	Occupiers Liability Insurance	Okongwu *et al*. (2021)

2.8.2 Summary of benefits of insurance policy in construction projects

The research constructs based on the benefits of insurance policy in construction projects as reviewed from literature are summarised in Table 2.2.

Table 2.2: Benefits of Insurance Policy in Construction Projects

S/No.	Benefits of Insurance Policy in Construction Projects	Source(s)
1	Transfers risk-bearing responsibility by the contractor to the insurance company	Odeyinka (2000); NOUN (2009); Samuel and Muhammed (2021)
2	Offers comprehensive and adequate financial protection against loss or damage in respect of the contract work	NOUN (2009)
3	Offers third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract	NOUN (2009)
4	Adequate insurance cover will compel the insurance companies to strictly monitor the contractors' operations and enforce compliance	Ameh and Farinde (2020)
5	Guarantees the success of projects	Samuel and Muhammed (2021)
6	Ensures financial security	NOUN (2009)
7	Serves as an important component in the financial intermediation chain	Samuel and Muhammed (2021)
8	Offers a ready source of long-term capital for infrastructural projects	Samuel and Muhammed (2021)
9	Provides contingent funding to the contractor in time of difficulty	Samuel and Muhammed (2021)
10	Averting hazards to the workers and the projects and liabilities to the insurer	Ameh and Farinde (2020)

2.8.3 Summary of barriers to the implementation of implementation of insurance policy in construction projects

The review of literature of this study has been able to identify the following constructs in respect of the barriers to the implementation of implementation of insurance policy in construction projects as summarised in Table 2.3.

Table 2.3: Barriers to the Implementation of Implementation of Insurance Policy in Construction Projects

S/No.	Barriers to the Implementation of Implementation of Insurance Policy	Source(s)
1	Poor leadership	Idubor and Oisamoje (2013); Ameh and Farinde (2020)
2	Attracts additional cost to the contractor	Idubor and Oisamoje (2013)
3	Lack of concern	Idubor and Oisamoje (2013)
4	Lack of accurate records	Idubor and Oisamoje (2013)
5	Poor statutory regulations	Idubor and Oisamoje (2013)
6	Urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects	Patrick (2008)
7	Inadequate legal framework	Jimoh *et al*. (2020)
8	Ineffective implementation strategy	Jimoh *et al*. (2020)
9	Cultural factors	Jimoh *et al*. (2020)
10	Low awareness level	Ameh and Farinde (2020); Jimoh *et al*. (2020); Samuel and Muhammed (2021)
11	Lack of proper enforcement of the Act	Jimoh *et al*. (2020)
12	Time to time replacement of H&S facilities	Ameh and Farinde (2020)
13	Cost implication of H&S policies	Ameh and Farinde (2020)
14	Poor management commitment	Ameh and Farinde (2020)
15	Fear of not recouping investment in H&S facilities	Ameh and Farinde (2020)
16	Poor safety discipline	Ameh and Farinde (2020)
17	Absence of clearly stated safety rules;	Ameh and Farinde (2020)
18	Continuity in business	Ameh and Farinde (2020); Samuel and Muhammed (2021)
19	Excessive premium charged by insurance companies	Samuel and Muhammed (2021)
20	Lack of trust for the insurance companies	Samuel and Muhammed (2021); Oknogwu *et al*. (2021)
21	Bureaucratic processes involved in purchasing these policies	Samuel and Muhammed (2021)
22	Governments non implementation of existing insurance act	Samuel and Muhammed (2021); Oknogwu *et al*. (2021)
23	Delay in payment of insurance claims	Oknogwu *et al*. (2021)

2.8.4 Summary of drivers of the implementation of implementation of insurance policy in construction projects

The review of literature of this study has been able to identify the following constructs in respect of the drivers of the implementation of implementation of insurance policy in construction projects as summarised in Table 2.4.

Table 2.4: Drivers of the Implementation of Implementation of Insurance Policy in Construction Projects

S/No.	Drivers of the Implementation of Implementation of Insurance Policy	Source(s)
1	Employers' Liability Insurance Policy	Health and Safety Executive (2012); Ameh and Farinde (2020)
2	Provision for plan for setting aside replacement cost for plant and equipment	Ijigah *et al*. (2015)
3	Engaging in research and development	Ijigah *et al*. (2015); Agyekum *et al*. (2018)
4	Having clearly written down H&S policy	Ijigah *et al*. (2015); Agyekum *et al*. (2018)
5	Upper management support	Agyekum *et al*. (2018)
6	Involvement of employee in safety and evaluation	Agyekum *et al*. (2018)
7	Emergency response planning; and Safety and health committees	Agyekum *et al*. (2018)
8	Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency	Jimoh *et al*. (2020)
9	Encouraging ethical practices by all stakeholders	Samuel and Muhammed (2021)
10	Ensuring that construction companies subscribe to one type of insurance in order to reduce risk	Samuel and Muhammed (2021)

2.8.5 Summary of level of compliance with the implementation of insurance policy in construction projects

Compliance level of construction firms and relevant stakeholders in construction projects have been discovered to take two major forms from wide review of literature undertaken in this study. The first is that countries where safety legislation exists, the regulatory authority is weak or non-existent and employers 'pay lip service' to regulation (Lee & Halpin, 2003). The second one is that compliance to and enforcement of occupational H&S legislations with respect to Employees' Insurance is poor due lack of concern, lack of accurate records and poor statutory regulations (Idubor & Oisamoje, 2013). In view of this, the review of literature carried out in this study has identified 15 variables pertaining to H&S insurance policies which can be used to measure level of contractors' compliance to employees' insurance policy as summarised in Table 2.5.

Table 2.5: Variables for Measuring Level of Contractors' Compliance with Insurance Policy

S/No.	Variables for Measuring Level of Contractors' Compliance to Insurance Policy	Source(s)
1	Provision for a written H&S procedure in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
2	Availability of H&S plan before the commencement of any construction project in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
3	Organising H&S briefing before commencement of any day work	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
4	Adequately training of workers are in H&S	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
5	Making H&S procedure accessible to employees in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
6	Ensuring strict monitoring of H&S policy and proper keeping of safety records in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
7	Making available safety plan specifically for each job, outlining how the safety aspects of the particular job will be managed	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
8	Organisation always ensure the adequate provision of standardised H&S devices for workers	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
9	Provision of notices on H&S at conspicuous position in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
10	Observing that standing H&S rules and regulations on site is enforced during construction	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
11	Ensuring that suggestions and contribution made by employees on H&S issues are promptly responded to	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
12	Scheduled reviews of H&S standards at work site	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
13	Organising continuous basic training and education in H&S for workers in the organisation	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011);

		Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
14	Organisation carries out H&S evaluations and surveillance	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)
15	Ensuring that attention is given to prompt and adequate communication of H&S issues to key players	Lingard and Rowlinson (2005); Idoro (2007); Abdul Rahim *et al*. (2008); Ali *et al*. (2010); Ohdo *et al*. (2011); Hosseinian and Torghabeh (2012); Taylor (2012); Ameh and Farinde (2020)

2.8.6 Summary of effect of insurance policy on the safety performance of construction firms

The review of literature of this study has been able to identify the effects of insurance policy on the safety performance of construction firms as summarised in Table 2.6.

Table 2.6: Effects of Insurance Policy on the Safety Performance of Construction Firms

S/No.	Effects of Insurance Policy on the Safety Performance of Construction Firms	Source(s)
1	Actual replacement cost has a significant relationship with the claim settled in a construction project	Odeyinka (2000)
2	Use of insurance is effective in managing construction risks in construction projects	Odeyinka (2000)
3	Risk elimination resulting to high morale of management	Ijigah *et al*. (2015)
4	Risk avoidance/reduction reducing accidents rate and amount of compensation;	Ijigah *et al*. (2015)
5	Risk monitoring ensuring that accidents are avoided	Ijigah *et al*. (2015)
6	Risk transfer ensuring that the cost of hazards is shared among parties to the contract	Ijigah *et al*. (2015)
7	Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts	Ijigah *et al*. (2015)
8	Allowing businesses to take necessary risks without fear of huge financial loss	Okongwu *et al.* (2021); Samuel and Muhammed (2021)
9	Brings awareness of the potential risks and help to plan ahead to mitigate those risks	Okongwu *et al.* (2021); Samuel and Muhammed (2021)
10	Provides economic simulation which brings about funding for miscellaneous activities ranging from new construction to scholarships	Okongwu *et al.* (2021); Samuel and Muhammed (2021)
11	Insurance helps in decreasing the likelihood of financial hardship in case of a disaster or loss	Okongwu *et al.* (2021); Samuel and Muhammed (2021)
12	Insurance encourages the behaviour to plan in advance for life stage needs	Okongwu *et al.* (2021); Samuel and Muhammed (2021)

In addition, the review of literature has also established several variables for measuring the cost of accidents which is one of the key parameters for measuring the safety performance of construction firms. These variables are highlighted in Table 2.7.

Table 2.7: Variable for Measuring Cost of Accidents

S/No.	Variable for Measuring Cost of Accidents	Source(s)
1	Medical (ambulance, doctor, medical, hospital)	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
2	Wages for injured person(s)/Compensation	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
3	Overtime costs	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
4	Time lost by injured employees and co-workers	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
5	Injured employee's productivity loss costs	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
6	Supervision and Management lost time	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
7	Incident investigation costs	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
8	Damage to equipment, plant, tools, or other property	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
9	Idle plant and equipment	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
10	Others (including Consumables, Legal and Funeral Costs)	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
11	Training of replacement employee;	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)
12	Additional medical costs	Pillay (2014); Olutuase (2014); Ameh and Farinde (2020)

2.8.7 Summary of strategies for improving compliance with employees' insurance in construction projects for improved safety performance

The review of literature of this study has been able to identify the strategies for improving compliance with insurance policy in construction projects for improved safety performance as summarised in Table 2.8.

Table 2.8: Strategies for Improving Compliance with Insurance Policy in Construction Projects for Improved Safety Performance

S/No.	Strategies for Improving Compliance with Insurance Policy	Source(s)
1	Considerable care should be taken in determining the insured sum in a project	Odeyinka (2000)
2	Contractors should study the exclusion clauses carefully before entering into any contract of insurance	Odeyinka (2000)
3	Designation of safety responsibilities to trained personnel	Olutuase (2014); Cesarini and Kupiec (2016)
4	Direct safety talks with workers	Olutuase (2014)
5	Systematic hazard identification	Olutuase (2014)
6	Assessment of risk level	Olutuase (2014)
7	Safety orientation for new/transferred workers	Olutuase (2014)
8	Pre-project/project safety trainings received	Olutuase (2014); Cesarini and Kupiec (2016)
9	Scheduled in-house inspections	Olutuase (2014)
10	Having resident safety officer at sites	Olutuase (2014); Cesarini and Kupiec (2016)
11	Regular safety audit	Olutuase (2014)
12	Review accidents and near misses	Cesarini and Kupiec (2016)
13	Evaluate each project phase for safety	Cesarini and Kupiec (2016)
14	Work with your insurer and risk management experts	Cesarini and Kupiec (2016)
15	Work toward zero injuries	Cesarini and Kupiec (2016)
16	Construction companies should ensure to subscribe to one type of insurance in order to reduce risk	Samuel and Muhammed (2021)

CHAPTER THREE

3.0 THEORETICAL FRAMEWORK

3.1 The Concept of Theoretical Framework

What differentiates the writing of research of scholars from that of journalists is a well-developed and articulate theoretical framework. This section deals with aspects of theoretical frameworks in respect of the study's subject matter (i.e., implementation of insurance policies for safety at construction workplaces). The term "theoretical framework" comprises two words, "theory" and "framework. A theory is a set of interrelated constructs, definitions, and propositions that present a systematic view of phenomena by specifying relations among variables with the purpose of explaining and predicting phenomena. A framework, on the other hand, is a set of ideas that you use when you are forming your decisions and judgements (Crawford, 2020). A theory can be used to successfully make predictions and this predictive power of the theory can help guide researchers to ask appropriate research questions. On the other hand, a framework provides structure within which the relationships between variables of a phenomenon are explained. Crawford (2020) defined theoretical framework as any empirical or quasi-empirical theory of social and/or psychological processes, at a variety of levels that can be applied to the understandings of phenomena. Therefore, a theoretical framework arises from outcomes beyond a single study, based on one or more theories, which might be, for example, social constructivism, constructionism, or behaviourism (Passy, 2020).

3.2 A Review of Theories/Models for Implementation of Insurance Policy in Construction

According to United Nations (2015), there are four (4) basic priority steps or framework towards identifying areas requiring insurance policy in a construction projects. These priority steps (framework) include the following components: Priority 1: Understanding disaster risk; Priority 2: Strengthening disaster risk governance to manage disaster risk; Priority 3: Investing in disaster risk reduction for resilience; and Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

Priority 1: Understanding disaster risk

Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters.

Priority 2: Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk. Clear vision, plans, competence, guidance and coordination within and across sectors, as well as participation of relevant stakeholders, are needed. Strengthening disaster risk governance for prevention, mitigation, preparedness, response, recovery and rehabilitation is therefore necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction and sustainable development.

Priority 3: Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.

Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

The steady growth of disaster risk, including the increase of people and assets exposure, combined with the lessons learned from past disasters, indicates the need to further strengthen disaster preparedness for response, take action in anticipation of events, integrate disaster risk reduction in response preparedness and ensure that capacities are in place for effective response and recovery at all levels. Empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches is key. Disasters have demonstrated that the recovery, rehabilitation and

reconstruction phase, which needs to be prepared ahead of a disaster, is a critical opportunity to "Build Back Better", including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters.

In the contribution of International Association of Insurance Supervisors, IAIS (2019), it was reported that an effective system of insurance supervision requires a number of preconditions to be in place, as they can have a direct impact on supervision in practice. An assessment of a jurisdiction's observance of the Principal Statements and Standards may involve a review of preconditions for effective insurance implementation and supervision. In line with this, IAIS (2019) identified five steps and preconditions for effective insurance implementation and supervision: These are:

i. Sound and sustainable macroeconomic and financial sector policies;
ii. A well-developed public infrastructure;
iii. Effective market discipline in financial markets;
iv. Mechanisms for providing an appropriate level of protection; and
v. Efficient financial markets.

As these preconditions are normally outside the control or influence of the supervisor, and because they are beyond the scope of the Insurance Core Principles (ICPs), an assessment should not evaluate a jurisdiction's observance of the preconditions. Instead, the objective of a review of preconditions is to help inform an assessment of observance of the ICPs because the preconditions can directly impact the effectiveness of supervision. Where shortcomings exist, the supervisor should make its government aware of these and their actual or potential repercussions for the achievement of supervisory objectives and seek to mitigate the effects of such shortcomings on the effectiveness of supervision. This will make it possible to identify areas of work to be covered by insurance policy.

The construction industry, perhaps more than most of other industries, is overwhelmed by risks. If these risks are not dealt with satisfactorily, there is a maximum likelihood of cost overruns, time delays and low quality, resulting in dissatisfaction of clients and the public at large (Nadeem, 2010). It is, therefore, important to reduce losses in terms of monetary or life with efficient management of construction projects by clients, contractors and consultants. Application of various

project management techniques have to be made from the conception to the completion stage, which include managing various risks associated with project in its every stage. Construction work involves the production of a long-lived capital product. It is the result of a complex interaction of design, construction, finance, law and insurance. Construction insurance is a major method of managing risks in the construction industry. Its primary function is to transfer certain risks from clients, contractors, subcontractors and other parties involved in the construction project to insurers to provide contingent funding in time of difficulty. Construction insurance plays an increasingly important role in assuring the success of projects, with insurers sharing losses resulting from natural disasters and other contingencies. Insurance is, of course, only one means of managing risks associated with projects. It needs to be put into context and understood that not every risk can be insured against, insured against adequately or insured for a price that is acceptable. In view of these, Debela (2018) developed a Risk Management Framework which could serve as a good basis towards the implementation of insurance policy for mitigating workplace safety risks. This framework is presented as Figure 3.1.

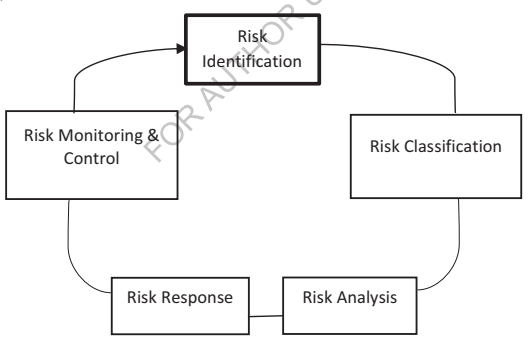

Fig. 3.1: Risk Management Framework (Source: Debela, 2018)

Al-Kasasbeh *et al*. (2021) reported that an innovative model is required to equip insurance companies with a mechanism to evaluate the safety performance of their construction clients. This innovative model should be built using the data envelopment analysis (DEA) technique to produce efficiency scores that describe the safety performance of the construction company. The model will also provide managers the ability to evaluate the company's safety performance and procedures

over the years to allow for continuous improvement actions as well as to address some of some obvious limitations such as (1) exclusivity on certain types of projects; (2) not going beyond specific case studies; (3) characteristics such as subjectivity, complexity, cost, and being time-consuming; and (4) working with a particular constraint, such as the availability of more than one company, to perform a comparison. In view of this, Al-Kasasbeh *et al*. (2021) developed a robust construction safety performance evaluation framework for workers' compensation insurance, which serves as a proposed alternative to experience modification rating (EMR) approach.

The proposed framework of Al-Kasasbeh *et al*. (2021) will enable insurance companies to identify the efficiency scores of their clients as a fast and robust mechanism for assessing the quality of their safety records. The management may also use the proposed framework to evaluate the annual improvements (or lack of) and effectiveness of the safety measures undertaken for their work environments by determining the efficiency scores for the time period they choose. However, it was suggested that future research is required to consider input from insurance and construction companies when fine-tuning the criteria and developing the thresholds for insurance rates to allow for fair and realistic rates. A survey of both insurance and construction companies could be used to develop a concise set of criteria that is trackable by both industries. Finally, field testing to measure the effectiveness of the framework is another important future research direction.

CHAPTER FOUR

4.0 CONCEPTUAL FRAMEWORK

4.1 Basics of a Conceptual Framework

A conceptual framework provided the orientation to the study and assists both the researcher and the reader in seeing how the study contributes to the body of knowledge on the topic, how elements of the study align, and how the study design and methodology meet rigorous research standards (Crawford, 2020). In summary, a conceptual framework is incredibly important. In addition, a conceptual framework tends to be more flexible and descriptive, as it usually identifies factors or criteria that have influence on a particular field within the more major features, which might be, for example, social learning, discovery learning, or experiential learning (Passy, 2020).

4.2 Conceptual Framework for the Study

In view of the background information in Section 4.1, Figure 4.1 shows the conceptual framework for this study based on the frameworks, models and guidelines reviewed in the previous chapter.

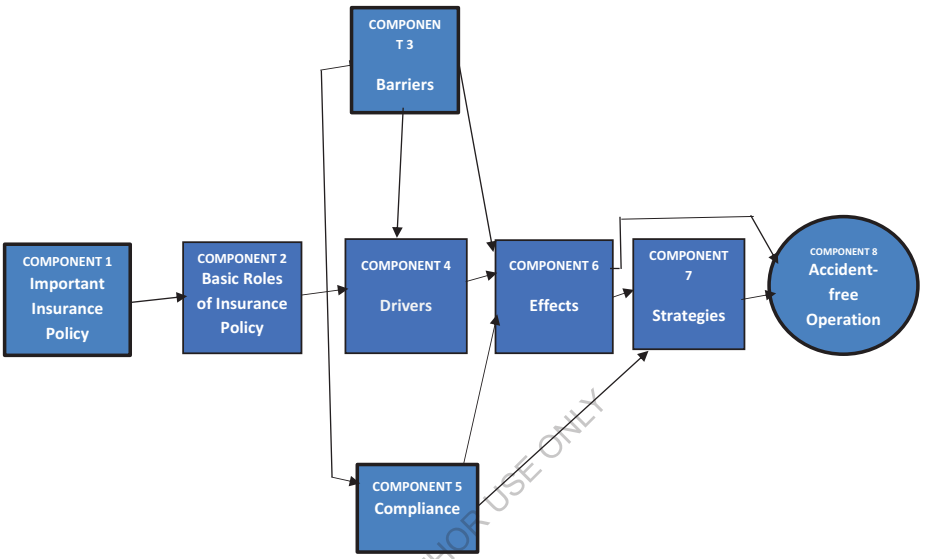

Fig. 4.1: Conceptual Framework for the Effective Implementation of Insurance Policy for Workplace Safety in Construction Projects
Source: Researcher's Construct (2022)

As presented in Figure 4.1, the framework is divided into eight (8) components. Component 1 illustrates identification of important insurance policy in the safety of construction site activities. After this, Component 2 indicates the determination of the basic roles of employees' insurance policy in construction projects. Components 3, 4 and 5 indicate the stages where the stakeholders will identify and assess the potential barriers to the implementation of insurance policy by construction firms; the drivers of the implementation of insurance policy by construction firms; and the level of compliance with the implementation of insurance policy by construction firms in Minna, Niger State, Nigeria. Component 6 is the stage where the effects of these barriers, drivers and level of compliance should be properly analysed. Component 7 is the stage where the strategies for the strategies for improving compliance with insurance policy in construction projects for improved safety

performance of construction firms should be thoroughly examined and evaluated in order to enhancing the safety performance of construction workers on site in Minna, Niger State, Nigeria. In Component 3, the barriers identified can directly be mitigated with the use of the drivers in Component 4 for effective project delivery. Component 8 shows the outcome of the effective implementation of the framework for achievement of accident-free construction operation.

The proposed framework illustrated as Figure 4.1 will be of immense benefit to the construction and design team in the operations of construction projects. It will help the team to be able to reduce the rate of accidents in at workplace through effective implementation of insurance policy thereby reducing cost of compensation. This will therefore reduce the overall cost of H&S as well as final cost. It will also help the Safety Officer or Quantity Surveyor to be able to accurately determine and manage the cost of H&S in construction projects. Visitors to sites will also be able to visit construction sites without fear of being injured.

CHAPTER FIVE

5.0 RESEARCH METHODOLOGY

5.1 Research Design

Research design is a system of processes which involves programmes that guide the researcher in collecting, analysing and interpreting observations. The research design is intended to provide an appropriate framework for a study. In view of this, the mixed methods approach which involves the combination of both quantitative and qualitative research approach was adopted for this study. Therefore, the use of structured questionnaire, interview schedule and data collection checklist (for archival data) were employed to collect data. See the Appendix section for samples of the data collection instruments.

5.2 Research Population

Research population, according to Morenikeji (2006), refers to the total number of the considerable population for the research. The population for the study was made up of registered professionals in Niger State Ministry of Works and Infrastructural Development (NSMWID) and Niger State Housing Corporation (NSHC) in Minna, Niger State. A pilot survey carried out for the study revealed that population size for this research is made up of sixty-seven (67) professionals from NSMWID actively involved on construction site activities, forty-eight (48) professionals from NHSC actively involved on construction site activities and fifteen (15) safety officers of construction firms actively involved in the projects executed by NSMWID and NHSC. This gives a total population size of one hundred and thirty (130) respondents.

5.3 Sampling Frame

The sampling frame of the study was made up of registered professionals in NSMWID and NSHC in Minna, Niger State. The sampling frame also included safety officers of construction firms registered to execute projects for and currently working on active sites of NSMWID and NSHC in Minna, Niger State. The sampling frame covered professionals of these two ministries which involve Architects, Builders, Quantity Surveyors and Engineers, as well as the safety officers in the construction firms registered to execute projects for these Ministries.

5.4 Sample Size

The sample size for a study is usually a smaller proportion of the entire research population which will be representative of the total population. However, the sample size for this study is same as the population size. This is because the population size is few and therefore does not require a smaller representative size. Hence, the sample size for the study was one hundred and thirty (130). All the target population group were therefore considered for the data collection process.

5.5 Sampling Technique

Sampling technique can be classified into five namely; simple random sampling, systematic random sampling, stratified random sampling, clustering random sampling and multi-stage sampling (Morenikeji, 2006). This study however carried out a census of the entire population since the population size is small. This is in line with the assertion of Watson (2001) which stated that if the population size is small (200 or less), then it is preferable to take a census of the total population.

5.6 Method of Data Collection

The use of structured questionnaire, interview schedule and data collection checklist were employed to collect data for the study. Questionnaire was employed to collect data on the research objectives based on a five-point Likert's Scale format in order to sample opinion of respondents. For this purpose, 130 copies of questionnaire were distributed, while 107 copies were returned and used for analysis; this gives a response rate of 82.31%. Interview schedule was used to collect data from five (5) insurance firms in order to corroborate the findings of the data collected from questionnaire and checklist. This also made it possible from all the stakeholders involved in construction insurance business. Data collection checklist was used to collect archival data on the cost of accidents recorded for a period of five years (2016 - 2020). The questionnaire was comprised of six sections. The first section addressed issues relating to the profile of respondents. The second section addressed issues relating to Objectives 1 and 2. Issues relating to Objective 3 were addressed in the third section of the questionnaire. The fourth section of the questionnaire addressed issues relating to Objective 4. The fifth section of the questionnaire addressed issues relating to Objectives 5 and 6. Issues relating to Objective 7 were addressed in the sixth section of the questionnaire. The interview schedule mainly addressed issues concerning the level of compliance with the implementation of insurance policy in

construction projects. See the Appendix section for samples of the questionnaire and the interview schedule.

5.7 Method of Data Analysis

The analysis of data was undertaken with the use of frequency count, percentage, Relative Importance Index (RII), Mean Item Score (MIS) and Spearman's Rank correlation analysis. The profile of respondents was analysed with the use of frequency count and percentage. In order to achieve the first and second objectives of the study, RII was used to rank the perception of respondents on the relative importance of the types of insurance policy provisions in the safety of construction site activities and the level of significance of the roles of employees' insurance policy in construction projects. MIS was used to assess the barriers to the implementation of insurance policy by construction firms in order of importance to achieve the third objective of the study. In order to achieve the fourth objective of the study, the use of MIS was also employed to assess the drivers of the implementation of insurance policy by construction firms in order of importance. MIS was also used to rank the level of compliance with the implementation of insurance policy by construction firms, based on the perception of respondents, to achieve the fifth objective of the study. MIS (respondents' opinions from questionnaire rankings) and Spearman Rank correlation analysis (using archival records) were used to determine the effect of insurance policy on the cost of site accidents to construction firms in order of significance to achieve the sixth objective of the study. The seventh objective of the study was also achieved using MIS to rank identified strategies for improving compliance with insurance policy in construction projects for improved safety performance of construction firms in order of effectiveness. For the Spearman Rank correlation, the decision rules for the nature of correlation state that if coefficient of correlation (r) =.10 to .29, then there is small amount of correlation; if r =.30 to .49; then there is medium amount of correlation; and if r = 0.50 - 1.0, then then there is large amount of correlation between the variables, as opined by Pallant (2013). Content analysis, with the aid of percentage, was used to analyse the data collected using interview schedule. A summary of the research process is presented in Figure 5.1.

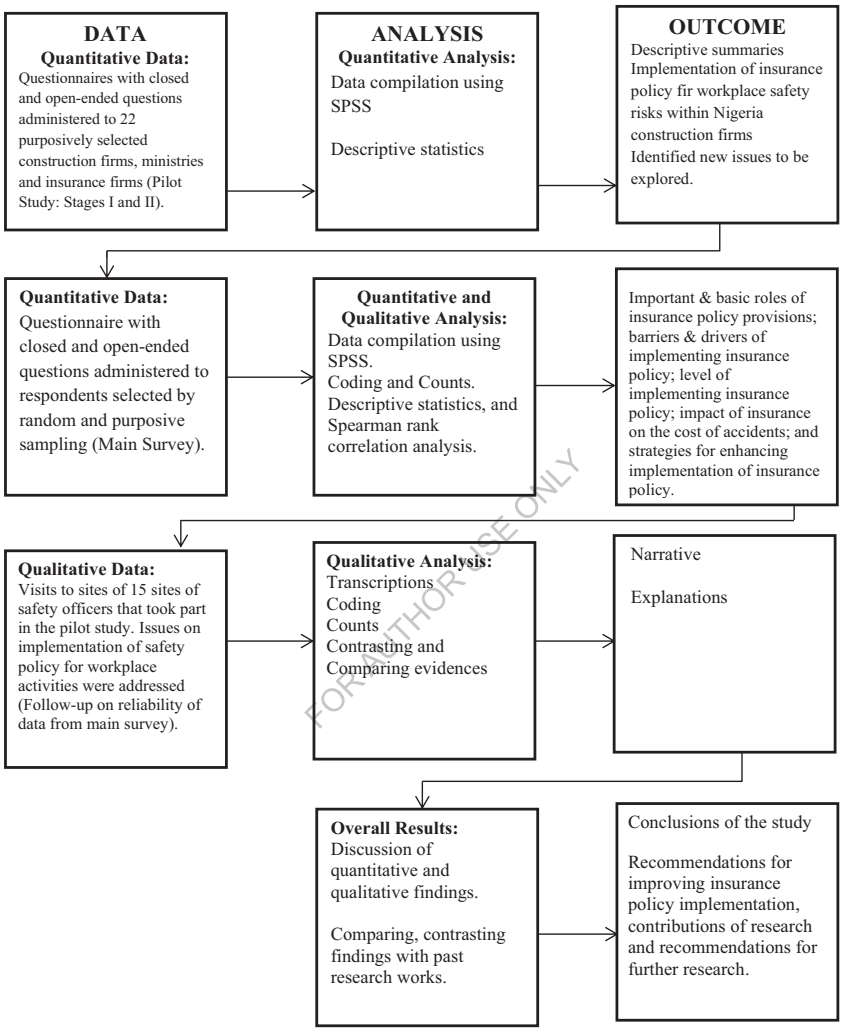

Fig. 5.1: Research Process for the Study

The formula used for calculating MIS for data analysis is expressed in Equations 5.1 as follows:

$$MIS = \frac{\Sigma W}{N} \text{---------- (5.1)}$$

Where: Σ = Summation, W = Weight, and N = Total

MIS is being ranked from 1.00 to 5.00 and the decision rule adopted for the MIS analysis are summarized in Table 5.1.

Table 5.1: Decision Rule for MIS Analysis

Scale	Cut-Off Point		Interpretation			
	RII	***MIS***	***Level of Importance***	***Level of Compliance***	***Level of Significance***	***Level of Effectiveness***
5	0.81 - 1.00	4.01 - 5.00	Extremely Important	Very High	Extremely Significant	Extremely Effective
4	0.61 - 0.80	3.01 - 4.00	Very Important	High	Very Significant	Very Effective
3	0.41 - 0.60	2.01 - 3.00	Important	Fair	Significant	Effective
2	0.21 - 0.40	1.01 - 2.00	Less Important	Low	Less Significant	Less Effective
1	0.00 - 0.20	0.01 - 1.00	Least Important	Very Low	Least Significant	Least Effective

Source: Adapted and Modified from Shittu *et al*. (2021)

5.8 Reliability Test

A reliability test was undertaken to validate the research instrument. See Table 5.2 for the result of the reliability test.

Table 5.2: Results of Reliability Test

Item No	Variable	Inter Item Correlation Coefficient				
		Item 1	**Item2**	**Item 3**	**Item 4**	**Item 5**
1	Barriers to the Implementation of Insurance Policy by Construction Firms	1.000	0.567	0.337	0.743	0.462
2	Drivers of the Implementation of Insurance Policy by Construction Firms	0.567	1.000	0.469	0.632	0.386
3	Level of Compliance with the Implementation of Insurance Policy	0.337	0.469	1.000	0.642	0.563
4	Effects of Insurance Policy on the Cost of Site Accidents to Construction Firms	0.743	0.632	0.642	1.000	0.718
5	Strategies for Improving Compliance with Insurance Policy in Construction Projects	0.462	0.386	0.563	0.718	1.000
N	107					
Cronbach's Alpha	0.856					
Cronbach's Alpha Based on Standardized Items	0.860					

It was observed from Table 5.2 that the Inter Item Correlation Matrix comprises of positive values, indicating that the items are measuring the same underlying characteristic. It was also observed that the Cronbach's Alpha was 0.856, suggesting very good internal consistency reliability for the scale with this sample. Therefore, the data set are reliable for analysis. This also agrees with the bench mark prescribed by Pallant (2013) that Values above 0.700 are considered acceptable; however, values above 0.80 are preferable.

CHAPTER SIX

6.0 RESULTS AND DISCUSSION

6.1 Respondents' Profile

The field work for this study involved collection of data, using questionnaire and data collection checklist, from 107 respondents from construction professionals made up of workers from Niger State Ministry of Works and Infrastructural Development (NSMWID), Niger State Housing Corporation (NSHC), and Safety Officers construction firms across fifteen (15) active sites of NSMWID and NSHC. Interview schedule was also used to collect data from five (5) purposively selected insurance firm in Minna, Niger State. See Table 6.1 for the profiles of the respondents from the Government Ministries and construction firms using questionnaire survey.

Table 6.1: Respondents' Profile

PROFILE	**STATISTICS**	
Respondents' Profession	**Frequency**	**Percentage**
Architect	14	13.08
Builder	32	29.91
Engineer	26	24.30
Quantity Surveyor	35	32.71
Respondents' Highest Academic Qualification	**Frequency**	**Percentage**
ND	15	14.02
HND	29	27.10
BSC/BTech	40	37.38
MSC/MTech	23	21.50
Respondents' Professional Qualification	**Frequency**	**Percentage**
MNIA/ARCON	14	13.08
MNIOB/CORBON	32	29.91
MNSE/COREN	26	24.30
MNIQS/RQS	35	32.71
Respondents' Years of Experience	**Frequency**	**Percentage**
1 – 5 years	19	17.76
6 – 10 years	23	21.50
11 – 15 years	34	31.78
16 – 20 years	19	17.76
Above 20 years	12	11.21
TOTAL	***107***	***100.00***

It can be seen from Table 6.1 that majority of the respondents are Quantity Surveyors making up 35 of the 107 respondents (i.e., 32.71 % of the total group). Others are Builders; Engineers; and Architects making up 29.91%; 24.30%; and 13.08% of the total group respectively. It was also revealed that most of the respondents are

BTech/MTech degree holder. This group makes up 37.38% of the total number of respondents. Others are holders of Higher National Diploma (27.10% of the respondents); MSc/MTech degree (21.50% of the respondents); and National Diploma (14.02% of the respondents). Table 6.1 also shows that all the respondents are registered members of their respective professional bodies which are NIA/ARCON; NIOB/CORBOM; NSE/COREN; and NIQS/QSRBN. Finally, it was revealed from Table 6.1 that majority of the respondents have 11 – 15 years of experience. This represents 31.78% of the total number of respondents. Others have experience in the ranges of 6 – 10 years; 1 – 5 years; 16 – 20 years; and Above 20 years. This makes up 21.50%; 17.76%; 17.76%; and 11.21% respectively. The profile of respondents presented in Table 6.1 indicates that the respondents are educated, experienced and knowledgeable enough to provide reliable information required for the study. This has already been confirmed in the result of the reliability test presented in Chapter Five.

6.2 Relative Importance of Types of Insurance Policy on Construction Site Activities

In view of the findings of the study on the profile of organisations on the adoption/implementation of insurance policy, the relative importance of eleven (11) identified types of insurance policy was examined with the use of Relative Importance Index (RII). The summary of the RII result is presented in Table 6.2.

Table 6.2: Results of Relative Importance of Types of Insurance Policy on Construction Site Activities

Code No.	Types of Insurance	RII	Rank	Decision
C10	Worker's Compensation Insurance.	0.96	1st	Extremely Important
C1	All-Risk Policies (Contractors All Risks; Erection All Risks; Plant All Risks)	0.95	2nd	Extremely Important
C8	Builder's Liability Insurance	0.89	3rd	Extremely Important
C7	Equipment Floater Insurance	0.86	4th	Extremely Important
C3	Multi-Risk Policies	0.78	5th	Important
C11	Occupiers Liability Insurance	0.78	5th	Important
C6	Boiler and Pressure Vessel	0.77	7th	Important
C9	Key Man Insurance	0.77	7th	Important
C2	Road Traffic Act Policies (Automobile Insurance/ Motor Third Party Liability Insurance)	0.76	9th	Important
C5	Machinery Breakdown	0.65	10th	Important
C4	Specified Peril Policies	0.62	11th	Important
	Average RII	***0.80***		***Important***

Table 6.2 revealed that the most important types of insurance policy on construction site activities are Worker's Compensation Insurance (RII = 0.96) and All-Risk Policies (Contractors All Risks; Erection All Risks; Plant All Risks) (RII = 0.95). The least important types of insurance policy on construction site activities are Machinery Breakdown Policy (RII = 0.65) and Specified Peril Policies (RII = 0.62). On the average, all the identified types of insurance policy on construction site activities are important (average RII = 0.80). The study of Odeyinka (2000), where it was reported that one of the ways in which accidents and its associated injuries could be reduced is through insurance, agrees with the finding of this study. The finding of this study also corroborates with the finding of Ameh and Farinde (2020) where it was established that transferring of risks from the parties to a construction project to insurers in order to provide contingent funding in time of difficulty is the primary function of insurance.

6.3 Level of Significance of the Roles of Employees' Insurance Policy in Construction Projects

Having known the relative importance of the types of insurance policy, this study further examined the basic roles of employees' insurance policy in construction projects with the use of RII. The summary of the result is presented in Table 6.3.

Table 6.3: Results of the Basic Roles of Employees' Insurance Policy in Construction Projects

Code No.	Roles of Insurance	RII	Rank	Decision
D5	Guarantees the success of projects	0.95	1st	Extremely Significant
D10	Averting hazards to the workers and the projects and liabilities to the insurer	0.94	2nd	Extremely Significant
D1	Transfers risk-bearing responsibility by the contractor to the insurance company	0.93	3rd	Extremely Significant
D7	Serves as an important component in the financial intermediation chain	0.92	4th	Extremely Significant
D4	Adequate insurance cover will compel the insurance companies to strictly monitor the contractors' operations and enforce compliance	0.90	5th	Extremely Significant
D6	Ensures financial security	0.84	6th	Extremely Significant
D2	Offers comprehensive and adequate financial protection against loss or damage in respect of the contract work	0.82	7th	Extremely Significant
D9	Provides contingent funding to the contractor in time of difficulty	0.82	7th	Extremely Significant
D8	Offers a ready source of long-term capital for infrastructural projects	0.79	9th	Significant
D3	Offers third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract	0.51	10th	Fairly Significant
	Average RII	***0.84***		***Extremely Significant***

Table 6.3 revealed ten (10) basic roles of employees' insurance policy in construction projects. It was revealed that the most significant roles are Guarantees the success of projects (RII = 0.95); Averting hazards to the workers and the projects and liabilities to the insurer (RII = 0.94); and Transfers risk-bearing responsibility by the contractor to the insurance company (RII = 0.93). The least significant role is Offers third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract (RII = 0.51). On the average, all the basic roles of employees' insurance policy in construction projects are significant (average RII = 0.84). The finding of this study agrees with the finding from past research works which revealed that a major method of managing construction risks in the Nigerian construction industry is through transfer to insurance companies (Odeyinka, 2000; NOUN, 2009; Samuel & Muhammed, 2021). It is therefore profitable and more safety conscious to take up employees' insurance in a construction project.

6.4 Results of Barriers to the Implementation of Insurance Policy by Construction Firms

The MIS result of the barriers to the implementation of insurance policy by construction firms in Minna, Niger State is presented in Table 6.4.

Table 6.4: Barriers to the Implementation of Insurance Policy by Construction Firms

Code No	Barriers	MIS	Rank	Interpretation
B23	Delay in payment of insurance claims	4.361	1st	Extremely Important
B22	Governments non implementation of existing insurance act	4.299	2nd	Extremely Important
B16	Poor safety discipline	3.961	3rd	Important
B17	Absence of clearly stated safety rules;	3.935	4th	Important
B21	Bureaucratic processes involved in purchasing these policies	3.920	5th	Important
B19	Excessive premium charged by insurance companies	3.897	6th	Important
B5	Poor statutory regulations	3.798	7th	Important
B11	Lack of proper enforcement of the Act	3.720	8th	Important
B20	Lack of trust for the insurance companies	3.716	9th	Important
B7	Inadequate legal framework	3.714	10th	Important
B14	Poor management commitment	3.645	11th	Important
B10	Low awareness level	3.636	12th	Important
B8	Ineffective implementation strategy	3.607	13th	Important
B15	Fear of not recouping investment in H&S facilities	3.510	14th	Important
B13	Cost implication of H&S policies	3.495	15th	Important
B18	Continuity in business	3.384	16th	Important
B1	Poor leadership	3.354	17th	Important
B4	Lack of accurate records	3.343	18th	Important
B2	Attracts additional cost to the contractor	3.333	19th	Important
B12	Time to time replacement of H&S facilities	3.326	20th	Important
B3	Lack of concern	3.253	21st	Important
B6	Urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects	3.056	22nd	Important
B9	Cultural factors	2.890	23rd	Fairly Important
	Average MIS	***3.615***		***Important***

Table 6.4 revealed the MIS ranking of twenty-three barriers to the implementation of insurance policy by construction firms identified from literature review based on respondents' opinions. It was revealed that "Delay in payment of insurance claims" and "Governments non implementation of existing insurance act" are the most

important barriers to the implementation of insurance policy by construction firms with MIS of 4.361 and 4.299 respectively. Other barriers ranging from "Poor safety discipline" (MIS = 3.961) and "Urgency to allocate a fraction of budget on H&S cost for both public and private projects" (MIS = 3.056) are also important. The least important barrier to the implementation of insurance policy by construction firms is "Cultural factors" with a fairly important MIS of 2.890). On the average, all the barriers to the implementation of insurance policy by construction firms in Minna, Niger State are important (average MIS = 3.615). The result of the study here agrees with result of past studies which revealed that continuity in business could become a major barrier if the contractor is skeptical about continuity in business or have the future plan of quitting operation and shifting towards other lines of business (Odeyinka, 2000; Ameh & Farinde, 2020). Also, in line with the finding of this study, Jimoh *et al*. (2020) found that it is unfortunate that there are various factors that could lead to non-compliance with implementation of insurance policy. On the other hand, the study of Samuel and Muhammed (2021) disagrees with the finding of this study because it revealed that the overall level of barriers to the adoption of insurance policy is moderately significant.

6.5 Results of Drivers of the Implementation of Insurance Policy by Construction Firms

The review of literature uncovered ten (10) drivers of the implementation of insurance policy by construction firms. The results of the MIS ranking of these drivers are presented in Table 6.5.

Table 6.5: Drivers of the Implementation of Insurance Policy by Construction Firms

Code No	Drivers	MIS	Rank	Interpretation
C10	Ensuring that construction companies subscribe to one type of insurance in order to reduce risk	4.430	1st	Extremely Important
C9	Encouraging ethical practices by all stakeholders	4.327	2nd	Extremely Important
C8	Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency	3.907	3rd	Important
C6	Involvement of employee in safety and evaluation	3.702	4th	Important
C4	Having clearly written down H&S policy	3.438	5th	Important
C7	Emergency response planning; and Safety and health committees	3.282	6th	Important
C5	Upper management support	3.158	7th	Important
C3	Engaging in research and development	3.128	8th	Important
C1	Employers' Liability Insurance Policy	2.269	9th	Important
C2	Provision for plan for setting aside replacement cost for plant and equipment	2.071	10th	Fairly Important
	Average MIS	***3.371***		***Important***

It was revealed from Table 6.5 that the most important drivers of the implementation of insurance policy by construction firms are "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk" (MIS = 4.430) and "Encouraging ethical practices by all stakeholders" (MIS = 4.327). Other drivers ranging from "Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency" (MIS = 3.907) and "Employers' Liability Insurance Policy" (MIS = 2.269) are also important. The least important driver of the implementation of insurance policy by construction firms is "Provision for plan for setting aside replacement cost for plant and equipment" (MIS = 2.071). On the average, all the drivers of the implementation of insurance policy by construction firms in Minna, Niger State are important (average MIS = 3.371). In line with the finding of this study, past studies revealed that these factors are driving forces that can significantly lead to the effective implementation of employees' insurance in construction projects (Health and Safety Executive, 2012; Ijigah *et al*., 2015; Agyekum *et al*., 2018; Ameh & Farinde, 2020; Samuel & Muhammed, 2021).

6.6 Results of Level of Compliance with the Implementation of Insurance Policy by Construction Firms

The review of literature undertaken for this study identified fifteen (15) important areas of H&S relevant to insurance policy implementation. The results of the MIS analysis carried out to rank the level of compliance with the implementation of insurance policy by construction firms in relation to these areas are summarised in Table 6.6.

Table 6.6: Result of Level of Compliance with the Implementation of Insurance Policy by Construction Firms

Code No	Areas of H&S Relevant to Insurance Policy Implementation	MIS	Rank	Interpretation
D4	Adequately training of workers are in H&S	2.757	1st	Average
D9	Provision of notices on H&S at conspicuous position in the organisation	2.714	2nd	Average
D13	Organising continuous basic training and education in H&S for workers in the organisation	2.696	3rd	Average
D3	Organising H&S briefing before commencement of any day work	2.647	4th	Average
D10	Observing that standing H&S rules and regulations on site is enforced during construction	2.529	5th	Average
D1	Provision for a written H&S procedure in the organisation	2.434	6th	Average
D11	Ensuring that suggestions and contribution made by employees on H&S issues are promptly responded to	2.432	7th	Average
D12	Scheduled reviews of H&S standards at work site	2.218	8th	Average
D2	Availability of H&S plan before the commencement of any construction project in the organisation	2.185	9th	Average
D5	Making H&S procedure accessible to employees in the organisation	2.185	9th	Average
D7	Making available safety plan specifically for each job, outlining how the safety aspects of the particular job will be managed	2.146	11th	Average
D6	Ensuring strict monitoring of H&S policy and proper keeping of safety records in the organisation	2.107	12th	Average
D8	Organisation always ensure the adequate provision of standardised H&S devices for workers	2.058	13th	Average
D15	Ensuring that attention is given to prompt and adequate communication of H&S issues to key players	1.878	14th	Low
D14	Organisation carries out H&S evaluations and surveillance	1.699	15th	Low
	Average MIS	***2.312***		***Average***

It was revealed from Table 6.6 that the level of compliance with twelve (12) of the fifteen (15) areas of H&S relevant to insurance policy implementation, ranging from "Adequately training of workers are in H&S" (MIS = 2.757) to "Organisation always ensure the adequate provision of standardised H&S devices for workers" (MIS = 2.058) is average. The remaining two (2) areas of H&S relevant to insurance policy implementation, which are "Ensuring that attention is given to prompt and adequate communication of H&S issues to key players" (MIS = 1.878) and "Organisation carries out H&S evaluations and surveillance" (MIS = 1.699) have low level of compliance. On the average, all the areas of H&S relevant to insurance policy implementation have an average level of compliance by construction firms in Minna, Niger State (average MIS = 2.313). This generally shows that the level of compliance with all the areas of H&S relevant to insurance policy implementation by construction firms is not encouraging. In line with this finding, past studies have established that in many of the countries where safety legislation exists, the

regulatory authority is weak or non-existent and employers 'pay lip service' to regulation and this results into low level implementation of insurance policy in construction (Lee & Halpin, 2003; Taylor, 2012; Ameh & Farinde, 2020).

6.7 Results of Effect of Insurance Policy on the Cost of Site Accidents to Construction Firms

The use of MIS and Spearman Rank correlation analysis were adopted to determine effect of insurance policy on the cost of site accidents to construction firms. MIS was used to rank respondents' opinions on the effect of insurance policy on the cost of site accidents to construction firms using the data from questionnaire only, while Spearman Rank correlation analysis was used for the same purpose but with the use of both data from questionnaire and data collection checklist.

6.7.1 Result of MIS ranking of effect of insurance policy on the cost of site accidents to construction firms

The results of the MIS ranking of the opinions of respondents on the effects of insurance policy on the cost of site accidents to construction firms are presented in Table 6.7.

Table 6.7: Effects of Insurance Policy on the Cost of Site Accidents to Construction Firms

Code No	Effects of Employees' Insurance on the Safety Performance of Construction Workers	MIS	Rank	Interpretation
E1.2	Use of insurance is effective in managing construction risks in construction projects	4.477	1st	Extremely Significant
E1.3	Risk elimination resulting to high morale of management	4.364	2nd	Extremely Significant
E1.4	Risk avoidance/reduction reducing accidents rate and amount of compensation;	4.336	3rd	Extremely Significant
E1.11	Insurance helps in decreasing the likelihood of financial hardship in case of a disaster or loss	4.299	4th	Extremely Significant
E1.9	Brings awareness of the potential risks and help to plan ahead to mitigate those risks	4.206	5th	Extremely Significant
E1.1	Actual replacement cost has a significant relationship with the claim settled in a construction project	4.075	6th	Extremely Significant
E1.12	Insurance encourages the behaviour to plan in advance for life stage needs	3.953	7th	Significant
E1.6	Risk transfer ensuring that the cost of hazards is shared among parties to the contract	3.813	8th	Significant
E1.8	Allowing businesses to take necessary risks without fear of huge financial loss	3.589	9th	Significant
E1.7	Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts	3.372	10th	Significant
E1.10	Provides economic simulation which brings about funding for miscellaneous activities ranging from new construction to scholarships	3.131	11th	Significant
E1.5	Risk monitoring ensuring that accidents are avoided	3.103	12th	Significant
	Average	***3.893***		***Significant***

The review of literature identified twelve (12) effects of insurance policy on the cost of site accidents to construction firms. It was revealed from Table 6.7 that "Use of insurance is effective in managing construction risks in construction projects" (MIS = 4.477) and "Risk elimination resulting to high morale of management" (MIS = 4.364) are the most significant effects of insurance policy on the cost of site accidents to construction firms. "Risk monitoring ensuring that accidents are avoided" is the least significant effect of insurance policy on the cost of site accidents to construction firms (MIS = 3.103). On the average, all the effects of insurance policy on the cost of site accidents to construction firms in Minna, Niger State are significant (average MIS = 3.893). The studies of Odeyinka (2000) and Ijigah *et al*. (2015) also corroborates the findings of this study by revealing that the use of insurance is effective in managing construction risks in construction projects. studies of Odeyinka (2000) and Ijigah *et al*. (2015) also found that "risk elimination resulting to high morale of management"; "Risk avoidance/reduction reducing accidents rate

and amount of compensation"; "Risk monitoring ensuring that accidents are avoided"; "Risk transfer ensuring that the cost of hazards is shared among parties to the contract"; and "Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts" are the most significant effects of insurance policy on the cost of site accidents to construction firms. These effects are among the three (3) topmost effects identified in this study. In addition, the finding of this study here agrees with the finding from past research works which revealed that a major method of managing construction risks in the Nigerian construction industry is through transfer to insurance companies (Odeyinka, 2000; NOUN, 2009; Samuel & Muhammed, 2021). It is therefore profitable and more safety conscious to take up employees' insurance in a construction project.

6.7.2 Result of Spearman Rank correlation analysis of relationship between implementation of insurance policy and the cost of site accidents to construction firms

As already emphasized, the results of Spearman rank correlation analysis also addressed the objective of the relationship between level of implementing the insurance policy in construction projects and the costs of accident. The cost of accidents in the context of this study was measured using the amount of compensation incurred; the number of accidents recorded; and the lost time experienced in the event of accident occurrence for a five-year period (2016 – 2020). All the variables here have been converted into Five-point Likert's Scale. However, before conducting the Spearman Rank Correlation Analysis, the suitability of the data for Spearman Rank correlation was tested.

The reliability test carried out between the level of implementing insurance policy in construction projects and amount of compensation shows no evidence of outliers with a scatterplot with the data points spread all over the place, suggesting a slightly low correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. Figure 6.1 shows the graph of the scree plot of the relationship between the level of implementing insurance policy in construction projects and amount of compensation.

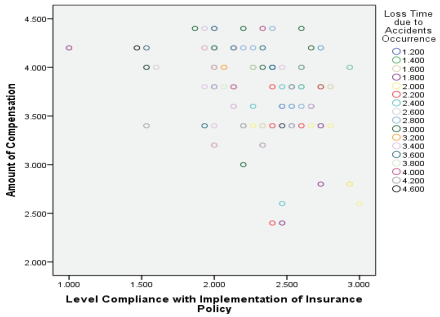

Fig. 6.1: Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Amount of Compensation

The reliability test carried out between the level of implementing insurance policy in construction projects and number of accidents recorded shows no evidence of outliers with a scatterplot with the data points neatly arranged in a narrow cigar shape, suggesting quite a strong correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. Figure 6.2 shows the graph of the scree plot of the relationship between the level of implementing insurance policy in construction projects and number of accidents recorded.

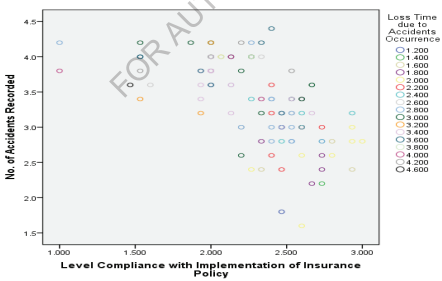

Fig. 6.2: Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Number of Accidents Recorded

The reliability test carried out between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence shows no evidence of outliers with a scatterplot with the data points neatly arranged in a narrow cigar shape, suggesting quite a strong correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. Figure 6.3 shows the graph of the scree plot

of the relationship between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence.

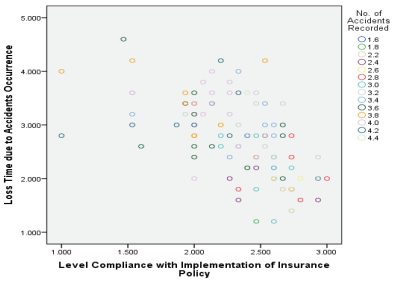

Fig. 6.3: Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Lost Time due to Accidents Occurrence

The first analysis was undertaken to determine the relationship between the level of implementing insurance policy in construction projects and amount of compensation. The result of the first Spearman Rank correlation Analysis of the relationship between the level of implementing insurance policy in construction projects and amount of compensation shows that that there exists a slightly weak, negative and significant relationship between the level of implementing insurance policy in construction projects and amount of compensation. The correlation coefficient (*r* value) observed was -0.234 indicating slightly low degree of association between the variables. Hence, the correlation between the variables is small (Pallant, 2013). The probability (P_{value}) value of 0.001 observed was less than the level of significance adopted for the study (0.01). This implies a significant relationship between the variables.

The result of the second Spearman Rank correlation Analysis of the relationship between the level of implementing insurance policy in construction projects and number of accidents recorded shows that that there exists a strong, negative and significant relationship between the level of implementing insurance policy in construction projects and amount of compensation. The correlation coefficient (*r* value) observed was -0.663, indicating strong degree of association between the variables. Hence, the correlation between the variables is large (Pallant, 2013). The probability P_{value} of 0.000 observed was less than 0.01. This implies a significant relationship between the variables.

It was observed in third Spearman Rank correlation Analysis of the relationship between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence also shows that there exists a strong, negative and significant relationship between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence. The correlation coefficient (*r* value) observed was -0.594, indicating strong degree of association between the variables. Hence, the correlation between the variables is large (Pallant, 2013). The P_{value} of 0.000 observed was less than 0.01. This also implies a significant relationship between the variables. The results of the three (3) analyses undertaken to establish the level of implementing the insurance policy in construction projects and the costs of accidents are presented in Table 6.8.

Table 6.8: Relationship between Level of Implementing Insurance Policy in construction projects and Costs of Accidents

VARIABLES		OBSERVATIONS		INFERENCES		
X_1	**X_2**	***r* (%)**	**LOS**	**P_{value}**	**Strength of Relationship**	**Remark**
Level of Implementing Insurance Policy in Construction Projects	Amount of Compensation	-0.234	0.01	0.001	Slightly Weak	SS
Level of Implementing Insurance Policy in Construction Projects	Nr of Accidents Recorded	-0.663	0.01	0.000	Strong	SS
Level of Implementing Insurance Policy in Construction Projects	Lost Time due to Accidents Occurrence	-0.594	0.01	0.000	Strong	SS

KEY:
SS = Statistically Significant
R = Correlation Coefficient
LOS = Study's Level of Significance
P_{value} = Calculated Probability Value

The result presented in Table 6.8 is in line with findings from past studies which revealed that insurance policy implementation is very significant in reducing the influence of risks on construction project performance to the barest minimum and boost the economy of the country (Okongwu *et al*., 2021; Samuel & Muhammed, 2021).

6.8 Results of Strategies for Improving Compliance with Insurance Policy in Construction Projects for Improved Safety Performance

The review of literature carried out in this study identified fifteen (15) strategies for improving compliance with insurance policy in construction projects for improved safety performance. The results of the MIS ranking of these strategies are presented in Table 6.9.

Table 6.9: Strategies for Improving Compliance with Insurance Policy in Construction Projects for Improved Safety Performance

Code No	Strategies	MIS	Rank	Interpretation
F3	Designation of safety responsibilities to trained personnel	4.682	1st	Extremely Effective
F10	Having resident safety officer at sites	4.523	2nd	Extremely Effective
F16	Construction companies should ensure to subscribe to one type of insurance in order to reduce risk	4.439	3rd	Extremely Effective
F1	Considerable care should be taken in determining the insured sum in a project	4.327	4th	Extremely Effective
F2	Contractors should study the exclusion clauses carefully before entering into any contract of insurance	4.327	4th	Extremely Effective
F6	Assessment of risk level	4.274	6th	Extremely Effective
F14	Work with your insurer and risk management experts	4.196	7th	Extremely Effective
F5	Systematic hazard identification	4.056	8th	Extremely Effective
F4	Direct safety talks with workers	4.050	9th	Extremely Effective
F11	Regular safety audit	3.465	10th	Effective
F7	Safety orientation for new/transferred workers	3.124	11th	Effective
F15	Work toward zero injuries	2.713	12th	Fairly Effective
F8	Pre-project/project safety trainings received	2.678	13th	Fairly Effective
F13	Evaluate each project phase for safety	2.638	14th	Fairly Effective
F12	Review accidents and near misses	2.595	15th	Fairly Effective
F9	Scheduled in-house inspections	2.451	16th	Fairly Effective
	Average MIS	***3.659***		***Effective***

The results presented in Table 6.9 revealed that the most effective strategies for improving compliance with insurance policy in construction projects for improved safety performance are "Designation of safety responsibilities to trained personnel" (MIS = 4.682) and "Having resident safety officer at sites" (MIS = 4.523). Other strategies ranging between "Construction companies should ensure to subscribe to one type of insurance in order to reduce risk" (MIS = 4.439) and "Direct safety talks with workers" (MIS = 4.050) are also extremely effective. "Direct safety talks with workers" (MIS = 4.050) and "Safety orientation for new/transferred workers" (MIS = 3.124) were observed to be effective. A few other strategies ranging from "Work toward zero injuries" (MIS = 2.713) to "Scheduled in-house inspections" (MIS = 2.451) are fairly effective. On the average, all the identified strategies for improving

compliance with insurance policy in construction projects for improved safety performance in Minna, Niger State are effective (average MIS = 3.659). In agreement with the findings of this study, past studies have established that in order to provide room for improving compliance with insurance policy in construction projects for improved safety performance, the safety management system of a construction firm should make provision for the designation of safety responsibilities to trained personnel; directing safety talks with workers; having regular safety audit; having systematic hazard identification; assessment of risk level; having safety orientation for new/transferred workers; pre-project safety trainings received; safety trainings received; scheduling in-house inspections; and having resident safety officer at sites (Odeyinka, 2000; Olutuase. 2014; Cesarini & Kupiec, 2016; Okongwu *et al.*, 2021; Samuel & Muhammed, 2021). These strategies are also amongst the three topmost strategies identified in this study.

6.9 Results of Interview Conducted with Insurance Firms

The interview conducted on five (5) insurance firms in Minna Niger State revealed the perception of the professionals of insurance companies on the level of compliance with the implementation of insurance policy in construction projects. The results of the interview covered issues of proportion of firms that undertake insurance policy with the insurance firms from the list of construction firms considered for this study; means for undertaking insurance policy for construction projects executed; and the party/parties who bears the cost of insurance for construction projects executed. Table 6.10 shows the results of the analysis of data gathered through the interview conducted.

Table 6.10: Profile of Organisations' Insurance Policy Adoption/Implementation

PROFILE	**FREQUENCY**	**PERCENTAGE (%)**
Proportion of Organisations that Undertake Insurance Policy		
Response Options	**No of Firms**	**Proportion (%)**
Yes	9	60.00
No	6	40.00
Means for Undertaking Insurance Policies for Construction Projects Executed		
Response Options	**No of Firms**	**Proportion (%)**
We undertake insurance for projects with > 5 site workers only	8	53.33
We undertake insurance for projects with > 10 site workers only	7	46.67
Party/Parties who Bears the Cost of Insurance for Construction Projects Executed		
Parties/Response Options	**No of Firms**	**Proportion (%)**
The Client	0	0.00
The Contractor	13	86.67
Both Client and Contractor	2	13.33

Table 6.10 shows that 60.00% construction firms undertake insurance policy for the construction projects being executed while 40.00% of construction firms do not undertake insurance policy for the construction projects being executed, as disclosed by the professionals of the insurance firms. It was also revealed in Table 4.8 that 53.33% of construction firms undertake insurance for projects with above 5 site workers, while 46.67% of construction firms undertakes insurance policy for projects with above 10 site workers; this shows that majority of the organisations undertake insurance for projects with above 5 site workers. This is in line with the finding from past studies that the Sections of the National Insurance Act 2003 are relevant to a construction business with more than four (4) workers (Okolie *et al*., 2017). In addition, the results in Table 6.10 showed that in 86.67% of construction firms, the cost of undertaking insurance policy is born by the contractor only, while in 13.33% of the construction firms, both the client and contractor bear the cost of undertaking insurance policy through a contract agreement. This implies that the contractor shows more willingness with the compliance to undertaking insurance policy for projects being executed than the client. This unwillingness attitude of clients can undermine the efforts of contractors to cover site activities and workers in construction projects in Minna.

The findings of this study as shown in Table 6.10 are in line with findings from the results presented in Tables 6.6 – 6.8 which revealed that on the average, all the areas of H&S relevant to insurance policy implementation have an average level of compliance by construction firms; and the effects of insurance policy on the cost of site accidents to construction firms in Minna, Niger State are significant. It is also in line with findings from previous studies. These previous studies revealed that construction firms do not seem to understand the implication of not taking up employees' insurance. The previous studies also revealed that in spite of the availability of H&S laws with specific provisions for insurance and risk management; the toll of injuries, fatalities and death from construction related activities is still on the higher side, implying possible non-compliance of contractors and clients to established insurance policies (Jimoh *et al*., 2019; van der Molen & Hoving, 2019; Ameh & Farinde, 2020; Okongwu *et al*., 2021).

6.10 Summary of Findings

Based on the analysis of data carried out and the results of the analysis, the following major findings were derived:

i. The most important types of insurance policy on construction site activities are Worker's Compensation Insurance (RII = 0.96) and All-Risk Policies (Contractors All Risks; Erection All Risks; Plant All Risks) (RII = 0.95). The least important types of insurance policy on construction site activities are Machinery Breakdown Policy (RII = 0.65) and Specified Peril Policies (RII = 0.62). On the average, all the identified types of insurance policy on construction site activities are important (average RII = 0.80).

ii. The most significant of roles of employees' insurance policy in construction projects are Guarantees the success of projects (RII = 0.95); Averting hazards to the workers and the projects and liabilities to the insurer (RII = 0.94); and Transfers risk-bearing responsibility by the contractor to the insurance company (RII = 0.93). The least significant role is Offers third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract (RII = 0.51). On the average, all the basic roles of employees' insurance policy in construction projects are significant (average RII = 0.84).

iii. The most important barriers to the implementation of insurance policy by construction firms are "Delay in payment of insurance claims" (MIS = 4.361) and "Governments non implementation of existing insurance act" (MIS = 4.299). The least important barrier to the implementation of insurance policy by construction firms is "Cultural factors" with a fairly important MIS of 2.890). On the average, all the barriers to the implementation of insurance policy by construction firms in Minna, Niger State are important (average MIS = 3.615).

iv. The most important drivers of the implementation of insurance policy by construction firms are "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk" (MIS = 4.430) and "Encouraging ethical practices by all stakeholders" (MIS = 4.327). The least important driver of the implementation of insurance policy by construction firms is "Provision for plan for setting aside replacement cost for plant and equipment" (MIS = 2.071). On the average, all the drivers of the

implementation of insurance policy by construction firms in Minna, Niger State are important (average MIS = 3.371).

v. The level of compliance with twelve 12 of the 15 areas of H&S relevant to insurance policy implementation, ranging from "Adequately training of workers are in H&S" (MIS = 2.757) to "Organisation always ensure the adequate provision of standardised H&S devices for workers" (MIS = 2.058) is average. On the average, all the areas of H&S relevant to insurance policy implementation have an average level of compliance by construction firms in Minna, Niger State (average MIS = 2.313).

vi. The most significant effects of insurance policy on the cost of site accidents to construction firms are "Use of insurance is effective in managing construction risks in construction projects" (MIS = 4.477) and "Risk elimination resulting to high morale of management" (MIS = 4.364). The least significant effect of insurance policy on the cost of site accidents to construction firms is "Risk monitoring ensuring that accidents are avoided" (MIS = 3.103). On the average, all the effects of insurance policy on the cost of site accidents to construction firms in Minna, Niger State are significant (average MIS = 3.893).

vii. The relationship between the level of implementing insurance policy in construction projects and costs of accidents is significant (p = 0.000 – 0.001).

viii. The most effective strategies for improving compliance with insurance policy in construction projects for improved safety performance are "Designation of safety responsibilities to trained personnel" (MIS = 4.682) and "Having resident safety officer at sites" (MIS = 4.523). On the average, all the identified strategies for improving compliance with insurance policy in construction projects for improved safety performance in Minna, Niger State are effective (average MIS = 3.659).

CHAPTER SEVEN

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

This study identified the problem of lack of implementation of insurance policy in construction projects being executed by most of the client's and contractor's organisations in Minna, Niger State mainly due to lack of awareness and unwillingness. In view of this, the study evaluated the impact of insurance policy on the safety performance of workers on construction sites in Minna, Niger State with a view to enhancing the safety performance of construction workers on site. The study, therefore, examined the barriers to the implementation of insurance policy by construction firms; examined the drivers of the implementation of insurance policy by construction firms; determined the level of compliance with the implementation of insurance policy by construction firms; determined the effect of insurance policy on the cost of site accidents to construction firms; and proposed strategies for improving compliance with insurance policy in construction projects for improved safety performance of construction firms in Minna, Niger State. In order to achieve the aim and objectives of the study, a mixed methods research approach was adopted through the use of questionnaire, interview and data collection checklist. Data was collected from contractor's and client's organisations and insurance firms with a response rate of 82.31%. Analysis of data collected was carried out using of frequency count, percentage, content analysis, Mean Item Score and Spearman Rank correlation analysis. Findings from the analysis of data undertaken led to vital conclusions stated in this section.

It was found that the most important barriers to the implementation of insurance policy by construction firms are "Delay in payment of insurance claims" and "Governments non implementation of existing insurance act". On the average, the barriers to the implementation of insurance policy by construction firms in Minna, Niger State are important. The most important drivers of the implementation of insurance policy by construction firms are "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk" and "Encouraging ethical practices by all stakeholders". On the average, the drivers of the implementation of insurance policy by construction firms in Minna, Niger State are important. The level

of compliance with all the areas of H&S relevant to insurance policy implementation is on the average. The most significant effects of insurance policy on the cost of site accidents to construction firms are "Use of insurance is effective in managing construction risks in construction projects" and "Risk elimination resulting to high morale of management". On the average, the effects of insurance policy on the cost of site accidents to construction firms in Minna, Niger State are significant.

It was also established that the relationship between the level of implementing insurance policy in construction projects and costs of accidents is significant. The most effective strategies for improving compliance with insurance policy in construction projects for improved safety performance are "Designation of safety responsibilities to trained personnel" and "Having resident safety officer at sites". On the average, the identified strategies for improving compliance with insurance policy in construction projects for improved safety performance in Minna, Niger State are effective. It can therefore be concluded that the impact of insurance policy on the safety performance of workers on construction sites in Minna, Niger State is significant.

7.2 Recommendations

In the light of the findings and conclusions of the study, the following recommendations were made:

i. In order to address the major barriers to the implementation of insurance policy by construction firms, construction stakeholders should lay more emphasis in ensuring that construction companies subscribe to one type of insurance in order to reduce risk and in encouraging ethical practices by all stakeholders.
ii. Construction stakeholders should focus more attention on adequately training of workers in H&S and observing that standing H&S rules and regulations on site is enforced during construction. This will assist in improving the level of compliance with the implementation of insurance policy by construction firms.
iii. In order to improve the level of compliance with insurance policy in construction projects for improved safety performance in Minna, Niger State, construction stakeholders should develop a mechanism that will adequately take cognizance of the proposed strategies of this study.

7.3 Contribution to Knowledge

Findings from this study has made the following contributions to the body of knowledge:

i. The study revealed that the most important type of insurance policy on construction site activities in Minna, Niger State, Nigeria is Worker's Compensation Insurance (RII = 0.96) and on the average, all the identified types of insurance policy on construction site activities in Minna, Niger State, Nigeria are important (average RII = 0.80).

ii. It was also uncovered that the most significant of role of employees' insurance policy in construction projects is "Guarantees the success of projects" (RII = 0.95) and on the average, all the basic roles of employees' insurance policy in construction projects in Minna, Niger State, Nigeria are significant (average RII = 0.84).

iii. The study discovered that "Delay in payment of insurance claims", as the most important barrier to the implementation of insurance policy by construction firms in Minna, Niger State, is extremely important (MIS = 4.361).

iv. It was also revealed that "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk", as the most important driver of the implementation of insurance policy by construction firms in Minna, Niger State, is extremely important (MIS = 4.430).

v. The study also found that all the areas of H&S relevant to insurance policy implementation have an average level of compliance by construction firms in Minna, Niger State (average MIS = 2.313).

vi. It was shown that the effects of insurance policy on the cost of site accidents to construction firms in Minna, Niger State are significant (average MIS = 3.893).

vii. It was established that there exists a slightly weak, negative and significant relationship between the level of implementing insurance policy in construction projects and amount of compensation; (r = -0.234; p = 0.001); there exists a strong, negative and significant relationship between the level of implementing insurance policy in construction projects and amount of compensation (r = -0.663; p = 0.000); and there exists a strong, negative and significant relationship between the level of implementing insurance policy in

construction projects and lost time due to accidents occurrence (r = -0.594; p = 0.000).

viii. Finally, the study showed that "Designation of safety responsibilities to trained personnel", as the most effective strategy for improving compliance with insurance policy in construction projects for improved safety performance, is extremely significant" (MIS = 4.682). Furthermore, all the identified strategies for improving compliance with insurance policy in construction projects for improved safety performance in Minna, Niger State are effective (average MIS = 3.659).

7.4 Areas for Further Studies

In view of the limitations of the study, further studies have been suggested in the following areas:

i. Assessment of the effect of insurance policy on the site safety performance of medium and large sized construction firms in Nigeria.
ii. Evaluation of the impact of insurance policy on the safety performance workers in oil and gas construction projects in Nigeria.
iii. Comparative analysis of the level on compliance with the implementation of insurance policy in projects executed between indigenous and multi-national construction firms in Nigeria.

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APPENDIX

APPENDIX ONE: Research Questionnaire (Pilot Survey)

DEPARTMENT OF QUANTITY SURVEYING
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

Date……

To: …….

…….

Dear Sir/Ma,

RESEARCH QUESTIONNAIRE: Impact of Employees' Insurance on the Safety Performance of Workers on Construction Sites in Minna

I am an undergraduate (BTech) student of the above-named Department and Institution, carrying out research on the topic: **Impact of Employees' Insurance on the Safety Performance of Workers on Construction Sites in Minna.** You are humbly invited to take part in the pilot survey of this research. The purpose of this pilot survey is to gather preliminary information required to form a background for designing the research instruments for the main survey of this study. In view of this, your co-operation is sought to kindly provide responses to the questions asked to the best of your knowledge. Please, be rest assured that all information given will be treated in strict confidence and would only be utilized for the purpose of this study.

I will be glad if this request is granted and you will also be kind enough to take part in the main survey. Thanks, in anticipation of your maximum cooperation.

Yours faithfully,

SHITTU, Abdullahi
2016/1/59832VQ
(Project student)
09016579781; 09023637614; aashittu45@gmail.com

QUESTIONNAIRE FOR PILOT SURVEY

IMPACT OF EMPLOYEES' INSURANCE ON THE SAFETY PERFORMANCE OF WORKERS ON CONSTRUCTION SITES IN MINNA

SECTION A: Respondents' Profile

Q1. Name of Organisation: ……..

Q2. What is your designation in this organisation? ……

Q3. What is your profession?

Architect [ ] Builder [ ] Engineer [ ] Quantity Surveyor [ ]

Others (Please specify) [ ]: …….

Q4. What is your highest academic qualification?

ND [ ] HND [ ] BSc/BTech [ ] MSc/MTech [ ] PhD [ ]

Q5. What is your professional qualification?

MNIA/ARCON [ ] MNIOB/CORBON [ ] MNSE/COREN [ ] MNIQS/QSRBN [ ]

Others (Please specify) [ ]: …….

Q6. What is your years of experience?

1 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ] Above 20 years [ ]

Q7. How many professionals do you have in your organisation that are involved in construction site activities? ……. (I will be glad to have a list of these professionals)

Q8. How many construction firms/contractors are registered to work for this organisation?

…… (I will be glad to have a list of these construction firms/contractors)

Q9. How many active construction project sites do you have presently? ……

SECTION B: Organisation's Insurance Policy Adoption/Implementation

Q10. Do you undertake insurance policy to cover the safety of site workers in projects executed by this organisation? YES [ ] NO [ ]

Q11. If your answer to Q10 is NO, please state the reason(s) why. ----------
---

Q13. If your answer to Q10 is YES, please indicate how you go about it by ticking (√) in the appropriate option(s) below.

We undertake insurance for projects with > 5 site workers only [ ]

We undertake insurance for projects with > 10 site workers only [ ]

We undertake insurance for projects with > 15 site workers only [ ]

We undertake insurance for projects with > 20 site workers only [ ]

Other means (please specify) [ ] …….

Q14. Who bears the cost and responsibility of undertaking insurance policy to cover the safety of construction site workers in the projects executed by your organisation?

The Client [ ]

The Contractor [ ]

Both the Client and Contractor through a contract agreement [ ]

Other means (please specify) [ ] …….

SECTION C: Types of Insurance Policies on Construction Site Activities

Q15. The following are the types of insurance policies on construction site activities as identified from the study. Please rank these policies in order of importance to the safety of construction workers on a five-point scale based on your experience.

Code No	Types of Insurance Policies	Extremely Important 5	Very Important 4	Important 3	Less Important 2	Least Important 1
C1	All-Risk Policies (Contractors All Risks; Erection All Risks; Plant All Risks)					
C2	Road Traffic Act Policies (Automobile Insurance/ Motor Third Party Liability Insurance)					
C3	Multi-Risk Policies					
C4	Specified Peril Policies					
C5	Machinery Breakdown					
C6	Boiler and Pressure Vessel					
C7	Equipment Floater Insurance					
C8	Builder's Liability Insurance					
C9	Key Man Insurance					
C10	Worker's Compensation Insurance.					
C11	Occupiers Liability Insurance					

SECTION D: Benefits of Employees' Insurance Policy in Construction Projects

Q16. The following are the benefits of employees' insurance policy in construction projects as identified from the study. Please rank these benefits in order of importance to the safety of construction workers on a five-point scale based on your experience.

Code No	Types of Insurance Policies	Extremely Important 5	Very Important 4	Important 3	Less Important 2	Least Important 1
D1	Transfers risk-bearing responsibility by the contractor to the insurance company					
D2	Offers comprehensive and adequate financial protection against loss or damage in respect of the contract work					
D3	Offers third parties' liabilities for bodily injury or damage to property arising in connection with the execution of the contract					
D4	Adequate insurance cover will compel the insurance companies to strictly monitor the contractors' operations and enforce compliance					

D5	Guarantees the success of projects					
D6	Ensures financial security					
D7	Serves as an important component in the financial intermediation chain					
D8	Offers a ready source of long term capital for infrastructural projects					
D9	Provides contingent funding to the contractor in time of difficulty					
D10	Averting hazards to the workers and the projects and liabilities to the insurer					

APPENDIX TWO: Research Questionnaire (Main Survey)

DEPARTMENT OF QUANTITY SURVEYING
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

Date:……

To: …….

……

……..

Dear Sir/Ma,

RESEARCH QUESTIONNAIRE: Impact of Employees' Insurance on the Safety Performance of Workers on Construction Sites in Minna, Niger State

I am an undergraduate (BTech) student of the above-named Department and Institution, carrying out research on the topic: **Impact of Employees' Insurance on the Safety Performance of Workers on Construction Sites in Minna, Niger State.**

You are humbly invited to take part in this research which is aimed at evaluating the impact of employees' insurance on the safety performance of workers on construction sites in Minna, with a view to enhancing the safety performance of construction workers on site. In view of this, your co-operation is sought to kindly provide responses to the questions asked to the best of your knowledge. Please, be rest assured that all information given will be treated in strict confidence and would only be utilized for the purpose of this study.

Thanks, in anticipation of your maximum cooperation.

Yours faithfully,

SHITTU, Abdullahi
2016/1/59832VQ
(Project student)
09016579781; 09023637614
aashittu45@gmail.com

QUESTIONNAIRE FOR MAIN SURVEY

IMPACT OF EMPLOYEES' INSURANCE ON THE SAFETY PERFORMANCE OF WORKERS ON CONSTRUCTION SITES IN MINNA, NIGER STATE

SECTION A: Respondents' Profile

Q1. Name of Organisation: ……..

Q2. What is your designation in this organisation? ……

Q3. What is your profession?

Architect [ ] Builder [ ] Engineer [ ] Quantity Surveyor [ ]

Others (Please specify) [ ]: …….

Q4. What is your highest academic qualification?

ND [ ] HND [ ] BSc/BTech [ ] MSc/MTech [ ] PhD [ ]

Q5. What is your professional qualification?

MNIA/ARCON [ ] MNIOB/CORBON [ ] MNSE/COREN [ ] MNIQS/QSRBN [ ]

Others (Please specify) [ ]: …….

Q6. What is your years of experience?

1 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ] Above 20 years [ ]

Q7. How many active constructions project sites do you have presently? ……

SECTION B: Barriers to the Implementation of Employees' Insurance by Construction Firms

Q8. The following are the barriers to the implementation of employees' insurance by construction firms as identified from this study. Please kindly indicate, by ticking (√) in the blank spaces provided in the Table below, the level of importance of these barriers on a five-point scale based on your experience.

Code No	Barriers to the Implementation	Extremely Important 5	Very Important 4	Important 3	Less Important 2	Least Important 1
B1	Poor leadership					
B2	Attracts additional cost to the contractor					
B3	Lack of concern					
B4	Lack of accurate records					
B5	Poor statutory regulations					
B6	Urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects					
B7	Inadequate legal framework					
B8	Ineffective implementation strategy					
B9	Cultural factors					
B10	Low awareness level					
B11	Lack of proper enforcement of the Act					
B12	Time to time replacement of H&S facilities					
B13	Cost implication of H&S policies					
B14	Poor management commitment					
B15	Fear of not recouping investment in H&S facilities					
B16	Poor safety discipline					
B17	Absence of clearly stated safety rules;					
B18	Continuity in business					
B19	Excessive premium charged by insurance companies					
B20	Lack of trust for the insurance companies					
B21	Bureaucratic processes involved in purchasing these policies					
B22	Governments non implementation of existing insurance act					
B23	Delay in payment of insurance claims					

SECTION C: Drivers of the Implementation of Employees' Insurance by Construction Firms

Q9. The following are the drivers of the implementation of employees' insurance by construction firms as identified from this study. Please kindly indicate, by ticking (√) in the blank spaces

provided in the Table below, the level of importance of these drivers on a five-point scale based on your experience.

Code No	Drivers of the Implementation	Extremely Important 5	Very Important 4	Important 3	Less Important 2	Least Important 1
C1	Employers' Liability Insurance Policy					
C2	Provision for plan for setting aside replacement cost for plant and equipment					
C3	Engaging in research and development					
C4	Having clearly written down H&S policy					
C5	Upper management support					
C6	Involvement of employee in safety and evaluation					
C7	Emergency response planning; and Safety and health committees					
C8	Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency					
C9	Encouraging ethical practices by all stakeholders					
C10	Ensuring that construction companies subscribe to one type of insurance in order to reduce risk					

SECTION D: Level of Compliance with the Implementation of Employees' Insurance by Construction Firms

Q10. The following are the measures that construction firms are required to provide in order to determine their level of compliance with the implementation of employees Please kindly indicate, by ticking (√) in the blank spaces provided in the Table below, the level of compliance with these measures by construction firms on a five-point scale based on your experience.

Code No	Types of Construction Insurance	Very High 5	High 4	Average 3	Low 2	Very Low 1
D1	Provision for a written H&S procedure in the organisation					
D2	Availability of H&S plan before the commencement of any construction project in the organisation					

D3	Organising H&S briefing before commencement of any day work					
D4	Adequately training of workers are in H&S					
D5	Making H&S procedure accessible to employees in the organisation					
D6	Ensuring strict monitoring of H&S policy and proper keeping of safety records in the organisation					
D7	Making available safety plan specifically for each job, outlining how the safety aspects of the particular job will be managed					
D8	Organisation always ensure the adequate provision of standardised H&S devices for workers					
D9	Provision of notices on H&S at conspicuous position in the organisation					
D10	Observing that standing H&S rules and regulations on site is enforced during construction					
D11	Ensuring that suggestions and contribution made by employees on H&S issues are promptly responded to					
D12	Scheduled reviews of H&S standards at work site					
D13	Organising continuous basic training and education in H&S for workers in the organisation					
D14	Organisation carries out H&S evaluations and surveillance					
D15	Ensuring that attention is given to prompt and adequate communication of H&S issues to key players					

SECTION E: Effect of Employees' Insurance on the Cost of Site Accidents to Construction Firms

Q11. The following are the effects of employees' insurance on the safety performance of construction workers on site as identified from this study. Please kindly indicate, by ticking (√) in the blank spaces provided in the Table below, the level of significance of these effects on a five-point scale based on your experience.

Code No	Effects of Employees' Insurance on the Safety Performance of Construction Workers	Extremely Significant 5	Very Significant 4	Significant 3	Less Significant 2	Least Significant 1
E1.1	Actual replacement cost has a significant relationship with the claim settled in a construction project					
E1.2	Use of insurance is effective in managing construction risks in construction projects					
E1.3	Risk elimination resulting to high morale of management					
E1.4	Risk avoidance/reduction reducing accidents rate and amount of compensation;					
E1.5	Risk monitoring ensuring that accidents are avoided					
E1.6	Risk transfer ensuring that the cost of hazards is shared among parties to the contract					
E1.7	Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts					
E1.8	Allowing businesses to take necessary risks without fear of huge financial loss					
E1.9	Brings awareness of the potential risks and help to plan ahead to mitigate those risks					
E1.10	Provides economic simulation which brings about funding for miscellaneous activities ranging from new construction to scholarships					
E1.11	Insurance helps in decreasing the likelihood of financial hardship in case of a disaster or loss					
E1.12	Insurance encourages the behaviour to plan in advance for life stage needs					

SECTION F: Strategies for Improving Compliance with Employees' Insurance in Construction Projects for Improved Safety Performance

Q12. The following are the strategies for improving compliance with employees' insurance in construction projects for improved safety performance as identified from this study. Please kindly indicate, by ticking (√) in the blank spaces provided in the Table below, the level of effectiveness of these strategies on a five-point scale based on your experience.

Code No	Strategies for Improving Compliance with Employees' Insurance	Extremely Effective 5	Very Effective 4	Effective 3	Less Effective 2	Least Effective 1
F1	Considerable care should be taken in determining the insured sum in a project					
F2	Contractors should study the exclusion clauses carefully before entering into any contract of insurance					
F3	Designation of safety responsibilities to trained personnel					
F4	Direct safety talks with workers					
F5	Systematic hazard identification					
F6	Assessment of risk level					
F7	Safety orientation for new/transferred workers					
F8	Pre-project/project safety trainings received					
F9	Scheduled in-house inspections					
F10	Having resident safety officer at sites					
F11	Regular safety audit					
F12	Review accidents and near misses					
F13	Evaluate each project phase for safety					
F14	Work with your insurer and risk management experts					
F15	Work toward zero injuries					
F16	Construction companies should ensure to subscribe to one type of insurance in order to reduce risk					

APPENDIX THREE: Data Collection Checklist

DATA COLLECTION CHECKLIST

IMPACT OF INSURANCE POLICY ON THE SAFETY PERFORMANCE OF WORKERS ON CONSTRUCTION SITES IN MINNA, NIGER STATE

SECTION A: Respondents' Profile

Q1. Name of Organisation: ……..

Q2. What is your designation in this organisation? ……

Q3. What is your profession?

Architect [ ] Builder [ ] Engineer [ ] Quantity Surveyor [ ]

Others (Please specify) [ ]: …….

Q4. What is your highest academic qualification?

ND [ ] HND [ ] BSc/BTech [ ] MSc/MTech [ ] PhD [ ]

Q5. What is your professional qualification?

MNIA/ARCON [ ] MNIOB/CORBON [ ] MNSE/COREN [ ] MNIQS/QSRBN [ ]

Others (Please specify) [ ]: …….

Q6. What are your years of experience?

1 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ] Above 20 years [ ]

SECTION B: Five – year Period Costs of Accidents Record

Q7. Kindly provide information on the cost of accidents incurred, from your records, based on the projects executed by your organisation in the last five years (i.e., 2016 - 2020). Use the Tables below as a guide to tick (√) in the appropriate option.

YEAR 2016						
Code No.	**Cost of Accidents**	**1**	**2**	**3**	**4**	**5**
E2.1	Amount of Compensation (=N=)	< 500,000	500,0000 – 1,000,000	1,000,000 – 1,500,000	1,500,000 – 2,000,000	> 2,000,000
E2.2	No. of Accidents Recorded	0 - 5	6 - 10	11 - 15	16 – 20	> 20
E2.3	Loss Time due to Accidents Occurrence (Days)	0 - 2	2 - 5	5 - 7	7 - 10	> 10

YEAR 2017						
Code No.	**Cost of Accidents**	**1**	**2**	**3**	**4**	**5**
E2.1	Amount of Compensation (=N=)	< 500,000	500,0000 – 1,000,000	1,000,000 – 1,500,000	1,500,000 – 2,000,000	> 2,000,000
E2.2	No. of Accidents Recorded	0 - 5	6 - 10	11 - 15	16 – 20	> 20
E2.3	Loss Time due to Accidents Occurrence (Days)	0 - 2	2 - 5	5 - 7	7 - 10	> 10

YEAR 2018						
Code No.	**Cost of Accidents**	**1**	**2**	**3**	**4**	**5**
E2.1	Amount of Compensation (=N=)	< 500,000	500,0000 – 1,000,000	1,000,000 – 1,500,000	1,500,000 – 2,000,000	> 2,000,000
E2.2	No. of Accidents Recorded	0 - 5	6 - 10	11 - 15	16 – 20	> 20
E2.3	Loss Time due to Accidents Occurrence (Days)	0 - 2	2 - 5	5 - 7	7 - 10	> 10

YEAR 2019						
Code No.	**Cost of Accidents**	**1**	**2**	**3**	**4**	**5**
E2.1	Amount of Compensation (=N=)	< 500,000	500,0000 – 1,000,000	1,000,000 – 1,500,000	1,500,000 – 2,000,000	> 2,000,000
E2.2	No. of Accidents Recorded	0 - 5	6 - 10	11 - 15	16 – 20	> 20
E2.3	Loss Time due to Accidents Occurrence (Days)	0 - 2	2 - 5	5 - 7	7 - 10	> 10

YEAR 2020						
Code No.	**Cost of Accidents**	**1**	**2**	**3**	**4**	**5**
E2.1	Amount of Compensation (=N=)	< 500,000	500,0000 – 1,000,000	1,000,000 – 1,500,000	1,500,000 – 2,000,000	> 2,000,000
E2.2	No. of Accidents Recorded	0 - 5	6 - 10	11 - 15	16 – 20	> 20
E2.3	Loss Time due to Accidents Occurrence (Days)	0 - 2	2 - 5	5 - 7	7 - 10	> 10

APPENDIX FOUR: Interview Schedule

INTERVIEW SCHEDULE

IMPACT OF INSURANCE POLICY ON THE SAFETY PERFORMANCE OF WORKERS ON CONSTRUCTION SITES IN MINNA, NIGER STATE

SECTION A: Respondents' Profile

Q1. Name of Organisation: ……..

Q2. What is your designation in this organisation? ……

Q3. What is your profession?

Architect [ ] Builder [ ] Engineer [ ] Quantity Surveyor [ ]

Others (Please specify) [ ]: …….

Q4. What is your highest academic qualification?

ND [ ] HND [ ] BSc/BTech [ ] MSc/MTech [ ] PhD [ ]

Q5. What is your professional qualification?

MNIA/ARCON [ ] MNIOB/CORBON [ ] MNSE/COREN [ ] MNIQS/QSRBN [ ]

Others (Please specify) [ ]: …….

Q6. What are your years of experience?

1 – 5 years [ ] 6 – 10 years [ ] 11 – 15 years [ ] 16 – 20 years [ ] Above 20 years [ ]

SECTION B: Construction Firm's Insurance Policy Adoption/Implementation

Q7. Do the construction firms considered by this study as contained in the list given to you undertake insurance policy to cover the safety of site workers in projects executed by them?

YES [ ] NO [ ]

Q8. Please, why do you think construction firms refuse to undertake insurance policy to cover the safety of site workers in projects executed by them?

Q9. Please how do construction firms that undertake insurance policy go about it from the options of?

Undertaking insurance for projects with > 5 site workers only [ ]

Undertaking insurance for projects with > 10 site workers only [ ]

Undertaking insurance for projects with > 15 site workers only [ ]

Undertaking insurance for projects with > 20 site workers only [ ]

Other means (please specify) [ ] …….

Q10. From the construction firms considered by this study as contained in the list given to you, who bears the cost and responsibility of undertaking insurance policy to cover the safety of construction site workers?

The Client [ ]

The Contractor [ ]

Both the Client and Contractor through a contract agreement [ ]

Other means (please specify) [ ] …….