

**APPRAISAL OF THE IMPLEMENTATION OF OCCUPATIONAL
SAFETY AND HEALTH PRACTICE IN BUILDING INDUSTRIES**

OF KWARA STATE, NIGERIA.

BY

BELLO, KHAFILAT AJIBIKE

2007/1/27270BT

**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION,
FEDERAL UNIVERSITY OF TECHNOGY,**

MINNA, NIGER STATE.

OCTOBER, 2012.

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**A RESEARCH PROJECT SUBMITTED TO THE INDUSTRIAL AND
TECHNOLOGY EDUCATION DEPARTMENT, SCHOOL OF SCIENCE
AND SCIENCE EDUCATION, FEDERAL UNIVERSITY OF
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AWARD OF BACHELOR OF TECHNOLOGY (B.TECH) IN AN
INDUSTRIAL AND TECHNOLOGY EDUCATION.**

OCTOBER, 2012.

CERTIFICATION

I, Bello KhafilatAjibike with matriculation No: 2007/1/27270BT, an undergraduate student of Industrial and Technology Education Department certify that the work embodied in this project is an original work which has not been and submitted in part or full for any other diploma or degree of this or any other universities.

.....

Name

.....

Signature & Date

APPROVAL PAGE

This project has been read and approved as meeting the requirements for the award of B-Tech in an Industrial and Technology Education Department, School of Science and Science Education, Federal University of Technology, Minna.

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Supervisor

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Signature & Date

.....
Head of Department

.....
Signature & Date

.....
External Examiner

.....
Signature & Date

DEDICATION

This research project is dedicated to Almighty Allah for his divine providence, guidance and protection upon my life, my entire family and my husband for their sincere love and care.

ACKNOWLEDGEMENT

Praise be to Almighty Allah Whom is the creator of the earth and the universe, for creating me, sustained my life and gave me the opportunity to write this project. My acknowledgement goes to my able supervisor Dr. Engineer P.A. Omozokpiafor his positive influence in my research project, to my internal reader, Mr T.M. Saba, and all my lecturers.My sincere appreciation also goes to my loving parents; Mr. and MrsAbdulyekeenBello for their support and encouragement from the inception of this program to a successful one. May they live long to reap the fruit of their labour in good health.(Amen). My thanks goes to my lovely siblings Mr.QozimBello, MrsMujeedatOlaitan, Mrs. Mojisola,Arc.Abeeb Bello andWakeelBello for their care, love and financial support, may Allah reward them abundantly.(Amen).I must not fail to extend my special appreciation to my lovely hubby, Mr.TajudeenAbdulsalam and my cute, handsome baby Adams OlatomiwaAsunmo for their warmth care and understanding to make this program a successful one.May Almighty Allah guide and protect them.I also owe a special debt of appreciation to my friends and colleagues, TolaEdu, TolaniRukayat,Folashade, Oluwatosin, Hannah, Ganiyat, Abdulrahman, Hassan , Folake, and those who have helped me in one way or the other, I say a big thank you.

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ABSTRACT

The research was carried out to appraise the implementation of occupational safety and health practice in building industries of Kwara state, Nigeria. The specific purposes of this study are to identify the roles of (OSH) regulation in construction industries of Kwara State, how (OSH) act are being implemented, the problems encountered by building industries in implementing the act and the possible solution on how to make all construction industries to follow this act. 4 research question and 2 hypothesis were formulated and tested at 0.05 level of significance. This study adopted the use of a descriptive survey and the area of study is Kwara State of Nigeria. The target population for this study comprises of 80 respondents, the entire population was used, hence no sampling. To elicit the pertinent information for the study, 4 research questions were drawn and two null hypotheses were formulated. The data was analyzed using mean standard deviation and t-test as a statistical tools. 80 questionnaires were administered to 80 respondents. The findings revealed that; workers are not obeying safety rules and regulation, and building construction equipments, tools and machines are not always kept in good working condition. In its benefit to both building industries and the country at large, it was recommended among others that, management should penalize workers who disobey safety rules and regulations, all accidents whether major or minor should be reported for referral, preventive and corrective purposes and also there should be presence of health personnel at the construction site in case of emergency.

CHAPTER I

INTRODUCTION

Background of the Study.

Over the years more and more accidents have occurred in the building industries due to lack of safety and health practice in the building and construction industry. Occupational safety refers to the way and manners we take care of ourselves in our different and various occupation. John (2001) says that workers in the construction industries face a lot of risk when working. The workers involved here among others are electricians, bricklayers, builder, quantity surveyor and carpenter.

Occupational health safety (OHS) in construction is all about protecting people from injury at work or from becoming ill through appropriate precautions. A safe healthy procedure workforce is needed to achieve the objective of national development and economic growth since construction industry is a stimulator for national economy.

Construction is a high hazard industry that comprises a wide range of activities involving construction, alteration, and or repair. Example includes residential construction, bridge erection, road way paving, excavations, demolition, and large scale painting jobs. Construction workers engaged in many activities that may expose them to serious hazard, such as falling from roof tops, unguarded machinery, being struck by heavy construction equipment, electrocutions, silica dust and asbestos.

The importance of the construction industry in national development can not be over emphasized considering the fact that at least 50% of the investment in various development plans is primarily in construction. It is the next employer in labour after agriculture in underdeveloped countries, about 10% of labour force (Oyatoye, 1994). In developed countries, activities in the industry

especially the building and civil works are used as indices of economic growth and buoyancy or recession (Adetifa, 1994). The output of the industry in Nigeria accounts for over 70% of GDP (Mbachu, 1998) and therefore it is a simulation of national economy. It is against this background that the construction industry has been recognized currently as a major economic force and one of the most hazardous industries. Present day construction is marked by rapid execution of project and the extensive use of machinery and mechanized production process. However, despite relatively large pool of construction machines and mechanism as well as high level of prefabrication in building construction and installation, the proportion of manual labour remain approximately 50% (Ateavet, 1985). Construction has many sub-sections ranging from simple housing to major high-rise buildings as well as bridges, road, tunnel and even under water construction. Each section has its distinct hazard and risks determined by the peculiarity of its labour process as indeed every production does irrespective of whether goods or service is produced.

In Nigeria, though there is no reliable data on accident in construction because contractor do not keep proper records on accident at appropriate ministry. In 2005, a four storey building under construction in Port-Harcourt collapse and not less than twenty workers died in the incident. 24 hours after a similar incident occurred in Lagos. Akintunde, (1990). The menace of collapsed building during construction is an indicator of unsafe place and system of work in which workers are subjected to and therefore already at risk of incident even where there is no collapse. Many people have met their untimely death on construction sites in Nigeria while others have become permanently crippled from injury. This emphasized the safety of workers in their site working environment, because the costs of accident are immense to the individual, the employer and the society. Occupational health and safety in construction is all about preventing

people from being injured at work or becoming ill through appropriate precaution and providing a satisfactory working environment. Hazard is something with potential to cause accident with varying severity from cut and bruises to serious illness, disability or death. Risk is the combination of severity of accident with the likelihood of it happening. Accidents are by their nature unplanned and uncontrolled event. Accidents do not necessary have to be injurious or damaging events but it can interrupt or disrupt the completion of an activity. Accident can result in direct and indirect cost, direct cost of construction accidents are medical bills, premium for compensation, benefits, liability and property loss. Indirect costs associated with accidents are:

1. Loss of time of injured employee.
2. Cost of work stoppage of others employees from curiosity, sympathy, and providing assistance.
3. Loss of supervisory time from assisting injured employee, rearranging work crews because of lost employees.

Hence this necessitates this study of appraisal of the implementation of occupational safety and health practice in the building Industry of Kwara state of Nigeria.

Statement of the Problem

The rate of work related accidents and diseases is particularly worrisome in developing countries. This is due to lack of increase or advancement in the provision of health or occupational safety measures. Fisk, (2006). According to him, he says this accidents could be as a result of inadequate protective wears such as helmet, goggles, nose mask ear muffs thereby subjecting this workers to injuries. According to Webb and Schilling, (1998). observes that the equipments and machine used in either production or service industries brings varying degree of

hazard and risk that threatens the health and safety of the workers. An accident was said to have occurred in a construction site in Kwara State, when a worker fell down from a two story building under construction and died instantly. Oluwatobi, (2000). According to the eye witness, He said that the scaffold used was not properly erected and also the worker was not making use of his safety helmet to protect him. Another incident reported to have occurred when one of the men on site was using a machine to cut some metals, one of the blade removed and injured two other workers working on the site. Banke, (2001). According to him he said that similar incident had happened severally, he decried that hundreds of lives had and some permanently injured every year.

Health and safety has not been given enough attention in the construction industry in Nigeria thereby making the workman on the site prone to accident and may not be catered for even after the accident. As a result of this poor attitude it is necessary to find solution to the problem encountered in the provision of health and safety of workers on site. (Atwell, 1991)

It is therefore pertinent to undertake risk assessment. A risk assessment is a careful examination of those things in the process of work or in the work place that could cause harm to the people. (Atwell, 1991). It also covers finding out whether enough precaution have been taken or more should be done to prevent harm. According to him he said that, the essence is to ensure that no one gets hurt or become ill. What is most important is deciding whether a hazard is significant and if it is covered by satisfactory precautions so that the risk is small, the project supervisory team and their style can also influence the hazard vulnerability and safety performance during construction process. There is a gap between having a safety policy and implementing the policy. Actions to ensure safe access and safe working areas to ensure safe access and safe working area must be regularly reconsidered as construction proceed, otherwise safety may be

compromised. Therefore this study is designed to appraise the implementation of occupational safety and health practice in the building industries Kwara state of Nigeria

Purpose of the Study

The purpose of this study is the appraisal of the implementation of occupational safety and health practice in the Building Industries of Kwara state of Nigeria.

Specifically, the study will:

- (1) Identify the roles of (OSH) safety health regulation in the construction industry of Kwara State.
- (2) Identify how (OSH) act are being implemented in the construction industry of Kwara State.
- (3) Identify the problems encountered by construction Industry in implementing the (OSH)act.
- (4) Provide possible solutions on how to make all construction Industries in Kwara State to follow the (OSH) occupation safety and health.

Significant of the study

Upon the completion of this work, the study will be of benefit to the following; Government, the contractors, workers in the construction site.

The research findings workers in the construction industries to understand the extent to which safety rules and regulation is expected to be complied with, making others aware of issues and aspect of which they may consider as trivial or unimportant but may be very important as far as occupational safety is concerned. It will also be of benefit in the sense that they will be able

to know their rights in terms of safety measures and also maintaining good health status which will in turn help save lives from any form of accidents.

This study shall be of benefit to the contractors as when workers know that good health measures are put in place on site, which will in turn yield higher production and with this, the companies will be able to pay the tax levied on them effectively as there will be tremendous productivity. It will also be of benefit to them as there will be ways in which safety awareness of workers can be improved so as to minimize the extent to which occupational accidents occur, thereby safeguarding the lives of workers in the industries.

The government will benefit from this study in the sense that higher mortality rate which can adversely affect the government budget or plan will be reduced to the barest minimum. Also the money allocated to the health sector for drugs, implements and sophisticated facilities shall be reduced and placed in another sector.

Scope of the study

This study is delimited to the roles of (OSH) regulation in the building industries of Kwara state, how (OSH) acts are being implemented, the problems encountered by construction workers in implementing the act and the possible solution to make all construction industries follow this act.

Research questions

The following research questions were formulated to guide this study;

1. What are the roles of (OSH) regulation in the building industries of Kwara State.
2. How is (OSH) act being implemented

3. What are the problems encountered by the construction Industries in implementing the (OSH)act?
4. What are the possible solutions on how to make all Kwara state construction company to follow the (OSH) act?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

HO₁. There is no significant difference in the mean responses of Workers and the management on the roles of health and safety regulation in construction industry.

HO₂. There is no difference in the mean responses of workers and management on the possible solution on how to make all the Kwara State construction industry to follow the (OSH) act.

Assumption of the Study

1. The questionnaire administered to the respondents were returned representing 100% return rate.
2. The researchers assistance helps the researcher in administering the questionnaire to all the management staff and workers correctly.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

In this chapter, literature related to this study are reviewed and discussed under the following sub-headings:-

- i. The role of OHS in the construction industry of Kwara state of nigeria
- ii. Concept of OSH
- iii. Problems encountered by workers in implementation of OSH
- iv. Possible solution to the problems
- v. Summary of related literature

The Role of OHS in The Construction Industry of Kwara State Of Nigeria.

According to Cronin Jeff, (2005). Construction is a process that consists of the building or the assembling of infrastructures. The role of the OHS in kwara state of Nigeria is the same for all the states of Nigeria as it is the same rules that guides all the states of the federation. The difference may only arise on the type and location of buildings that is, water-logged areas, and also the type/size of structure to be erected. The major role of the OHS in the construction industry is to ensure the safety of the lives of workers, passerby, future occupants as well as the environment in general Essiet,(2005). Accidents may occur on the construction site but to a very large extent it can be controlled and reduced to its barest minimal to help reduce their after effects. To this effect, seminar and works

effect, seminar and workshop on safety are education aspect of safety program which may ensure that employees know how to work safely, why it is important to do so, and that safety is expected by the management. Cronin Jeff, (2005). The Workplace Health and Safety Regulation 2008 clearly states the way workplace health and safety risks from certain hazards must be managed. The regulations cover the following:

- principal contractor for construction safety plans
- work method statements for high-risk construction activities, demolition work and asbestos removal
- general and site-specific induction
- housekeeping practices
- safety of plant provided for common use
- excavations (including trenches)
- working at heights (including work on roofs, from ladders and trestle ladder platforms, and work to erect or dismantle scaffolding)
- Protecting the public and workers from falling objects and amenities.

Principal contractor for construction work; the principal contractor for construction work, other than prescribed construction work, is the person appointed by the client as the principal contractor for the construction work.

(2) If the client does not appoint a principal contractor for the construction work, the client is taken to be the principal contractor for the construction work.

(3) The principal contractor for prescribed construction work is the person who is in control of the prescribed construction work.

Relevant person - A person who conducts a business or undertaking has an obligation to ensure the workplace health and safety of the person, each of the person's workers and any other persons is not affected by the conduct of the relevant person's business or undertaking.

Construction safety plans: A documented plan for the construction work can assist the principal contractor to manage relevant workplace health and safety obligations.

A principal contractor must prepare a construction safety plan before construction work starts.

The plan must state:

- workplace address
- name and address of the principal contractor
- expected start date
- estimated duration of the work
- type of construction
- common plant to be provided
- site rules
- the risks the principal contractor is obligated to manage
- proposed control measures for the risks
- how the controls will be implemented
- arrangements for monitoring and reviewing controls
- emergency procedures, and
- public safety strategies

The plan must be:

- written so it is easy to understand
- signed and dated by the principal contractor
- Available for the length of the project.

The principal contractor must sign and date work method statements that have been received and keep them with the plan, as well as monitor their implementation.

The principal contractor cannot allow work to start unless the plan:

- has been discussed with or a copy given to all relevant persons employers and self-employed persons
- Is available or readily available for inspection.

The plan must be amended if there are changes in how risks will be managed. The principal contractor must inform any affected person of the change.

Work method statements: Work method statements assist a subcontractor to consider how certain activities will be carried out safely. A subcontractor doing construction work needs to prepare a work method statement for these high-risk activities:

(a) Where a person is:

- (i) Required to enter a trench more than 1.5 metres deep;
- (ii) Using explosives other than powder-actuated handheld fastening tools;
- (iii) Using a confined space; or
- (iv) Using a hazardous substance.

(b) If a person could fall:

- (i) At least 3 metres for housing construction; or

(ii) At least 2 metres for other construction.

The work method statement must take into account the principal contractor's construction safety plan and also state:

- (a) The high-risk construction activity; and
- (b) The control measures to be used; and
- (c) The way the activity will be performed; and
- (d) How the control measures will be monitored and reviewed; and
- (e) Licenses for high risk work and earthmoving or particular crane occupations.

Work method statements must be easy to understand, signed and dated. The work method statement must be readily available for inspection. It must also be reviewed each year and amended if necessary.

A principal contractor must ensure a person has had a medical check-up before he/she starts construction work.

According to congregational research service (CRS) in private construction firms, accident occurs as a result of lack of frequent medical check-ups. The health demand of some work is more than what the health of some workers can meet. In agreement with the bitter fact, Atwell, (1991), says that, for employment, the health status of a worker must be assessed and matched with the requirement of the work, and constant medical check-up should be imbibed on.

Safe housekeeping practices: Principal contractors play an important role in ensuring the orderly conduct of a construction workplace. Atwell, (1991). The principal contractor must ensure safe housekeeping practices including: appropriate, safe and clear access to and from the workplace safe systems for collecting, storing and disposing of excess or waste materials

Adequate space for storing materials or plant: A subcontractor must implement and maintain the safe housekeeping practices that apply to their work including:

- managing risks from protruding objects such as exposed nails or vertical reinforcing steel
- Providing and maintaining appropriate lighting for the work being done.

Subcontractors must ensure their workers on site are instructed to follow the safe housekeeping practices.

Common plant: Common plant is plant provided by the principal contractor for use by another person at the workplace, e.g. scaffolding, switchboards.

A principal contractor must ensure common plant is safe for the purpose for which it is provided and that it is maintained.

The principal contractor must comply with any requirements about the plant in Part 20 of the Workplace Health and Safety Regulation 2008. A subcontractor or worker using the plant must ensure all requirements about its safe use are complied with.

Workplace Health and Safety Queensland, Department of Justice and Attorney-General
Handbook Building and construction industry Workplace Health and Safety Guide PN10129
Version 3 Last updated May 2011 8

Underground Services: Before excavation work starts, if there is a principal contractor appointed, or if no principal contractor has been appointed then each relevant subcontractor must:

- (a) Find out what underground services exist at or near the location of the excavation
- (b) Obtain relevant information about the service (location, type, depth, restrictions to be followed) from the appropriate source
- (c) Record the information in writing
- (d) Keep the information recorded until the construction work ends.

Ensure this information is considered in planning the work and decide on and use control measures to prevent people being exposed to the risk of death, illness or injury from coming in contact with, or damage to, the service.

Excavations: A relevant subcontractor must manage the risks associated with:

- an excavation collapsing
- objects falling into an excavation
- a person falling into an excavation,
- a person being exposed to carbon monoxide or other impurity of the air in the excavation.

A relevant subcontractor must decide on and use appropriate control measures and maintain the control measures necessary to prevent, or minimize the level of, exposure to the risk. A relevant subcontractor must implement any control measures necessary to prevent risk from the collapse of another structure such as an adjoining building or road.

A relevant subcontractor needs to ensure that if a person is entering a trench more than 1.5 metres deep, one of the following control measures is implemented:

- (a) has shoring or shielding; or
- (b) is benched – not higher than it is wide and no vertical face exceeding 1.5 metres; or
- (c) is battered – angle not exceeding 45° and bottom vertical face not exceeding 1.5 metres; or
- (d) Is approved in writing by a geo-technical engineer as safe to work in.

Workplace Health and Safety Queensland, Department of Justice and Attorney-General
Handbook Building and construction industry Workplace Health and Safety Guide PN10129
Version 3 Last updated May 2011 9. A geo-technical engineer must provide written approval to vary the benching and battering requirements. The approval must be kept on site at all times.

Ladders used for access must be no more than nine metres apart in the area of the trench where work will be carried out.

Work at heights: (Excluding work on ladders or trestle ladder platforms and scaffolding work)

If there is a risk of fall of less than three metres in housing construction work or less than two metres in other construction work, or if work is on a roof surface or partly completed roof surface, with a slope not over 26° , the subcontractor who intends to do the work must identify each hazard and assess the risk as a result of the hazard before work starts.

Hazards that may present a risk from a fall include:

vertical reinforcing steel, the edge of a rubbish skip, a picket fence, or a stack of bricks below workers unsheathed floor bearers and joists two metres below workers work on a brittle roof two metres above a floor.

Factors such as the type of activity being carried out should be taken into consideration to establish the degree of risk.

Control measures used to manage risks must comply with regulatory requirements. All building industries should give adequate knowledge to the staff of the building industries, the policy should make it clear that safe work practice are expected of all employees at all level because safety policy serve as the foundation upon which all other promotional effort are built. Bokinni, (2006).

A subcontractor carrying out work above these heights, or on a roof surface or partly completed roof surface, with a slope over 26° must prevent a fall; or if prevention is not practicable, arrest the fall and prevent or minimize the risk of death or injury from the arrest of the fall.

Falling objects: a principal contractor must ensure appropriate control measures are used to prevent, or minimize the level of, exposure to the risk of falling objects on the construction site

and onto adjoining areas such as a public footpath, road, square or the yard of a dwelling or other building beside a workplace.

Housing and civil construction work: a principal contractor or subcontractor must assess the risk from falling objects and use controls to prevent or minimize the risks from falling objects. The controls chosen must comply with any regulatory requirements. Atwell,(1991).The principal contractor or subcontractor must close the adjoining area or erect perimeter containment screening where demolition work or work erecting or dismantling formwork is However, if permission to close the adjoining area is withheld and perimeter containment screening cannot be erected, the principal contractor or subcontractor must ensure that another control measure is implemented to prevent objects falling on or otherwise hitting members of the public.

The public must be kept out of an adjoining area where loads are being lifted, unless a gantry, that would withstand the force of the load if it fell, has been provided.

Amenities:A principal contractor must ensure workers have reasonable access to a room or sheltered area to eat meals or take breaks. The area must:

- Present no health or safety risk
- Be hygienic
- Have adequate space, seating and facilities for washing and storing utensils, boiling water and storing food in a cool place if there are 15 or more workers at the site.Pinnagoda, (1992).

Principal contractors must ensure workers have reasonable access to toilets. Reasonable access for a civil construction workplace would be a toilet in the workplace site compound boundaries and for other construction workplaces, within the workplace site boundaries.

There must be one toilet available for each 15, or part number of workers. A toilet connected to sewerage, a septic system, a pump-out holding tank storage type system ('connected') or a

portable toilet is acceptable for a workplace with fewer than 15 workers. However, if the number of the workers increases and the toilet provided was portable, it must be replaced by a connected toilet within two weeks after the number of workers has increased. A workplace with four or more levels must have a toilet on the ground and fourth floor and every third floor thereafter. He also stated that Toilets must;

- Be in a cubicle or room fitted with a door and located in a position that allows privacy have fresh air,
- Be equipped with sanitary disposal facilities if used by female construction workers, and
- Be separated so that urinals are not visible to female workers.

The principal contractor must ensure workers have access to washing facilities. The facilities must be separate from toilets if there are no separate toilet facilities for females. Employers must also provide workers with reasonable access to appropriate and adequate first aid equipment. A self-employed person is responsible for ensuring reasonable access to appropriate and adequate first aid equipment. Barber and Danovan, (1992). According to him, he says a man's capital is his/her health and ability to do work. There is little or no first aid treatment that can be given to any accident victim without adequate equipped first aid box.

CONCEPT OF OHS

Occupational safety and health (OSH) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment (Lawrence, 2012). The goals of occupational safety and health programs include to foster a safe and healthy work environment. OSH may also protect co-workers, family members, employers, customers, and many others who might be affected by the workplace environment.

Occupational safety and health can be important for moral, legal, and financial reasons. Moral obligations would involve the protection of employee's lives and health. Legal reasons for OSH practices relate to the preventative, punitive and compensatory effects of laws that protect worker's safety and health. OSH can also reduce employee injury and illness related costs, including medical care, sick leave and disability benefit costs. OSH may involve interactions among many subject areas, including occupational medicine, occupational hygiene, public health, safety engineering, industrial engineering, chemistry, health physics, ergonomics and occupational health psychology (Lawrence, 1999).

According to Hornby, (2006).occupation can be defined as the activity, work, trade or professional engaged in by a person in order to earn a living. Safety according to the same dictionary is the state of being safe from harm or danger. It further explained that safety features are intended to make something less dangerous.

The occupational safety and health Administration (OSHA) act. Formed in 1970, OSHA set and revokes safety and health standards, conducts inspections, investigating problems, issues citation, assess penalties, petition the court to appropriate actions against unsafe employers, provides safety training, provides injuries prevention, consultation making a date of health and safety statistics.(Goetsch,2008).

Another government organization is the National Institute for Occupational safety and Health (NIOSH). This organization is part of center for diseases control (CDC) and prevention of department of health and human service. This organization will provide on-site test of potentially toxic substances so that companies will know what they are handling and what precaution to take (Goetsch, 2008). Since the task of ensuring occupational safety in the work place is not the sole responsibility of an individual but rather collective or combined effort, the difference parties are

aimed with passing implementing and obeying laws and regulations on occupational safety and health have the following roles to play;

The roles of government are to make legislation concerning occupational safety and health, investigation of reported cases of occupational accident and diseases, prosecution of defaulting employer who contravene the factories decree and other subsidiary legislation and provision of technical adviser on occupation and health.

The roles of the employers are to establish occupational health and safety service program, compliance with various provision of the factories decree and subsidiary legislation and preparation and adaptation of occupational safety and health policy.

The roles of the employees are; obeying all safety rules and regulation by wearing all protective equipments and clothing and submitting themselves for all necessary medical examination.

The Need for Health and Safety Rules in the Construction Industry: The need for health and safety rules in the construction industry cannot be over emphasized as it benefits the construction industry, the contractors and workers. But too bad, workers are not observing their safety rules and regulation. According to National Occupational Safety and Health Information Center (NOSHIC) during convention held in 2006, adopted factor act cap 126, provides minimum standard safety rules and regulation, and explained that an effective safety strategy include consideration for safety in all ramification. This will help achieve a healthy workforce and also increase productivity.

With the above, the construction company would no longer be a death trap for workers but a place to make people appreciate their work skills and abilities. Health and Safety Regulation 2008

Occupational Safety And Health (OSH) Act In Kwara State: Basically, there is no particular OSH act for Kwara state of Nigeria, but there is an OSH act for Nigeria that binds every state. This OSH act is the same as that being used in other countries of the world only for the differences in the fine attached to the loss of lives of the workers, injury and some other differences.

Even with the presence of the OSH act, workers and contractors do not go by the act in their work and adhere to OSH policy as there is serious follow up on the work they do. Aliu, (2005). According to him, construction worker who adhere to safety policy are aimed at achieving an accident free environment. As there is no serious follow up on the work they do. Also, the idea of doing work without serious supervision by the OSH bodies of the state and country makes the construction industry really unsafe as it has become an occupation owned and ruled by quacks. These quacks have little or no ideas on the safety of their workers since their major concern is on making profits at the long run even before their works starts. According to him, construction workers who adhere to safety policy are to be rewarded. Aliu, (2005)

Accident in Construction Industries and Safety Responsibility: According to journal of laws no 199 item 1673 define accident at construction site as sudden events cause by an external reason, resulting in injury or death, which took place in connection with work. A badly planned and untidy site is the underlying cause of many accidents resulting from falls of material and collisions between workers and plant or equipment. Pinnagoda, (1992). Space constraints, particularly in urban work sites, are nearly always the biggest limiting factor and a layout which caters best for the safety and health of workers may appear to be difficult to reconcile with productivity. Proper planning by management is an essential part of preparation and budgeting for the safe and efficient running of a construction operation.

Before work even begins on site, thought needs to be given to:

- The sequence or order in which work will be done and to any especially hazardous operations or processes; Access for workers on and around the site. Routes should be free from obstruction and from exposure to hazards such as falling materials, materials-handling equipment and vehicles. Suitable warning notices should be posted. Routes to and from welfare facilities need equal consideration. Edge protection will be required at the edge of floor openings and stairs, and wherever there is a drop of 2 m or more points. The objective should be to avoid the need to slew the load over workers;
- The location of trade workshops – these are not usually moved after they are built;
- The location of medical and welfare facilities. On large sites sanitary facilities for both sexes should be provided at several locations;
- Artificial lighting at places where work continues or workers pass after dark;
- Site security. The site should be fenced in to keep out unauthorized persons, children in particular, and to protect the public from site hazards. The type of fencing will depend on the location of the site, but in populated areas it should be at least 2 m high and without gaps or holes. Overhead protection will be necessary if tower crane loads pass over public thoroughfares;
- Arrangements to keep the site tidy and for the collection and removal of waste;
- The need for low-voltage electric power supplies for temporary lighting, portable tools and equipment;
- Training needs of both workers and supervisors.

Most construction work involves some form of excavation for foundations, sewers and underground services. Excavation or trenching work can be highly dangerous and even some of the most experienced workers have been caught by the sudden and unexpected collapse of the

unsupported sides of a trench. Therefore, qualitative materials are needed by workers in order to prevent them from accident encountered on the sites. Aliu,(2005). And these materials include safety goggles, helmets, and safety boots among others.

Excavation work involves the removal of soil or a mixture of soil and rock. Water is nearly always present, even if only as moisture in the soil, and heavy rain is a frequent cause of soil slip. The possibility of flooding presents an additional hazard which should always be considered. Cracks are caused by pressure release as soil is removed, or from drying out in hot weather.

Soil varies in its nature (e.g. fine sand which flows easily, and stiff clay which is more cohesive). However, no soil can be relied upon to support its own weight and precautions always need to be taken to prevent the collapse of the sides of an excavation of more than 1.2 m in depth.

The main causes of accidents resulting from excavation work are as follows:

- Workers trapped and buried in an excavation owing to the collapse of the sides;
- Workers struck and injured by material falling into the excavation;
- Workers falling into the excavation;
- Unsafe means of access and insufficient means of escape in case of flooding;
- Vehicles driven into or too close to the edge of an excavation, particularly while reversing, causing the sides to collapse;
- Asphyxiation or poisoning caused by fumes heavier than air entering the excavation, e.g. exhaust fumes from diesel and petrol engines.

Scaffolding: Falls of persons from a height, and similarly of materials and objects, represent the most serious safety risk in the construction industry. A high proportion of deaths are caused by falls. Many of the falls are from unsafe working places or from unsafe means of access to working places. Scaffolding can be defined as a temporary structure supporting one or more platforms and which is used either as a workplace or for the storage of materials in the course of any type of construction work, including both maintenance and demolition work.

Where work cannot safely be done from the ground or from the building or structure being worked upon, then there should always be suitable and sufficient scaffolding. Pinnagoda, (1992). This must be properly constructed of sound material which is of adequate strength to provide you with both means of safe access and a safe place of work. Scaffolds should be erected, altered or dismantled only by competent persons under supervision, and this training manual sets out general principles for the various common types of scaffold. After erection, scaffolds should be inspected at least once a week and a written report on each inspection kept. There are many different materials used to construct scaffolding, such as steel, aluminum, wood and bamboo. Whatever the material, the principles of safe scaffolding remain the same that it should be of adequate strength to support the weight and stress which the processes and workers will place upon it, that it is securely anchored and stable, and that it is designed to prevent the fall of workers and materials.

Although most accidents happen to roof workers, there are many workers engaged simply in maintaining and cleaning roofs. To undertake roof work safely you require knowledge and experience, and special equipment. Atwell, (1991). Before the job begins, a safe system of work must be planned. Precautions must be adopted to reduce the risk of a worker falling or, if it

occurs, to prevent the fall being the cause of serious injury. The precautions to be taken will depend on the type of roof and the nature of the work to be undertaken.

Movement of materials: Before a crane is used on site, management should consider all the factors that could affect its safe use, such as:

- The weight, size and type of load it will have to lift.
- the maximum reach or radius required of it; restrictions on use such as overhead power lines, the state of the site and the type of ground;

We cannot discuss about ways in which accident occurs without talking about safety responsibility.

Safety responsibility:Construction site can be considered as being one of the most hazardous types of working environment in the nation. Although the resident project representative is often spared more detailed responsibilities of the general contractor in assuming safety working condition environment in the nation. Although the resident project representative is often spared more detailed responsibilities of the general contractor in assuring safety condition of construction site; though there are two type of contract for construction in which the resident project representative may be well involved in the matter involving on-site construction safety as general contractor under the conventional contract. These include;

1. Professional construction manager. (PCM)
2. Design-build construction contract.

In many cases, the PCM firm can incur obligation and responsibilities that were previously preserved to the general contractor. Where multiple prime contractors are being managed, as in fast tract construction, The PCM might do well to include the following items.

- All unsafe or unhealthy condition observed should be reported to the resident project representative, so that immediate corrective action can be initiated
- Compliance with all applicable safety and health law, codes, ordinances and the regulation should be made mandatory.
- Recognized safety and health work practice should be made mandatory.
- Safety equipment should be inspect regularly and should be properly maintained.
- The PCM should require that an ongoing accident prevention program be implemented at the work site by each contractor and sub-contractor.
- Each contractor and sub-contractor should be requiring to properly maintaining all necessary protective equipment.
- There should be continuing communication channel open between the PEM and each of the sub-contractor concerning safety and health matters.
- Period on-site inspection include voted by the PCM to guarantee continual of acceptable prevention procedure by each contractor and sub-contractor. (Fisk, 2006)

To establish a meaningful and successful accident prevention program, it I necessary to accept the premise that the PEM contractor management has the legal and moral responsibility to ensure a safe and healthy working place. The top manager, president or owner must outline policies, stimulate thinking and exhibit personal concern and interest in such a program before expecting other to follow and co-operate. The same top management should show the personal interest and give positive evidence of sincere commitment by personally informing the entire employee that accident prevention is a good business and everybody is expected to be an active participant. In large organization, the administration of such safety program is a full job and is generally handle

by a person designated a safety engineers, hazard control engineers, safety and health directors or a similar title.

The safety engineer should advice the operating management staff on safety and health matters of interested or important to them. Although the safety engineer must have sufficient management backing to the action when the responsible operating management fails to respond, care must be exercise; that this authority is not used to circumvent the authority of the other members of the management staff. (Fisk, 2006).

The resident project representative is the person who is the most direct involve in the administration of the contract provision and should have the responsibility of assuring that the contractor is in full compliance with all aspect of the contract, including applicable major safety requirement. The degree of control that the inspector may have over the contractor in requiring compliance with OSHA's construction safety requirement depend at least partly on the following condition.

1. If no mention is made in the contract document, whether on the drawing on in the specification themselves, safety obligation of the contractor are primarily a legal obligation between himself and the state or federal agency administering the provision of OSHA. Although an inspector would see to the obligated to call attention to observe deficiency that constitute a serious hazard, and to notify the contractor that they should be remedied. The contractor's failure to respond can be handled by the inspector through the service of written notices to the contractor with copy to the organization administering the construction contract and filling on official notices to the local OSHA enforcement agency, which is administered at the state level in many areas. Otherwise the contractor's

failure to comply with safety and health of the workers is difficult to control as the project inspect normally possess no special power over the work.

2. If however, the contractor compliance with specified in the OSHA as specified in the contract specifications. The inspector sub-sequent demand that the contractor comply with certain OSHA provision take on different light. In this case the safety requirement. In addition to being the legal obligation of the contractor, have become a contractual one as well. Thus the contractor's failure to comply can be interpreted as the breach of contract and the design firm may recommend that the owner withhold the payment for the portion of the work until the contractor complies. This does not take the place of the official notices mention in the previous paragraph but merely provide an additional recourse notices firm and the owner beyond the step already mention.

Furthermore under these condition there must going to be an assurance that the contractor is living up to the safety obligation which is part of inspectors responsibility, because it's written in to specification and most therefore be consider as one of the inspector field administrative responsibilities. This also functions as an allocation of portion of the safety hazard risk to the inspector's employer. When the construction safety provision are written as part of the term of the construction contract, the inspector in the administration of the contract is required to see the contractor properly provides for the safety the workmen. Under no circumstances should the contract be instructed orally or in written as how to correct deficiency (Fisk, 2006)

As previously mentioned, it's quit probable that the inclusion of safety requirement in the construction contract will incur additional responsibilities in the part of architect or engineer to assure that proper safety precaution have been taken. It must also be recognized that there may

be some additional liability to the architect in case of job-related injury involving failure of contractor to observe safety requirement.

However it's only readily at the disposal of the architect or engineer to assure the performance of the contractor safety obligation and the risk of loss to the architect or engineer could be even greater in the absence of such control, if a fatal or crippling accident did occur as one may be certain that the architect or engineer, the owner and the resident project representative would all be name in any resulting litigation.

According to federal OSHA volume II title "construction safety and health regulation" (1926) explain that under the federal safety program, each state has the right to enact a safety code that is at least equivalent to the federal OSHA provision, and by so doing retain the right to be the sole safety enforcement agency with its jurisdiction border. If state does not choose to exercise this option construction in that state will be subjected to inspection by both federal and state agencies. If the state enact to degrade its safety code to meet the OSHA'S requirement, it75886 3 years period to accomplish this under these conditions, local safety enforcement will be by state agency only both during and after enactment.

PROCEDURE/GUIDELINE ;In carrying out the owner's and the design firm's responsibility of assuring safety compliance as a contract requirement, the following guidelines are suggested, where the owner feel that inspector monitoring of the contractor safety program is desirable.

1. Imminent hazard: a condition that if not corrected would most likely result in an accident severe or permanent disabling, injury or death.

Procedure;- when an imminent hazard condition is known to exist, the resident project representative should immediately order affected, and not permit work to resume on these operation until the condition has been corrected. The project manager of the design firm, the

owner, state or federal agency having jurisdiction over construction safety should be notified of the hazardous condition and of the action taken.

In addition, a letter given all the details should be prepared covering the entire event leading up to suspension and this letter are submitted to the project manager.

2. **Dangerous condition:** a condition that does not present an immediate danger to workers but if not corrected could result in disabling injury and possibly death, or could develop into an imminent hazard as just described.

Procedure; when a dangerous condition is known to exist, the resident inspector should notify the contractor in writing of the condition and allow the reasonable period of time for correcting the condition. If the resident inspector is not certain of the remedial measures, propose or taken by the contractor, then the service of construction should be requested. If the contractor did not correct the dangerous condition or if the condition is deteriorating into an “imminent hazard” the design firm should consider recommending that he suspend the affected operation.

3. **Minor or non-serious condition:** condition that could result into minor or less serious injuries, or that are small in nature, so that they still be classified as a threat to health.

Procedure:- when a minor or non-serious condition is known to exist the resident project representative should advise the contractor of the condition and the necessity of eliminating them, if the contractor fail to correct the problem or permit repeated occurrence on subsequent operation, then the design firm or the owner should be notify. (Fisk, 2006)

The construction safety activities of both the contractor and all the project personnel must be documented in inspector’s diary. It’s important for the inspector to realize that the duty only include responsibility for the contractor complies with the project safety requirement through

the use of normal administrative procedure. The legal enforcing is the federal or state OSHA officer.

PROBLEMS ENCOUNTERED IN IMPLEMENTATION OF OSH ACT.

The problems involved in the implementation of OSH act are so much but can basically be summarized under the following :-

1. The construction body- NIOB and CORBON among others
2. The employers of labour in construction companies.

The construction body- these are organizations involved in the implementation of set rules guiding the construction industries. It is no difficulty setting up rules to guide the industry but its major problems are as follows:-

1. Not setting up rules to guide the industry
2. Not following up the set rules.
3. Not penalizing the defaulters of the set laws.
4. Not having good officials to do the follow-up.

The employers of labour:- The basic problems of implementing the OSH act are caused by the employer as they serve as the main chain of implementing all the set act, rules and regulations. Even after the act, the ball lies in their court to implement it. Accident can be prevented as well as danger can be averted. Whenever an accident occurs, it is an indication that somebody somewhere has fail to do what should be done. This could be as a result of negligence, ignorance or lack of knowledge (Essiet, 2005). The problems that could cause this are:1. Not having enough safety equipments, not enlightening the workers on how to use the equipments,

not taking proper care and record of injured staff, not having good health facilities and not training the workers.

The employees:- they are the main people who enjoy or suffer the OSH act as it is made to protect them. The construction workers have the following problems on implementing the act:

1. No adequate training and re-training on rules and regulations.
2. No enough safety equipments such as nose mask, ear muffles, helmet, safety boots among others.
3. No adequate equipped first aid box.

POSSIBLE SOLUTIONS ON HOW TO MAKE ALL KWARA STATE CONSTRUCTION COMPANIES FOLLOW THE OSH ACT

Making all the construction companies in Kwara state may be quite difficult but is possible and this would be determined by the construction bodies of Kwara state and the construction companies as a whole. Employers hold the primary responsibility for the health of their employees in workplaces and for occupational disease prevention and treatment. The law requires the employer to establish a system to protect health and safety. The following were suggested by as possible ways of eliminating accidents on the construction sites of Kwara state:

- Effective measures should be taken for hazard control and occupational disease prevention. The employer should establish an occupational health organization staffed with full-time or part-time occupational health professionals for in-plant occupational health management and service; a plan and concrete programs for hazard control should be mapped out and put into practice; workplaces should be regularly monitored and

evaluated for effective hazard control actions; occupational health records (of workplace hazard monitoring and workers' health examinations) should be complete and current; and an emergency rescue counter plan should be carefully prepared.

- Workers who are exposed to hazardous factors at workplaces should have regular health examinations, including pre-placement examinations, periodical on-the-job examinations, and pre-departure examinations.

- The employer should pay for the health examinations and keep accurate health records, which will follow the workers from job to job so that when a worker is found to be damaged, health inspectors can trace where and when the damage occurred.

- Employers have the responsibility to educate their workers. They should provide pre-placement and regular training courses to inform the workers about protection from specific occupational hazards and the need to adhere strictly to work safety rules. When negotiating or concluding an employment contract, the employer must inform the employee of any occupational diseases that may be contracted at work, the consequences thereof, and the measures adopted by the employer to protect against the harm. The employer must specify this information in the employment contract and must not conceal such information from or deceive the employee in any manner.

- All expenses for prevention and control of occupational hazards, workplace monitoring, workers' health examinations, and occupational health training should be considered production costs.

- Also, workers should be penalized for not using the right tool for the right job or not following the set down safety rules laid.

Aside the above being stated, (Maxwell,1999) stated the following as other ways in which the employee can be much more acquainted to the OSH act:

- Access to occupational health services (e.g., healthexaminations, occupational disease diagnosis, andrehabilitation).
- The right-to-know of the health effects of hazards inthe workplace and how to protect from work-relatedharm.
- The opportunity to request and claim improvementof working conditions and personal protectiveequipment.
- The right to criticize and accuse perpetrators of malpracticesthatviolates the law and regulations andharm health.
- The right to reject illegal orders and commands toundertake operations without appropriate safeguardmeasures.
- The right to participate in the democratic managementof the employer’s occupational health practice,and make comments and suggestions withregard to the occupational disease prevention practicesof the employer.
- Also, the Labor union should urge the employer to carry outthe occupational health education and training, makecomments and suggestions for the employer’s occupational-disease–prevention practice, and coordinatewith the employer to solve problems identified by theworkers with regard to occupational disease prevention.

Also, the employee has his own part to play in his health safety; these are:

- Using the right tool for the right job.
- Using safety equipments and gadgets for all jobs.
- Placing sign posts where they are needed.

Summary of Related Literature

From the above related review of literature, it shows that engineering aspect of safety involve making design, improvement to both product and processes. By altering the design of a product, the processes use for its manufacturing can be simplified, as a result, made less dangerous, this is called designing for safety.

It also shows that government on their own side of concern implemented, the rules and regulation on occupational safety and health practice in building construction, prominent among these are:

- Making legislation concerning occupational safety and health.
- Prosecution of defaulting employers who contravene the factories decree and other subsidiary legislation.
- Investigation of suspected accident and diseases.
- Cooperation with various international organizations concerned with occupational safety and health.
- Provision of technical advice on occupational safety and health.

The education aspect of safety programs ensures that an employee knows how to work safely, why is it important to do so and that the safety is expected by management.

CHAPTER III

METHODOLOGY

INTRODUCTION

This chapter describes Research design, Area of the study, population, Administration of instrument for data collection, instrument method of Data collection, validation of the instrument, method of Data analysis and Decision Rule.

Research Design

This study adopts the use of descriptive survey research design because it involves the use of questionnaire to help in determining the opinion of the respondents. According to Ogunjimi, (2000), Research design is plans, strategies and structure employed toward obtaining answer to research question and hypothesis. He further added that it covers the outline of what the researcher intended to do up till the final analysis. A research report is thus the written presentation of knowledge and understanding. Appropriate statistics of mean, standard deviation and t-test of independent means were used to analyze the data.

Area of the Study

This study is conducted in four (4) different building construction industries in Kwara state namely;

Bal engineering limited

3. Yolas construction limited
4. Charvet Nigeria limited
5. Construction product Nigeria limited

Population

The target population used for this study comprises of 35 management staff and 45workers, from four building construction industries in the kwara state of Nigeria. The entire population was used for the study, hence no sampling procedure adopted.

Table 1: Shows the distribution of management staff and worker as the population of the study.

S/No	Building construction Industries	Management staff	Workers	Total
1	Bal engineering limited	8	10	18
2	Yolas construction limited	11	15	26
3	Charvet Nigeria limited	6	12	18
4	Construction product Nigeria	5	8	13
Total		35	45	80

Instrument for Data collection

The instrument used for data collection was a structuredquestionnaire, management staff and workers constituted the respondents. The questionnaire consist of 4 parts,part A contain 10 items

which dealt with'' The roles of (OSH) safety regulation in the construction industries in Kwara State', part B contain 10 items which dealt with'' How are (OSH) act being implemented', partC contains 10 items which dealt with the problems encountered by construction industries inimplementing the (OSH) act', and part D contains 10 items which dealt with '' possible solution on how to make all Kwara State construction company to follow the (OSH) act.''

Validation of the instrument

The questionnaire drafted by the researcher was validated by threecturers in the Department of Industrial and Technology Education, Federal University of Technology, Minna Niger state, for proper and necessary corrections. In order to produce relevant informations needed for answering the research question. The validated questionnaires were used to collect data for this study.

Administration of instrument

The researcher personally administered the instrument to the respondents by visiting all building construction industries listed in the area of study.eighty questionnaires were administertothe management staff and workers and were returned representing 100% returned rate.

S/NO	Names of industries	No. of questionnaire	No. of returns	No. of loss	% returned
1	Bal engineering limited	18	18	nil	100%
2	Yolas construction limited	26	26	nil	100%
3	Charvet Nigeria limited	18	18	nil	100%
4	Construction product Nigeria	13	13	nil	100%

Method of Data Analysis

The Data collected was analyzed using statistical mean score. Standard deviation and t-test, to agree or disagree on the respondent opinion on a particular item contained in the instrument. The mean responses were used to ascertain the central tendency of the respondent opinion to decide on the items and answer the four research questions.

The four(4) point of rating scale value were developed as followed.

Strongly Agree (SA) = 4 points

Agree (A) = 3 points

Disagree (DS) = 2 points

Strongly Disagree (SD) = 1 point

Decision Rule

To determine the acceptance level a mean score of 2.50 was used as decision point, however any item with means response to 2.50 and above was consider being acceptable and item with mean score of less 2.50 and below was considered as rejected. The null hypothesis were tested at a significant level of 0.05. when the t-calculated is equal or greater than the t-table value, the null hypothesis is rejected, meaning that there is significant differences and when the t-calculated is less than the t-value, the null hypothesis was accepted, meaning there was no significant is no significant difference.

CHAPTER IV

PRESENTATION AND DATA ANALYSIS

The data presented in this chapter were collected through the responses of the management staff and the workers in four industries in kwara state.

Research question 1

What are the roles of (OHS) safety regulation in the construction industries in kwara state?

Table1: mean responses of the management staff and the Workers on the role of (OHS) safety regulation in the construction industries in kwara state.

N1= 35, N2=45

S/N0	ITEM	\bar{X}_1	\bar{X}_2	\bar{X}_t	REMARK
1.	Occupational health and safety organization ensure the safety of lives of workers, passerby, future occupant as well as the environment.	3.54	3.47	3.51	Agreed
2.	Occupational health and safety organization protect the public and workers from falling object and amenities.	3.43	3.33	3.38	Agreed
3.	Occupational health safety organization organizes safety Programs and training for its workers.	3.72	3.13	3.43	Agreed
4.	Occupational health and safety organization ensures that Management and staff make use of safety equipment.	3.80	3.47	3.64	Agreed
5.	Occupational health and safety organization department helps to achieve an accident free environment.	3.86	3.31	3.59	Agreed

- | | | | | |
|--|------|------|------|-----------|
| 6. OHS takes record of accidents. | 3.06 | 3.16 | 3.11 | Agreed |
| 7. Occupational safety and health organization has safety policy
Agreedfor attaining sound value of productivity. | 3.06 | 3.27 | 3.17 | |
| 8. Occupational health and safety organization assist
companies to organize regular safety meetings. | 2.09 | 2.53 | 2.31 | Disagreed |
| 9. Occupational health and safety organization rewards
workers embarking on safety preventive measures. | 2.08 | 2.51 | 2.30 | Disagreed |
| 10. Occupational safety and health organization ensures
adequate and sound health of workers duringconstruction. | 2.71 | 3.00 | 2.86 | Agreed |

Average mean

3.143.12 3.13

Keys

N_1 = number of management staff, N_2 = number of workers, x_1 = mean score of management staff, x_2 = mean score of workers, x_t = average mean.

The above shows that both the management staff and the workers of building industries in Kwara State agree to the item in 1,2,3,4,5,6&10 because their mean scores are more than 2.50 and above, while disagreeing to the question 8&9 because their mean scores are less than 2.50 and below.

Research Question 2

How are (OSH) act being implemented in the construction industries of Kwara State.

TABLE 3; mean responses of management staff and workers on how (OSH) act are being implemented.

N1=35, N2=45

S/NO	ITEM	\bar{X}_1	\bar{X}_2	\bar{X}_t	REMARK
1	By ensuring that sick people are not allowed to participate in any work until he/she is fully recovered.	3.57	3.42	3.50	IM
2	By providing a well-equipped first aid box in the construction site.	3.31	3.16	3.24	IM
3	By providing an ambulance as a means of transporting workers in case of occupational accident.	2.06	2.87	2.47	NI
4	The construction firms are fully registered with public health provider.	2.17	3.09	2.63	IM
5	Health personnel are always available on the construction site in case of emergencies.	2.06	2.22	2.14	NI
6	Qualitative materials are provided for workers to ensure safety during the construction.	3.06	2.67	2.87	IM
7	Medical check-up are constantly conducted for workers on regular basis.	2.40	2.36	2.38	NI
8	Adequate ventilation and lightning are provided for workers working in tight and cramped places.	2.74	3.00	2.87	IM

	Workers who adhere to safety policy and regulation are highly rewarded.	1.69	1.76	1.73	NI
10	Workers with known health status are not always allow to embark upon the work that will complicate there health condition	2.29	2.60	2.50	IM
Average Mean		2.54	2.72	2.63	

Keys

N_1 = number of management staff, N_2 = number of workers, X_1 = mean score of management staff, X_2 = mean score of workers, X_t = average mean, IM = Implemented, NI = Not implemented.

The above shows that both the management staff and the workers in the building construction industries of Kwara State agrees to the item 1,2,3,4,5,6,7,8 and 10 because their mean scores are more than 2.50 and above, while disagreeing to the question 9 because their mean scores are less than 2.50 and below

Research Question 3

What are the problems encountered by the construction industries in Kwara State in implementing the (OSH) act.

TABLE 4: mean responses of the management staff and the workers on the problems encountered by the construction industries in Kwara State in implementing the (OSH) act?

N1=35, N2=45

S/NO	ITEMS	\bar{X}_1	\bar{X}_2	\bar{X}_t	REMARK
1	Negligence and attitude of workers in the construction site.	3.80	3.53	3.67	Agreed
2	Workers on construction do not observe their safety rules and regulation.	3.37	3.04	3.21	Agreed
3	No adequate orientation for newly appointed workers in the industries.	3.48	3.20	3.34	Agreed
4	Building equipment, tools, and machinery are not properly maintained and kept in good working condition.	3.60	3.38	3.49	Agreed
5	Industries are not making use of their safety code.	3.48	3.33	3.41	Agreed
6	Inadequate knowledge of safety by the management staff of the building construction firm.	3.54	3.02	3.28	Agreed
7	No adequate communication among workers on the construction site.	3.68	3.20	3.44	Agreed
8	Workers are penalized on safety rules and regulation.	2.60	2.16	2.38	Disagreed
9	No provision for safety materials and protective wears	3.68	3.22	3.45	Agreed
10	Construction firms are not obeying OHS policy.	3.31	3.51	3.41	Agreed
Average Mean		3.45	3.16	3.31	

Keys; N₁= number of management staff. N₂= number of workers, X₁=mean score of management staff, X₂= mean score of workers, X_t= average mean

Table 4: shows that both the respondent agree to items 1,2,3,4,5,6,7,9 and 10 because their mean score are more than 2.50 and above while disagreeing to the question 8 because their mean score are less than 2.50 and below.

Research question 4

What are the possible solutions to make all Kwara State construction companies to follow the (OHS) act?

TABLE 4: mean response of the management staff and the workers on the possible solution to make all Kwara State construction companies to follow the (OSH) act.

N1=35, N2=45

S/NO	ITEMS	\bar{X}_1	\bar{X}_2	\bar{X}_t	REMARK
1	Workers on construction site should follow their safety rules and regulation.	3.66	3.58	3.62	Agreed
2	Building equipment, tools and machinery should be properly maintained and kept in good working condition.	3.31	3.51	3.41	Agreed
3	Proper and adequate orientation should be given to newly employed workers on construction site.	3.77	3.20	3.49	Agreed
4	There should be adequate communication on the construction site.	3.20	3.58	3.39	Agreed
5	Workers should be penalized for disobeying rules and regulation.	3.54	3.38	3.46	Agreed
6	There should be provision for safety materials and	3.31	3.49	3.40	Agreed

protective wears such as hand gloves and safety goggles.

7	Contractors should include safety requirement in their construction document.	3.43	3.16	3.30	Agreed
8	Adequate knowledge of safety policy should be given to the management staff of the building construction industries.	3.09	3.31	3.20	Agreed
9	Construction industries should adhere to O H S policy.	2.97	3.11	3.04	Agreed
10	Non-challant attitude should be controlled while working on the construction site.	3.03	3.13	3.08	Agreed

Average Mean	3.33	3.35	3.34
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Key;

N_1 = number of management staff, N_2 = number of workers, X_1 =meanscore of management staff, X_2 = mean score of workers, X_t =average mean

Table:5 shows that both the respondent agree to the item 1,2,3,4,5,6,7,8,9,10 because their mean score are 2.50 and above.

Hypothesis I: There is no significant difference between the mean responses of management staff and workers on the roles of (OHS) in the construction industry in Kwara state.

Table 5 : the mean score, standard deviation and t-test of management staff and workers on the roles of (OHS) in the construction industries in Kwara State.

Groups	Mean	S.D	D F	ALFA	t-cal	t- critical
Management staff	3.14	0.66	78	-0.06	0.89	1.99
Workers	3.19	0.35	-	-	-	-

table 5: collated t –value (1.99) which does not exceeded the critical value necessary for the accepted of null hypothesis at 0.05 level of significances and 78 degree of freedom,thereforeaccepted since there is no significances difference between the mean responses management staff and workers on the roles of (O H S) safety regulation in the construction industries of Kwara state.

Hypothesis II: There is no significant difference between the responses of the management staff workers on the possible solution to make all Kwara construction industries to follow the (OSH) act.

Table 6; mean score, standard deviation, t- test of management staff and Workers on the possible solution to make all Kwara state construction companies to follow the (O S H) act.

Group	Mean	S D	D F	ALFA	t- cal	t- critical
Management	3.33	0.27	78	-0.19	0.89	1.99
Workers 3.34	0.19	-	-	-	-	-

In table 6: calculated t-value 0.19 does not equal or exceed the critical table value(1.99) necessary for acceptance of null hypothesis at 0.05 level of significance and 78°of freedom.

The hypothesis is therefore accepted hence there is no significant difference between the response of management staff and workers on the possible solution to make all Kwara state construction companies to follow the (O S H) act.

Findings

The following findings resulted from the analysis of the data collected.

Findings revealed on the roles of (OHS) safety regulations in the building construction industries show that:

1. Occupational health and safety organization ensures the safety of lives of workers,passerby, future occupant as well as the environment.
2. Occupational health and safety organization department helps to achieve an accident free environment.
3. Occupational health and safety organization ensures adequate sound health of workers during construction.
4. Occupational health and safety organization protect the public from falling object and amenities.

The finding revealed on how (OSH) act are being implemented in building construction industries shows that:

1. The construction firm should be fully registered with public health provider.
2. Workers with known problems of health status are not allowed to embark upon the work that will complicate their health condition.

3. Qualitative materials are provided for working to ensure safety during construction.
4. Adequate ventilation and light are provided for workers working in light and cramped places

Finding revealed that the problems encountered by the construction industries in kwara state in implementing the (OSH) act show that:

1. No provision for safety materials and protective wears such as hand gloves and safety goggles.
2. Negligence and attitude of workers on the construction site
3. Building equipment, tools and machinery are not properly maintain and kept in good working condition.
4. Inadequate knowledge of safety policy by the management staff in building construction industries.

Finding revealed that the possible solutions to make all kwara sat safetyy materials Kwara state construction companies to follow the (OHS) act show that:

- 1 There should be provision for safety wears such as hand gloves and safety goggles
- 2 Construction industries should adhere to OHS policy
- 3 Contractors should include safety requirement in their construction document.
- 4 Proper and adequate orientation should be given to newly employed workers on construction site.
- 5 Building equipment, tools and machinery should be properly maintained and kept in good working conndition.

Discussion of the finding

The responses contained in table 1 show that accidents may occur on construction site but to a very large extent it can be controlled and reduced to its barest minimal to help reduce their after effects.

According to Essiet, (2005), the major roles of OHS in the construction industries are to ensure the safety of the lives of workers, passerby, future occupants as well as the environment in general.

The table also shows an agreement on occupation health and safety organization should organize safety program and training for its workers. According to Cronin Jeff, (2005), seminar and workshops on safety are education aspect of safety programme which ensures that employees know how to work safely, why is it important to do so and that safety is expected by the management. According to him, safety program (seminar/workshop) typically covers what, where, when and why safety is required. This simply implies that good safety programme should seek to instill in the workers the knowledge of how to ensure safety through training and ways of recognizing potential the table also shows an agreement on the occupation safety and health organization in rewarding the workers who embark on safety prevention measures. Through this rewards, workers who do not follow/embark on safety measures will be encouraged to follow the rules and regulation in order to achieve an accident free environment. **The table also reveals** that the provision of a well equipped first aid box on the construction site will go a long way in preventing death and injuries. According to (Barber and Danovan, 1988). Says that there is little or no first aid treatment that can be given to any accident victim without an adequate equipped first aid box, so it should be noted that an accident victim dies or stay alive.

Table 3 shows that workers are not observing their safety rules and regulation. This is probably due to the fact that workers are not being supervised by the management in ensuring the safety rules and regulation. According to the national occupational safety and health information center (NOSHIC) during a convention held in 2006, adopted the factor acts cap 126, laws of the federation, provides minimum standards of safety rules and Regulation, and explained that: an effective safety strategy include consideration for safety in all ramification. The same table shows the negligence and attitude of workers in the construction site. According to (Essiet, 2005). He stated that whenever accident occurs, it is an indication that somebody, somewhere has failed to do what should be done. He further stated that this could be due to negligence, ignorance or lack of knowledge.

TABLE 4: shows that adherent to the (OSH) policy is the best way to make all construction industries to follow the (OSH) act. According to (Aliu,2005). He says that construction workers who adhere to safety policy are aimed at achieving an accident free environment. The table also shows that adequate knowledge of safety policy should be given to the management staff of the building construction industries, the policy should make it clear that safe work practice are expected of all employees at all level aid at all time because the safety policy serves as the foundation upon which all other promotional effort are built. (Bokini, 2006).

The table also shows that workers should be penalize for not obeying rules and regulation. Through this policy it will serve as an example for the other workers working on site to obey the rules and regulation.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary of the Study

This study is aimed to appraise the implementation of occupation safety and health practice in building construction industries in Kwara State. In doing this, some more literatures related to the topic were reviewed to shed more light on seriousness of the topic. The reviewed literatures briefly on the roles of occupational safety and health regulation in the building construction industries; the duty of the principal contractor, health and safety regulation and other regulating bodies in effort to ensure safety and health of workers and the construction industries where they work.

A brief discussion on the need for health and safety rules in the construction industry was also reviewed. Other areas that were reviewed include occupational safety and health (OSH) act, accidents in construction industries and ways in which they can be controlled in order not to affect the workers on site, passerby, future occupants as well as the environment at large

The questionnaire method was used as the instrument for data collection with a total of 80 respondents comprising of 35 management staff and 45 workers. (A total of 80 questionnaire item were equally distributed under 4 research questions). The responses constituted the data which was analyzed using frequency count, mean, standard deviation and t-test.

Implication of the Study

The implication of this study, following the analysis, interpretation and ensuring discussion, bears on both the management staff and workers of four different building constructions industries in Kwara State.

The study has the following implications on both the management and workers of the industries

1. Lack provision of protective wears such as nose mask and ear helmet to protect workers from the dust and excessive or deafening noise, which could either trigger sickness like asthma in workers who are prone to the diseases
2. Lack of strict adherence to and enforcement of safety rules and regulation. This evident in lack of adequate measures against workers for disobeying safety rules and regulation. Also lack of utilization of the protective wears provided to workers by the management. This act implies a deliberate subjection on oneself to the risk of occupational accident by the workers an act which threatens to avoid all efforts being made towards safety enhancement in the industries

Conclusion

Safety rules and regulations, by occupational safety and health Administration (OSHA) and other industrial and factory regulatory bodies, are aimed towards the reduction of occupational accident which should result in increased safety for workers and also the tools and machine which they make use of. Even though a hundred percent (100%) safety

may not be obtained in a risky and danger-prone environment as the building construction industry is said to be, risk and danger can however be drastically reduced to a considerable minimum given that nobody is perfect, if however, the aspect of human factors is removed, the number of occupational accidents and injuries that will occur in the work place will be at a near-zero level, except for unforeseen circumstances of which we do not hope for but practicing the rules and regulation can subject workers for the effect.

In view of these, the following recommendations are made with the hope and believe that their implementation will help increase the safety in the construction industries.

Recommendations

- 1 All accidents, whether major or minor should be reported for referral, preventive and corrective purposes.
- 2 There should be presence of good health personnel at the building construction site in case of emergency.
- 3 Management should endeavor to penalize workers who disobey safety rules and regulation to the detriment of their own and other workers safety.

Suggestion for Further Study

1. Appraisal of available safety and health department in building construction.
2. Appraisal of maintenance and safety culture of workers in the building construction industries of Kwara State Nigeria.

REFERENCES

- Adetifa G. B. (1994). *Industrial and Organizational Theories in the Nigeria Economy System*. Journal of Industries and Organizations **8**, (3), pp. 5 – 7.
- Akintunde, G. T. (1990). *The Menace of Collapsed Buildings in Lagos State*. Retrieved on 19th March, 2012, from The Punch Magazine, 2005. Lagos, Nigeria. P. 4.
- Aliu, M.M. (2005). “*The Significance of Safety Work Practices to Health*”. John Wiley and Sons Incorporation. UK. pp. 111 – 115.
- Ateavet, A. (1995). *Safety in Nigeria Work Environment*. Symphony Ventures, Ibadan, Nigeria. pp. 121 – 127.
- Atwell, C. (1991). “*The Effects of Health on Work*”. Empathy International Publisher. UK. pp. 211 – 213.
- Bamford, A. (1991). *Work and Health. An Introduction to Occupational Safety and Health*. John Wiley and Sons Incorporation. UK. pp. 116 – 119.
- Banke, A.B. (2001). *Herald newspaper* for December 9, 2001. Ilorin, Nigeria. P. 3.
- Barber, D. H and Danovan, R.E. (1988). *Industrial Safety, A hand book of industrial Engineering and Engineering and Management*. Prentice-Hall of India, New Delhi private limited, India. pp. 222 – 226.
- Bokini, A.C. (2006) *Basic Concepts of Occupational Safety and Health for Industries and Organizational Development*
- Cronin, J. A. (2005). *The roles of Occupational Health and Safety Organization in the Construction Industries in Nigeria*. Journal on the Occupational Health and Safety Organization. pp. 7 – 8.
- Dr. Chandra, P. (1992). *A Training Manual on Safety Health and Welfare Practice on Construction Sites*. Juni Printing Press. Bangladeshi. India. pp. 44 – 45.
- Essiet, P. E. (2005). *Accidents Prevention and Maintenance Culture*. Published by Hockshop Publications, Italy. pp. 12 – 16.
- Fisk, P. E. (2006). *Construction project management second edition*. Published by the Amazon Publications, Canada. pp. 90 – 93.
- Goetsch, D. (2008). *Occupational Safety and Health for Engineers, Technologist and Managers*, Pearson Publishers, London. pp. 110 – 114.
- Hornby, A. S. (2006). Books from the *Oxford University Library*. Oxford University Press. UK.
- John, K. L. (2001). *Fundamentals of Risk Management and Building Construction Industries*. Journal on Risk Management. P. 3.

- Lawrence, C. O. (1999). "*Fall Injuries Prevention in the Workplace*". *NIOSH Workplace Safety and Health Topic*. National Institute for Occupational Safety and Health. Retrieved on 12th, July, 2012.
- Maxwell, A. A. (1999). *Basic Concepts of Occupational Safety and Health for Industries and Organizational Development*. Retrieved on 13th, August, 2012 from
- Mbachu, R.O. (1998). *Safety in Nigeria Work Environment*. Symphony Ventures, Ibadan. Nigeria. P. 190.
- National Institute for Occupational Safety Health, (NIOSH,2005). Retrieved on 18th June 2012 from <http://www.niosh.org>.
- Ogunjimi, S. (2000) *Research Designs Standard Specification*, University of Ibadan, Faculty of Education. UI Press, Ibadan, Nigeria. pp. 44 – 45.
- Oluwatobi, O.A. (2000). *Accidents in Construction Industries*. Retrieved on 19th March, from *Herald newspaper* for 15th, August, 2005. Ilorin, Nigeria. P. 10.
- OSHA Volume II(1926). "*Construction Safety and Health Regulation*". Rights of Codes. <Http://www.culturalconcepts.com>.
- Oyatoye, J.I. (2005). *Significance of Construction Industry in National Development*. Retrieved on 17th, March, 2012, from *Dailytrust newspaper* for 14th, July, 2005. P. 5.
- Webb, A. and Schilling, C. (1998). *Construction Management and Safety precaution*, Wirlde Private Construction Limited. Trevak Publications. Frankfurt, Germany. pp. 66 – 67.
- Wikipedia (2000). *Occupational Health Psychology*. Retrieved on 17th July 2012, from <http://www.rail.org>.

APPENDIX B

QUESTIONNAIRE ON THE APPRAISAL OF THE IMPLEMENTATION OF OCCUPATIONAL SAFETY AND HEALTH PRACTICE IN BUILDING INDUSTRIES IN KWARA STATE OF NIGERIA.

SECTION A

Please complete the following by ticking () or filling the spaces provided personal data

1. Position held: Management staff () Worker ()
2. Sex: Male () Female ()

Please complete the questionnaire by ticking () in response to the following items using the keys provided below;

KEY:

- Strongly Agree (SA)
- Agree (A)
- Disagree (D)
- Strongly Disagree (S)

1. The roles of (OHS) safety regulation in the Construction Industries in Kwara State

S/N	ITEMS	SA	A	D	SD	X
1	Occupational health and safety organization ensure the safety of lives of workers, passerby, future occupant as well as the environment.					
2	Occupational health and safety organization protect the public and workers from falling object and amenities.					
3	Occupational health safety organization organizes safety programs and training for its workers.					
4	Occupational health and safety organization ensures that management and staff make use of safety equipment					

5	Occupational health and safety organization department helps to achieve an accident free environment.					
6	Occupational health and safety organization always takes record of accident that occurs on site.					
7	Occupational safety and health organization has safety policy for attaining sound value of productivity.					
8	Occupational health and safety organization assist companies to organize regular safety meetings.					
9	Occupational health and safety organization rewards workers embarking on safety preventive measures.					
10	Occupational safety and health organization ensures adequate and sound health of workers during construction					

2. How are (OSH) act being implemented in the construction industries of Kwara State.

S/N	ITEMS	SA	A	D	SD	X
1	By ensuring that sick people are not allowed to participate in any work until he/she is fully recovered.					
2	By providing a well -equipped first aid box in the construction site.					
3	By providing an ambulance as a means of transporting workers in case of occupational accident.					
4	The construction firms are fully registered with public health provider.					
5	Health personnel are always available on the construction site incase of emergencies.					
6	Qualitative materials are provided for workers to ensure safety during the construction.					
7	Medical check-up are constantly conducted for workers on regular basis.					
8	Adequate ventilation and lightning are provided for workers working in tight and cramped places.					
9	Workers who adhere to safety policy and regulation are highly rewarded.					
10	Workers with known health status are not always allow to embark upon the work that will complicate there health condition					

3. What are the problems encountered by the construction industries in Kwara State in implementing the (OSH) act.

S/NO	ITEMS	SA	A	D	SD	X
1	Negligence and attitude of workers in the construction site.					

2	Workers on construction do not observe their safety rules and regulation.					
3	No adequate orientation for newly appointed workers in the industries.					
4	Building equipment, tools, and machinery are not properly maintained and kept in good working condition.					
5	Industries are not making use of their safety code.					
6	Inadequate knowledge of safety by the management staff of the building construction firm.					
7	No adequate provision of communication for workers on the construction site.					
8	Workers are penalized on safety rules and regulation.					
9	No provision for safety materials and protective wears such as hand gloves and safety goggles.					
10	Construction firms are not obeying OHS policy.					

4. What are the possible solutions to make all Kwara State construction companies to follow the (OHS) act.

S/NO	ITEMS	SA	A	D	SD	X
1	Workers on construction site should follow their safety rules and regulation.					
2	Building equipment, tools and machinery should be properly maintained and kept in good working condition.					
3	Proper and adequate orientation should be given to newly employed workers on construction site.					
4	There should be adequate communication on the construction site.					
5	Workers should be penalized for disobeying rules and regulation.					
6	There should be provision for safety materials and protective wears such as hand gloves and safety goggles.					
7	Contractors should include safety requirement in their construction document.					
8	Adequate knowledge of safety policy should be given to the management staff of the building construction industries.					
9	Construction industries should adhere to O H S policy.					

10	Non- chalant attitude should be controlled while working on the construction site.					
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APPENDIX C

MANAGEMENT STAFF RESPONSE (N=35)

1.The roles of (OHS) safety regulation in the Construction Industries in Kwara State

S/N	ITEMS	SA	A	D	SD	X
1	Occupational health and safety organization ensure the safety of lives of workers, passerby, future occupant as well as the environment.	19	16	0	0	3.54
2	Occupational health and safety organization protect the public and workers from falling object and amenities.	15	20	0	0	3.43
3	Occupational health safety organization organizes safety programs and training for its workers.	25	10	0	0	3.72
4	Occupational health and safety organization ensures that management and staff make use of safety equipment	29	6	1	0	3.80
5	Occupational health and safety organization department helps to achieve an accident free environment.	30	5	0	0	3.86
6	Occupational health and safety organization always takes record of accident that occurs on site.	5	27	3	0	3.06
7	Occupational safety and health organization has safety policy for attaining sound value of productivity.	5	27	3	0	3.06
8	Occupational health and safety organization assist companies to organize regular safety meetings.	0	3	32	0	2.09
9	Occupational health and safety organization rewards workers embarking on safety preventive measures.	0	8	22	5	2.08
10	Occupational safety and health organization ensures adequate and sound health of workers during construction	0	30	0	5	2.71

2. How are (OSH) act being implemented in the construction industries of Kwara State.

S/N	ITEMS	SA	A	D	SD	X
1	By ensuring that sick people are not allowed to participate in any work until he/she is fully recovered.	20	15	0	0	3.57
2	By providing a well -equipped first aid box in the construction site.	12	22	1	0	3.31
3	By providing an ambulance as a means of transporting workers in case of occupational accident.	0	6	25	4	2.06
4	The construction firms are fully registered with public health provider.	4	2	29	4	2.17
5	Health personnel are always available on the construction site incase of	6	25	6	0	2.06

	emergencies.					
6	Qualitative materials are provided for workers to ensure safety during the construction.	4	29	22	0	3.06
7	Medical check-up are constantly conducted for workers on regular basis.	4	6	5	0	2.40
8	Adequate ventilation and lightning are provided for workers working in tight and cramped places.	4	22	5	4	2.74
9	Workers who adhere to safety policy and regulation are highly rewarded.	4	5	2	24	1.69
10	Workers with known health status are not always allow to embark upon the work that will complicate there health condition	0	10	25	0	2.60

3. What are the problems encountered by the construction industries in Kwara State in implementing the (OSH) act.

S/NO	ITEMS	SA	A	D	SD	X
1	Negligence and attitude of workers in the construction site.	28	7	3	0	3.80
2	Workers on construction do not observe their safety rules and regulation.	13	22	3	5	3.37
3	No adequate orientation for newly appointed workers in the industries.	17	18	5	4	3.48
4	Building equipment, tools, and machinery are not properly maintained and kept in good working condition.	14	21	0	0	3.54
5	Industries are not making use of their safety code.	17	18	6	9	3.68
6	Inadequate knowledge of safety by the management staff of the building construction firm.	19	16	13	0	2.60
7	No adequate provision of communication for workers on the construction site.	24	11	11	0	3.68
8	Workers are penalized on safety rules and regulation.	2	17	16	0	2.60
9	No provision for safety materials and protective wears such as hand gloves and safety goggles.	25	9	1	4	2.69
10	Construction firms are not obeying OHS policy.	16	14	5	0	3.31

4. What are the possible solutions to make all Kwara State construction companies to follow the (OHS) act

S/NO	ITEMS	SA	A	D	SD	X
1	Workers on construction site should follow their safety rules and regulation.	31	4	0	0	3.66
2	Building equipment, tools and machinery should be properly maintained and kept in good working condition.	15	16	4	0	3.31
3	Proper and adequate orientation should be given to newly employed workers on construction site.	31	4	0	0	3.77
4	There should be adequate communication on the construction site.	19	8	4	0	3.20
5	Workers should be penalized for disobeying rules and regulation.	23	8	4	4	3.54
6	There should be provision for safety materials and protective wears such as hand gloves and safety goggles.	15	16	4	0	3.31
7	Contractors should include safety requirement in their construction document.	19	12	4	0	3.43
8	Adequate knowledge of safety policy should be given to the management staff of the building construction industries.	11	20	4	0	3.09
9	Construction industries should adhere to O H S policy.	11	16	4	4	2.97
10	Non- chalant attitude should be controlled while working on the construction site.	8	20	7	0	3.03

APPENDIX D

WORKERS RESPONSE (N=45)

1.The roles of (OHS) safety regulation in the Construction Industries in Kwara State

S/N	ITEMS	SA	A	D	SD	X
1	Occupational health and safety organization ensure the safety of lives of workers, passerby, future occupant as well as the environment.	24	21	0	0	3.47
2	Occupational health and safety organization protect the public and workers from falling object and amenities.	16	28	1	0	3.33
3	Occupational health safety organization organizes safety programs and training for its workers.	21	9	15	0	3.13
4	Occupational health and safety organization ensures that management and staff make use of safety equipment	22	22	1	0	3.47

5	Occupational health and safety organization department helps to achieve an accident free environment.	14	31	0	0	3.31
6	Occupational health and safety organization always takes record of accident that occurs on site.	14	24	7	0	3.16
7	Occupational safety and health organization has safety policy for attaining sound value of productivity.	21	15	9	0	3.27
8	Occupational health and safety organization assist companies to organize regular safety meetings.	1	22	22	0	2.53
9	Occupational health and safety organization rewards workers embarking on safety preventive measures.	23	22	0	0	2.51
10	Occupational safety and health organization ensures adequate and sound health of workers during construction	14	17	9	0	3.00

2. How are (OSH) act being implemented in the construction industries of Kwara State.

S/N	ITEMS	SA	A	D	SD	X
1	By ensuring that sick people are not allowed to participate in any work until he/she is fully recovered.	19	26	0	0	3.42
2	By providing a well -equipped first aid box in the construction site.	7	38	0	0	3.16
3	By providing an ambulance as a means of transporting workers in case of occupational accident.	0	39	6	0	2.87
4	The construction firms are fully registered with public health provider.	10	29	6	0	3.09
5	Health personnel are always available on the construction site incase of emergencies.	4	12	19	10	2.22
6	Qualitative materials are provided for workers to ensure safety during the construction.	4	22	19	0	2.67
7	Medical check-up are constantly conducted for workers on regular basis.	0	16	29	0	2.36
8	Adequate ventilation and lightning are provided for workers working in tight and cramped places.	6	33	6	0	3.00
9	Workers who adhere to safety policy and regulation are highly rewarded.	4	22	19	0	1.76
10	Workers with known health status are not always allow to embark upon the work that will complicate there health condition	4	19	22	0	2.60

3. What are the problems encountered by the construction industries in Kwara State in implementing the (OSH) act.

S/NO	ITEMS	SA	A	D	SD	X
1	Negligence and attitude of workers in the construction site.	21	24	2	9	3.53

2	Workers on construction do not observe their safety rules and regulation.	8	31	6	0	3.04
3	No adequate orientation for newly appointed workers in the industries.	16	22	7	0	3.20
4	Building equipment, tools, and machinery are not properly maintained and kept in good working condition.	24	14	7	0	3.38
5	Industries are not making use of their safety code.	22	16	7	3	3.33
6	Inadequate knowledge of safety by the management staff of the building construction firm.	8	30	7	0	3.02
7	No adequate provision of communication for workers on the construction site.	16	22	7	0	3.20
8	Workers are penalized on safety rules and regulation.	8	6	16	0	2.16
9	No provision for safety materials and protective wears such as hand gloves and safety goggles.	16	23	6	1	3.22
10	Construction firms are not obeying OHS policy.	23	22	4	0	3.51

4. What are the possible solutions to make all Kwara State construction companies to follow the (OHS) act.

S/NO	ITEMS	SA	A	D	SD	X
1	Workers on construction site should follow their safety rules and regulation.	35	4	3	3	358
2	Building equipment, tools and machinery should be properly maintained and kept in good working condition.	32	7	3	3	3.51
3	Proper and adequate orientation should be given to newly employed workers on construction site.	26	5	11	3	3.20
4	There should be adequate communication on the construction site.	35	4	3	3	3.58
5	Workers should be penalized for disobeying rules and regulation.	26	13	3	3	3.38
6	There should be provision for safety materials and protective wears such as hand gloves and safety goggles.	31	8	3	3	3.49
7	Contractors should include safety requirement in their construction document.	22	12	7	4	3.16
8	Adequate knowledge of safety policy should be given to the management staff of the building construction industries.	27	8	7	3	3.31
9	Construction industries should adhere to O H S policy.	27	5	7	7	3.11

10	Non- chalant attitude should be controlled while working on the construction site.	20	15		4	3.13
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APPENDIX E

MEAN SCORE, STANDARD DEVIATION OF EACH GROUP OF RESPONDENTS.

Mean Score, Standard Deviation of management staff for research question 1

S/NO	X	(X-x)	(X-x) ² =X
1	3.54	0.4	0.16
2	3.72	0.29	0.084
3	3.80	0.58	0.3364
4	3.86	0.66	0.436
5	3.06	0.72	0.518
6	3.06	-0.08	0.0064
7	2.07	-0.8	0.0064
8	2.09	-1.05	1.1025
9	2.08	-1.06	1.1236
10	2.71	-0.45	0.1849
A/S	3.14		0.0889

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.4816}}{10} = \sqrt{(0.0889)}$$

$$S.D = 0.094$$

Mean Score, Standard Deviation of management staff for research question II

S/NO	X	(X-x)	(X-x) ² =X
1	3.57	1.03	1.0609
2	3.31	0.77	0.5929
3	2.06	-0.48	0.2304
4	2.17	-0.37	0.1369
5	2.06	-0.48	0.2304
6	3.06	-0.52	0.2704
7	2.40	-0.14	0.0196
8	2.74	-0.25	0.04
9	1.69	-0.85	0.7225
10	2.29	-0.25	0.0625
A/S	2.54		0.4816

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.4816}}{10} = \sqrt{(0.4816)}$$

$$S.D = 0.219$$

Mean Score, Standard Deviation of management staff for research question III

S/N	X	(X-x)	(X-x) ² =X
1	3.80	0.42	0.1764
2	3.37	-0.08	0.0064
3	3.48	0.03	0.0009
4	3.60	0.15	0.0225
5	3.48	0.03	0.0009
6	3.54	0.09	0.081
7	3.68	0.23	0.0529
8	2.60	-0.85	0.7225
9	3.68	0.25	0.0529
10	3.31	-0.14	0.0196
A/S	3.45		1.3189

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{1.3189}}{10} = \sqrt{(0.13189)}$$

$$S.D = 0.363$$

Mean Score, Standard Deviation of management staff for research question IV

S/N	X	(X-x)	(X-x) ² =X
1	3.66	0.33	0.1089
2	3.31	-0.02	0.0004
3	3.77	0.44	0.1936
4	3.20	-0.13	0.0169
5	3.54	0.21	0.0441
6	3.31	-0.02	0.0004
7	3.43	0.34	0.1156
8	3.09	-0.24	0.0576
9	2.97	-0.36	0.1296
10	3.03	-0.3	0.09
A/S	3.33		0.06929

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.06929}}{10} = \sqrt{(0.006929)}$$

$$S.D = 0.083$$

APPENDIX F

Mean Score, Standard Deviation of professional builders for research question 1

S/N	X	(X-x)	(X-x) ² =X
1	3.47	0.35	0.1225
2	3.33	0.21	0.0441
3	3.13	0.01	0.0001
4	3.47	0.35	0.1225
5	3.31	0.19	0.0361
6	3.16	0.04	0.0016
7	3.27	0.05	0.0225
8	2.53	0.67	0.4489
9	2.51	0.61	0.3721
10	3.00	0.12	0.0144
A/M	3.12		0.486

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.486}}{10} = \sqrt{(0.0486)}$$

$$S.D = 0.220$$

Mean Score, Standard Deviation of professional builders for research question 1I

S/N	X	(X-x)	(X-x) ² =X
1	3.42	0.7	0.49
2	3.16	0.44	0.1936
3	2.87	0.15	0.0225
4	3.09	0.37	0.1369
5	2.22	-0.5	0.25
6	2.67	0.05	0.0025
7	2.36	-0.36	0.1296
8	3.00	0.28	0.0784
9	1.76	-0.96	0.9216
10	2.60	-0.12	0.0144
A/S	2.72		0.3917

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.3917}}{10} = \sqrt{(0.03917)}$$

$$S.D = 0.198$$

Mean Score, Standard Deviation of professional builders for research question 1II

S/N	X	(X-x)	(X-x) ² =X
1	3.55	0.39	0.1521
2	3.04	0.12	0.0144
3	3.20	0.04	0.0016
4	3.38	0.22	0.0484

5	3.33	0.17	0.0289
6	3.02	0.14	0.0196
7	3.20	0.04	0.1936
8	2.16	-1.00	1
9	3.22	0.06	0.0036
10	3.51	0.35	0.1225
A/S	3.16		0.4833

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.3917}}{10} = \sqrt{(0.04833)}$$

$$S.D = 0.219$$

Mean Score, Standard Deviation of professional builders for research question 1V

S/N	X	(X-x)	(X-x) ² =X
1	3.58	0.03	0.0009
2	3.51	-0.04	-0.0016
3	3.20	-0.35	-0.1225
4	3.58	0.03	0.0009
5	3.38	0.17	0.0289
6	3.49	0.06	0.0036
7	3.16	0.39	0.1521
8	3.31	0.24	0.0576
9	3.11	0.44	0.1936
10	3.13	0.42	0.1764
A/S	3.55		0.6767

$$S.D = \frac{\sqrt{\sum(X-x)^2}}{N} = \frac{\sqrt{0.6767}}{10} = \sqrt{(0.06767)}$$

$$S.D = 0.260$$

However, the mean were analyzed by using the following formula

$$\bar{X} = \frac{\sum X}{N} \text{ where}$$

\bar{x} = mean

X = Nominal value

\sum = summation

N=Number of item

Therefore, the mean value is equal to

$$\frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

The mean score of each item was completed by multiplying the frequency of each response mean with appropriate nominal value and dividing by sum of the value obtained under each item with of respondent to an item.

$$\text{Mathematically, means score} = \frac{\sum FX}{N}$$

Where \sum =summation

X=Nominal value

F=Frequency of response under each mean

N=Number of respondent to item

The standard deviation of each class of respondent was computed as following;

SD= Standard deviation

\bar{X} =Grand mean of all items

X=mean of each item

F=frequency of score

\sum = summation

N= total number of items

T=Test

T-Test was used to compare the mean of the classes of respondent i.e. management staff and professional builders and also determine the relationship between their responses.

The formula used to calculating T-Test is;

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Where:

T=Test of significance

\bar{X}_1 =Mean score of management staff

\bar{X}_2 = Mean score of professional builder

S_1^2 =Variance of management staff

S_2^2 =Variance of professional builder

N_1 =Number of management staff

N_2 =Number of professional builder

N_2+N_1-2 = Degree of freedom