

**ASSESSMENT OF OCCUPATIONAL SAFETY AND HEALTH PRACTICE IN  
BUILDING CONSTRUCTION SITE IN MINNA, NIGER STATE.**

**BY**

**SHUAIBU, Idris  
2015/3/57416TI**

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

**OCTOBER, 2018**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF  
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AWARD OF BACHELOR OF TECHNOLOGY  
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**OCTOBER, 2018**

## DECLARATION

I, SHUAIBU IDRIS with Matriculation Number 2015/3/357416TI, an undergraduate student of the Department of Industrial and Technology Education certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree of this or any other University.

SHUAIBU, Idris  
2015/3/57416TI

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Signature and Date

## CERTIFICATION

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

Mrs Franca Nwankwookereke  
Project Supervisor

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Signature and Date

Prof. Okwori, R.O.  
Head of Department

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Signature and Date

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External Examiner

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Signature and Date

## **DEDICATION**

I dedicate this project to Almighty Allah (S.W.A) who in His wisdom made this possible.

## ACKNOWLEDGEMENTS

The researcher would first of all thank Almighty Allah whom in his unlimited mercy, protection, sound health and wisdom made this research successful one.

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This work couldn't have been possible without the moral support of the researcher parent, Late Alh mallam idris usman , Haj. Hauwaidris maman"Ya"ya da jikoki (inna), Alh ahmad idris fagge, Haj. Rabi idris fagge, Haj hindatu idris fagge. Special appreciation goes to my siblings especially Alh. Ahmad idris fagge, abdullhi yusif fagge, zaharaddin sani diniya ,ismaila idris fagge ,zara,u idris fagge ,murja idris fagge, and big brother bashir idris fagge . I thank you all for the love and support.

## **ABSTRACT**

The research was designed to study the assessment of the Occupational Safety and Health Practices of Workers in Construction Site in Minna Metropolis, Niger State. The major purpose of this study is to examine the level of which construction workers are aware of occupational safety and health regulation on construction site. The occupational safety and health practices in the building construction industry, Ways of improving awareness of occupational safety to construction among workers in the building construction site. The literature was reviewed in line with the three research questions, and two null hypotheses were formulated to guide the study, in which several sub-headings were discussed as regard to the purpose of the study. The research design use for this study is survey research design in which the total population is 50 respondents, consisting of 20 building construction engineer and 30 construction workers. The target population of the study comprised of building construction engineer and construction workers. The sampled population for the study is 20 building construction engineer and 30 construction workers. Data obtained was analyzed using mean, standard deviation and t-test statistics. The findings of the study revealed that effective knowledge of operation of fire extinguishing Apparatus provided on the site Knowledge of recommended protective clothing and devices such as hand gloves, footwear, goggle, helmets when working , Knowledge of first aid administration, Knowledge of tools and equipment handling and maintenance on construction site. This study recommend that the seminars and workshops on safety should be organized on regular basis for workers, Indoctrinating new employees into proper safety culture in construction site, workers should be trained on how to improve their practical skills, workers should be encourage to the use correct, the personal protection clothing and devices provided for use and encouraging maintenance culture for equipment and machineries in the construction site.

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## **CHAPTER ONE INTRODUCTION**

### **1.0**

#### **1.1 Background of the Study**

Construction industry in developing countries has performed far below the expectation in the areas of health and safety, the situation in Nigeria is no exception. This is due to the fact that, there is no existing functional legislation with regards to occupational health and safety in Nigeria Isaac (2014). Occupational safety and health (OSH) in Nigeria is traced back from the slave trade period in Nigeria. Thus occupational health and safety (OHS) can be seen to concern the physical and mental well-being of the individual at a place of work. this regulations stipulates the general health and safety standard/ guidelines that should be observed by workers and employers in order to prevent accident that may result to illness, injury or loss of life. In more general term the International Labour Organisation (2006) define occupational safety and health regulation as the science of the anticipation, recognition, evaluation and the control of hazards arising in, or from the workplace that could impaired the safety, Health and well-being of workers. This includes their promotion and the maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.

Construction site is marked by rapid execution of projects and the extensive use of machinery and mechanized production processes. However, despite a relatively large pool of construction machines and mechanism as well as high level of prefabrication in building construction and installations, the proportion of manual labour remains approximately 50% (Atev, Bondarik, Zolotnitsky, and Gromov 1995). Construction has many sub-sectors ranging from simple housing to major high-rise buildings as well as bridge, road, tunnel, and even under water construction. Each sector has its distinct hazard and risks determined by the peculiarities of its labour process as indeed every

production process does irrespective of whether a good or service is produced. This emphasized the need for adequate occupational health and safety strategies for workers in their site working environment, because the costs of accidents are immense to the individual, the employer and the society. Therefore, occupational health and safety issues become a primary concern to governments, employers, employees, and project participants alike, as construction activities are likely to adversely affect the health of both construction workers and other persons on construction sites (Danso, 2010).

Occupational safety and health is often considered as an issue supported by everyone. Unfortunately, when it comes to spending money on health and safety, many people do not feel it is vital to the success of projects. Thus, it is not normally a cost code item, and it is subject to cutbacks if budgetary constraints develop. This stems from the failure of many to recognize that an effective Occupational safety and health program can reduce job accidents and directly or indirectly reduce project costs. Identifying the appropriate means of achieving or maintaining acceptable safety performances, particularly on large projects, is the focus of the study herein described. Specifically, this study is conducted to give guidelines for large projects buildings for occupational safety and health that can improve project practices.

Health and safety at construction sites deals with both physical and psychological well-being of workers on construction sites and other persons whose health is likely to be adversely affected by construction activities. It is of primary concern to employers, employees, governments and project participants. Occupational safety and health therefore is an economic as well as humanitarian concern that requires proper management control.

The construction industry has therefore earned the reputation of being a dangerous or highly hazardous industry because of the disproportionately high incidence of accidents and fatalities that occur on construction sites around the world. Internationally, construction workers are two to three times more likely to die on the job than workers in other industries while the risk of serious injury is almost three times higher.

Occupational health and safety in construction is all about preventing people from being injured at work minimizing accidents or becoming ill through appropriate precaution and providing a satisfactory working environment. The need for safety and health measure would arise to functionalize occupational health condition of construction workers in Minna metropolis. This study is focusing on assessing the practise of construction workers base on occupational safety and health in building construction in Minna metropolis in Niger State.

The development of occupational health in developed countries many of which were attained by political and economic emancipation that followed the path already laid down by their industrialized colonial masters (Asogwa, 2007) Certain features in these newly emergent nations have mirrored the situations in their colonial masters. As a result, what one sees is not only a replication of some of the labour laws relating to occupational health and safety but also the pattern of occupational health as it exists in the countries of their former colonial masters with whom they still maintain strong economic ties. The health problems resulting from the industrialization necessitated the services of health personnel to save the life of the employees in industries and other work environments.

The doctors were the earliest health personnel engaged in the services of occupational health (Asogwa, 2007). The services provided were depended on the nature of the

industry. Occupational accidents that take place in construction constitute an economic and social problem of the first magnitude. It is difficult to quantify the labour accidents on a world scale, as many countries provide no information to this regard. Each accident is a tragedy that affects not only the worker but also his or her surroundings, family, friends, co-workers.

The first occupational health services in Nigeria was introduced by the Medical examination Board of Liverpool Infermary in 1789 with the main aim of caring for the health of British slave dealers from Africa to Britain. However, after the abolition of slave trade, the Royal Niger Company of Britain increased its exploration and trading activities in Nigeria. The Company organized its own health services which were later inherited by the United African Company (UAC). The earliest practices that can be regarded as occupational health services in Nigeria were carried out by British Companies like UAC, John Holt. This was followed by establishment of some occupational health services by Nigerian governments in the Railway Corporation and Coalmines. Such services included pre-employment and periodic medical examination, treatment of minor illnesses and accidents. People of Nigeria who lived between world war periods had no knowledge between work conditions and health (Achal, 2000). They accepted work related illnesses and injuries as part of the job and lived shorter lives. Employers attributed workers' poor health and early death to workers' personal habits on the job and their living conditions at home. Little or no attention was paid to prevention of the hazards in work places. Payment was very poor and dismissal is very common because job seekers were many. Workers' reaction to poor conditions at work resulted in killing of coal miners in Enugu (Achal, 2000). That exposed the working conditions of coal miners and the origin of worker's day in Nigeria. These developments

and awareness lead to the establishment of some occupational health services in some Nigerian industries and occupational health legislations Act in Nigeria.

In the last two decades population has witness increment due to urbanisation in Nigeria (Ajanlekoko, 2011). Cities of Nigeria in 1950's was about fifty six (56) with population of 10.6% lived in her metropolis. The population tends to increase in 1963 to 19.1% and also in 1985 to 24.5%. Nigeria population of recent is estimated to be about 160 million people with 30% of the populace reside in urban regions (Achal, 2000) With the discovery of the oil sector in the economy in the early 1970's, immigration from rural to urban within Nigeria played a role to the growth of the nation resulting to huge amount of housing difficulty in urban areas. The National Rolling Plan (NRP) has proved that Nigerian housing in the range of 500,000 and 600,000 units in the cities which requires up to four percent tenancy space fraction. Solving this problem requires appropriate planning of housing development in cities of Nigeria. However, there should be an appropriate measure to conquer hazard facing by the worker of construction of building in Nigeria especially in Minna metropolis Niger. Minna metropolis has experienced more than double of construction of building in the recent time. Practising of occupational safety and health of the construction workers of buildings which contributed to increment of urbanisation in Minna metropolis, there is therefore need for assessment.

Assessment as define by Atsumbe (2013) is the process of gathering data and fashioning them into interpretable form for decision making. It involves collecting and collating of data obtained from an assessment process with a view to making value judgement concerning quality of an object or event. The purpose of assessment in this study is to determine the level which occupational health and safety practice are put into practice in practical terms in building construction site. However the series of accident and fatality

rate in Nigeria industries calls for questioning. Hazard is something with potential to cause accident with varying severity from cut and bruises to serious illness, disability or death. Accidents are by their nature unplanned and uncontrolled events (Okeola, 2009). Accidents that occur during construction of building do not necessarily have to be injurious or damaging events but it can interrupt or disrupt the completion of building project activities. The accident often occurs during working hour of project activities. It results to loss of time of injured employee; cost of work stoppage of other employees from curiosity; sympathy, cost of providing of more assistance; loose of supervisory time from assisting injured employee; rearranging of work crews due to employee loose of life and delay of time of project execution.

## **1.2 Statement of the Problem**

The rate of accidents and decline in health and welfare of industrial worker in Nigeria industry is lamented by Okeye, Ezeokonkwo and Ezeokoli (2016) which according to them, industrial accidents is attributed to lack of effective monitoring and reporting of factories act offences in Nigeria while Umeokafor, Isaac, Jones, and umeadi (2014) implies that the authors view may or may not represent the case of construction site in Minna metropolis in Niger state. To establish the situation to workers in construction site in Minna metropolis in Niger state, Assessment of occupational safety and health practices becomes imperative. Many people have met their ultimate death on construction sites in Nigeria while others have become permanently crippled from injury (Okeola, 2009). Improper safety and health practices may put construction worker in building into high risk construction site in Minna metropolis. Therefore this study is to assess the occupational safety and health practices of workers in construction site in Minna metropolis Niger state.

## **1.3 Purpose of the Study**

The purpose of the study is to assess the occupational safety and health practice in building construction in Minna metropolis in Niger State. Specifically, the study will examine:

- i. The level of which construction workers are aware of occupational safety and health regulation on construction site.
- ii. The occupational safety and health practices in the building construction industry.
- iii. Ways of improving awareness of occupational safety to construction among workers in the building construction site.

#### **1.4 Significance of the Study**

The finding of this study will be of benefit to the construction engineers, construction workers, government, the construction industry, researchers and students.

The findings of this study will be of benefit to the construction workers (labourers, foreman, store keepers) and engineers by giving them an insight in the advantages of implementing and practicing reducing the accident rates on building construction implementing and practicing occupational safety and health practicing on sites thereby making the site a safe and healthy environment to work.

The findings of this study will also be of benefit to the government by helping to establish a basic source of revenue and improvement of the economy, most unemployed youths are put to work on construction site without fear of sudden death or being permanently handicapped from accidents, and also help government to enact laws and policies to govern safety and health practices on sites.



The findings of this study will of benefit the construction industry by providing more physically and mentally fit workers to work on construction sites and reduce the risk associated with working on a construction site and also bring about the advancement of the construction industry.

### **1.5 Scope of the Study**

This study will be delimited to assessment of the occupational safety and health in building construction in sites in Minna metropolis Niger state. Specifically the study will assess the level of which construction workers are aware of occupational safety and health regulation on construction site, the occupational safety and health practices in the building construction industry and Ways of improving awareness of occupational safety to construction among workers in the building construction site in Minna metropolis Niger State.

### **1.6 Research Questions**

The following research questions are tested in the study and they include by:

- i. What is level of which construction workers are aware of occupational safety and health regulation on construction site?
- ii. What are the occupational safety and health practices in the building construction site?
- iii. What are the ways for improving awareness of occupational safety to construction among workers in the building construction sites?

### **1.7 Hypothesis of Study**

The following hypotheses were drawn and tested 0.05 level of significance to guide the study

**HO1:** There will be no significant difference in mean responses of the building construction engineers and construction worker on the level of which construction workers are aware of occupational safety and health regulation on construction site in Minna metropolis Niger State.

**HO2:** There will be no significant difference in mean responses of the building construction engineers and construction worker on the occupational safety and health practices in the building construction industry in Minna metropolis Niger State.

**HO3:** There will be no significant difference in mean responses of the building construction engineers and construction workers on the improving awareness of occupational safety to construction among workers in building construction sites in Minna metropolis Niger State.

## **CHAPTER TWO LITERATURE REVIEW**

### **2.0**

This chapter presents a literature review on this study. The following review is organized under the following;

### **2.1 Concept of Health and Safety Practices on Construction Sites**

It is the responsibility of every employer to provide a safe working environment for all employees in construction industry, free from any hazards and complying with all state and federal laws. Health and safety in the workplace is about preventing work-related injury and disease, and designing an environment that promotes well-being for everyone at work. According to Akinyele (2010), about 80% of productivity problems reside in the work environment of organizations. Business is full of risks and uncertainties and the ability of any organization to respond successfully to the challenges posed by the present dynamic nature of economic situations will largely depend on how well the organization can effectively and efficiently utilize the human resources at its disposal. It is a generally accepted fact that the success of any business organization will largely depend upon the effective and meaningful utilization of its financial and physical resources. The performance of a corporate organization, which determines its survival and growth, depends to a large extent on the productivity of its workforce.

The need to provide a safe work environment for employees has had a long history in human resource management. Spector and Beer (1994) acknowledged that work systems cannot only affect commitment, competence, cost effectiveness and congruence but also have long term consequence for workers' well being; there are some evidences to indicate that work systems designs may have effects on physical health, mental health and longevity of life itself. Conducive work environment ensures the wellbeing of

employees which invariably will enable them exert themselves to their roles with all vigour that may translate to higher productivity (Akinyele, 2007).

The Encarta Dictionary defines environment as the surrounding influence that is, all the external factors influencing the life and activities of people, plants and animals. Environment can also be referred to as the medium in which an organism exists. It is made up of raw materials of life and the conditions, both favourable and unfavourable, that affect the use of those materials. Man has created the artificial environment or alters the natural environment with its attendant consequences on our well-being. The 19th century European Industrial Revolution which led to the development of various technologies is often blamed for the present day problems that afflict the environment (Olagunju and Adepoju, 1994). The automation of technologies has resulted in climatic changes as well as environmental pollution. The concern for environmental problems prompted the creation of Federal Environmental Protection Agency (FEPA) by decree 58 of 1988. Since then, corporate organizations and institution have been championing the course of ensuring safe environment for mankind. In collaboration with FEPA, the Manufacturing Association of Nigeria (MAN) organized a national workshop with the theme: “Ensuring a safe Environment” in six of the geopolitical zone s between July and September, 1993.

The objectives of the workshop as cited in Olagunju and Adedapo (1994) were:

1. To create a forum for the exchange of ideas between Industrialists and FEPA on sustainable environment protection mechanism in developing economy;
2. For participating to keep abreast of the new technologies and approaches to environmental protection measures;

3. To sensitize participants on environmental waste management and National Policy on Environment.

## **2.2 Planning in Building Construction**

According to Akinsola (1993), planning is one of the tools necessary to functionalise building location competitively in society. Planning is needed by the construction industry stakeholders at all stages of construction projects. It is of crucial importance to incorporate the utilisation of surveying firms in the entire process of tendering for the purpose of enhancing quality and safety of the services.

Planning services are the basis for taking off an implementation of any component of building and civil engineering works. These works are found in almost all public and private sector institutions. The sectors include agriculture, forestry, fisheries, defence and security forces, transportation and communication, production, energy, aviation, lands and mapping, statistics, research, exploration and construction. Therefore, the irrigation channels are built in the agricultural sector, hydropower dams in energy, channels dredging and docking wharfs in marine, tunnelling and shafts excavations in mining, high precision installation of machines in industrial and production engineering, just to mention a few, do require high quality surveying services. According to Ambogo (2008), the following factors are required to functionalise construction industry:

- i. Selection of appropriate maps for preliminary study of the construction viability
- ii. Identification of location of the construction site for clearance
- iii. Production of topographical maps for landscaping, architectural and engineering designs
- iv. Planning include horizontal and vertical critical points for erection of structures, calculation of earthwork quantities, and checking for approval the completion

and/or the beginning of a particular task, Example ; filling and cutting levels in route projects.

- v. Fixing and checking the alignment of the buildings and floors of rising structures as per specifications.
- vi. Preparation for built plan of the constructed infrastructures for proper management.
- vii. Monitoring the magnitude and behaviour of deformation displacements of the structures as surveillance mechanism of preventing fast deterioration and disastrous occurrences; Example; collapsing of structures.

### **2.3 Health's Hazards, First Aid and Occupational Health Services**

For works which by their very nature expose workers to hazards arising from the use or presence of chemical, physical or biological agents and climatic conditions, appropriate preventive measures should be taken to avoid any danger to the safety and health of workers. The preventive measures should place emphasis on the need to eliminate or reduce the hazard at the source and in particular should require (ILO, 1992):

- i. The replacement of hazardous substances, equipment or processes with substances, equipment or processes less harmful or hazardous to workers' safety and health;
- ii. The reduction of noise and vibration caused by equipment, machinery, installations and tools;
- iii. control of the release of harmful agents or chemicals into the working environment; training in manual lifting;
- iv. proper working postures when workers are required to work in fixed working positions or when they are carrying out repetitive work;

- v. appropriate protection against climatic conditions likely to jeopardise health;
  - vi. where the foregoing measures are inappropriate: instituting work practices which will eliminate or minimise danger to safety and health;
  - vii. Supplying and requiring the use of personal protective equipment and clothing.
- This means that it is concerned with prevention as it is with health care after an accident .the goal of occupational health and safety is to do everything that can be done to prevent accidents and minimize illness.

#### **2.4 Benefits of Occupational Health Promotion in Construction Sites**

Generally, the introduction of occupational health in industries and other occupations can benefit everybody especially the management, the employers and the employees. The workplace is an ideal setting for promoting the health and well-being of the employees and the employers. This is because a large number of the population spends greater number of their time and energy at work environment each day. In essence, the work place is the second home for any employer. Also Occupational health is meant not only for the worker but is extended to the family members and the entire community directly or indirectly. When the employees are healthy physically, emotionally and psychologically the atmosphere within the occupational setting becomes encouraging, relaxed and inviting. The productivity increases, the company stands better chance of growth. Introduction of occupational health into the companies reduces items of loss and cost reduction due to absenteeism as a result of illness and accidents. Through occupational health, conditions that cause illness and accidents are far more reduced if not prevented. The benefits of occupational health at work settings could be summarised thus (Ezenduka and Olubiyi, 2010):

- i. Improvement of worker's health behaviour due to relaxed atmosphere in the work setting
- ii. Improved worker's health
- iii. Improved workers moral and job-satisfaction
- iv. Improved workers efficiency and productivity
- v. Lower sickness rates, lower accidents and injury rates
- vi. Reduced absenteeism reduced labour turnover
- vii. Reduced health cost to the employee, the management and the employers
- viii. Improved corporate image and industrial relations
- ix. Lower compensation for occupational illnesses and injuries
- x. Improved intra-personal and inter-personal relationship within the companies, the family and in the community

In other words, Occupational health and safety encompasses the social ,mental and physical wellbeing of workers .successful occupational health and safety practice requires the collaboration and participating of both employers and workers in health and safety programmes, and involves the consideration of issue relating to occupational medicine, industrial hygiene, toxicology , education engineering safety, ergonomic, psychology, among others.

## **2.5 Safety and Health in Construction Sites**

According to ILO (1992), the employer should provide for the setting up of or access to an occupational health service consistent with the objectives and principles of the Occupational Health Services Convention and Recommendation. All workers should be subject to health surveillance. Monitoring and control of the working environment and planning of safety and health precautions should be performed as prescribed by national

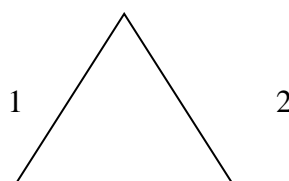


laws and regulations. A multiplicity of health hazards are present in construction work and every effort should be made to promote awareness of this fact and of the need to safeguard health. Whenever new products, equipment and working methods are introduced, special attention should be paid to informing and training workers with respect to the implications for safety and health.

Safety is just a simple word that the most of people take for granted and tend to forget this simple word may cause a harmful to us in daily routine. Most of body defined safety approach from the citation taken by McGhee (1951), American College Dictionary; safety is defined as “Freedom from injury or danger, quality or insuring against hurt, injury, danger of risk”. Meanwhile the New English Dictionary echoes the same negative ideas, “exemption from hurt or injury: freedom from harm and others”. Wikipedia, safety is as being ‘safe’ in term of conditions being protected against any physical, social, spiritual, financial, political, emotional, occupational, psychology, education or other types of consequences of failure, damage, error, accident, harm, or any event which could be considered non-desirable. Safety’s aim is to reduce the accidents among employee at the workplace. Safety triangle shows the relationships between the unsafe work situation and injuries. According to McSween (2003), unsafe work behaviour is according to the result of:

1. Physical environment,
2. the social environment and
3. workers’ experience within environment

safety triangle



Generally, a code of practice is a set of rules according to which people in a particular profession are expected to behave or practise. The ILO's Code of Practice on Health and Safety on Construction site provides guidelines in the implementation of the health and Safety practise on construction sites for all workers including casual workers. The document outline the steps that have to be taken, among others to provide adequate welfare facilities, personal protective equipment appropriate for a job and provision and maintenance of safe working environment to all workers on site. Salient portions of the code relevant to this study are explained and presented below (Danso, 2010)

### **Welfare Facilities**

Under the general provisions of welfare facilities, it writes “at or within reasonable access of every construction site, the following facilities should, depending on the number of workers and the duration of the work, be provided, kept clean and maintained(ILO, 1992).

- i. sanitary and washing facilities or showers;
- ii. facilities for changing and for the storage and drying of clothing;
- iii. accommodation for taking meals and for taking shelter during interruption of work due to adverse weather conditions”

### **Sanitary Facilities**

The Sanitary facilities are defined to include toilet, privies, chemical closet. The understanding from the document is that, the provision, the construction and the installation of these facilities should comply with the requirements of the authorities (laws of the land). Further, no toilet other than a water flush toilet should be installed in any building containing sleeping, eating or other living accommodation, and should be

adequately ventilated and not open directly into occupied rooms. Adequate washing facilities should be provided as near as practicable to toilet facilities.

### **Washing Facilities**

The rules governing washing facilities (e.g. shower-bath) are that, the number and the standard of construction and maintenance of washing facilities should comply with the requirements of the authorities. Washing facilities should not be used for any other purpose and where workers are likely to be exposed to skin contamination by poisonous, infectious or irritating substances, or oil, grease or dust, there should be a sufficient number of appropriate washing facilities or shower-baths supplied with hot and cold water.

### **Drinking Water**

The code requires that, contractors must provide enough water for all workers and the treatment of the drinking water will be as follows. All drinking water should be from a source approved by the authorities. Where such water is not available, the authorities should ensure that the necessary steps are taken to make any water to be used for drinking fit for human consumption. Drinking water for should be stored in closed containers only, from which the water should be dispensed through taps or cocks. If drinking water has to be transported to the worksite, the transport arrangements should be approved by the authorities. The transport tanks, storage tanks and dispensing container should be designed, used, cleaned and disinfected at suitable intervals in a manner approved by the authorities. Water that is unfit to drink should be conspicuously indicated by notices prohibiting workers from drinking it. A supply of drinking water should never be connected to a supply of water that is unfit to drink.

### **Facilities for Food and Drink**

Contractors are required in appropriate cases, depending on the number of workers, the duration of the work and its location, adequate facilities for obtaining or preparing food and drink at or near a construction site should be provided, if not otherwise available. The facilities should be hygienic and located in hygienic environment.

### **Living Accommodation**

The code of practice requires that suitable living accommodation should be made available for all the workers at construction sites which are remote from their homes. Adequate transportation between the site and their homes should be provided, and where this is not possible other suitable living accommodation should be provided. Men and women workers should be provided with separate sanitary, washing and sleeping facilities.

### **2.6 Personal Protective Equipment and Protective Clothing**

Under this provision, employers were to note that suitable personal protective equipment and protective clothing, having regard to the type of work and risks, should be provided and maintained by them without cost to the workers. Also under this provision, personal protective equipment and protective clothing should comply with standards set by the authorities, taking into account as far as possible the ergonomic principles. Further, employers should provide the workers with the appropriate training to enable them to use the individual protective equipment, and should require and ensure its proper use (ILO, 1992).

### **2.7 Types of Protective Equipment and Protective Clothing**

Employers are required by law to provide all workers including casual workers with the following personal protective equipment and protective clothing on site.

- i. safety helmets or hard hats to protect the head from injury due to falling or flying objects, or due to striking against objects or structures;
- ii. clear or coloured goggles, a screen, a face shield or other suitable device where workers are likely to be exposed to eye or face injury from airborne dust or

flying particles, dangerous substances, harmful heat, light or other radiation, and in particular during welding, flame cutting, rock drilling, concrete mixing or other hazardous work;

- iii. protective gloves or gauntlets, appropriate barrier creams and suitable protective clothing to protect hands or the whole body as required, against heat radiation or while handling hot, hazardous or other substances which might cause injury to the skin;
- iv. footwear of an appropriate type when employed at places where there is the likelihood of exposure to adverse weather conditions, or of injury from falling or crushing objects, hot or hazardous substances, sharp-edged tools or nails and slippery or ice- covered surfaces;
- v. respiratory protective equipment, suitable for a particular environment, where workers can be protected against airborne dust, fumes, vapours or gases by ventilation or other means;
- vi. a suitable airline or self-contained breathing apparatus when employed in places likely to have an oxygen deficiency;
- vii. respirators, overalls, head coverings, gloves, tight-fitting boiler suits, impermeable footwear and aprons appropriate to the risks of radioactive contamination in areas where unsealed radioactive sources are prepared or used; and
- viii. waterproof clothing and head coverings when working in adverse weather conditions

From the above section, it can be concluded that the legal framework (i.e. the ILO's Code of Practice on Health and Safety on Construction site) for construction workers in general is adequate to protect them. This legal framework covers both permanent and

casual workers. It does not prohibit or exclude any section of workers from its protection (Danso, 2010).

The national body guiding the construction worker should provide:

- i. The nature and length of training or retraining required for various categories of workers employed in construction projects;
- ii. The employer has the duty to set up appropriate training schemes or arrange to train or retrain various categories of workers.
- iii. Wherever required by national laws and regulations, only drivers, operators or attendants holding a certificate of proficiency or license should be employed to operate particular vehicles, lifting appliances, boilers or other equipment.

### **Benefits of compliance and practicing of Health and safety practices**

A safe working environment for all employees and construction site owners themselves that will guarantee relatively accident free working place should be the top most priority of all construction site owners. Considering the working environment of the construction site, accident is inevitable. In the construction site, there is no area of the working condition that accident cannot occur. Safety is therefore a duty of every participating party in the construction site. It requires absolute commitment from the management in order to set the culture in which safety will be the number one priority of all workers. Safety in the construction site should be of prime importance of everybody. A safe working construction site is the site that both workers and managers need to recognize that safety depend on both employee's and employers reaction to potential hazards. That is to say employer and employee both have their responsibility to play to provide a safe working environment (Satyendra 2015). Unfortunately, safety and health provision seems to always be relegated in the operation of factories in

Nigeria. Workers and employers lack adequate knowledge of the regulation responsibility provision in the safety and health in the operation of construction site in Nigeria (Usman, 2015).

The OSH regulation requires construction site owners to provide adequately hygienic working environment and good welfare to workers that will guarantee their safety at work. The responsibility of factory owners include conducting evaluate on workplace health and safety conditions as they relate to workers' exposure to chemical, physical, and biological hazards during at work, provision of occupational health and safety monitoring equipment used to assess workers adherence to safety regulations, provision of airborne dust/aerosol mass concentrations measuring devices. Others employees responsibilities towards safety include (i) complying with the prescribed safety norms and procedures, (ii) taking all steps to eliminate or control hazards or risks to themselves and to others arising during the construction site, including the proper care and use of personal protective equipment, facilities and equipment placed at their disposal for this purpose, (iii) report forthwith to their immediate supervisor or safety representative any unusual conditions at the workplace or affecting installations and equipment which, they believe, presents a hazard or risk to their safety or health or that of other people arising from the construction site, and which they cannot deal with effectively themselves, (iv) cooperate with the management and other employees to permit compliance with the duties and responsibilities placed on the management and employees (Satyendra, 2015). On the other hand, the responsibility of the workers majorly is to comply with occupational health and safety regulations in order to minimize workers rate of exposure to hazards at construction site.

OSH is therefore an economic as well as humanitarian concern that requires proper management control .The construction industry has therefore earned the reputation of

being a dangerous or highly hazardous site because of the disproportionately high incidence of accidents and fatalities that occur on construction sites around the world. Internationally, construction workers are two to three times more likely to die on the job than workers in other construction site while the risk of serious injury is almost three times higher. Hence, therefore are stipulated Rules & Safety regulations

1. Use of Personal Protective Equipment and Safety Devices.
2. General Housekeeping, Stacking of Materials.
3. Road Safety inside Project. Access, Egress & Workstation Safety.
4. Safe Use of Construction Power Supply &
5. Maintenance of Installations.
6. Work Permits Systems.
7. Use, Maintenance & Inspection of Construction Plant & Machinery.
8. Scaffold & Formwork Norms.
9. Use of Material & Personnel Handling Devices.
10. Fire Prevention, Protection & Preparedness.

The essential reason for OHS is to prevent accidents, injuries, and diseases among workers of various occupations by managing occupational hazards and risk. Hazard is the inherent potential to cause harm, damage or injury to a worker's health whereas risk is the likelihood that a worker will experience advert health effect or harmed or property will be damaged if exposed to hazard (International Labour Organisation, 2006). The relationship between hazard and risk depends on the nature of the exposure, including



the length of intensity and time of exposure and the control measures taken. The basic process of hazard and risk reduction is the core principle governing OHS.

Before recommending strategies for improving OHS in Nigeria, International Labour Organisation, (2006) itemized procedures for hazard identification and risk management/assessment to identifying causes of harm to workers and property and the environment particularly the working environment with a view to developing appropriate preventive and protective measures for the implementation of OHS. The generic risk management and assessment method consist of five risk management process as itemized in the following five steps; identify the hazards possible causes of hazards, identify who might be harmed and ways which he might be harmed, identify and decide on the measures for controlling safety and health risk, record who is responsible for implementing which control measure, and the time frame and record the findings, monitor and review the risk assessment, and update when necessary. Establishment of these measures forms the basis that set the pace for the success of the OHS preventive principles. The Preventive principles involve combating risk at the source, adapting work to the individual especially in the design of workplaces and replacing the dangerous by the non-dangerous or the less dangerous. Prevention should take precedence over protective and are based on collective, rather than individual preventive measures.

Furthermore, in addition to the above Okoye, Ezeokonkwo and Ezeokoli (2016) observed that with high level of increased construction activities in Nigeria, if nothing is done to improve OHS accidents, injuries, and fatalities rate is inevitable. He opined that proper enforcement of OHS is a key mechanism for improving adequate implementation of OHS. In this regard he suggested some of the following as way which OHS can be improved:

- a) Recruitment and training of enforcement officers: If more professionals are employed and trained as OSH inspectors and enforcers, implementation of OHS regulations will be boosted since more enforcement personnel will be available.
- b) OHS regulations should be enforced at local level: Local government authorities should be involved in the enforcement of OSH regulations as achieved in other developed countries of the world as UK does. A department made up of professional and trained OHS inspectors should be set up to carry out inspection in construction sites at local level.
- c) Provision of adequate information system: adequate information is vital in ensuring optimum OHS. Through information technology via the use of mobile phones, unsafe practices and accidents can be reported.
- d) OHS regulations should be updated and revised as required to avoid having outdated regulations and with plenty limitations.

## **2.8 Summary of related review literature**

In summary, the review on theoretical framework showed that in the building construction site each developmental stage of maturation is characterized by acquisition of a higher level structure of consciousness than the stage preceding it, although earlier levels of consciousness remain; that is, adults can display all three levels of consciousness. The registrative, interpretative, and integrative levels of consciousness govern the process of learning from experience through the selection and definition of that experience. Theoretical models for economic cost of occupational injuries and disease were also reviewed.

The review of conceptual framework revealed that adequate legal framework or codes of practice exist for protection of workers in the building construction sites. Strict adherence to the awareness and implementation of existing codes of

practice however appears difficult. It appears as if a lot of workers in the building construction sites work for survival without paying attention to the occupational health hazard and safety practices surround their working places. The workers are also ignorant of the responsibilities and obligation of the construction site in terms of health care provision of workers as well the safety training needs of the workers.

## **CHAPTER THREE RESEARCH METHODOLOGY**

### **3.1 Research Design**

The research design adopted for this study will be descriptive survey design. The descriptive survey design is a research which uses to gather the information largely on what people do and think (warwick 2012). Survey design method was considered

suitable since the study will seek information from a sample that was drawn from a population using questionnaire to get opinions from respondents.

### **3.2 Area of the Study**

The study will be carried out in Minna metropolis in Niger state among construction industries, within Chanchaga and Bosso local government.

### **3.3 Population of the Study**

The population for this study will comprise or consist of 50 respondents comprising of 20 building construction engineers and 30 construction workers within the construction industry in Minna metropolis Niger state.

### **3.4 Instruments for Data Collection**

The instrument that will be used to collect data for this study is questionnaire titled, Assessment Occupational Safety and Health Regulation practices in Building construction sites. The questionnaire items will be administered to 20 construction engineers and 30 construction workers on site

The questionnaire is made up two main section; A and B. Section A seek information on the respondents personal data while section B solicits various information on occupational safety and health regulations in construction site and sub-divided into four parts (parts I, II, III and IV).

Part I solicit information on level of availability of safety and health facilities in construction site in Niger State and consist of 9 structure item questions. Part II solicits information on constructor's awareness of safety and health regulations in construction site in Niger State. This part contains 8 structured items. Part III which solicit information on employer's awareness of safety and health regulations in construction

site in Niger State contain 9 structured question items. Part IV seeks to ascertain the challenges of militating against the implementation of occupational safety and health in Niger State. This part consists of 10 questions items. On the other hand, part V which proffer strategies for enhancing the implementation of occupational safety and health in Niger State contain 12 structured item questions.

### **3.5 Validation of the Instrument**

To ensure that the instrument adequately covers the scope of the objectives of the study, the instrument will be subjected to content validation. Copies of the drafted questionnaire will be given to three experts from the department of Industrial and Technology Education, Federal University of Technology, Minna. These experts from Building technology option were asked to scrutinize each item of the questionnaire for clarity of statements. Appropriateness and adequacy of all the items of the questionnaire. The suggestions and corrections made by these experts were reflected on the final copy of the instrument.

### **3.6 Administration of the Instrument**

The researcher will administer the instruments to the respondents through personal contact with the respondents and with the help of two research assistants. The research assistants will be given training on how to administer and collect the questionnaire. The purpose of training the research assistants is to acquaint them with the research procedures. The training covers mainly explanation on the purpose of the research and its expectations and how to administer the questionnaire.

### **3.7 Method of Data Analysis**

The data will be collected and analysed using mean and standard deviation while t- test will be used to test the hypothesis at 0.05 level of significance.

SA	Strongly agree	=	Very Highly Aware (VHA)	=	4pts
A	Agree	=	Highly Aware (HA)	=	3pts
D	Disagree	=	Aware (A)	=	2pts
SD	Strongly Disagree	=	Unaware (UA)	=	1pt

### **3.8 Decision Rule**

To determine the acceptable level. The mean cut – off of 2.50 will be used as deciding point between agreed and disagreed. Responses with a mean of 2.50 and above were considered agreed. While responses below 2.50 were considered disagree. Also an inferential statistics t- test was used to test the hypothesis of 0.05 level of significance to compare the mean responses of the two groups. A t- critical value of  $\pm 1.960$  will be selected based on the 148 degree of freedom at 0.05 level of significant. Therefore, any item with t- calculated value greater than or equal to t- critical was regarded as rejected or significant.

## **CHAPTER FOUR RESULT AND DISCUSSION**

### **4.0**

#### **4.1 Research Question One**

What is the level of construction workers awareness of occupational safety and health regulation on building construction?

**Table 4.1: Mean responses of building construction engineer and construction workers on the level of construction workers awareness of occupational safety and health regulation on building construction.**

**N<sub>1</sub> = 20, N<sub>2</sub> = 30**

S/N	ITEMS	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	X <sub>T</sub>	REMARKS
1	effective knowledge of operation of fire extinguishing Apparatus provided on the site .	3.06	0.43	3.10	0.43	3.08	Agree
2	Knowledge of recommended protective clothing and devices such as hand gloves, footwear, goggle, helmets when working .	3.10	0.32	3.15	0.25	3.13	Agree
3	Knowledge of first aid administration .	2.96	0.31	3.00	0.34	2.98	Agree
4	Knowledge of tools and equipment handling and maintenance on construction site.	2.99	0.28	3.05	0.37	3.02	Agree
5	Knowledge of proper collection and disposal of construction waste.	2.67	0.23	2.85	0.41	2.76	Agree
6	Knowledge of scaffolding and ladder setting up and utilization .	2.55	0.26	2.60	0.16	2.58	Agree
7	Knowledge of fall protection .	1.99	0.22	2.02	0.31	2.01	Disagree
8	Knowledge of hazard communication .	3.04	0.29	3.10	0.13	3.07	Agree

**Key**

- N<sub>1</sub> = Number of building construction engineer
- SD<sub>1</sub> = Standard deviation of building construction engineer
- N<sub>2</sub> = Number of construction workers
- SD<sub>2</sub> = Standard deviation of construction workers
- X<sub>1</sub> = Mean of building construction engineer
- X<sub>2</sub> = Mean of construction workers
- X<sub>t</sub> = average mean of building construction engineer and construction workers

The result presented in table 4.1 shows that the mean value of all the items agree with the level of construction workers awareness of occupational safety and health regulation on building construction, except the mean value of items 7 disagree with the level of construction workers awareness of occupational safety and health regulation on building construction.

**4.2 Research Question Two**

What are the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state?

**Table 4.2: Mean responses of building construction engineer and construction workers on the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state.**

$N_1 = 20, N_2 = 30$

S/N	ITEMS	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	$X_T$	REMARKS
1	Inspection of soil profile type before erecting structures on site.	3.67	0.77	3.80	0.56	3.74	Agree
2	Keeping accidents record properly.	3.09	0.73	3.15	0.72	3.12	Agree
3	Following and obeying building construction codes and regulation	2.97	0.71	2.90	0.79	2.94	Agree
4	Utilization of skilled labour on site for safe construction.	3.05	0.66	2.95	0.78	3.00	Agree
5	Proper effective communication between the engineers and workers in case of any emergency.	2.70	0.65	2.55	0.82	2.63	Agree
6	Utilization of the right machines and tools for the right job.	2.78	0.58	2.75	0.58	2.76	Agree
7	Usage of hard harts.	2.88	0.61	2.75	0.74	2.82	Agree
8	Safety boots.	3.15	0.72	3.05	0.99	3.10	Agree
9	Safety gloves.	2.90	0.74	2.95	0.75	2.93	Agree
10	Safety respiratory protection.	3.03	0.65	3.10	0.72	3.07	Agree

**Key**

- $N_1$  = Number of building construction engineer
- SD<sub>1</sub> = Standard deviation of building construction engineer
- $N_2$  = Number of construction workers
- SD<sub>2</sub> = Standard deviation of construction workers
- $X_1$  = Mean of building construction engineer
- $X_2$  = Mean of construction workers
- $X_t$  = average mean of building construction engineer and construction workers

The result presented in table 4.2 shows that the mean value of all the items agreed with the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state

**4.3 Research Question Three**

What are the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state?



**Table 4.3: Mean responses of building construction engineer and construction workers on the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state.**

$N_1 = 20, N_2 = 30$

S/N	ITEMS	$\bar{X}_1$	SD <sub>1</sub>	$\bar{X}_2$	SD <sub>2</sub>	X <sub>T</sub>	REMARKS
1	All accidents, irrespective of the degree should be reported and documented	3.67	0.77	3.80	0.56	3.74	Agree
2	Seminars and workshops on safety should be organized on regular basis	3.09	0.73	3.15	0.72	3.12	Agree
3	Indoctrinating new employees into proper safety culture	2.97	0.71	2.90	0.79	2.94	Agree
4	Workers should be trained on how to improve their practical skills	3.05	0.66	2.95	0.78	3.00	Agree
5	Workers should be encourage to the use correct, the personal protection clothing and devices provided for use.	2.70	0.65	2.55	0.82	2.63	Agree
6	Encouraging maintenance culture for equipment and machineries	2.78	0.58	2.75	0.58	2.76	Agree
7	Training of workers in potential hazard identification	2.88	0.61	2.75	0.74	2.82	Agree
8	Provision of protective equipment such as hand gloves, helmet, goggles etc.	3.15	0.72	3.05	0.99	3.10	Agree
9	Supervisors enforce strict compliance with safety rules and regulation	2.90	0.74	2.95	0.75	2.93	Agree
10	Ensure that safety signs and cautions are always mounted at strategic position	3.03	0.65	3.10	0.72	3.07	Agree

**Key**

$N_1$  = Number of building construction engineer

SD<sub>1</sub> = Standard deviation of building construction engineer

$N_2$  = Number of construction workers

SD<sub>2</sub> = Standard deviation of construction workers

$X_1$  = Mean of building construction engineer

$X_2$  = Mean of construction workers

$X_t$  = average mean of building construction engineer and construction workers

The result presented in table 4.3 shows that the mean value of all the items agreed with

the strategies to motivate student choice in woodwork trade in vocational and technical colleges in Minna, Niger state.

**4.4 hypotheses One**

HO<sub>1</sub>: There will be no significant difference between the Mean responses of building construction engineer and construction workers on the level of construction workers awareness of occupational safety and health regulation on building construction.

**Table 4.3: T-test of the Mean responses of building construction engineer and construction workers on the level of construction workers awareness of occupational safety and health regulation on building construction.**

S/N	RESPONDENTS	N	$\bar{x}$	SD	d.f	t-cal	t-critical
1	Building construction engineer	20	2.86	0.68	48	0.19	2.01
2	construction workers	30	2.93	0.75			

In table 4.3, the t-calculated (0.19) does not exceed the t-critical of (2.01) necessary for acceptance of null hypotheses at 0.05 level for 48 degree of freedom, the hypotheses were accepted, hence there was no significant difference between the mean rating of building construction engineer and construction workers on the level of construction workers awareness of occupational safety and health regulation on building construction.

#### 4.5 hypotheses Two

HO<sub>2</sub>: There will be no significant difference between the Mean responses of building construction engineer and construction workers on the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state.

**Table 4.5: T-test of the Mean responses of building construction engineer and construction workers on the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state.**

S/N	RESPONDENTS	N	$\bar{x}$	SD	d.f	t-cal	t-critical
1	Building construction engineer	20	2.99	0.68	48	0.15	2.10
2	construction workers	30	2.88	0.75			

In table 4.5, the t-calculated (0.15) does not exceed the t-critical of (2.01) necessary for acceptance of null hypotheses at 0.05 level for 48 degree of freedom, the hypotheses were accepted, hence there was no significant difference between the mean rating of building construction engineer and construction workers on the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state .

#### 4.6 hypotheses Three

HO<sub>3</sub>: There will be no significant difference between the Mean responses of building construction engineer and construction workers on the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state.

**Table 4.6: T-test of the Mean responses of building construction engineer and construction workers on the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state.**

S/N	RESPONDENTS	N	$\bar{x}$	SD	d.f	t-cal	t-critical
1	Building construction engineer	20	2.99	0.68	48	0.18	2.01
2	construction workers	30	2.88	0.75			

In table 4.6, the t-calculated (0.18) does not exceed the t-critical of (2.01) necessary for acceptance of null hypotheses at 0.05 level for 48 degree of freedom, the hypotheses were accepted, hence there was no significant difference between the mean rating of building construction engineer and construction workers on the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state.

#### 4.7 Findings of the Study

Based on the data collected and analyzed, the following findings were made according to the research questions raised for the study.

Findings related to the level of construction workers awareness of occupational safety and health regulation on building construction. Both respondents agreed with the following.

1. effective knowledge of operation of fire extinguishing Apparatus provided on the site
2. Knowledge of recommended protective clothing and devices such as hand gloves, footwear, goggle, helmets when working.
3. Knowledge of first aid administration.
4. Knowledge of tools and equipment handling and maintenance on construction site

Findings related to the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state. Both respondents agreed with the following.

1. Inspection of soil profile type before erecting structures on site.
2. Keeping accidents record properly
3. Following and obeying building construction codes and regulation
4. Utilization of skilled labour on site for safe construction
5. Proper effective communication between the engineers and workers in case of any emergency

Findings related to the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state. Both respondents agreed with the following.

1. All accidents, irrespective of the degree should be reported and documented
2. Seminars and workshops on safety should be organized on regular basis
3. Indoctrinating new employees into proper safety culture
4. Workers should be trained on how to improve their practical skills
5. Workers should be encourage to the use correct, the personal protection clothing and devices provided for use
6. Encouraging maintenance culture for equipment and machineries

#### **4.6 Discussion of the Findings**

Assessment of the occupational safety and health practices of workers in construction site in Minna metropolis, Niger state.

Table 4.1 presents the finding on the level of construction workers awareness of occupational safety and health regulation on building construction. According to Akinsola (1993), planning is one of the tools necessary to functionalise building location competitively in society. Planning is needed by the construction industry stakeholders at all stages of construction projects. It is of crucial importance to incorporate the utilisation of surveying firms in the entire process of tendering for the purpose of enhancing quality and safety of the services.

Planning services are the basis for taking off an implementation of any component of building and civil engineering works. These works are found in almost all public and private sector institutions. The sectors include agriculture, forestry, fisheries, defence and security forces, transportation and communication, production, energy, aviation, lands and mapping, statistics, research, exploration and construction. Therefore, the irrigation channels are built in the agricultural sector, hydropower dams in energy, channels dredging and docking wharfs in marine, tunnelling and shafts excavations in

mining, high precision installation of machines in industrial and production engineering, just to mention a few, do require high quality surveying services.

Furthermore, Momoh (2012) and Mohammed (2001) observed that government lack of commitment to Woodwork trade and inadequate funding has weakened Woodwork trade in Nigeria. A direct consequence of this is that while the number of Woodwork trade in situation is dwindling that of general education is growing in bounds (Momoh,2012).

Table 4.2 is the data of findings on the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state. The findings gotten from this, shows, Inspection of soil profile type before erecting structures on site, Keeping accidents record properly, Following and obeying building construction codes and regulation, Utilization of skilled labour on site for safe construction and Proper effective communication between the engineers and workers in case of any emergency.

According to ILO (1992), the employer should provide for the setting up of or access to an occupational health service consistent with the objectives and principles of the Occupational Health Services Convention and Recommendation. All workers should be subject to health surveillance. Monitoring and control of the working environment and planning of safety and health precautions should be performed as prescribed by national laws and regulations. A multiplicity of health hazards are present in construction work and every effort should be made to promote awareness of this fact and of the need to safeguard health. Whenever new products, equipment and working methods are introduced, special attention should be paid to informing and training workers with respect to the implications for safety and health.

Safety is just a simple word that the most of people take for granted and tend to forget this simple word may cause a harmful to us in daily routine. Most of body defined

safety approach from the citation taken by McGhee (1951), American College Dictionary; safety is defined as “Freedom from injury or danger, quality or insuring against hurt, injury, danger of risk”. Meanwhile the New English Dictionary echoes the same negative ideas, “exemption from hurt or injury: freedom from harm and others”. Wikipedia, safety is as being ‘safe’ in term of conditions being protected against any physical, social, spiritual, financial, political, emotional, occupational, psychology, education or other types of consequences of failure, damage, error, accident, harm, or any event which could be considered non-desirable. Safety’s aim is to reduce the accidents among employee at the workplace. Safety triangle shows the relationships between the unsafe work situation and injuries.

## **CHAPTER FIVE**

### **5.0 SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1 Summary of the Study**

The study is a survey research designed on the assessment of the occupational safety and health practices of workers in construction site in Minna metropolis, Niger state.

The specific objectives of the study were to examine:

1. The level of which construction workers are aware of occupational safety and health regulation on construction site.
2. The occupational safety and health practices in the building construction industry.
3. Ways of improving awareness of occupational safety to construction among workers in the building construction site.

In order to achieve these objectives three research questions were formulated to achieve the study. The population used was fifty (50). The instrument used for gathering data was a questionnaire. The data collected were analyzed using mean standard deviation and t-test statistics at 0.05 level of significance.

Occupational health in industries and other occupations can benefit everybody especially the management, the employers and the employees. The workplace is an ideal setting for promoting the health and well-being of the employees and the employers. This is because a large number of the population spends greater number of their time and energy at work environment each day. In essence, the work place is the second home for any employer. Also Occupational health is meant not only for the worker but is extended to the family members and the entire community directly or indirectly. When the employees are healthy physically, emotionally and psychologically the atmosphere within the occupational setting becomes encouraging, relaxed and inviting. The productivity increases, the company stands better chance of growth. Introduction of occupational health into the companies reduces items of loss and cost reduction due to absenteeism as a result of illness and accidents. Through occupational health, conditions that cause illness and accidents are far more reduced if not prevented

## **5.2 Conclusion**

Occupational safety and health is often considered as an issue supported by everyone. Unfortunately, when it comes to spending money on health and safety, many people do not feel it is vital to the success of projects. Thus, it is not normally a cost code item, and it is subject to cutbacks if budgetary constraints develop. This stems from the failure of many to recognize that an effective Occupational safety and health program can reduce job accidents and directly or indirectly reduce project costs. Identifying the appropriate means of achieving or maintaining acceptable safety performances,



particularly on large projects, is the focus of the study herein described. Specifically, this study is conducted to give guidelines for large projects buildings for occupational safety and health that can improve project practices.

Health and safety at construction sites deals with both physical and psychological well-being of workers on construction sites and other persons whose health is likely to be adversely affected by construction activities. It is of primary concern to employers, employees, governments and project participants. Occupational safety and health therefore is an economic as well as humanitarian concern that requires proper management control.

### **5.3 Contribution to Knowledge**

The study contribute to provide information to the construction workers (labourers, foreman, store keepers) and engineers by giving them an insight in the advantages of implementing and practicing reducing the accident rates on building construction implementing and practicing occupational safety and health practicing on sites thereby making the site a safe and healthy environment to work.

The study contribute to provide information to the government by helping to establish a basic source of revenue and improvement of the economy, most un- employed youths are put to work on construction site without fear of sudden death or being permanently handicapped from accidents, and also help government to enact laws and policies to govern safety and health practices on sites.

### **5.4 Recommendations**

1. Seminars and workshops on safety should be organized on regular basis for workers
2. Indoctrinating new employees into proper safety culture in construction site

3. Workers should be trained on how to improve their practical skills
4. Workers should be encourage to the use correct, the personal protection clothing and devices provided for use
5. Encouraging maintenance culture for equipment and machineries in the construction site

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**APPENDIX**

**FEDERAL UNIVERSITY OF TECHNOLOGY MINNA**

**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION**

**QUESTIONNAIRE ON ;**

**ASSESSMENT OF THE OCCUPATIONAL SAFETY AND HEALTH PRACTICES  
OF WORKERS IN CONSTRUCTION SITE IN MINNA METROPOLIS, NIGER  
STATE**

**PART I**

**PERSONAL DATA INSTRUCTION;**

- 1. Please kindly answer the questionnaire sincerely;*
- 2. Your option would be treated with high confidentiality.*

*This part is divided into four sections [I-IV],*

*Please [tick] the appropriate answers from the option given in section [I-IV].*

SA	Strongly agree 4pts	=	Very Highly Aware (VHA)	=
A	Agree 3pts	=	Highly Aware (HA)	=
D	Disagree 2pts	=	Aware (A)	=
SD	Strongly Disagree 1pt	=	Unaware (UA)	=

**PERSONAL DATA**

*Employee*

*Employer*

**PART II**

**SECTION A**

**What is the level of construction workers awareness of occupational safety and health regulation on building construction?**

S/N	Level of workers awareness of safety and health regulations	VHE	HE	LE	VLE
1	effective knowledge of operation of fire extinguishing Apparatus provided on the site .				
2	Knowledge of recommended protective clothing and devices such as hand gloves, footwear, goggle, helmets when working .				

3	Knowledge of first aid administration .				
4	Knowledge of tools and equipment handling and maintenance on construction site.				
5	Knowledge of proper collection and disposal of construction waste.				
6	Knowledge of scaffolding and ladder setting up and utilization .				
7	Knowledge of fall protection .				
8	Knowledge of hazard communication .				

## SECTION B

What are the occupational and health practices of building construction workers in construction site in Minna metropolis Niger state ?

S/N	ITEMS	VHE	HE	LE	VLE
1	Inspection of soil profile type before erecting structures on site.				
2	Keeping accidents record properly.				
3	Following and obeying building construction codes and regulation				
4	Utilization of skilled labour on site for safe construction.				
5	Proper effective communication between the engineers and workers in case of any emergency.				
6	Utilization of the right machines and tools for the right job.				
7	Usage of hard harts.				
8	Safety of boots.				
9	Safety of gloves.				
10	Safety of respiratory protection.				

## SECTION C

What are the ways for improving awareness of occupational safety to construction workers in the building construction site in Minna metropolis Niger state?

S/N	ITEMS	VHE	HE	LE	VLE
1	All accidents, irrespective of the degree should be reported and documented				
2	Seminars and workshops on safety should be organized on regular basis				
3	Indoctrinating new employees into proper safety culture				
4	Workers should be trained on how to improve their practical skills				
5	Workers should be encourage to the use correct, the personal protection clothing and devices provided for use.				
6	Encouraging maintenance culture for equipment and machineries				
7	Training of workers in potential hazard identification				
8	Provision of protective equipment such as hand gloves, helmet, goggles etc.				
9	Supervisors enforce strict compliance with safety rules and regulation				
10	Ensure that safety signs and cautions are always mounted at strategic position				
11	Legislation of appropriate laws on safety at work by government				