

Health and Safety Behaviour of Construction Masons in Lagos State

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Abstract:-

➤ Purpose-

The research project is an assessment of the health and safety behavior of construction masons in Lagos state. Health and safety is a safety risk mitigating mechanism that must be implemented to ensure a hazard-free construction work experience and increase productivity in the construction industry. The construction masons play an important and arguably the largest role in the construction industry which makes them more accident-prone than the other workforce in the industry. This necessitates that the poor health and safety behavior of construction masons be studied. This study aims to ascertain the behavioral patterns of construction masons towards health and safety so that there would be an awareness of the essence of health and safety practices on the construction site.

➤ Research Methodology-

With regards to this, 113 construction professionals who work along with the masons in Lagos state were selected and issued well-structured questionnaires to get responses on the health and safety behavior of construction masons in Lagos state along with focus-group-based interviews of construction masons. The derived data was analyzed through the use of descriptive and analytical scientific methods (frequencies, mean, and percentages).

➤ Findings-

The research study revealed that many of the construction professionals coupled with the construction workers (masons) are aware of the necessity of the implementation of the health and safety concepts in the construction industry. Also, many of the respondents agreed that dust and fumes from cement and falling objects are the commonest hazards faced by construction masons. In addition to that, it was observed that lack of adoption of safety measures by construction organizations, ignorance about the importance of safety, and overconfidence on the part of the workers are the major factors contributing to poor safety behaviors among workers.

➤ Limitation-

Some important limitations encountered in the course of this research are averseness of organizations to disclose relevant safety information and lack of adequate records of safety issues in Nigeria.

➤ Recommendation-

In line with this, the research recommends that there should be adequate delivery of safety equipment to construction sites, adequate safety supervision, adequate site safety meetings, and functional health and safety laws in the state.

➤ Social Implications/Value-

This research has been able to contribute to the body of knowledge by evaluating the level of safety awareness of construction professionals, identifying the common hazards among construction professionals, unearthing the factors discouraging good safety behavior among masons, and identifying the factors that can promote a good safety behavior among masons to develop a more effective construction industry.

Keywords:- Accidents, Awareness, Behavior, Construction Masons, Construction Site, Hazard And Health And Safety.

I. INTRODUCTION

A. Background of Study

The construction industry is a highly labour-intensive industry with a high hazard rate. The construction industry has been considered to be the most hazardous industry which has led to the death and fatal injuries of many workers. Therefore, there is a need for an effective mitigating mechanism to curtail the hazard rate. Health and safety according to Occupational Health and Safety Agency is defined as the set of policies, regulations and procedures that are set to protect individuals' and workers' well-being, security, and welfare in various environments, most importantly, their workplace. (Zafar, 2023)

The construction industry has been observed to be a major catalyst for social and economic development around the world. When compared with other labor-intensive industries, the construction industry has historically experienced a high rate of fatalities and disabilities for an industry of its size. It produces 30% of all fatal industrial accidents across the European union, despite the low employed 10% of the working population. The unpleasant

situation is worse in developing countries, particularly Nigeria where there are no reliable sources of data for such accident records at appropriate ministries nor keep proper records on accidents and the insincere data been released on the part of the contractors during research works coupled with their averseness to release site accidents during research works. (Mba & Hildah, 2014)

Globally, the issue of safety risks in the construction industry has been rampant. In the UK, roughly one-third of all occupational deaths have been prevalent in the construction industry. The fatality rate in the Norwegian construction industry was significantly higher than that in other sectors. According to data released by the Ministry of Housing and Urban-Rural Development, China, at the beginning of 2020, from January to December 2019, a total of 773 work safety accidents resulting in 904 deaths occurred in China.

In Africa, it was observed in 2014, that 20% of all fatal injuries were in construction, which is the greatest percentage across all of the industry sectors included. The main causes of fatalities observed within the construction sector were as follows: falls accounted for 59% of all fatalities, being struck by a falling or moving object accounted for 3% of all fatalities, a major collapse or over the cause of 5% of construction fatalities, being hit by a moving vehicle made up 10% of all fatal accidents and electricity was the cause of 5% fatalities. (Kiganda, 2021)

It has been observed that unsafe work practices, absence of safety equipment, poor health and safety culture and non-implementation of the Learning From Incidents concept are major contributors to construction site accidents.

The concept of Health and Safety management is to ensure that the risks to the well-being of the workers are appropriately identified, assessed, and mitigated or eliminated. Health and Safety management provides a template for this concept. When appropriately applied, it is an effective mechanism against construction site death and injuries.

Masons are essential bodies in the construction of buildings. They contribute a large part in the number of laborers in the construction industry. A person who lays or constructs masonry is called a mason. They help in the arrangement and setting-up of bricks, plastering works and rendering works in the industry.

Masonry work is an important phase in the construction of buildings. It contributes a large percentage of the construction labour force. Therefore, there is the need to ensure productivity in this section of work by maintaining a good health and safety culture.

It has been observed that there is the negligence and averseness to the concept of construction health and safety on the part of the mason workers which has led to many fatal accidents and deaths.

Therefore, being a large contributor of the workforce in the industry, efforts should be made to ensure their adequate site safety. It has been observed that the construction industry workers have a poor construction health and safety culture which is caused by many factors. A good safety culture among construction workers would reduce injuries, absenteeism, reduced agitation of workers, a positive effect on the overall project costs, and improvement in productivity. (Ikechukwu, 2020)

B. Statement of Research Problem

It has been observed that the safety and health culture in developing countries is lower than that of the developed countries. This implies that the workers in the construction industry are extremely susceptible to death and fatal injuries in the developing countries. Therefore, masons, being the largest workforce in the construction industry are the most susceptible to construction site hazard.

It has been observed globally that the masons are more prone to injuries and illnesses than any other section of work in the construction industry. This is because of many factors which include the large workforce size, prevalent work at heights, poor training, inadequate safety awareness, ignorance on the parts of the workers and stubbornness.

For maximum productivity in the industry, there is the need for an adequate and effective safety culture. It has been recorded in many cases in the Nigerian construction industry that the masons are always reluctant to use their safety equipment and the employers are often negligent in motivating them to use the equipment to enhance safety.

Therefore, the factors discouraging a good safety culture among masons have to be analyzed along with the measures that can be taken to promote a good safety culture in the construction industry.

C. Research Question

In order to create a well-organized approach to the subject matter, some questions need to be designed to which answers would be provided in the course of the research so as to arrive at reasonable points that would assist the research work. Thus, this research work is expected to answer the following questions to justify those above:

- How exposed or aware are the masons as regards construction health and safety?
- What common hazards and injuries are masons exposed to?
- What are the factors discouraging good safety behavior among masons?
- What are the factors that can promote good safety behavior among the masons?

D. Aims and Objectives

The aim of this research is to ascertain the common hazards that construction masons are susceptible to and the behavioral pattern of masons towards health and safety so that there would be an awareness of the importance of construction health and safety on construction sites

➤ *The Specific Objectives of this Research Work Are:*

- Establish the level of safety awareness among masons on the construction site
- Identify the common hazards and injuries among masons in the construction industry.
- Determine the factors discouraging good safety behavior among masons.
- Identify the factors that can promote healthy and safe behavior among masons.

E. Justification of Research

The construction industry has been identified to be the most hazardous and dangerous industry. It has led to more death and fatal injuries than any other industry due to the large number of workers participating in the construction projects and the high rate of risky activities. An adequately mitigated safety risk can ensure a low rate of injury and a reduced incident of site deaths.

The masonry aspect of construction contributes a large percentage of the activities in most construction projects. Thus, an effectively supervised masonry work aspect contributes well to the success of a project. The masonry work aspects involve a large number of workers ranging from labourers to artisans.

This implies that there is a high safety risk in the masonry aspect of work because the higher the number of workers, the higher the safety risk on every project.

It has been observed that the masonry work is a high safety-risk aspect of work due to many factors ranging from overconfidence on the part of the workers, inadequate provision of safety equipment by the organization, and laxity towards risk on the part of the workers.

Therefore, since the masonry work aspect contributes a great deal to the success of a construction project and to the overall productivity in the construction industry, there is the need to adequately observe the major causes of safety risks in the construction industry, the behavioural pattern of masons towards construction health and safety and the recommendations for the reduction of hazards in the construction industry.

II. LITERATURE REVIEW

A. Theoretical Framework of Health and Safety

➤ *The Concept of Health and Safety*

Occupational safety and health is generally defined as the science of the anticipation, evaluation and elimination of the hazards that arise in or from the work place that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment. (Alli, 2008)

A joint ILO/WHO committee on Occupational Health implied that the main focus of occupational health is on the different objectives: (i) the maintenance and enhancement of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertaking. (Coppee, 2012)

It is expedient to effectively mitigate occupational hazards for many reasons that include employees' well-being, societal goodwill, building a good organizational reputation and for maximum productivity through a highly motivated workforce. Hazards are potential and likely occurrences that can cause dangers or risks. The risks range from minor injuries to death. The concept of health and safety management helps to identify these risks and to provide a highly effective mechanism to eliminate or reduce the risky occurrence.

According to a joint report by the World Health Organization and International Labour Organization in 2016, it was recorded that there were about 1.9 million global deaths due to work-related diseases and injuries. The overall number of reported workplace injuries in 2022 was 21,766 with a 1.9% decline compared to 22,186 in 2021. In 2022, most of the fatal injuries came from the traditionally higher risk industries- construction, manufacturing, transportation and storage. Construction was the top contributor followed by manufacturing. (Manpower,2022)

With this high hazard rates, there is the need to effectively control them to ensure that there would be a reduction in the rate of accidents, illnesses and sudden deaths. Health and safety came into place to provide solution to every occupational injury, accident and death. It provides policies, regulations and guidelines that would provide a safe and healthy work environment in order to enhance organizational productivity.

It has been observed that the workers in developing countries are more susceptible to accidents than their counterparts in the advanced countries due to the level of safety awareness, implementation of safety policies, adequate training, active labour laws and availability of adequate health and safety equipment. Thus, effective implementation of health and safety concepts require high commitment, adequate education, safety policies and requisite resources. Health and safety covers a lot of health areas which include work place safety, environmental health, occupational health, public health and product safety. When people think about workplace safety, they quickly think solely about physical hazards like slips, falls and trips.

However, many other work place hazards like chemical, ergonomic, biological and psychological hazards can threaten employees' safety and health. (Zafar S., 2023)

➤ *History of Health and Safety*

Health and safety had its inception in 1833 when factory inspectorates were installed. It was the foremost real movement towards ensuring safety for people in the workplace, and it helped to reduce the number of injuries workers were prone to at that time. It was created to reduce the injuries rate among the children and young persons in the textile industry. The injuries rate and sicknesses among workers was increased then due to overwork and an outcry against this unpleasant situation birthed the factory inspectorates. After a decade, mines inspectorate were formed to help provide a better and safer platform for the mining industry due to the previous poor working conditions within mines. Also, the quarry inspectorate formed in 1895, carried out much of the same jobs as with the miners.

Furthermore, Otto Von Bismark, Duke of Lauenburg, the first chancellor of the German Empire, introduced the first social insurance legislation in 1883 and the first worker's compensation law in 1884. (Abrams, 2001)

In 1956, the same regulations were introduced via the Safety, Health and Welfare Provisions Act 1956. This was a policy enacted to ensure a generalized safety in the workplace. Not limited to factories but to all professions. It made a difference in the way farms and agriculture operated, which helped to reduce the rate of accidents and the spread of diseases. All these laid the foundation for the Health and Safety Act 1974 which was introduced and acted as a key part for the future for those who were within work and needed adequate safety. (BCF GROUP, 2020)

The industrial revolution in the late 18th century saw Britain transition from artisanal, manual forms of production into a manufacturing powerhouse where high heavy tools were used and mechanization of processes began. This gave a rise to the use of child labour by organizations who sought for increased labour and competitive advantage. Child labour offered a cost effective solution but a lack of industrial experience resulted in fatal accidents when working with foreign machines and chemicals. With a rapid rise in other work-related accidents, including mining fatalities, immense pressure was placed on government to take actions against companies who did not protect their workers effectively.

The Health and Safety Work Act 1974 brought the incorporation of health and safety into every industry- from manufacturing to health care. It enhanced the awareness of health and safety among employers and employees. It brought safety and health into the conscience of the workplace and placed a responsibility and accountability of health and safety on employers. It also empowered employees to understand their own responsibilities. It brought about training in every workplace which is a legal requirement.

Health and safety has changed intensely since 1980. There has been a continuous improvement on the health and safety regulations which has enhanced safety at work and a drastic reduction in the worker-accident ratio.

B. Health and Safety in the Nigerian Construction Industry

The Nigerian construction industry has experienced a massive growth rate over the years. This is due to the high rate of infrastructural development, increased demand for housing because of the booming population and the increased demand for building structures among business outfits. The industry has contributed massively to job creation and the economical development of the nation. However, there has been a high rate of fatal injuries and death of construction workers due to increased building collapse and the poor construction health and safety culture and its implementation.

The contractors in the construction industry who are meant to play a good role in its implementation are often averse to health and safety concepts. They are frequently opposed to the idea of hiring an HSE-Health and Safety Executive, training their employees as regards safety and providing the necessary safety equipment. This is a result of their perceiving the HSE policy implementation as a costly and time-consuming process. In addition, the contractors often find it hard to release sensitive information and give accurate reports about site accidents and deaths because of their desire to portray a good reputation for their company.

On the other hand, the construction workers are often negligent, not well-educated on safety matters and are most often averse to the use of their safety equipment. (Nweke & Nouban, 2020)

Contrary to what we have in the developed countries, the Nigerian construction industry activities are not well regulated by regulatory bodies as regards health and safety. This makes the construction companies to be negligent and unwilling to implement health and safety policies because no controlling body will hold them responsible. An example of an effective regulatory body is OSHA- Occupational Health and Safety Administration that is active in the United States, a developed country. This massively reduces the rate of construction site accidents and deaths.

Furthermore, most Nigerian construction companies coupled with other developing countries do not take the issue of safety seriously during construction but considers it as a burden. It has been observed that the provision of good and sound policies, health and safety plans can be a yardstick of having rapid advancement of employees, their progress, and a maintained workplace that is considered to be free from real construction hazard that can cause injury to employees. Also, non-provision of safety equipment was also one of the problems encountered by the workers. The non-availability of employed safety officers on construction sites is another problem majorly facing the safety of workers in the construction industry. The presence of a safety officer in a construction company will no doubt help in curtailing the hazard rates and injury risks among construction workers. (Isah, 2019)

In many developed countries, there is usually a provision for safety insurance for construction workers. The workers are insured against injuries that could hamper their wellbeing and exhaust their financial resources. This is

contrary to what we have in a developing country like Nigeria where there is the absence of safety insurance provision to cover the workers in case of an injury. Absence of on-the job safety training for workers is another factor contributing to the poor safety situation in the country. Safety training provisions for construction workers will no doubt help in adequately reducing the hazard rates and minimizing the number of injuries on construction sites. In addition, it has been observed that many construction firms make no provision for health and safety plan when embarking on a fresh project. Implementing a health and safety plan will no doubt massively help in foreseeing the safety risks and mitigating them.

An appropriate health and safety plan approved by the government which would no doubt improve construction health and safety is not prevalently practiced in Nigeria. (Isah, 2019) The top nine principal factors that influence safety performance in the Nigerian construction sites are relationship between supervisors and employees on site, geographical location (environmental factors: natural and working environment), working procedure, ear defenders not worn (while working under noisy equipment), talk by management on safety, tidy site, safety communication, operatives job experience (Duration in construction) and ladders used without being tied secured.

Safety of workers on construction site is very important because of the mere reason that occurrence on sites result in consequences like delay in completion time, after overall cost of executing project, taint the reputation of the construction of the construction firm, demotivate the co-workers and in some cases lead to the death of the workers. (Koko, Tsedo, Abdullahi, Yakubu, & Aguwa, 2018)

Injury occurrence on construction sites are rarely reported by the workers, because they have the perception that nothing can be done about it even when they report it. According to ILO, 2.78 million workers die on a yearly basis with an estimated loss of GDP of 2.99 trillion dollars yearly as a result of work-related diseases alone. The top nine principal factors influencing safety performance in the Nigerian construction industry are relationship between supervisors and employees on site, geographical location (environmental factors: natural and working environment, working procedure, ear defenders not worn (while working under noisy equipment), talk by management on safety, tidy site, safety communication, operatives job experience (Duration in construction) and ladders used without being tied secured. (Koko, Tsedo, Abdullahi, Yakubu, & Aguwa, 2018).

C. Level of Safety Awareness Among Construction Workers in the Nigerian

➤ *Construction Industry*

It is highly evident that one of the factors that can effectively mitigate health and safety risks on construction sites is an adequate safety education and awareness among workers.

The Nigerian construction industry consists of workers that are highly averse to the use of safety equipment and the construction organizations are also guilty of not adequately educating the workers on the importance of health and safety. It has been observed that unsafe act and unsafe working conditions are the major causes of accidents on construction sites. This is majorly caused by the unawareness of the workers about the concepts of health and safety. Most regulating bodies in developing countries like Nigeria do not often visit construction sites to regulate the health and safety on site which makes the workers indifferent and negligent to the pertinence of health and safety. (Isah, 2019).

Many construction workers mix concrete manually without the use of hand gloves, climb to high parts of the building without the use of safety belts, work in areas susceptible to falling objects without the use of helmet, are exposed to extreme site noise without the use of earmuffs, work on welding activities without eye protection. This shows their level of ignorance about personal protective equipment and the essence of a good health and safety culture.

Most organizations are also culpable of the low or no level of awareness as regards health and safety among their workers because of their inability to train them. The major factors that affect or dictate the level of awareness among construction workers in Nigeria are dysfunctional health and safety law, non-utilization of health and safety management systems in organizations, non-provision for the mandatory use of PPE within the construction industry by the Factory Act of 1990, weak workplace health and safety.

Management, the safety of workers not a priority to those who manage construction companies, the absence of health and safety policies in organizations, the absence of safety representatives in the organization, and the lack of resources.

By its nature, a health and safety management system through its provisions and demands, not only reflects the effect of poor health and safety standards on organizational performance but also encourages greater awareness of health and safety issues and responsibilities. (Diugwu, Dorothy Li Baba, & Egila, 2012)

A non-functioning health and safety law will inevitably prevent the enforcement of safety standards on construction sites which would make the construction workers unaware of the essence of health and safety. In Nigeria, the health and safety laws are not as functioning compared to that in the developed countries. This makes workers in the Nigerian construction industry significantly unaware of the need for health and safety on construction sites

A strong workplace health and safety management by organizations can significantly reduce the rate of construction site accidents and deaths. However, in most cases, in the Nigerian construction industry, there is a weak workplace health and safety management system which reduces the level of health and safety awareness among workers and

consequently, increases the hazard rates on the construction sites.

Construction activities in developing countries like Nigeria is prevalently labour intensive unlike around the globe. Injury occurrences on construction sites are rarely reported by the workers, this is because of the perception of the workers that nothing would be done to address the problems even when reported. According to a report by the Independent Commission Against Corruption, Hong Kong, it was revealed that corruption within the construction industry has led to substandard works which affect quality of buildings and also threatens public health. It has been observed that prequalification of contractors is largely practiced in the Nigerian construction industry. However, little or no consideration is given to safety in these processes. (Koko, Tsedo, Abdullahi, Yakubu, & Aguwa, 2018)

It is believed that a substantial level of consideration given to safety during prequalification would enhance the practice of health and safety in the Nigerian construction industry.

In most cases on the construction sites, most Nigerian construction firms are against the idea of employing a health and safety representative which would eliminate the importance of an expert responsible for health and safety in the organization and consequently, reduce the level of safety awareness among workers.

D. The Common Hazards Among Construction Workers in The Construction Industry

There are diverse hazards common on construction sites. These hazards in some cases are not severe and, in many cases, can be severe. The construction industry is a major stakeholder in the economic and social development of a nation and must be well maximized to realize its full potential. This can be done by ensuring the workers who are the major contributors to the growth of this industry are well catered for through the elimination of construction hazards.

Some of the common hazards that are prevalent in the construction industry fall from height, falling objects, premature collapse of structures being demolished, dust and fumes, presence of asbestos dusts, noise and vibrations from heavy equipment, electrocution, fires and explosions from the use of flammable and explosive substances.

Work at heights is a common source of hazards on the construction site. Accidents mostly occur through this process when the specifications for work at heights are not followed and safety precautions are not taken by workers. It has been observed that work at heights accounts for more deaths and injuries more than any other workplace activity each year. It includes working on a scaffold, or from a mobile elevated platform, working near an excavation area or cellar opening if a person could fall into it and be injured, painting or pasting and erecting bill posters at height, working using a ladder without safety precautions at great heights. All these can cause falls at heights. Also, falling objects is one of the major causes of construction accidents on the construction

site. It involves construction debris falling from great heights. These falling materials can be extremely dangerous and can cause serious injuries and death. They can be caused by non-provision of suitable safety nets to catch falling debris, non-utilization of chutes or hoists to transport waste materials to ground level, throwing of wastes from great heights without caution, non-utilization of hard hats or safety helmets by workers or site visitors and non-utilization of warning signs around areas susceptible to falling objects. In addition, demolition works creates a lot of hazards on the construction sites which include falling debris, premature collapse of the structure being demolished, dust and fumes, the sitting up of drainage systems by dust, the problems arising from spit fuel oils, manual handling, noise and vibration from heavy plant and equipment, electric shock, fires and explosions from the use of flammable and explosive substances, smoke from burning waste timber, pneumatic drills and power tools, the existence of services such as electricity, gas and water, collision with heavy plant and plant and vehicles overturning.

Vehicles and traffic routes are also contributors to the on-site construction hazards. On-site construction hazards by the use of vehicles are mostly as a result of overturning on slopes and at the edges of excavations, poorly maintained braking systems, and driver error due to lack of training and/or experience. Fire is another hazard that is common on construction sites. Non-provision of fire points, and assembly points, no extinguisher provision, no site evacuation plan, non-contact with the emergency services, non-accident reporting and investigation and rescue from excavations and confined spaces.

Many excavations collapse without warnings resulting in serious injury or death on the construction site. The specific hazards associated with excavations are collapse of the sides, materials falling on workers in the excavation, falls of people and/or vehicles, workers being struck by plant, specialist equipment such as pneumatic drills, hazardous substances particularly near the site of current or former industrial processes, influx of ground or surface water and entrapment in silt or mud, proximity of stored materials, waste materials or plant, and proximity of adjacent buildings or structures and their stability.

Other hazards common on the construction sites are noise pollution from vibration, dust (including asbestos), cement, solvents, and paints and cleaners. Extreme exposure to asbestos dust would lead to respiratory diseases such as asbestosis and cancer which is a serious ailment and it has been observed to kill more people more than any work-related cause and it has been found to have no known cure. High level of noise can lead to hearing loss and exposure to materials such as cement and silica can cause skin problems such as dermatitis. Noise hazards majorly come from machinery used for demolition, excavation and piling and from compressors, concrete mixers and other operations such as hammering and riveting.

Also, electrical accidents such as electrical shock, equipment, contact with overhead powerlines and buried cables. Trips being the commonest hazard on the construction site is caused by ineffective management of access routes which include stairwell, corridors and footpaths. (HSE, 2006) burns and electrocution can be caused by manhandling of electrical equipment, use of unsafe

III. RESEARCH METHODS

The research methodology to be used is based on work done in the previous chapter, which is the literature review. The literature review reveals the details, concepts, and significance of health and safety in the construction industry as well as the poor safety culture among construction workers as well as other stakeholders in the Nigerian construction industry. This generated information would be evaluated and would be useful as a template for the research methodology.

A. Research Design

The research design is an identified design concept used for conducting scientific research. The research design can come in various forms. It can be in the form of experiments, survey, case study, history, research problem, semi-experimental and archival analysis. However, this study employed a mixed research design adopting both quantitative and qualitative methods with convenient selection of its respondents for its research design.

B. Study Population

The study population is the subset of the target population available for study. I.e. The total number of people considered for the study. Also, it implies identifying the characteristics that members of a group have in common. The target population to be used for this study comprises the construction masons in some selected areas of Lagos State, Nigeria.

C. Study Area

This research work was carried out in Lagos state. Lagos remains the nation's economic and commercial capital. It is the most populous state in Nigeria, the 4th most populous city in the world and the most populous urban centre in Africa. It is located in the South Western part of Nigeria, bound in the north and east by Ogun state and in the west by the Republic of Benin.

Lagos being a highly developed area with continuous infrastructural development provides a good platform for this research work. This is because the majority of the massive construction projects are in Lagos and the best construction companies and technologies are in Lagos.

This would provide us a large pool of construction workers that would be able to give details about their respective safety culture. Furthermore, Lagos state is the best place for construction activities in the country and a place where adequate construction standards are been observed. This would provide sufficient numbers of enlightened construction workers for the research work.

D. Sampling Technique

The sampling technique adopted in this research work is the purposive sampling technique. It involves selecting the sample population that is most useful for the purpose of this research. Purposive selection of respondents was done to get a good number of construction workers that work in a hazard-prone environment. In assuring the respondents about the purpose of the research, well detailed explanations were given to them about the research.

➤ Sample Size

The sample size of a survey study is vital in making adequate inferences about a population from a sample. Sampling involves the selection of a subset of individuals from the population to analyze the features of the whole population. A sample of 113 respondents comprising of all construction workers and relevant construction site stakeholders were considered. Focus- group based interviews were also carried out among construction masons. 11 interviews were carried out. A total of 5 construction sites/companies that carry out building construction, and other types of construction works were selected.

E. Sources of Data

This research incorporates the use of both primary and secondary sources of data to provide an in-depth knowledge of the area of study. It also provides a good platform for the researcher to have a broad information in terms of the available data from past and present research works in the area of interest.

➤ Primary Data

The primary data for this research work was collected from the respondents through the use of questionnaires and interviews directed to the construction masons. The questionnaires were directed to the contractors, construction workers and other construction site stakeholders in Lagos State. Construction companies who are currently engaged on on-going construction projects and are capable of adopting construction health and safety policy are used as the source of data for this research work. The contractors would give insightful views about their personal dispositions about health and safety as well as the behaviors of their construction workers towards health and safety. Other construction site stakeholders who are highly relevant in this study area include site engineers, builders, architects, and site health and safety executives. The aforementioned professionals can give insightful information that would enhance the quality of this research work. Most importantly, the construction workers/laborers who are the main subjects of this research work would give first-hand quality information about this study area through the interviews.

➤ Secondary Data

The secondary data used for this research work was the literature review as indicated in the previous chapter. The literature review gave an in-depth, quality, and broad knowledge of this study area which has provided relevant data for the research work. Relevant concepts like construction site hazards, safety procedures, global hazard rates and Nigerian construction companies' disposition

towards health and safety were observed so as to provide a quality research. Also, it gives a wide range of sources of information on past identical researches carried out in the same area. In addition, a source where the ideas, methods, results, and experiences of researchers can be easily accessed. The secondary sources used for this research work include journals, books, conference proceedings, blog reports, students' thesis and other secondary data sources.

F. Data Collection Instrument

This study incorporates the use of a well-structured questionnaire as a data collection instrument to collect data and well-structured interview questions. The questionnaire questions were produced to be well opened enough so that the respondents would give in-depth information. The questions in the questionnaire were structured to provide information

on the common site hazards, construction workers' behavior towards safety and health, construction companies' disposition to the concept of health and safety and adequate recommendations to improve construction health and safety in Nigeria.

IV. RESULTS AND DISCUSSION

A. Presentation of Results

➤ *Demographic Attributes of the Respondents*

The first part of the questionnaire elicited personal information of the respondents. The information elicited include gender, academic qualification, profession, years of experience, etc.

Table 1: Data Presentation On Demographic CharacteristicsOf Participants (Profession)

Professional Parameter	Frequency	Percent	Valid Percent	Cumulative Percent
Architect	7	6.2	6.2	6.2
Builder	36	31.9	31.9	38.1
Civil Engineer	28	24.8	24.8	62.8
Others	10	8.8	8.8	71.7
Project Manager	4	3.5	3.5	75.2
QuantitySurveyor	15	13.3	13.3	88.5
Safety Manager	13	11.5	11.5	100.0
Total	113	100.0	100.0	

Table 1 above demonstrates that 31% of the respondents are builders. This indicates that the builders are the major respondents in this research work.

Table 2: Data Presentation on Demographic Characteristics of Participants (Academic Qualification)

Academic Qualification	Frequency	Percent	Valid Percent	CumulativePercent
BSc/BTech	70	61.9	61.9	61.9
MSc	15	13.3	13.3	75.2
ND/HND	22	19.5	19.5	94.7
Other	3	2.7	2.7	97.3
PhD	3	2.7	2.7	100.0
Total	113	100.0	100.0	

Professionals with BSC/BTech degree are the major respondents in this research with a frequency of 70 and a percentage of 61.9% according to Table 2.

Table 3: Data Presentation on Demographic Characteristics of Participants (Professional Body)

Professional Body	Frequency	Percent	Valid Percent	Cumulative Percent
	14	12.4	12.4	12.4
APM 1		.9	.9	13.3
ARCON 6		5.3	5.3	18.6
COREN 22		19.5	19.5	38.1
GMNIOB 1		.9	.9	38.9
ICAN 1		.9	.9	39.8
IOSH 2		1.8	1.8	41.6
Ispn 1		.9	.9	42.5
ISPON 4		3.5	3.5	46.0
Ispn, bosiet 1		.9	.9	46.9
NATE 1 &NICE		.9	.9	47.8
NEBOSH 1		.9	.9	48.7
NIA 1		.9	.9	49.6
NICE 1		.9	.9	50.4

	NIOB	37	32.7	32.7	83.2
	NIQS	13	11.5	11.5	94.7
	NITP	1	.9	.9	95.6
	NMS	1	.9	.9	96.5
	None	3	2.7	2.7	99.1
	QSRBN	1	.9	.9	100.0
	Total	113	100.0	100.0	

Professionals belonging to NIOB are the major respondents in this research work with total NIOB member

respondents amounting to 37 with a percentage of 32.7% according to Table 3.

Table 4: Data Presentation on Demographic Characteristics of Participants (Professional Years Of Experience)

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-10	83	73.5	73.5	73.5
11-20	23	20.4	20.4	93.8
21- above	7	6.2	6.2	100.0
Total	113	100.0	100.0	

Construction professionals with years of experience ranging from 1-10 years are the majority in this research work

with frequency of 83 and percentage of 73.5% according to Table 4.

Table 5: Data Presentation on Demographic Characteristics Of Participants (Respondent’s Age)

Age	Frequency	Percent	Valid Percent	Cumulative Percent
15-30	43	38.1	38.1	38.1
31 - 50	66	58.4	58.4	96.5
50 & ABOVE	4	3.5	3.5	100.0
Total	113	100.0	100.0	

B. Data Analysis on Objective 1: Establishment of the Level of Safety Awareness among Masons on the Construction Site

This objective investigated the level of awareness of construction professionals as regards safety among the construction workers (workers) in Lagos state. A five-point

Likert scale was used for the collection of data from the respondents to identify their level of awareness. With 1 = Very Unaware, 2= Unaware, 3= Neither aware nor unaware, 4= Aware and 5 = Very aware. The frequency and percentage of response were used in analyzing results.

Table 6: Showing the Mean Values of the Factors that Determine the Level of Safety Awareness among Construction Masons

Level of Safety Awareness Parameters	Very Aware	Aware	Neither Aware Nor Unaware	Unaware	Very Unaware	Mean	Rank
Importance of the use of safety equipment	81	25	5		2	4.62	1
Disadvantages of unsafe acts and Unsafe working conditions	74	32	4	1	2	4.59	2
Importance of adequate provisionOf safety equipment	77	29	5	1	1	4.55	3
Importance of health and safety policies In the organization	69	33	6	3	2	4.45	4

Table 7: Showing The Likert Scale and Mean Values of Factors that Determinethe Awareness of the Health and Safety Concepts

Factors That Determine The Awareness of The Health & Safety Concepts Parameters	Very Aware	Aware	Neither Aware Nor Unaware	Unaware	Very Unaware	Mean	Rank
Activities with eye protection working on welding	72	27	10	1	3	4.45	1
The use of helmets when exposed to falling objects	72	27	9	1	4	4.43	2
The use of earmuffs when exposed to extreme site noise	62	28	14	5	4	4.40	3
The use of safety belts when working at heights	67	33	8	1	4	4.23	4
The use of hand gloves by workers when mixing concrete	72	27	9	1	4	4.05	5

According to Table 7, activities with eye protection working on welding with mean 4.45 and the use of helmets when exposed to falling objects with 4.43 are safety concepts with the highest mean. These are essential safety concepts on the construction site. This shows that there is a high level of awareness about safety concepts in the construction industry.

➤ *Qualitative Data*

The responses from the interview that was conducted, the respondents have the following comments Respondent 1 “Top companies take safety important, while the small companies do not take safety seriously” This could be attributed to the complexity of construction work that the large companies get involved in and due to the low-capital base of the small firms.

Respondent 2 “some companies do not provide adequate safety equipment”. Respondent 3 “There is a good awareness about basic safety equipment among masons”.

Respondent 4 “Safety equipment are available for protection”. Respondent 5 “Health and safety involves the use of safety boots, helmets and gloves for protection on the site”. Respondent 6 “The use of safety equipment can prevent site injuries and accidents” However, it was gathered that individual workers have an awareness level due to health and safety not necessarily from the effort of the top management. In addition, the level of knowledge of the masons about health and safety is only limited to the basic safety equipment.

C. *Data Analysis on the Identification of the Common Hazards and Injuries among Masons in the Construction Industry.*

This objective outlined and analyzed the common injuries and hazards that are evident among the construction masons in Lagos State. A five-point Likert scale was employed. 1= Strongly Disagree, 2= Disagree, 3= Neither Disagree nor Agree, 4= Agree, and 5= Strongly Agree

Table 8: Data Presentation on the Likert Scale and Mean Values of the Common Hazards and Injuries among Masons in the Construction Industry

Hazards & Injuries Among Masons	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Mean	Rank
Dust and fumes from cement	73	31	6		3	4.51	1
Falling objects	63	34	10	3	3	4.34	2
Exposure of the skin to Chemicals	48	47	16		2	4.23	3
Noise hazards	46	50	10	5	2	4.18	4
Fall from heights	43	50	11	6	3	4.10	5

Dust and fumes from cement with mean value of 4.51, falling objects of 4.34 and exposure of the skin to chemicals

with 4.23 have the highest mean values among hazards and injuries among masons.

Table 9: Table Showing the Likert Scale and Mean Values of the Factors that Cause Hazards and Injuries among Masons

Factors That Cause Hazards	Strongly Agree	Neither Agree nor Disagree	Strongly Disagree	Mean	Rank
Poor safety behavior	104	9		1.96	1
Non-provision of Safety training	105	8		1.93	2
Non-provision of adequate safety equipment	104	9		1.92	3
Absence of safety Officials in organization	94	19		1.83	4
Inactive safety regulatory bodies	90	23		1.80	5

According to Table 9, poor safety behavior with mean value of 1.96, non-provision of safety training with mean value of 1.93 and non-provision of adequate safety equipment with mean value of 1.92 have the highest mean value of the factors that cause hazards among masons.

➤ *Qualitative Data*

From the interview embarked upon, it was gathered that fall from height due to poor scaffolding, falling objects like broken blocks, exposure to cement dust which can cause skin irritation, cancer and lung problems coupled with nail injuries in the foot are the common injuries among masons. This was reiterated by most of the respondents, who all agreed that these are the common injuries among masons.

D. *Determination of the Factors Discouraging Good Safety Behaviors among Masons.*

Table 10: Table Showing the Likert Scale and Mean Values of the Factors that Discourage a Good Safety behavior among Masons

Factors Discouraging A Good Safety behavior among Masons	Agree	Disagree	Mean	Rank
Overconfidence on the part of the workers	93	20	1.92	1
Ignorance about the importance of Safety	102	11	1.90	2
Indifference to the importance of Safety by construction organizations	93	20	1.82	3
Inexperience on the part of the Workers	90	23	1.80	4
Addiction to drugs and alcohol by the workers	90	23	1.80	5

According to Table 10, overconfidence on the part of the workers with 1.92, indifference to the importance of safety by construction organizations with 1.90 and indifference to the importance of safety by construction organizations are the most common factors discouraging a good safety behaviour among masons.

➤ *Qualitative Data*

From the interview that was embarked upon, the following was gathered from the respondents: Respondent 1 “Weak scaffolds is a common cause for fall from heights” Respondent 2 “Poor attitude to safety by small organizations is a common factor that causes site injuries”, Respondent 3 “Disobedience on the part of the masons is a common cause of site injuries among masons among masons”. Respondent 4 “Overconfidence on the part of the workers discourages a good safety behaviour among masons”. Respondent 5 “Inadequate supply of safety equipment can cause injuries”. Respondent 6 “Inactive government safety policies hinders adequate adoption of health and safety among masons” Respondent 7 “Many masons feel uncomfortable when using

safety equipment”. Respondent 8 “Masons do not use their safety equipment when not working with companies”. Respondent 9 “Absence of acclimatization to the use of safety equipment among masons contributes to poor safety behaviour”

Therefore, we can infer from the interviews conducted among the masons that poor attitude to safety on the part of small organizations, inactive government safety policies, overconfidence on the part of the workers and disobedience on the part of the masons are major factors that discourage a good safety behavior among masons.

E. *Data Analysis on Identification of the Factors that can Promote a Healthy and Safe Behavior among Masons.*

This objective identified and analyzed the factors that can promote a good safety behavior among masons. Some important factors have been outlined in this research work. A two- point Likert scale was used in this research work. 1= Strongly Disagree, and 2= Agree.

Table 11: Table Showing the Likert Scale and Mean Values of Factors that can Promote a Healthy and Safe Behavior among Masons

Factors That Promote a Healthy & Safe Behavior Among Masons	Frequency	Agree	Disagree	Mean	Rank
Adequate incentives and motivation for safety compliance		98	15	1.96	1
Close safety Supervision		107	6	1.95	2
Adequate delivery of Safety equipment to Site		106	7	1.94	3
Functional health and safety laws		105	8	1.93	4
Incentives and motivation For safety compliance		98	15	1.87	5

According to Table 11, adequate incentives and motivation for safety compliance with mean value of 1.96, close safety supervision with mean value of 1.95 and adequate delivery of safety equipment to site with mean value of 1.94 have the highest values among the factors that promote a healthy and safe behaviour among masons.

➤ *Qualitative Data*

According to the interview conducted, the following was gathered from the respondents:

Respondent 1 “Some companies engage in safety trainings which promotes a good safety behavior”, Respondent 2 “ Enforcement of safety by construction companies would help in enhancing a good safety behavior among masons”, Respondent 3 “Masons that do not work with companies do not take safety seriously”, Respondent 4 “ Positive government policies towards safety can promote a good safety behavior among masons” Respondent 5 “ Adequate compensation for safety adoption can help in enhancing safety” Respondent 6 “ Safety training creates enough awareness among masons”

Therefore, it can be gathered from the interviews conducted that safety trainings, enforcement of safety by construction companies, positive government policies and adequate compensation for safety compliance would help in promoting a good safety behavior among masons.

➤ *Illustration*



Fig 1: Picture Showing an Interview with Bricklayers at Yaba, Lagos



Fig 2: A Picture Showing an Interview with Construction Masons at Ikeja, Lagos



Fig 3: A Picture Showing an Interview with Construction Masons

V. CONCLUSION AND RECOMMENDATION

This study evaluated the health and safety behaviour of construction masons in Lagos State through the analysis and interpretation of data obtained using questionnaire survey. The objectives that guided the research work were the establishment of the level of safety awareness among masons on the construction site, identification of the common hazards and injuries among masons in the construction industry, determination of the factors discouraging a good safety behavior among masons and identification of the factors that can promote a healthy and safe behavior among masons.

It can be deduced from the analyzed quantitative data that many of the construction professionals coupled with the construction workers (masons) are aware of the necessity of the implementation of the health and safety concepts in the construction industry. Also, many of the respondents agreed that dust and fumes from cement and falling objects are the commonest hazards faced by construction masons. In addition to that, it was observed that lack of adoption of safety measures by construction organizations, ignorance about the importance of safety, and overconfidence on the part of the workers are the major factors contributing to poor safety behaviors among workers. Furthermore, according to the analyzed data it was observed that adequate delivery of safety equipment, adequate safety supervision, presence of toolbox talks/ site safety meetings, and functional health and safety laws are the most effective factors in promoting a healthy and safe behavior among masons.

In addition to the quantitative data, it can be deduced from the qualitative data gathered from the interviews conducted that there is a relative level of awareness about the basic health and safety concepts and some knowledge of the usefulness of some basic safety equipment among the construction masons. Fall from heights due to weak scaffolds, falling objects like broken blocks, exposure to cement dust which can cause skin irritation and cancer and exposure to nail injuries are the commonest hazards among the masons according to the data gathered from the interviews conducted. According to the qualitative data, the major causes of the poor safety behavior and consequent avoidable site injuries among masons are poor attitude to safety on the part of small organizations, inactive government safety policies, poor vocational trainings without regard to safety importance, overconfidence on the part of the workers and disobedience on the part of the masons. The factors that can promote a good safety behaviour among masons according to the qualitative data are adequate safety trainings, enforcement of safety by construction companies, positive government policies and adequate compensation for safety compliance.

➤ Recommendations

Based on the findings of the research, the study recommends that in order to promote a healthy and safe behaviour among masons in Lagos state, the following should be adopted:

- There should be functional health and safety laws in Lagos state and the country at large. This would create safety-consciousness in the construction industry and consequently improve the safety behaviour of masons.
- Tool box talks/ site safety meetings should be enhanced. This would help in creating adequate awareness and seriousness among the construction masons.
- Adequate safety supervision should be enhanced on the construction site among the masons. This would increase the likelihood of safety compliance among masons.
- and, there should be an adequate supply of safety equipment to the construction site. A site where there is sufficient safety equipment can enhance safety compliance and a consequent good safety culture.

➤ *Contribution to Knowledge*

The research has been able to contribute to the body of knowledge by evaluating the level of awareness of construction professionals about the concepts of health and safety, identifying the commonest hazards among construction masons, evaluating the factors discouraging a good safety behaviour and outlining the factors that can promote a good safety culture among masons in Lagos state and Nigeria at large.

➤ *Areas for Further Research*

We are now in a computer age, the advent of Artificial Intelligence has brought ease to major organizational sectors. Other areas of research relating to the implementation of AI in the implementation, control, and coordination of health and safety processes can be worked on.

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