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ASSESSING PROFESSIONALS' PERCEPTION OF HEALTH AND SAFETY REGULATION COMPLIANCE IN KADUNA STATE

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Abstract

The construction industry stands out among all other industries worldwide as the main contributor to severe and fatal work-related accidents. This study aims to assess professionals' perception of compliance with health and safety regulations, with a view to enhancing health and safety practices. Data were collected using structured questionnaires. The study was carried out using sample questionnaires administered to various construction firms within the study area. A total of 80 questionnaires were administered, and 73 valid questionnaires were retrieved and used to analyze the data. The results revealed that companies consulted are aware of the regulations but do not always adhere to them. Among the categories of companies that the questionnaires were distributed to, 19% have 1-5 years of experience, 48% have 5-10 years of experience, and 33% have 10-20 years of experience. The highest percentage of respondents (48%) fell within the 5-10 years of experience category. All companies consulted use British standards. The various professions were grouped into 5 categories: Civil/Structural Engineers, Builders, Quantity Surveyors, Site Foremen, and Mechanical Engineers. Based on the findings, the following recommendations are made: The government should administer penalties for non-compliance with H&S regulations by construction firms, and construction firms should organize seminars for training and re-training of personnel on health and safety.

Key words: Building Safety Assessment, Building Safety Perception, Professional Perception to Building Health and Safety.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Introduction

OSHA 18001 standard define safety as a designed tools for accidents prevention, incident and injuries. This helps in the elimination or reduction of hazards and involved risk in all conducted industrial activities in work premises and work places (SV Paul 2007). Throughout the world, the construction industry stands out among all other industries as the main contributor to severe and fatal-work related accidents. One third of work related fatalities in United Kingdom is in the construction industry with statistics of five construction workers killed every two weeks. In the developing countries it is also the same, workers of construction industries are five time more likely to suffer from fatal industries and permanent disabilities. (Chinda and Mohammed, 2008).

Health and Safety Executive (2009) emphasizes that, majors have been taken to reduce the fatal rate in the construction industries as the result of construction works. The situation in developing countries like Nigeria is worse than what prevails in developed countries because of lack of statutory regulations on health and safety.

According to (Grant, 2007), safety legislation alone cannot change this situation. What is needed is a change in the inbred attitudes of all involved with construction operation, manual workers, management, designers and client. This change can be helped by implementing legislation but it also requires higher levels of awareness of safety problems and how they can be reduced.

Although several health and safety standards exist, the extent to which construction firms adhere to this standard differs. It is important to understand the extent to which they comply with the standards.

According to (Lepe et al., 2008), accidents in the construction industry represent a substantial ongoing cost to the employers, workers and society. The costs of accidents incurred by contractors on account of accident are divided in to three (3) sections: The cost of construction health and safety measures, that is expenses invested directly by contractors in safety measures to prevent accident. Direct costs: this defines as those actual costs that can be directly attributable to injuries and fatalities. Is a cost caused by accidents arising from occurrence of accidents despite the fact that safety measure were in place. It refers to expenditure on insurance, damage to building and equipment or vehicles, cost of health or expenditure on medical care, cost of investigation, legal cost, death, permanent associated with accidents. Indirect costs: it refers to costs that may not be covered by insurance and are the less tangible costs that result from accident. They are classified by HSE as those costs incurred by the diversion of time to deal with the consequences of an accident, which also can affect productivity and these include, cleaning up, hire consulting experts, time lost, sick pay, and overtime working and temporary labour.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Statement of research problem

Due to the fact that high rate of accident do occur on construction sites. (Alfred et al., 2008) in an attempt to evaluate health and safety performance of Nigerian construction firms found that tool problem, health problem, workmanship and material standard factor, contingencies and corporate code of health and safety management are the major factors causing occupational hazards.

(Bako, 2008), highlight the possible provision of health and safety facilities on construction firms and ways of improving safety measures. Further shows that the commonest accidents on construction firms are, people stuck by falling object, people falling/slipping from walkways, scaffold and stepping on dangerous object. While, lack of provision of safety facilities has resulted to accident and loss of life to workmen and to the economy and also to the employer.

With all effort of researchers to tackle the problems of health and safety, it is observed that accident still happen on construction firms. Thus it is highly desirable to find out whether health and safety regulations are being adhered to on construction firms.

Significance of the study

Over the years, a high number of people have been killed or injured as a result of construction work (HSE, 2010). It is therefore necessary to investigate the degree to which construction firms adhere to health and safety regulations in Nigeria and make a contribution to knowledge in this area. Addressing health and safety issues should not be seen as a regulatory burden as it offers significant opportunities and benefits to the construction companies. Such benefits include: reduced risks in the workplace, less absences by employees and hence increased productivity, fewer accidents and less threats of legal action, improved standing among clients and partners, and obviously reduced costs to the business.

Aim

The study aimed at assessing the professional perception to compliance to health and safety regulations, with the view to enhancing the health and safety practice.

Objectives

i. To examine the extent of adherence to the health and safety regulations by constructions firms.
ii. To identify the problems associated with Adherence to health and safety regulations.
iii. To identify factors that enhance adherence to health and safety regulations.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Scope of the study

This research covers professionals within Kaduna North Local Government Area, Kaduna State. The research is restricted to companies registered with Kaduna North Local Government Area which constitutes the construction, consultancy and other construction related industries. There is difficulty in collecting sufficient data from the survey and also the research is limited to Kaduna State of Nigeria.

Concept of Health and Safety in the Construction Industry

Construction workers on site are exposed to hazards of occupational diseases and injuries and the adverse effects of excessively long hours of work. Machines, plants and other sophisticated construction equipment posed anger to the operators, who in most cases do not have prior skills for operating them (Muiruri and Mulinge, 2014). Hassan et al. (2007) argued that the awareness and perception of the workers toward safety, health and their working environment are important aspects to enhancing the building construction to a better condition for the workers.

The overall construction industry is still looking at positive way to change to a safer working environment with many researchers on board (Makinde, 2014). Hassan et al. (2007) study revealed in valuable indications to the construction managers especially in improving the construction workers attitude towards safety, health and environment and good safety culture in the building construction industries. Yakubu et al. (2012) asserted that to examine safety performance, the safety and health assessment system in the construction industry is used in order to have a platform for assessing and evaluating contractor's safety and health measures at site. In another study (El-Mashaleh et al., 2010) concluded that good safety performance contractors have more detailed written safety programmes when compared to poor safety performance contractors.

The culture of the construction industry in developing countries also does not promote health and safety, as such the practices of competitive tendering and award of most public contracts to the lowest bidder in many developing countries compels contractors to drive their prices low while cutting costs which in turn affects health and safety (Muiruri & Mulinge, 2014). It is a clear fact that, site accident sometimes happens because of complete mistakes or lack of awareness on the part of the workers, for that, such employees should have the basic knowledge of plants, materials and technology of the trade involved in the construction works (Makinde, 2014).

Meaning and various definitions

Safety are those activities that seek either to minimize or to eliminate hazardous conditions that can cause bodily injury. Safety precautions fall under two principal headings, occupational safety and public safety. Occupational safety is concerned with

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

risks encountered in areas where people work: offices, manufacturing plants, farms, and construction firms, commercial and retail facilities. Public safety involves hazards met in the home, in travel and recreational centers. Industrial accidents can occur because of improper contact with machinery, lifting or other handling of bulk materials, contact with electrical, chemicals and radiation hazards (Ikenna, 2006). Oxford English dictionary (2000), defines health as the state of being physically and mentally healthy while Safety is the state of being safe and protected from danger or harm.

Safety is the condition of being protected against failure, damage, error, accident or harm (en.wikipedia.org/wiki/safety, 2008). Safety could also be seen as freedom from those conditions, which can cause injury or death to personnel, damage to or loss of equipment or property, (www.rocketnetech.com/systems/concept.htm). Safety can also be defined as any action or happening without a recourse or mishap to self or to others. In other words, it is the process of preventing or avoiding an unsuitable occurrence, which could be harmful to self or to others.

An Act is legislation passed by the Parliament, whereas the Regulations are Subsidiary legislation, and are published in government gazette for becoming legal (Sur, 2019)

Acts set out the broad legal principles whereas the Regulations are set out for the application of the Act (Sur, 2019)

Regulations are generally made by an executive authority in exercise of a power conferred by an Act (Dhamija, 2019)

Standards refers to the principles behind a work and values associated with it but regulations refers to the set of laws and rules that are need to be followed while performing a certain task. (Tartir, 2015)

Basic component of Health and Safety

A safety and health management system means the part of the Organisation's management system which covers:

i. the health and safety work organisation and policy in a company
ii. the planning process for accident and ill health prevention
iii. the line management responsibilities and
iv. the practices, procedures and resources for developing and implementing, reviewing and maintaining the occupational safety and health policy.

The system should cover the entire gambit of an employer's occupational health and safety organisation. The basic component of a successful safety and health management system are:

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Policy and commitment

The workplace should prepare an occupational safety and health policy programme as part of the preparation of the Safety. Effective safety and health policies should set a clear direction for the organisation to follow. They will contribute to all aspects of business performance as part of a demonstrable commitment to continuous improvement. Responsibilities to people and the working environment will be met in a way that fulfils the spirit and letter of the law. Cost-effective approaches to preserving and developing human and physical resources will reduce financial losses and liabilities. In a wider context, stakeholders' expectations, whether they are shareholders, employees or their representatives, customers or society at large, can be met.

Planning

The workplace should formulate a plan to fulfil its safety and health policy as set out in the Safety Statement. An effective management structure and arrangements should be put in place for delivering the policy. Safety and health objectives and targets should be set for all managers and employees.

Implementation and operation

For effective implementation, organisations should develop the capabilities and support mechanisms necessary to achieve the safety and health policy, objectives and targets. All staff should be motivated and empowered to work safely and to protect their long-term health, not simply to avoid accidents. These arrangements should be:

i. underpinned by effective staff involvement and participation through appropriate consultation, the use of the safety committee where it exists and the safety representation system
ii. sustained by effective communication and the promotion of competence, which allows all employees and their representatives to make a responsible and informed contribution to the safety and health effort.

There should be a planned and systematic approach to implementing the safety and health policy through an effective safety and health management system. The aim is to minimise risks. Risk Assessment methods should be used to determine priorities and set objectives for eliminating hazards and reducing risks. Wherever possible, risks should be eliminated through the selection and design of facilities, equipment and processes. If risks cannot be eliminated, they should be minimised by the use of physical controls and safe systems of work or, as a last resort, through the provision of PPE. Performance standards should be established and used for measuring achievement. Specific actions to promote a positive safety and health culture should be identified. There should be a shared

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

common understanding of the organisations vision, values and beliefs on health and safety. The visible and active leadership of senior managers fosters a positive safety and health culture.

Measuring performance

The organisation should measure, monitor and evaluate safety and health performance. Performance can be measured against agreed standards to reveal when and where improvement is needed. Active self-monitoring reveals how effectively the safety and health management system is functioning. Self-monitoring looks at both hardware (premises, plant and substances) and software (people, procedures and systems, including individual behaviour and performance). If controls fail, reactive monitoring should find out why they failed, by investigating the accidents, ill health or incidents, which could have caused harm or loss. The objectives of active and reactive monitoring are:

i. to determine the immediate causes of substandard performance
ii. to identify any underlying causes and implications for the design and operation of the safety and health management system.

Auditing and reviewing performance

The organisation should review and improve its safety and health management system continuously, so that it's overall safety and health performance improves constantly. The organisation can learn from relevant experience and apply the lessons. There should be a systematic review of performance based on data from monitoring and from independent audits of the whole safety and health management system. There should be a strong commitment to continuous improvement involving the development of policies, systems and techniques of risk control.

Performance should be assessed by:

i. internal reference to key performance indicators
ii. external comparison with the performance of business competitors and best practice in the organisations employment sector.

Many companies now report on how well they have performed on worker safety and health in their annual reports and how they have fulfilled their responsibilities with regard to preparing and implementing their Safety Statements. In addition, employers have greater responsibilities under Section 80 of the 2005 Act on Liability of Directors and Officers of Undertakings that requires them to be in a position to prove they have pro-actively managed the safety and health of their workers. Data from this Auditing and reviewing performance process should be used for these purposes.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Prospects and challenges of Health and Safety in Nigerian Construction Industry

Approximately 45% of the world's population and 58% of the population over 10 years of age belong to the global workforce, i.e. 60-70% of the adult male and 30-60% of the adult female population of the world (Chandrasekar, 2011). There is a wide variation in economic structures, occupational structures, working conditions, work environment, and the health status of workers in different regions of the world, in different countries and in different sectors of the economy. Therefore, the mechanisation of the construction industry is not uniform throughout the world. However, as stated earlier, the construction industry plays a vital role in boosting the economy of any country, especially a developing country. It provides the infrastructure required for other sectors of the economy to flourish. Many studies, such as (Coble and Haupt, 1999) have shown that construction industry reflects the level of economic development within the country. The construction sector everywhere faces problems and challenges. However, in developing countries, these difficulties and challenges are present alongside a general level of socio-economic stress and a lower productivity rate when compared to developed countries (Ofori, 2000). Nevertheless, it is generally believed that the construction industry is a good source of employment at various levels of skills, from a general labour to semi-skilled, skilled and specialist workforce. Other major areas that impact on this sector are lack of research and development, lack of trade and safety training, client dissatisfaction, and the continuously increasing construction costs (all of which result in less profitability).

Construction within developing countries often fails to meet the needs of modern competitive businesses in the marketplace and rarely provides the best value for clients and taxpayers (Datta, 2000). Additionally, this sector also demonstrates poor performance in respect of health and safety due to the absence of any stringent safety and construction laws. International labour organization (ILO, 1987) attributes the poor health and safety records in construction projects within developing countries to:

i. The high proportion of small firms and the high number of self-employed workers
ii. The variety and comparatively short life of construction sites
iii. The high turnover of workers
iv. The large proportion of seasonal and migrant workers

(Kartam et al., 1998) found that, in most developing countries, for example like India, there are no training programs for staff and workers; therefore, no orientation for new staff or workers is conducted; hazards are not pointed out; and no safety meetings are held. Employees are expected to learn from their own mistakes and experience.

In adopting different approaches to health and safety in developed and developing countries, two main differences can be identified. The first is the existence of legislation and its effective implementation; the second is hazard awareness. In developed countries,

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

many safety acts and legislation exist and are implemented effectively. Nominated safety officers promote hazard awareness with the help of regular safety training sessions. In developing countries, however, safety rules barely exist at all; and when they do, they are inappropriate, ineffective, and out of date, based on conditions that prevailed while the country was still being colonised. Additionally, the regulatory authority is usually very weak in implementing rules effectively, and work hazards are either not perceived at all, or perceived to be less dangerous than they actually are (Larcher and Sohail, 1999; Hinze et al., 1999).

Health and Safety Regulations in Construction Firms

Effective regulations are fundamental in ensuring employees state of work in the delivery of construction projects in safe atmosphere. (Idoro, 2011) observed that almost all the existing safety and health regulations in Nigeria originated from foreign countries. The Factories Act of 1990 is an adaptation of the UK Factories Act of 1961 (Idoro, 2008) while the Occupation Safety and Health OSH Act of 1970 was said to originate from America. The control of substances hazardous to health regulation of 1988, the PPE at work regulations of 1992, and management of health and safety at work regulations of 1999 are all British regulations (Idoro, 2011). The first effort in terms of regulation relating to health and safety at work in Nigeria was the Factories Act of 1958 (Dodo, 2014). This Act was repealed and replaced by Factories decree 16 and workman compensation decree No. 17 which became effective in 1990. The Factories Act of 1990 (Article 47 and 48) contains regulations governing the provisions of Personal Protective Equipment (PPE) for workers. (Idoro, 2011) concluded that neither the Factories act of 1990 nor the PPE (EC directive) 1992, sufficiently capture the construction sites and their operations, which indicated that construction works in Nigeria is unregulated in terms of occupational health and safety.

Standards, bylaws and Regulations Governing Health and Safety Regulations

Nigeria as a former colony of Britain depended solely on standards and regulations of her colonial master before and even after independence. As a result, almost all existing regulations of reference on health and safety in Nigeria originated from foreign countries. The Occupational Safety and Health Act of 1970 is an American regulation which is revised in 2004 and 2015. Construction Design and Management Regulation which were introduced in 1994, and was revised in 2015 which is originated from Britain. All health and safety regulations in Nigeria are yet to have Nigerian versions. The Factories Act is a Nigerian Act to provide for the registration of factories; to provide for factory workers and a wider spectrum of workers and other professionals exposed to occupational hazards, but for whom no adequate provisions had been formerly made; to make

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

adequate provisions regarding the safety of workers to which the Act applies and to impose penalties for any breach of its provisions.

Construction Design & Management (CDM) Regulation 2015

The Regulations are key in defining approach to managing health and safety on firms. CDM 2015 integrate health and safety into the management of the project and to encourage everyone involved to work together as an integrated team to:

i. Improve planning and management of projects from the start.
ii. Identify hazards early so that they can be eliminated.

These Regulations concern occupational health and safety on construction. They place duties in relation to management arrangements and practical measures on a range of construction project participants, including clients, designers and contractors.
The Regulations are key in defining our approach to managing health and safety on firms.

Duties of Stake Holders

Stakeholders are very important to the success of a project. It is vital to identify them as they affect or are affected by the project. (Pan, 2005) believes that the identification of stakeholders involves knowing those with high or potential interest in the project and its outcome and involves the grouping of stakeholders with shared objectives together. (Winch, 2010) describes project stakeholders as those actors which will incur or perceive they will incur a direct benefit or loss as a result of the project. The execution of construction projects usually brings about new product or value, but they can also have damaging effects creating such problems as noise, dust, environmental pollution and other obstruction within the project area. These often lead to public outcry and resistance from local residents and other interest groups whom could be affected by the construction project.

Duties of Clients

The role of the client has been given a higher profile in (CDM, 2015) to provide leadership to the construction team and to be made clearly accountable for the impact their approach has on health and safety of those working on or affected by the project. However, it is recognised that clients may not have the expertise or resources to plan and manage projects themselves but they are required to ensure that arrangements are in place to ensure that duties of others carried out. There is also a duty to see that the arrangements, once agreed, are working. Clients are also expected to take an active role in co-operating with the coordinator/supervisor in creating the pre-construction information. In particular, the client should consider any specific requirements they have

at this point in the procurement process so as to avoid change and possible conflict at a later point in time. Issues such as access points and any rules for contracting organisations in occupied premises need to be considered.

It should be noted that in some forms of procurement, the role of the client may shift to different parties. Clients should anticipate this and make suitable arrangements.

Where a project is notifiable under the regulations, clients must appoint a coordinator/supervisor and a principal contractor. It is good practice for clients to consider for all projects (notifiable or not) if they need health and safety assistance.

Duties of Designer

Designers include everyone who prepare or specify designs for construction work, including variations. This is not just the drawings, design details and specifications but specifies quality of work and including lists of specific requirements and even materials which they wish to prohibit (CDM, 2015). CDM 2015 recognizes the key role designers have in construction health and safety projects.

Designers shall not commence work in relation to the project unless their client is aware of their duties under the Regulations. This in turn, will help to ensure that the client's requirements are clearly understood by encouraging discussion and co-operation.

A new duty placed on the designer is so far as is reasonably practicable to eliminate hazards which may give rise to risks and to reduce risks from any remaining hazards.

Duties of Contractors

Anyone who directly employs, engages construction workers or who manages construction work is a contractor (CDM, 2015). For the purposes of these, Contractors and their employees, those actually doing the construction work are most at risk of injury and ill-health. They have a key role to play, in cooperation with other duty holders in co-ordination by planning and managing the work to ensure that risks are identified and are properly controlled.

Duties of Site manager or engineer

A site manager within the construction industry is responsible for overseeing the operations of the whole site on day-to-day basis and that a project comes in on time and in budget. Site manager is sometimes go under the title of the Construction manager or Site agent. Site managers are also responsible for taking staff and preparing the site including installing temporary offices and facilities before construction work starts. With larger projects, a Site manager may be responsible for part of it and would usually report into a Project Manager.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

During the construction of a project a Site Managers role will be to monitor the progress and report back to the client's representatives, ensure the safety of the team and site workers and troubleshoot any issues that may arise. From employer to employer the job description of a Site Manager will vary, however typical duties and activities undertaken include:

i. Hiring staff
ii. Maintaining quality control procedures
iii. Ensuring site safety by making safety inspections
iv. Problem solving
v. Sourcing materials
vi. Checking and preparing reports for clients
vii. Monitoring progress of the project
viii. Liaising with clients or the client's representatives to update on progress
ix. Keeping staff motivated and focused

Duties of Workers and Operatives

Workers along with all others involved in the life of a Project have duties to co-operate and to co-ordinate with others (The term worker includes managers and supervisors). They need to be involved at the earliest practicable point in time and should;

i. Give feedback to their employer via the agreed consultation method
ii. Give input into risk assessments and developing a method statement from it
iii. Work to the agreed method statement or approach their employer to discuss implementing any change or improvement.

Occupational Safety and Health Administration (OSHA) Regulation 2017

The Occupational Safety and Health Act of 1970 (OSHAct) was passed to prevent workers from being killed or seriously harmed at work. The law requires that employers provide their employees with working conditions that are free of known dangers. The Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health regulations. OSHA also provides information, training and assistance to workers and employers.

To help assure a safe and healthful workplace, OSHA also provides workers with the right to:

i. Receive information and training about hazards, methods to prevent harm, and the OSHA standards that apply to their workplace. The training must be in a language you can understand
ii. Observe testing that is done to find hazards in the workplace and get test results
iii. Review records of work-related injuries and illnesses

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

iv. Get copies of their medical records
v. Request OSHA to inspect their workplace
vi. Use their rights under the law free from retaliation and discrimination.

The Regulations

The main standards drawn from regulations are:
(1).Use health and safety files, (2). Investigate all accidents that occur in your firms, (3). Provide personal protective equipment and clothing for workers, (4). Provide health and safety training for workers and supervisors, (5). Notify health and safety agency if construction phase is likely to involve more than500 person or more than 30 days, of construction work, (6). Appoint competent staff, (7). Provide first aid and medical attention, (8). Provision of Fire protection and prevention, (9). Housekeeping (10). Site illumination, (11). Sanitation, (12). Accident prevention by signs and tags, (13). Provide and maintain equipment, machines, materials or things that are properly equipped with safety devices, (14). Communication between the employer and worker, (15). Deliver the safety files to the Client on completion of the project, (16). Emergency routes and exits remain clear of obstruction, (17). Explosives used or to be used on the firms are stored, transported, used and disposed, (18). Provide pregnant women and nursing mothers at work on the site with appropriate facilities, (19). Provide persons at work with disabilities, in particular as regards doors, passageways, staircases, showers, wash basins, lavatories and work-stations used or occupied directly by those persons, (20). Keep tools and personal protective equipment in good condition, (21). Co-operate with all parties involved in construction, (22). Allocate health and safety Coordinator/Supervisor, (23). Provide welfare facilities from the start of the construction phase, including sanitary conveniences, washing facilities, drinking water, changing rooms and secure storage.

Employer Responsibilities

Employers have the responsibility to provide a safe workplace. Employers MUST provide their employees with a workplace that does not have serious hazards and follow all OSHA safety and health standards. Employers must find and correct safety and health problems. OSHA further requires that employers have to try to eliminate or reduce hazards first by making changes in working conditions rather than just relying on masks, gloves, ear plugs or other types of personal protective equipment (PPE). Switching to safer chemicals, enclosing processes to trap harmful fumes, or using ventilation systems to clean the air are examples of effective ways to get rid of or minimize risk.
Employers must also:

i. Inform employees about hazards through training, labels, alarms, color-coded systems, chemical information sheets and other methods.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

ii. Keep accurate records of work-related injuries and illnesses.
iii. Perform tests in the workplace, such as air sampling required by some OSHA regulations.
iv. Provide hearing exams or other medical tests required by OSHA regulations.
v. Post OSHA citations, injury and illness data, and the OSHA poster in the workplace where workers will see them.
vi. Notify OSHA within 8 hours of a workplace incident in which there is a death or three or more workers go to a hospital.
vii. Not discriminate or retaliate against an employee for using their rights under the law.

Factories Act (No. 16 1987)

An Act to provide for the registration of factories; to provide for factory workers and a wider spectrum of workers and other professionals exposed to occupational hazards, but for whom no adequate provisions had been formerly made; to make adequate provisions regarding the safety of workers to which the Act applies and to impose penalties for any breach of its provisions.

Removal of dust or fumes

i. In every factory in which, in connection with any process carried on there is given off any dust or fume or other impurity of such a character and to such extent as to be likely to be injurious or offensive to the persons employed, or any substantial quantity of dust of any kind, all practicable measures shall be taken to protect the persons employed against inhalation of the dust or fume or other impurity and to prevent its accumulating in any workroom, and in particular where the nature of the process makes it practicable, exhaust appliances shall be provided and maintained, as near as possible to the point of origin of the dust or fume or other impurity as to prevent it from polluting the air of any workroom.
ii. No stationary internal combustion engine shall be used unless provision is made for conducting the exhaust gases from the engine into the open air.

Meals in certain dangerous places

Where in any room any poisonous or otherwise injurious substance is so used as to give rise to any dust, or fume, no person shall be permitted to partake of food or drink in that room.

Protective clothing and appliances

Where in any factory workers are employed in any process involving excessive exposure to wet or to injurious or offensive substance, suitable protective clothing and appliances,

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

including, where necessary, suitable gloves, footwear, goggles and head coverings, shall be provided and maintained for the use of such workers.

Protection of eyes in certain processes

i. In the case of any of the processes specified in the Fourth Schedule to this Act, suitable goggles or effective screens shall be provided to protect the eyes of the persons employed in the process.
ii. Where in any factory electric arc welding is carried on, effective provisions shall be made, by screening or otherwise, to prevent persons employed (other than persons employed in the welding process) from being exposed to the electric arc flash.

Power to make regulations for health, safety and welfare

1. Where the Minister is satisfied that-

a) owing to the conditions and circumstances of employment or of the nature of the processes carried on in a factory, provision requires to be made for securing the health, safety and welfare of persons employed or any class of them; or
b) any manufacture, machinery, plant, equipment or process used in factories is of such nature as to cause risk of bodily injury or be offensive to persons employed or any class of them, he may, subject to the provisions of this Act and the Labour Act, make such regulations as appear to him to be reasonably practicable and to meet the necessity of the case.

2. Regulations so made may apply to all such factories or to any specified class or description of such factories, and may provide for the exemption of any specified class or description of factory either absolutely or subject to conditions. (3) Regulations so made may without prejudice to the generality of the powers conferred in subsection (1) of this section-

a) prohibit the employment of or modify or limit the hours of employment of, all persons or any class of persons in connection with any manufacture, machinery, plant, equipment, appliance, process or description of manual labour; or
b) prohibit, limit or control the use of any material or process; or
c) modify or extend with respect to any class or description of factory any provisions of Parts II, III, IV or this Part of this Act, being provisions imposing requirements as to health, safety or welfare; or
d) make provision for- (i) arrangements for preparing or heating and taking meals; (ii) ambulance and first-aid arrangements; (iii) rest room; (iv) the supply and use of seats in workrooms; (v) the supply of protective clothing; and (vi)

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

arrangements for the supervision of persons employed, and may impose duties on owners, employed persons and other persons, as well as on occupiers.

3. The Minister may make regulations in connection with the fees to be paid in respect of any matter or thing done under this Act.

Power to take samples

1. An inspector may, at any time after informing the occupier or, if the occupier is not readily available, a manager or other responsible person in the factory, take for analysis sufficient samples of any substance used or intended to be used in a factory, being a substance in respect of which he suspects a contravention of any regulation made under this Part of this Act or which he thinks may prove on analysis to be likely to cause bodily injury to the persons employed.
2. The occupier or the manager or other person aforesaid may, at the time when the sample is taken under this section, and on providing the necessary appliances, require the inspector to divide the sample into three parts, to mark and seal or fasten up each in such manner as its nature permits and-

a) to deliver one part to the occupier or the manager or other responsible persons aforesaid;
b) to retain one part for future comparison; ,
c) to submit one part to the analyst, and any analysis under this section shall, if so required, be carried out by a government chemist in the public service of the Federation or a State.

3. A certificate purporting to be a certificate by a government chemist as aforesaid as to the result of an analysis of samples under this section shall in any proceedings under this Act be admissible as evidence of the matters stated therein, but any party to the proceedings may require the person by whom the analysis is made to be called as a witness.
4. It shall not be lawful for any person, except in so far as is necessary for the purposes of a prosecution for an offence under this Act, to publish or disclose to any person the results of an analysis made under this section, and if any person acts in contravention of this subsection he shall be guilty of an offence and on conviction shall be liable to a fine not exceeding 1000 naira.

Lack of Health and Safety (H & S) awareness by the management

The argument that lack of knowledge and understanding of OSH regulations determine the level of compliance within construction regulations is made by (Windapo and Oladapo, 2012), in that there is lack of awareness in most developing countries (e.g., Nigeria) for OSH regulations and practice, an issue that is also echoed by (Idubor and

Osiamoje, 2013). Therefore, (Diugwu et al., 2012) contend that lack of knowledge for details and implications hinder OSH management in the construction industry. They found that construction workers in Minna, Nigeria (if not the whole country) do not know the enforcer of OSH regulations in Nigeria. If workers do not know or understand the regulations, they will not know when their rights have been violated. (Puplampu and Quartey, 2012) note a similar issue that lack of adequate Information and statistics hinder the compliance with OSH in Africa; while (Diugwu et al., 2012), (Idubor and Osiamoje, 2013) identify same for Nigeria. The above is explained by (Diugwu et al., 2012), whose study argues that OSH information dissemination in Nigeria is ineffective, and has minimal impact to target groups, hence blaming the government for it. This demonstrates that enacting laws without adequate effort to make it available to the public is as a good as not formulating one at all.

Lack of knowledge of Government legislation on H & S

(Idubor and Osiamoje, 2013) uphold that poor national OSH standards hinder compliance with OSH in Nigeria. This factor is evident in the Nigerian construction industry, where the local OSH law (Factories Act of 1990) does not technically cover it (Diugwu et al., 2012; Idoro, 2008; Idoro, 2011), thus not enforceable in the industry. Consequently, some construction firms adopt regulations from developed countries, and enforcement is at adopter's discretion (Idoro, 2008). Hence, (Diugwu et al., 2012) found that lack of adequate regulation, lack of support as some of the constraints to OSH management in the Nigerian construction industry. It may also determine compliance with OSH regulations.

Improper selection of key personnel for H & S

Construction safety officers create, implement and enforce safety policies that reduce the risk of accidents. It is their responsibility to determine which policies are necessary for the job site and how to enforce them. Safety officers must have updated knowledge about safety methods and standards. This way, they can keep policies up-to-date and renew them when new risks are discovered.

Safety officers carry out inspections on site to determine hazardous situations. They must also create regulations and policies to overcome them. For example, broken equipment and flawed tools create a hazard for construction workers, and safety officers are responsible for detecting those issues. They also specify the adequate personal protective equipment needed, and make sure that workers know how to handle tools and equipment properly.

Accident investigation is also among the tasks of construction safety officers. The main objective of a construction safety officer is preventing work accidents, but if an accident

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

occurs they must investigate and gather evidence to determine its causes. Once an investigation takes place, they will document findings and recommendations to prevent similar accidents from happening again.

Safety officers are responsible for reviewing and meeting all the federal and state requirements for record-keeping.

Lack of proper H & S inspection and audits by management

The organisation should review and improve its safety and health management system continuously, so that it's overall safety and health performance improves constantly. The organisation can learn from relevant experience and apply the lessons. There should be a systematic review of performance based on data from monitoring and from independent audits of the whole safety and health management system. These form the basis of complying with the organisations responsibilities under the 2005 Act and other statutory provisions. There should be a strong commitment to continuous improvement involving the development of policies, systems and techniques of risk control. Performance should be assessed by:

- internal reference to key performance indicators
- external comparison with the performance of business competitors and best practice in the organisations employment sector.

Many companies now report on how well they have performed on worker safety and health in their annual reports and how they have fulfilled their responsibilities with regard to preparing and implementing their Safety Statements. In addition, employers have greater responsibilities under Section 80 of the 2005 Act on Liability of Directors and Officers of Undertakings that requires them to be in a position to prove they have pro-actively managed the safety and health of their workers. Data from this Auditing and reviewing performance process should be used for these purposes.

Non enforcement of H & S regulations by Government

(Nzuve and Lawrence, 2012) found that low level of inspection and examination of workplaces might determine the level of compliance with OSH regulations as evident in workplaces in Nairobi. The same can be said of Nigeria, where lack of enforcement characterises regulatory institutions (Idubor & Osiamoje, 2013), most laws appear to fulfill all righteousness or are used for political or victimisation reasons, and the institutions alleged and proved to be corrupt and arbitrarily exercise its powers (Onyeozili, 2005). These ill characteristics of the regulatory institution in Nigeria also weaken its legal system. The contention being that the efficiency and effectiveness of the OSH enforcement bodies may determine the level of compliance with OSH regulations in

workplaces. These explain why researchers posit, that lack of: strict legislation enforcement (Idubor & Oisamoje, 2013; Onyeozili, 2005); competent professionals i.e. OSH officers (Federal Ministry of Labour and Productivity 2010 in Idubor & Oisamoje, 2013); trained safety officers (Okeola, 2009), all enable non-compliance with OSH regulations in Nigeria. However, although the quality of enforcement may be marginal, enforcement at organisational level perhaps via safety officers should be made mandatory to Nigerian construction contractors (Okeola, 2009), as it will improve OSH enforcement. Equally important, (Idubor and Oisamoje, 2013) argue that the weak legal structure and absence of law enforcement in Nigeria allow foreign companies to take advantage of the ineffective statutory regulation. The same can be said of the construction industry. That may also suggest that these foreign firms may not have plans to comply fully with the OSH regulations in Nigeria or have a OSH management system similar to those obtained in their countries of origin, as they intend to reduce expenses and added cost to construction outputs.

Engage an in-house and Outsourcing (H & S) by engaging a Consultant

As an employer, you must appoint someone with the necessary skills and knowledge to help you meet your Health and Safety duties. If you have a low risk business this could be you or one or more of your employees. If your business has higher risk, or you do not have the time or an appropriate staff member available to take on this role, you may decide to outsource this role to a specialist.

Employers must consult employees on Health and Safety issues so that they understand who is responsible for health and safety in the workplace. Consultation must be either direct or through a safety representative that is either elected by the workforce or appointed by a trade union. They are independent of management and represent their co-workers best interests.

An engaged workforce is a safer workforce. Promoting a culture where employees are actively encouraged to participate in health and safety motivates individuals to take better care of themselves, their surroundings and their colleagues. You will receive more information about incidents and near misses, increase observation about the condition of your premises and be notified in advance of potential hazards and threats.

Knowledge of Government Legislation on H & S

Government's responsibility to protect and advance the interests of society includes the delivery of high-quality health care. Because the market alone cannot ensure all Americans access to quality health care, the government must preserve the interests of its citizens by supplementing the market where there are gaps and regulating the market where there is inefficiency or unfairness. The ultimate goal of achieving high quality of

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

care will require strong partnerships among federal, state, and local governments and the private sector. Translating general principles regarding the appropriate role of government into specific actions within a rapidly changing, decentralized delivery system will require the combined efforts of the public and private sectors.

Benchmarking H & S regulations to keep with best practice

The maxim you cannot manage what you cannot measure is as applicable to health and safety as it is to any other business management function.

The usual measures used to indicate current health and safety performance will be internal leading (inputs) and lagging (outputs) indicators but it is possible to use external measures, eg by benchmarking against similar organisations. A benchmark is defined as a standard or point of reference against which things may be compared while the verb benchmarking can be defined as the evaluation (of something) by comparison with a standard.

From a health and safety perspective, the EU-OSHA defines benchmarking as a planned process by which an organisation compares its health and safety processes and performance with others to learn how to reduce accidents and ill health, improve compliance with health and safety law and/or cut compliance costs.

In other words, benchmarking can be used as a tool to improve health and safety performance by looking at comparable organisations (or systems) and on the basis of the insight gained, to redesign and/or change current practice.

Benchmarking is also referred to in BS ISO 45001 Occupational Health and Safety Management Systems. This formal management system standard suggests that benchmarking can form part of the continual improvement of performance with organisations able to benchmark against other organisations, external standards and codes, statistics or internal codes and objectives.

It is generally accepted that there are three types of benchmarking, which can be summarised as follows.

a. Strategic: a comparison of the strategic choices, decisions and dispositions made by other organisations.
b. Performance: the comparison of key indicators of performance with the similar performance indicators of others.
c. Process: the comparison of methods and practices of performing business processes.

Emphasizing the need for H & S in the workplace environment

The importance of health and safety in the workplace simply cannot be underestimated. As well as being the law, it is part and parcel of being a good employer to make sure your staff are not at risk of any injury as a result of the work they do for you.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

It's not just your staff that health and safety is important for, it's there to protect any visitors, customers, sub-contractors and the general public who may work for you, do business with you or come into contact with your organisation in any way.

Training and re-training of personnel on H & S

How does the employer train staff to ensure they have the skills, knowledge and attitudes to make them competent in the safety and health aspects of their work?

Under Section 10 of the Safety, Health and Welfare at Work Act 2005, employers must provide their employees with the instruction and training necessary to ensure their safety and health. There are specific training obligations for employees involved in the safety consultation and safety representation processes. Safety and health training must form part of the training of all people who work at the workplace. Training helps people acquire the skills, knowledge and attitudes to make them competent in the safety and health aspects of their work. It includes formal off-the-job training, instruction to individuals and groups, and on-the-job coaching and counselling. However, training is not a substitute for proper risk control, for example to compensate for poorly designed plant or inadequate workstations. The key to effective training is to understand job requirements and individual abilities.

In order to train staff to ensure they obtain the necessary skills, knowledge and attitudes to make them competent in the safety and health aspects of their work, it is important to identify appropriate training objectives and methods by first identifying the training needs. Training needs may be organisational, job-related and individual.

Encourage monitoring of adherence to H & S regulations

It should be a line-management responsibility to monitor safety and health performance against predetermined plans and standards. Monitoring reinforces management's commitment to safety and health objectives in general and helps to develop a positive safety and health culture by rewarding positive work done to control risk. Two types of monitoring are required **Active and Reactive monitoring**

Active monitoring

Every organisation should collect information to investigate the causes of substandard performance or conditions adequately. Documented procedures for carrying out these activities on a regular basis for key operations should be established and maintained. The monitoring system should include:

a. Identification of the appropriate data to be collected and accuracy of the results required, monitoring of the achievement of specific plans
b. Set performances criteria and objectives

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

c. Installation of the requisite monitoring equipment and assessment of its accuracy and reliability
d. Calibration and regular maintenance of this equipment together with documented records of both the procedures involved and the results obtained
e. Analysis and records of the monitoring data collected and documented actions to be taken when results breach performance criteria
f. Evaluation of all the data as part of the safety and health management review
g. Documented procedures for reviewing the monitoring and safety and health implications of forthcoming changes to work systems.

Techniques that should be used for active measurement of the safety and health management system include:

a. Systematic inspections of workplace processes or services to monitor specific objectives, e.g. weekly, monthly or quarterly reports
b. Systematic review of the organisations Risk Assessments to determine whether they are functioning as intended or need to be updated, and are the necessary improvements being implemented
c. Plant or machinery inspections, e.g. statutory plant inspections and certification
d. Environmental sampling for dusts, chemical fumes, noise or biological agents
e. Analysis of safety and health management system records.

Reactive monitoring

A system of internal reporting of all accidents (which includes ill health cases) and incidents of non-compliance with the safety and health management system should be set up so that the experience gained may be used to improve the management system. The organisation should encourage an open and positive approach to reporting and follow-up and should also put in place a system of ensuring that reporting requirements are met.

The organisation should establish procedures for investigating accidents and incidents to identify their causes, including possible deficiencies in the safety and health management system. Those responsible for investigating accidents, and incidents should be identified and the investigation should include plans for corrective action, which incorporate measures for restoring compliance as quickly as possible, preventing recurrence, evaluating and mitigating any adverse safety and health effects, reviewing the Risk Assessments to which the accident relates and assessing the effects of the proposed remedial measures.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Institute penalties for non-compliance with H & S regulations

OSHA is in charge of enforcing health and safety laws, which means you must follow their guidelines when creating your health and safety procedures. If your work environment isn't safe for your employees, then you may receive a fine or have your business temporarily or permanently shut down, depending on the magnitude of your violation. This is something many businesses can't afford. These standards can be enforced by any person representing OSHA many who will now be obtaining an occupational health and safety online degree. If you don't meet health and safety standards, then your company will lose business, money, and customers.

Violating or not have safety and health procedures in place can have a tremendous impact on your business. You could lose money, workers, clients, productivity, vendors, respect, and potentially your entire business. Although, Workers' Compensation Insurance covers workplace injuries and illnesses, there could be more costs to pay if you're negligent. These costs include clean-up and repair, claims management, accident investigation, litigation, and the hiring and training of new employees. However, much of this can be avoided if you just realize the importance of having a health and safety program, and implementing it into your company's infrastructure.

RESEARCH METHODOLOGY

This section discusses the research methodology adopted, the study population, sampling techniques, data collection instruments, data collection procedures, and data analysis methods.

Research Design

To achieve the research objectives, a field survey design was utilized, involving the use of questionnaires for primary data collection. This approach enabled the physical observation and recording of existing conditions, providing insight into the implementation of Health and Safety Regulations by Construction Firms in Kaduna State. The research design allowed for the assessment of current practices and the proposal of measures to ensure effective Health and Safety Regulations by Construction Firms in Kaduna State.

Study Area

The study area, Kaduna metropolis in Kaduna State, Nigeria, comprises commercial buildings, institutional buildings, and residential areas with several streets. These areas include construction firms and/or construction companies, covering both residential and business zones.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Population

The study population consists of construction firms registered with Kaduna North Local Government Area, encompassing building, civil engineering, and other construction activities within the local government area. The population comprises a total of one hundred (100) construction firms.

Sample Size

To determine the sample size, a sample size table (Appendix I) was used, with a confidence level of 95% and a margin of error of 5.0%. This yielded a sample size of 100 construction firms. A total of 80 questionnaires were administered personally, and feedback was collected in the same manner.

Sampling techniques

The researcher adopted a convenience sampling procedure due to the accessibility and proximity of respondents, making it feasible to distribute questionnaires to respondents in the study area.

Data Collection Instrument

The instrument used for data collection was a questionnaire designed to achieve the research aims and objectives. The questionnaire consists of two sections: Section A, which gathers respondent profile data (name, gender, status, and duration of residency), and Section B, which addresses adherence to, problems with, and factors enhancing health and safety regulations practice. A sample of the questionnaire is provided in Appendix II.

Method of Administering the Instrument

Primary data was obtained through a field survey involving measurements, interviews, and visual inspections. A structured questionnaire, based on the study's aims, was designed to collect data and meet the research objectives.

Methods of Data Analysis and Presentations

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) to generate simple statistical tools such as mean, percentage, and frequency. Results were presented in tables. The questionnaire contains Sections A and B, with some questions requiring selection of the preferred choice from the provided options.

DATA PRESENTATION, ANALYSIS AND DISCUSSION

This section presents, analyzes, and interprets the collected data. Observations from the field survey are presented, analyzed, and interpreted accordingly.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Data Presentation

Data was obtained from 73 valid questionnaires, out of 80 administered to construction firms (a response rate of 91.25%). The analysis is based on these 73 questionnaires.

Table 1: Professional Response

S/No.	PROFESSIONAL	RESPONSE	PERCENTAGE
1	Architect	11	15%
2	Civil/Structural Engineer	16	22%
3	Electrical Engineer	8	11%
4	Mechanical Engineer	8	11%
5	Builder	13	18%
6	Q/S	11	15%
7	Project Manager	6	8%

Source: Field survey (2020)

Table 1 reveals the professional distribution of respondents: Civil/Structural Engineers (22%) topped the list, followed by Builders (18%), Architects (15%), Quantity Surveyors (15%), Mechanical Engineers (11%), Electrical Engineers (11%), and Project Managers (8%).

Table 2: Higher Qualification

S/No.	QUALIFICATION	RESPONSE	PERCENTAGE
1	O-level GCE	0	0%
2	A-level GCE	0	0%
3	OND	8	11%
4	HND	23	32%
5	BSc	25	34%
6	MSc	14	19%
7	PhD	3	4%

Source: Field survey (2020)

Table 2 indicates the educational qualifications of respondents: BSc (34%) had the highest percentage, followed by HND (32%), MSc (19%), OND (11%), O-level/GCE (4%), and PhD (4%). A-level and GCE had 0% response.

Table 3: Years of Experience

S/No.	YEARS OF EXPERIENCE	RESPONSE	PERCENTAGE
1.	1 – 5 years	14	19%
2.	5 – 10 years	35	48%
3.	10 – 20 years	24	33%

Source: Field survey (2020)

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Table 3 shows that respondents with 5-10 years of experience had the highest percentage (48%), followed by those with 10-20 years (33%), and 1-5 years (19%).

SECTION B: ADHERENCE, PROBLEMS AND FACTORS THAT ENHANCE HEALTH AND SAFETY PRACTICES

All the 23 Health and Safety regulations presented in Table 4 were sourced from the Occupational Safety and Health Act of 1970 (OSHAct) that was passed to prevent workers from being killed or seriously harmed at work. The law requires that employers provide their employees with working conditions that are free of known dangers. The Act created the Occupational Safety and Health Administration (OSHA), which sets and enforces protective workplace safety and health regulations.

Table 4: Extent to which constructions firms adhere to Health and Safety Regulations.

S/N	Health and Safety Regulations	Response					Mean
		Always	Often	Sometimes	Seldom	Not at all	
1	Use health and safety files	51	12	10	-	-	0.70
2	Investigate all accidents that occur in your firms.	43	15	8	7	-	0.59
3	Provide personal protective equipment and clothing for workers.	54	11	8	-	-	0.74
4	Provide health and safety training for workers and supervisors.	38	29	15	6	-	0.52
5	Notify health and safety agency.	30	32	7	4	-	0.44
6	Appoint competent staff.	62	11	-	-	-	0.85
7	Provide first aid and medical attention.	51	15	7	-	-	0.70
8	Provision of fire protection and prevention.	51	15	7	-	-	0.70
9	Housekeeping.	29	33	8	3	-	0.44
10	Site illumination.	54	10	9	-	-	0.74
11	Sanitation.	49	23	1	-	-	0.67
12	Accident prevention by signs and tags.	62	11	-	-	-	0.85
13	Provide and maintain equipment, machines, materials or things that are properly equipped with safety devices.	35	35	3	-	-	0.48
14	Communication between the employer and worker.	38	35	-	-	-	0.52
15	Deliver the safety files to the Client on completion of the project.	20	35	15	3	-	0.48
16	Emergency routes and exits remain clear of obstruction.	62	11	-	-	-	0.85
17	Explosives used or to be used on the firms are stored, transported, used and disposed.	23	35	15	-	-	0.48
18	Provide pregnant women and nursing mothers at work on the site with appropriate facilities.	24	24	13	12	-	0.33
19	Eliminate unlawful discrimination, advance equality of opportunity and foster good relations.	24	38	8	3	-	0.52
20	Keep tools and personal protective equipment in good condition.	62	8	3	-	-	0.85
21	Co-operate with all parties involved in construction.	59	14	-	-	-	0.81

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

S/N	Health and Safety Regulations	Response					Mean
		Always	Often	Sometimes	Seldom	Not at all	
22	Allocate health and safety Coordinator/Supervisor.	29	32	12	-	-	0.44
23	Provide welfare facilities from the start of the construction phase.	49	21	3	-	-	0.67

Source: Field survey (2020)

According to Table 4, respondents' adherence to health and safety regulations was as follows: 85% adhere to appointing competent staff, preventing accidents, ensuring emergency routes are clear, and maintaining tools/equipment. 81% cooperate with all parties involved in construction. 74% provide personal protective equipment and site illumination. 70% use health and safety files, provide first aid, and fire protection. 67% provide sanitation and welfare facilities. 59% investigate accidents. 52% provide health and safety training and communicate with workers. 48% provide safety equipment, deliver safety files, and manage explosives. 44% notify health and safety agencies, maintain housekeeping, and allocate a coordinator. 33% provide facilities for pregnant women and nursing mothers.

Table 5: Problems Associated With Adherence to Health and Safety Regulations

S/N	Problems	Response					Percentage
		Always	Often	Sometimes	Seldom	Not at all	
1	Lack of Health and Safety (H & S) awareness by the management.	43	27	3	-	-	59%
2	Lack of knowledge of Government legislation on H & S	30	41	2	-	-	56%
3	Improper selection of key personnel for H & S	30	38	5	-	-	52%
4	Lack of proper H & S inspection and audits by management	46	13	14	-	-	63%
5	Non enforcement of H & S regulations by Government	35	24	14	-	-	48%

Source: Field survey (2020)

According to Table 5, the problems associated with adherence to health and safety regulations include lack of proper health and safety inspection and audits by management (63% of respondents), lack of health and safety awareness by management (59%), lack of knowledge of government legislation on health and safety (56%), improper selection of key personnel for health and safety (52%), and non-enforcement of health and safety regulations by government (48%).

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

Table 6: Factors that Enhancing Adherence to Health and Safety Regulations on Construction firms

S/N	Enhancing Adherence	Response					Percentage
		AL	OF	SO	SE	NA	
1	Engage an in-house Health and Safety (H & S) specialist	38	30	5	-	-	52%
2	Outsourcing (H & S) by engaging a consultant	32	41	-	-	-	56%
3	Knowledge of Government Legislation on H & S	30	41	2	-	-	56%
4	Benchmarking H & S regulations to keep with best practice	51	19	3	-	-	70%
5	Emphasizing the need for H & S in the workplace environment	35	32	6	-	-	48%
6	Training and re-training of personnel on H & S	38	32	3	-	-	52%
7	Emphasize personal benefits of H & S to personnel	27	43	3	-	-	59%
8	Encourage monitoring of adherence to H & S regulations	30	30	13	-	-	41%
9	Institute penalties for non-compliance with H & S regulations	43	22	8	-	-	59%

Source: Field survey (2020)

According to Table 6, ways to enhance adherence to health and safety regulations include benchmarking best practices (70% of respondents), emphasizing personal benefits and instituting penalties for non-compliance (59%), outsourcing health and safety or engaging a consultant and improving knowledge of legislation (56%), engaging an in-house specialist and providing training (52%), emphasizing workplace health and safety (48%), and encouraging monitoring of adherence (41%).

Summary

This research work was carried out to evaluate the extent to which construction firms adhere to health and safety regulations on construction sites in Kaduna. The results collated are as follows:

i. Respondents' adherence to health and safety regulations was high, with 85% appointing competent staff, preventing accidents, ensuring clear emergency routes, and maintaining equipment. 81% cooperate with all parties involved in construction. 74% provide personal protective equipment and site illumination. 70% use health and safety files, provide first aid, and fire protection. 67% provide sanitation and welfare facilities. 59% investigate accidents.

EDITOR-IN-CHIEF
Prof. W. F. HILL [MALAWI]

ii. To enhance health and safety adherence, respondents suggested: benchmarking best practices (70%), emphasizing personal benefits and instituting penalties (59%), outsourcing or improving legislation knowledge (56%), engaging specialists and training staff (52%), emphasizing workplace health and safety (48%), and monitoring adherence (41%).

iii. Key challenges to health and safety adherence include lack of proper inspection and audits (63%), lack of management awareness (59%), lack of legislation knowledge (56%), improper personnel selection (52%), and non-enforcement by government (48%).

Conclusion

From the research findings, it was observed that most professionals often put into practice this regulations in construction sites, this shows that 100% are aware of health and safety regulations. If we have 100% awareness of health and safety regulations, there will be reduction in accident and hazard to life. Finally, assessment of professional compliance to health and safety regulations will not only reduce the rate of exposure to risk and hazard on construction site but also eliminate them where possible.

Recommendation

From the above conclusion, the following recommendations were made.

i. The government should administer penalties for non-compliance with H&S regulations by construction firms.

ii. Construction firms should organize seminars for training and re-training of personnel on health and safety.

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