

# Level of Awareness and Adherence to Health and Safety Regulations in Construction Industry in Kwara State of Nigeria



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## Abstract

*Investigation into causes of accidents and ill-health on construction sites in Nigeria revealed poor health and safety performance. Construction workers are approximately three times more likely to suffer from fatal injuries than those in other sectors. This has earned the industry the reputation of being a dangerous or highly hazardous industry. This study therefore evaluates extent to which construction organizations are aware and adhere to Health and Safety Regulations with a view to enhancing safe work environment. Data for the study were collected from construction firms registered with Kwara State Ministry of Housing and Urban Development, Nigeria. The ministry keeps the data base of all registered contracting firms within the state. This revealed a total of fifty-two (52) firms. The use of questionnaire was adopted for data collection. Out of 52 copies of questionnaire administered to respondents, 35 copies were retrieved representing about 67% response rate. The analytical tools used were simple percentage and Relative Importance Index (RII). The findings from the analysis revealed high level of awareness of health and safety regulations (87%). Though few of the regulations were been adhere to: provision of adequate site security (RII value of 4.35), provision of first aid facilities (4.29) and working at height safety precautions (4.18). Use of health and safety file and workers undergoing medical test prior to work were ranked last. The study also unearthed that compliance with health and safety regulations could reduce accidents on construction sites (4.86), raise the organization image (4.51), improve productivity and reduce project delay (4.43). It was concluded that there were high level awareness of health and safety regulations in the construction industry but the level of adherence is relatively low.*

**Keywords:** Adherence, Awareness, Construction firms, Health and Safety, Regulations

## Introduction

Accidents and ill health are common problems on construction sites. These are of grave concern for both practitioners and researchers all over the world. Construction site has been regarded as the most hazardous place to work with high level of health and safety risks (International Labour Organization (ILO), 2005; Lingard and Rowlison, 2005; Olatunji, Aje and Odugboye, 2007; Phoya, 2012; Vitharana, De Silva and De Silva, 2014). Olutase (2014) established that the construction sector across the world has higher records of fatal injuries and major accidents as

compared to other sectors. In Nigeria, Health and Safety (H&S) has not been given the required attention to reduce or prevent hazards and accidents on construction sites, thereby posing serious threats to workers and even non-workers, creating the need for a quick solution for the issue to be addressed (Adebisi, 2018). Even though there is no reliable data relating to construction accidents in Nigeria, previous studies have indicated that accident and injury rate are quite high as compared to other industries in the country (Kalejaiye, 2013; Agwu & Olele, 2014 and Dodo, 2014). This ugly trend often leads to site closures, loss of man-hours,

payment of compensation and loss of reputations which affects the performance of the industry and its contribution to national development.

Major causes of these accidents according to Whittingham (2014), are attributable to the poor safety attitude of the construction companies based on lack of awareness or understanding of H&S regulations and standards or workers disregard for H&S regulations and standards. However, several H&S regulations and standards exist, the extent to which

### **Global Situations of Health and Safety in Construction Industry**

Globally, the construction industry stands out among all other industries as the main contributor to severe and fatal-work related accidents (ILO, 2005). In the United Kingdom, for example, the industry accounts for one-third of all work-related fatalities and, five construction workers are killed every two weeks (Berger, 2000). Emerging economies and less developed countries are

### **Health and Safety Regulations**

Health and safety regulations governing the construction industry and other work related industries exist in Nigeria. A number of legislations on health and safety exist. These include; Labour Act of 1974 modified to Labour Acts 1990, and updated to Labour Act, Cap L1, Laws of the Federation of Nigeria (LFN), 2004; the Factories Act of 1987 which became effective in 1990 and later updated to Factories Act, Cap. F1, LFN, 2004 (FGN, 1990 and FRN, 2004); the Workman's Compensation Act of 1987 which became effective in 1990, modified to Workman's Compensation Act, Cap W6, LFN, 2004 and repeal to Employee's Compensation Act, No. 13, 2010 of the laws of the Federation of Nigeria (FRN, 2010) and the Labour, Safety, Health and Welfare Bill of 2012 including the National Building Code Enforcement Bill

construction firms adhere to these standards differs. It is important to understand; the extent to which they comply with the standards and how the level of adherence affects projects performance. This study therefore, examined the level of adherence to H&S regulations on construction sites with a view to enhancing workers' safety. The H&S regulations and standards on construction sites were identified and the study analysed the impact of adherence to these H&S regulations on the project performance and workers' safety.

no exception to high fatality rates (Adeogun & Okafor, 2013; Kwofie, 2015). Construction workers are five times more likely to suffer a permanent disability than those in other industries (Chinda and Mohammed, 2008). Various studies were carried out to assess the causes of these accidents. Findings from research studies have pointed to low level of adherence to H&S regulations (Idubor and Osiamoje, 2013; Umeokafor, Isaac, Jones, Umeadi 2014).

which has suffered huge political setback over the years, and is yet to be passed into law by the National Assembly.

The Federal Ministry of Labour and employment is saddled with the responsibility of enforcing the Factories Act and Employee's Compensation Act, while the Labour, Safety, Health and Welfare Bill of 2012 empowers the National Council for Occupational Safety and Health of Nigeria to administer the proceeding regulations on its behalf. In the developed countries such as UK, USA, Australia, Singapore and Germany, these regulations are well developed and functional. However, despite being among the countries that signed the occupational health and safety law in the Geneva Convention of 1981, the pathetic health and safety situation in Nigeria construction industry still pervades.

In spite of numerous statutory provisions and expectations in Nigeria, gap still exist in health and safety management (Diugwu Baba & Egila., 2012). This gap is largely due to a dysfunctional health and safety law, causing an apparent lack of regulation of health and safety in almost every sector of the economy. Adeogun and Okafor (2013) contended that these acts are not being enforced in Nigeria as evidenced from the reports of unhealthy exposure to risks of workers and employees in various organizations. According to Okeola, (2009) the Ministry charged with enforcement of these laws has not been effective in identifying violators probably due to inadequate funding, lack of basic resources and training therefore, consequently neglect safety oversight on construction sites. Plate 2.5 presents the picture of workers on site without any Personal Protective Equipment (PPE). Umeokafor *et al.*, (2014) agreed that the impact of the enforcement authority is ineffective, as the key stakeholders pay less attention to health and safety regulations; thus, rendering the scheme dysfunctional and unenforceable, at the same time impeding its development.

To this end, Diugwu *et al.*, (2012) attributed the failed health and safety management system to the non-functional health and safety regulations and provisions. Idoro, (2011) linked the problem to adopting almost all existing regulations of reference on health and safety in Nigeria from foreign countries, especially from the British legal system with little or no changes made (Kolo

2015). Kolo (2015) further observed that some provisions from these laws do not necessarily meet the conditions experienced in Nigeria. In addition, the labour law does not provide workers with right to remove themselves from dangerous work situations without loss of employment. Nevertheless, the emergence of new regulations, laws, standards and codes has made many construction organizations to improve their safety performance.

In addressing the conceptual clarification of H&S on construction site, it is important to ask in this context “What are regulations?” According to Windapo (2013), regulations are products of legal efforts designed to instill law and order in the society. They should be: properly enforced, unambiguous, updated as required and properly complied with if the purposes for design are to be achieved. Occupational Health and Safety is defined by Kalejaiye (2013) to be an interdisciplinary area mainly burdened with protecting the safety, health and welfare of people in the workplace and people that will be affected directly or indirectly by the activities in a workplace. As such, Occupational Health and Safety regulations are enforceable, unequivocal and compliable legal products designed to enforce the protection of safety, health and welfare of people that may be directly or indirectly affected by the activities in a workplace. Effective regulations are fundamental in ensuring employees state of work in the delivery of construction projects in safe atmosphere.

### **Construction Health and Safety Compliance**

Hawkins, (2002) describes compliance as applying measures designed to comply with legal requirements with the regulator being primarily more concerned with improved outcomes than prosecution results. According to Idubur and Osiamoje

(2013), lack of strict enforcement of OSH regulations enables non-compliance to OSH regulations; while (Umeakafor *et al.*, 2014) state that non-compliance to OSH regulations is a major contributor to the poor state of OSH in Nigeria. Hence compliance with Occupational Health and Safety legislations can increase productivity in industries by

reducing accidents, because accidents result in decreasing productivity and damage to equipment or property (Hawkins, 2002).

On the other hand, OHS measures are said not to be effective in improving H&S conditions in workplace (Kamau, 2014). He further observed that OHS regulations are just symbolic gestures and useless. Thus the prevalence of health and safety abuses on construction site among construction stakeholders calls for an intensive

investigation into the level of health and safety knowledge and compliance of construction workers. This is because enforcement and compliance with OHS regulations are not the standalone steps for improving OHS, as improving organizational culture can also improve OHS (Umeakafor *et al.*, 2014). This therefore, implies that regulation without strict compliance and management commitments amounts to waste of time and resources.

### **Research Methods**

The research was conducted within the scope of construction firms that registered with the Kwara State Government under the Ministry of Housing and Urban Development. This ministry is responsible for keeping the data base of registered contracting firms in the state. A total of fifty-two (52) firms were found to have registered with the ministry. The use of questionnaire was adopted for data collection. Out of 52 copies of questionnaire administered to the respondents, 35 copies were retrieved representing about 67% response rate. The questionnaire was divided into two categories: the first category was designed to get information about personal data of the respondents such as education, roles and year of experience in construction industry. The second set of questions was designed with the purpose of assessing level of awareness and adherence of H&S regulations and impact of adherence to H&S regulations on project performance. Respondents were therefore requested to rate their awareness with each of the 22 H&S regulations identified from literature review on a five point Likert scale from 1 = not at all aware to 5 = extremely aware. Respondents were also requested to state their level of adherence to the H&S regulations on a five point Likert scale from 1 = never to 5 = always. Impact of adherence

to H&S standards were also determined by the respondents through their level of agreement on the identified statements.

The collected data were edited for completeness, consistency and readability. The data analysis in this study was structured into two main statistical packages. The first part involved a descriptive analysis of the background information about the respondents. Frequency distribution, table and percentile were used and arranged in rows and columns for displaying specific information. This information is very crucial in ensuring validity and reliability of the study. The second part involved analysis using Relative Importance Index (RII) method to show the level of awareness and adherence of H&S regulations on construction sites. The RII is similar to Heightening your Awareness of your Research Philosophy (HARP) which is a reflexive tool that has been designed to help in exploring research philosophy (Saunders, Lewis & Thornhill, 2019). The RII for each factor was computed from the analysis of the rating indicated by the respondents with the use of five-point likert scale. The RII is the ratio of the "Summation of the weight value" (SWV) and the total number of respondents from all ratings. The nearer the RII is to 5, the higher the degree of importance of the categorized factors.

## Demographic Information of the Respondents

The reliability of any research is partly dependent on the source of data and the rigorousness of the analysis employed. To provide reliability and impose confidence of the findings, questions were posed in the questionnaire that aimed at gathering information about the background of the respondents. Table 1 revealed the details

information about the respondents: Information was sought from the firms on the type of their contracting organization. The type of organization gives the reflection of the type of projects they have handled. From the table, 43% are building contractors and 37% are civil engineering contractors. Additional 14% registered as industrial engineering contractors while 5.7% are services engineering contractors.

**Table 1.** Respondent's Profile

| Profile                                                   | Frequency | Percentage (%) | Cumulative % |
|-----------------------------------------------------------|-----------|----------------|--------------|
| <b>Type of Contracting Firms</b>                          |           |                |              |
| Building Engineering                                      | 15        | 42.9           | 42.9         |
| Civil Engineering                                         | 13        | 37.1           | 80.0         |
| Industrial Engineering                                    | 5         | 14.3           | 94.3         |
| Service Engineering                                       | 2         | 5.7            | 100.0        |
| <b>Total</b>                                              | <b>35</b> |                |              |
| <b>Highest Educational Qualification of Respondents</b>   |           |                |              |
| Higher National Diploma (HND)                             | 10        | 28.6           | 28.8         |
| Bachelor's Degree (BSc./B.Tech)                           | 16        | 45.7           | 74.3         |
| Masters Degree (MSc./M.Tech)                              | 9         | 25.7           | 100.0        |
| <b>Total</b>                                              | <b>35</b> |                |              |
| <b>Year of Establishment of the Firm</b>                  |           |                |              |
| 0-5 years                                                 | 8         | 22.9           | 22.9         |
| 6-10 years                                                | 11        | 31.4           | 54.3         |
| 11-15 years                                               | 7         | 20.0           | 74.3         |
| 16-20 years                                               | 6         | 17.1           | 91.4         |
| Above 20 years                                            | 3         | 8.5            | 100          |
| <b>Total</b>                                              | <b>35</b> |                |              |
| <b>Years of Experience on Construction sites.</b>         |           |                |              |
| 0-5 years                                                 | 12        | 34.3           | 34.3         |
| 6-10 years                                                | 8         | 22.9           | 57.2         |
| 11-15 years                                               | 8         | 22.9           | 80.1         |
| 16-20 years                                               | 5         | 14.3           | 94.4         |
| Above 20 years                                            | 2         | 5.7            | 100          |
| <b>Total</b>                                              | <b>35</b> |                |              |
| <b>Number of Projects Undertaken in the last 10 years</b> |           |                |              |
| 1-5 projects                                              | 2         | 5.7            | 5.7          |
| 6-10 projects                                             | 9         | 25.7           | 31.4         |
| 11-15 projects                                            | 9         | 25.7           | 57.1         |
| 16-20 projects                                            | 11        | 31.4           | 88.5         |
| Above 20 projects                                         | 4         | 11.4           | 100          |
| <b>Total</b>                                              | <b>35</b> |                |              |

It is clear that the firms surveyed cut across all types of construction and have enormous experience as far as construction projects are concerned.

To further provide reliability and credibility to the data collected, respondents were asked to provide information on their academic qualification. It can be deduced from the table that 28% of the contractors have obtained the Higher National Diploma

(HND). About 46% of them have also obtained University Bachelors Degree (BSc./BTech.). Additionally, 26% have also obtained Masters Degree (MSc./MTech). It can be seen from the above analyses that, majority of the contractors have obtained at least a first degree. The spread of educational qualification of the contractors surveyed can be said to be enough to provide the information required from them and that the

information provided was borne out of their understanding of the issues posed.

It can be deduced from the Table 1 that out of the 35 firms surveyed, 23% were established within a period ranging between One (1) to Five (5) years. From the Table, up to 31% were established within 6-10 years. Another 20% of the firms were established between 11 to 15 years. Additionally, 17% have been established within 16 to 20 years. It can also be seen from the table that about 8.5% of the firms surveyed have also been established for over 20 years. This is a clear indication that these contractors have enough experience in construction and as such the information obtained from them can be regarded as one gathered as a result of extensive experience in construction.

The result further shows that about 34% of the contractors have been working on construction sites for not more than 5 years, 23% have worked between 6 -10 years, while another 23 % have also worked between 11 –

15 years. Additional 14% have between 16 – 20 years experience on sites while about 6% have over 20 years experience of construction sites. This gives credence to the findings that the information provided are as a result of a relatively long experience on construction sites.

It can be seen from the table that in the last 10 years, 6% of the contractors have worked on projects ranging between 1 - 5, 26% have also worked on about 6 - 10 projects, another 26% have also managed projects ranging between 11 - 15. Additional 31% also handed between 16 - 20 projects, while 11% have worked on over 20 projects. This shows that the respondents have experience in construction activities. It can be seen from the demographic variables collected that the respondents have expertise and experience in the construction industry. It is therefore plausible to conclude that the data provided are credible.

### **Level of Awareness of the Health and Safety Regulations on Construction Site**

Table 2 presented the analysis of the level of awareness of H&S regulations among the respondents. The result revealed that there was high level of awareness of these H&S regulations among the respondents. About 92% of the respondents were aware of these regulations while only about 8% were not aware of the regulations. This result therefore confirmed a very high level of awareness of these regulations.

### **Level of Adherence to the Health and Safety Standards by the Respondents**

Table 3 revealed the analysis of respondent level of awareness of H&S standards. The respondents were asked to score the H&S regulations in line with their level of adherence, using 5points likert scale. Where 1= Never (N), 2= Rarely (R), 3= Occasionally (O), 4= Frequently (F) and 5= Very Frequently (VF).

**Table 2. Level Awareness of the Health and Safety Regulations**

| <b>Health and Safety Standards</b>                                  | <b>Not Aware</b> | <b>Aware</b> |
|---------------------------------------------------------------------|------------------|--------------|
| Use of health and safety file                                       | 2                | 33           |
| Accidents investigation                                             | 3                | 32           |
| All workers undergo medical test prior to work                      | 10               | 25           |
| Provision of adequate site security                                 | 2                | 33           |
| Provision of health and safety training for workers and supervisors | 4                | 31           |
| Appointment of competent health and safety officer                  | 9                | 26           |
| Provision of first aid facilities and medical attention             | 3                | 32           |
| Fire protection and prevention                                      | 2                | 33           |

|                                                                 |               |               |
|-----------------------------------------------------------------|---------------|---------------|
| Housekeeping practice on construction site                      | 5             | 30            |
| Site illumination                                               | 2             | 33            |
| Accident prevention by signs and tags                           | 2             | 33            |
| Delivery of the safety file to the client on project completion | 9             | 26            |
| Emergency routes and exits clear of obstruction                 | 5             | 30            |
| Proper handling of explosives                                   | 3             | 32            |
| Safe storage, handling and disposal of hazardous substances     | 3             | 32            |
| Provision of personal protective equipment (PPE)                | 1             | 34            |
| Replacement and repair of personal of protective equipment      | 7             | 28            |
| Allocation of health and safety coordinator/supervisor          | 8             | 27            |
| Excavation work safety precautions                              | 3             | 32            |
| Working at height safety precautions                            | 1             | 34            |
| Safe loading and unloading of goods and material                | 1             | 34            |
| Provision of welfare facilities and amenities                   | 1             | 34            |
| <b>Total</b>                                                    | <b>86</b>     | <b>684</b>    |
| <b>Percentage (%)</b>                                           | <b>12.57%</b> | <b>87.43%</b> |

From the result on table 3, provision of adequate site security was ranked 1<sup>st</sup> with the highest RII value of 4.35, the result depicts that there was high level of adherence. 2<sup>nd</sup> on the ranking table is provision of first aid facilities and medical attention with index value of 4.29, followed by working at height, safety precautions and safe loading and unloading of goods and

material which have the same index value of 4.18. This indicated moderate level of adherence. Also, safe storage, handling and disposal of hazardous substances, provision of welfare facilities and amenities and provision of personal protective equipment has the same RII value which was calculated to be 4.08 and were ranked 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> respectively.

**Table 3: Relative Importance Index of Level Adherence of the H&S Standards**

| Health and Safety Standards                                 | SWV = $\sum xi yi$ | RII= $\sum xi yi / \sum xi$ | Rank |
|-------------------------------------------------------------|--------------------|-----------------------------|------|
| Provision of adequate site security                         | 213                | 4.35                        | 1    |
| Provision of first aid facilities                           | 210                | 4.29                        | 2    |
| Working at height safety precautions                        | 205                | 4.18                        | 3    |
| Safe loading and unloading of goods and material            | 205                | 4.18                        | 3    |
| Safe storage, handling and disposal of hazardous substances | 200                | 4.08                        | 5    |
| Provision of welfare facilities and amenities               | 200                | 4.08                        | 5    |
| Provision of Personal Protective Equipment (PPE)            | 197                | 4.08                        | 7    |
| Site illumination                                           | 199                | 4.06                        | 8    |
| Replacement and repair of PPE                               | 197                | 4.02                        | 9    |
| Proper handling of explosives                               | 196                | 4.00                        | 10   |
| Accident prevention by signs and tags                       | 193                | 3.94                        | 11   |
| Excavation work safety precautions                          | 193                | 3.94                        | 11   |
| Fire protection and prevention                              | 190                | 3.88                        | 13   |
| Appointment of competent health and safety officer          | 188                | 3.84                        | 14   |
| Accidents investigation                                     | 182                | 3.71                        | 15   |
| Emergency routes and exits clear of obstruction             | 179                | 3.65                        | 16   |
| Allocation of health and safety supervisor                  | 175                | 3.57                        | 17   |
| Provision of training for workers and supervisors           | 174                | 3.55                        | 18   |
| Housekeeping practice on construction site                  | 174                | 3.55                        | 18   |
| Use of health and safety file                               | 171                | 3.49                        | 20   |
| Delivery of the safety file to the client on completion     | 177                | 3.47                        | 21   |
| All workers undergo medical test prior to work              | 157                | 3.20                        | 22   |
| <b>Average Score</b>                                        |                    | <b>3.87</b>                 |      |

The least ranked standards on the table are provision of H&S training for workers and supervisors, housekeeping practice on construction site, use of health and safety file, delivery of the safety file to the client on completion of the project and all workers undergo medical test prior to work, (RII = 3.55, 3.49, 3.47 and 3.20 respectively.

#### **Impact of Adherence to Construction H&S Regulations on Project Performance**

From Table 4, the average RII value (4.14) indicated that the impact of adherence to health and safety regulations on project performance was high. Majority of the respondents strongly agreed that H&S

compliance could lead to reduction in construction site accidents with index value of 4.86 and also could raise the firm's image, improve the industry's reputation which was initially painted as one of the most hazardous industries and main contributor to severe and fatal-work related accidents. It was also agreed that compliance with H&S regulations could increase productivity and efficiency with RII value of 4.31. However, quite number of the respondent neither agreed nor disagreed that compliance with Health and safety Regulation could lead to reduction in project cost which has the least index value of 3.41 that falls between (neutral and agree) but closer to neutral.

**Table 4. Impact of Adherence to Construction Health and Safety Regulations**

| Impacts                               | SWV = $\sum x_i y_i$ | RII = $\sum x_i y_i / \sum x_i$ | Rank |
|---------------------------------------|----------------------|---------------------------------|------|
| Reduces construction site accident    | 238                  | 4.86                            | 1    |
| Raises firm's image                   | 221                  | 4.51                            | 2    |
| Improve the industry's reputation     | 217                  | 4.43                            | 3    |
| Increases productivity and efficiency | 211                  | 4.31                            | 4    |
| Reduces construction project delay    | 199                  | 4.06                            | 5    |
| Improves human relations              | 198                  | 4.04                            | 6    |
| Improves human relations              | 198                  | 4.04                            | 6    |
| Improves project quality              | 190                  | 3.88                            | 8    |
| Reduces claims and litigations        | 189                  | 3.86                            | 9    |
| Reduces project cost                  | 167                  | 3.41                            | 10   |
| Average Score                         |                      | 4.14                            |      |

#### **Conclusion and Recommendation**

Continuous health and safety challenges resulting to different types and magnitudes of losses including loss of lives on construction sites has continued to attract great concerns. Sometimes it is said that knowledge is power, but misapplication of knowledge is disastrous. In view of this, this study has examined the level of contractors' health and safety awareness and compliance and the impact of adherence to health and safety on project performance on construction sites in Kwara State, Nigeria. The study showed that the level of health and safety awareness among the construction

firms in the state was high. It also found that construction firms occasionally adhere to health and safety regulations on construction site despite being highly aware of the regulations and standards. The study showed that lack of enforcement, Gross negligence, absence of health and safety inspection and audit as well as absence of Nigerian standards are the problems that cause non-compliance.

The result further revealed that project performance could be improved through adherence to health and safety regulations on construction site, where majority of the respondents agreed that Adherence to H&S regulation could lead to

significant reduction in construction site accidents, raise the firm's image and increase productivity and efficiency among others. However, the study showed that most of the respondents do not believe that adherence could lead to reduction in project cost as the cost of adhering was perceived to be too high which could reduce the contractors' projected profit, owing to the initial cost of compliance, but the result found out that

adherence would help to avoid direct and indirect cost that might result from construction site accidents.

Finally, adherence to health and safety standards always will not only reduce the rate of exposure to risk and hazard on construction site but also eliminate them where possible and would also improve the image of the company.

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