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Assessment of Safety Provisions on Building Construction Sites in Abuja, Nigeria: Professionals and Workers Perspective

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ABSTRACT
Despite the growth of the building construction sector in Nigeria, the provision of the basic safety materials and facilities to workers remains a challenge. The construction industry is believed to be a pillar of domestic economy in most nations; it is believed to contribute about 2.08% to the GDP of Nigeria. Yet, the rate of non-fatal, fatal injuries and illnesses exceeds that of many other industries, the construction industry has the most fatality rate when compared to other industry sectors. This paper examines the level of provision of the basic safety materials and facilities to workers by contractors in the Nigerian construction industry, the study employed the work study and field survey research method. Structured questionnaire were administered to the Architects, Engineers, Project managers and Contractors as well as the workers engaged in construction. The research exposed the neglect in the provision of safety materials and facilities on the part of the contractors. Scaffolds and shovels where the materials readily provided by the contractors from the list of safety materials provided as recommended by the regulatory authorities. The Institute of safety professionals of Nigeria, Council of registered builders of Nigeria and other statutory government agencies should be more diligent to effectively monitor the activities of building construction contractors in Abuja, Nigeria.

Keywords: *Construction, Industry, Professionals, Safety.*

1 INTRODUCTION

Accidents frequently occur in building construction sites, these accidents could be in the form of workers falling from heights, exaction accidents, risk of falling debris or equipments. Researchers have shown that accidents and injuries in developing countries are generally high when compared to the developed countries (Idoro, 2007). Some of these accidents could be attributed to the fact that work takes place in unsuitable site conditions, cases however exist where construction workers fail to utilise the available safety facilities and materials. It is worthy of mentioning that safety is not giving consideration during construction project delivery process in most developing nations, it is deemed to be an unnecessary aspect of the process. Mbuya and Lema (1996) and Ibrahim and Abdul-Bello (2014) opined that the building construction industry is made up of several personnel with different trades; these personnel are assembled on site at various stages of the construction process. This single factor adds more complexity to construction process, control of activities and personnel is usually not easy as they come from different backgrounds with unique characteristics special to them.

Abuja the Federal capital of Nigeria has been charaterised with a sudden increase in population over the years resulting in the need for massive infrastructural development. Authorities concerned have sorted the expertise of various construction and building contractors to provide infrastructures such as roads, housing and dams to cater for the increasing population. Construction activities are prone to risks and different hazards. Thus, the safety of construction personnel becomes an integral part of the construction process in line with global best practices. Safety in construction is the control of recognized hazards to attain an acceptable level of risk associated with that hazard (Hislop, 2009). Hinze (2005) opined that in order to improve safety performance on construction sites, the construction firms must be structured and positioned to make changes when it is needed. For construction companies to be really up to the task in combating safety issues, they need adopt a safety approach which is not based on monitoring injuries alone but rather also deals in measures/policies which can lead to better safety performance (Hinze, 2005). Unfortunately, though prequalification is widely practiced in Nigeria in the process of awarding contracts, safety factors are not given priority in these processes (Olatunji and Ade, 2005).

1.1 HAZARDOUS SITE WORKER PRACTICES IN NIGERIA

Hazards on construction sites are real or likely situations which can lead to death or injuries to the workers, damage/loss of items or belongings (Foad, 2011). Typical workers on Nigerian building sites pay little or no attention to their personal safety, they engage

in practices that eventually pose danger to them. Okoli and Okoye (2012) outlined some unsafe practices among workers on Nigerian construction sites to include: working bare footed on construction sites and mixing concrete with bare hands without protection, some unskilled laborers carry bags of cement on their bare heads.

1.2 WORKER SAFETY LEGISLATIONS IN NIGERIA

In Nigeria, virtually all legislations associated with the construction sector were received from the British legal system with little or no changes made. Some provisions in these legislations do not necessarily put into consideration factors peculiar to the Nigerian construction sector. Most professionals in Nigeria lack awareness of their legal responsibilities while the government rarely shows determination in enforcing these laws (Aniekwu, 1989). Some early legislations in Nigeria include the Workmen Compensation Act and the Factory Act (1987), which primarily dealt with provisions to ensure compensation payment to workers for injuries they sustained on site while the Factories Act dealt with ventilation, lightning, drainage of floors and ensuring all equipments and machinery (hoist, cranes, prime movers) are in good working condition. The Workmen Compensation Act of 1987 was modified into the Workmen Compensation Act of 2004, it was further updated into the Employees Compensation Act of 2011. The Safety, Health and Welfare Bill of 2012 was also passed by the National assembly in 2012.

Nigeria is a member of the United Nations; it employs the conventions of the International labor organization (ILO). The ILO's 1992 code of practice of construction enumerates guidelines needed for the smooth implementation of Health and Safety of all workers on site, it shows the necessary guidelines in ensuring the provision of adequate welfare facilities, protective personal equipments (PPE) and ultimately a safe working environment for workers on site. Some aspects of the code which are useful to this research are explained in 1.2.1 – 1.2.3.

1.2.1 PERSONAL PROTECTIVE EQUIPMENT

Under the ILO codes of practice 1992, employers are mandated to provide personal protective equipments (PPE) and protective clothing suitable for the nature of work to be performed, the PPE and Protective clothing should comply with the standards set by Authorities. These PPEs should however fit perfectly and be convenient because if they aren't comfortable the workers would refuse using them (Fedrick, 2010).

1.2.2 TYPES OF PPE AND PROTECTIVE CLOTHING

The law binds employers to provide the following PPE & protective clothing for workers on site:

i. Waterproof clothing and head coverings when engaged on sites with adverse weather conditions.
ii. Gloves, Overalls, respirators, impermeable foot wears to guard against hazards in workplaces exposed to harms like radioactive threats.
iii. Foot wears when exposed to sites liable to adverse weather conditions or sharp.
iv. Clear or colored goggles, a screen face, a face shield or other suitable devices when workers are faced with threats of potential eye injury (Fedrick, 2010).

1.2.3 WELFARE FACILITIES

The ILO code states thus: "at or within reasonable access of every construction site, the following facilities should, depending on the number of workers and the duration of the work be provided, kept clean and maintained:

i. Sanitary and washing facilities.
ii. Facilities for changing & for storage and drying of clothing.
iii. Accommodation for taking meals and for taking shelter during interruption of work due to adverse weather conditions (Fedrick, 2010).

2 METHODOLOGY

The primary data were obtained from questionnaire issued on site in addition to face-to-face interviews/interactions with the respondents. The questionnaire were quite simple to read and understand, this helped facilitate participation of the respondents especially the workers. Some cases of illiterate workers were encountered, the researcher read out the questions and helped thick their responses. 2 set of well structured questionnaire were designed for this research in order to obtain quantitative and qualitative data. One was designed and issued to the workers on site while the second was designed and issued to the construction professionals (Architects, Engineers, Project Managers and Contractors). 80 questionnaire were administered (50 to workers and 30 to construction professionals), 42 and 26 copies were retrieved from the workers and professionals respectively. This represented a response rate of 85% which is adequate (Oladapo, 2005). Fedrick (2010) opined that a response rate of about 30% is adequate for construction sector research. Safety materials in this context refers to the equipments used by workers to enhance productivity while safety facilities are other auxiliary measures put in place to enhance safety and make site environment conducive. A five point likert scale was used in analysing the data. Mean score values were calculated using the expression in (1).

$$\text{Mean Score} = \frac{Ranking\ x\ Number\ who\ chose\ the\ ranking}{Total\ number\ of\ respondents} \quad (1)$$

3 RESULTS AND DISCUSSION

TABLE 1: CONSTRUCTION PROFESSIONALS RESPONSE TO THE PROVISION OF SAFETY FACILITIES

Safety Facility	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)	Mean Score	Grand Mean
First Aid Equipment	80.77	19.23				4.81	
Sanitary Facilities	23.08	65.38	11.54			4.12	
Appointing Safety Officer on site	53.85	34.62	11.54			4.42	4.30
Rain gear	15.38	76.92	7.69			4.08	
Hearing Protection	19.23	69.23	11.54			4.08	

From Table 1, it is seen that the professionals on site strongly agree to the relevance attached to provision of safety facilities for their workers, all mean score values were above the weighted average of 2.5, with a grand mean of 4.30. First aid equipment was viewed by the construction professionals as most important safety facility followed by appointment of safety officer which ranked 2nd with mean value of 4.42 then provision of sanitary facilities with a mean score value of 4.12. This strongly indicates they know the importance attached to providing these safety facilities for workers. Personal inspection of the sites visited coupled with interaction with the workers however revealed despite the awareness of these safety facilities, they are not usually provided by the employers for workers use. A few of the sites visited actually had a safety officer on ground.

TABLE 2: CONSTRUCTION PROFESSIONALS RESPONSE TO THE PROVISION OF SAFETY MATERIALS

Safety Material	Very Important	Important	Neutral	Not Important	Not Very Important	Mean Score	Grand Mean	RII	Rank
Safety Sign	84.62	15.38				4.85		0.97	3rd
Helmets	92.31	7.69				4.93		0.98	2nd
Head Pan	11.54	84.61	3.85			4.08		0.79	6th
Safety Boots	96.15	3.85				4.96	4.50	0.99	1st
Shovel	11.54	73.08	15.38			4.0		0.79	7th
Hand Gloves	61.53	34.62	3.85			4.58		0.92	4th
Eye Glasses	19.23	69.23	11.54			4.07		0.82	5th

From Table 2, 84.62% of the professionals were of the opinion that safety signs are very important component of site safety, 92.31% considered helmets as very important. 61.53% viewed hand gloves as very important and 96.15% indicated safety boots as very important. Shovels and eye glasses were considered important with response of 73.08% and 69.23% respectively. The mean score values also pointed to the fact that the professionals knew the importance of these safety materials as the values were above the weighted average of 2.5. The Relative importance index values had very high ratings (above 0.80) with safety boots ranking first with RII value of 0.99. Head pan and Shovel both had RII values of 0.79 signifying high rating. Though the site staff attached importance to the provision of these safety facilities and materials listed in Table 1 and Table 2 respectively, a visit to virtually all the site reveals that these materials and facilities are grossly inadequate and in some cases unavailable.

TABLE 3: WORKERS RESPONSE TO THE PROVISION OF SAFETY MATERIALS

Safety Material	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean Score	Grand Mean	RII	Rank
Safety Signs		2.83		35.71	61.90	4.57		0.91	1st
Helmets	2.38	2.38	2.38	50.00	42.86	4.28		0.86	2nd
Head Pan	19.05	26.19	16.67	28.57	9.52	2.83		0.57	6th
Safety Boots	2.83	4.76	4.76	61.90	26.19	4.05	3.47	0.81	3rd
Shovel	19.05	61.90	7.145	11.90		2.12		0.42	7th
Hand Gloves		2.38	26.19	54.76	16.67	3.86		0.77	5th
Eye Glasses			19.05	54.76	26.19	4.07		0.81	4th
Scaffold/ Ladder	50.00	50.00				1.50		0.30	8th

The workers agreed to the provision of scaffolds and shovels as they fell below the weighted average of 2.5; however the workers disagreed to the provision of the remaining safety materials on site as they all had weighted values above 2.5. This result reveals that provision of safety materials by Nigerian contractors have been seriously compromised, the RII values computed showed the workers viewed provision of safety materials as very important as five (5) 0f the variables had very high ratings (RII $\geq$ 0.8) the remaining three(3) had low ratings (RII 0.6). Safety sign was the most important material from the workers perspective it ranked first (1st) with RII value of 0.91 followed by Helmets with RII value of 0.86 then safety boots with RII of 0.81while the least ranked was scaffold/ladder. This implies the workers attached more importance to the provision of safety signs than any other safety material on the list. In the workers perspective safety signs were the most important material lacking on the building construction sites, these signs were rarely provided. The provision of these signs could help reduce drastically the number of accidents recorded. The introduction of pictorial books / leaflets depicting unsafe acts and the best practices would help mitigate the bad practices among workers. The safe and acceptable practices are usually indicated along the unsafe practices so the workers easily know how to go about implementing these safe procedures. Such policies should be encouraged among building construction firms in Abuja, Nigeria.

4 CONCLUSION AND ECOMMENDATIONS

The building construction industry in Abuja (Nigeria) has come a long way. To achieve a sustainable industry, cases of unsafe practices among workers need to be mitigated. The study revealed the obvious compromise on the part of Nigerian building contractors in providing the needed materials and facilities for workers on site. Scaffolds and shovels were the two commonly provided materials in most of the sites visited, forcing the workers to perform tasks under unsuitable conditions. The importance of provision of these safety facilities and materials can never be overemphasised, legislations need to be strengthened especially with regards to the provision of personal protective equipments (PPE) for these workers. The workers themselves have to take responsibility for their own safety and ensure they perform these tasks safely. The following recommendations are hereby made:

1. The Federal ministry of labor and the Institute of safety professionals of Nigeria who are the agencies with oversight functions of ensuring strict implementation of the regulations should be given legal backing to carry out their roles effectively, accident documentation on these sites should be done

effectively. They should compel building construction contractors to provide a safe working environment for construction workers.

2. Constant sensitization of workers on the ills attached to unsafe practices on site.

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