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Assessment of Health and Safety Practices of Construction Workers in Educational Institutions Projects

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Abstract – The health and safety (H&S) in construction sites has become an integral part of project delivery because the construction industry has been described to have the most dangerous working environment. Majority of the construction casualties has been attributed to the attitude of individuals and professionals towards H & S on construction sites. This study assessed the H&S practices of construction workers in educational institutions projects. Three (3) educational institutions projects were sampled using a convenience and simple random sampling techniques. 87 questionnaires were returned out of 100 administered to respondents comprising construction operatives and construction professionals. Data obtained was analysed using descriptive and mean score (MS). The result of the study revealed provision of adequate and firm scaffold for high working areas (MS 4.07), proper material stacking and storage (MS 3.96), provision of perimeter fencing for safety of plants and equipment and prevention of intruders (MS 3.74) and provision of fire safety equipment in working areas (MS 3.73) as the major H&S practices embraced on the construction sites. The study further revealed that a good H&S practice have great impact in reducing injury to workers (MS 4.20), reduce financial loss to construction firms (MS 4.14), enhance easy movement and safe working environment (MS 4.00), reduces loss in productive hours by workers as a result of accident or injury (MS 3.80) and reduce injury claims by workers (MS 3.75). The study recommends the enforcement and regulation of H&S in construction sites by government and professional bodies, better awareness of H&S, training and retraining of construction workers on H&S and enforcing the use of protective safety wears and equipment

Keywords: Construction workers, Construction sites, Educational institutions projects, Health and Safety Practice

1. Introduction

The health and safety in construction sites has become an integral part of project success, this is so because the construction has been labelled to have the most dangerous working environment compared to other sector. According to [1] of the accidents that occurs in workplaces greater number of them happens in the construction industry because of its difficult and tough working conditions. It is ranked one of the most hazardous work environments that experience high number of workplace injuries and mortality rate [2]

The safety and health of the construction industry has become paramount because the construction industry contributes to the socio-economic development of many nation through the provision of infrastructures and creating employment opportunities. Consequently, by implementing appropriate health and safety practices, it will create a safer, healthier and more pleasant working environment and reduce the risk of accidents not just to workers but the public. [3] opined that a good health and safety conditions in construction constitute a good and safe business practice and could significantly contribute to quality assurance, cost efficiency, environmental sustainability and better employee-employer relationship and satisfaction.

Several factors has been identified as the causes of casualties on construction sites these include acts of God, law of awareness of safety regulations, indiscipline, poor working condition, inadequate communication, site characteristics, weak statutory operational safety and health regulations and provision [4] [5] [6] [7] [8]. However, the negative behavior and attitude of workers towards safety has been identified as the major cause of causalities on construction sites [9]. The behavior and attitude of construction workers towards Health and Safety (HS) has become vital in achieving project objectives and eliminating accidents, injuries and losses on construction sites. The non-implementation of HS on construction sites has great impact not only on the workers and projects but also on the economy in terms of unemployment, loss of direct investment from the construction sector that provides the necessary infrastructural facilities for economic development.

One of the sector of the economy that requires special attention in terms of Health and safety is the educational institutions because many construction activities is been carried out there, from the construction of new facilities to modernization of the old ones to enhance teaching, learning and research. The Health and safety of educational institutions construction projects is important to the safety and wellbeing of staff, students and the long time sustainability of the structures of the institutions. In view of this, this study assessed the Health and safety practices of construction workers in educational institutions projects with a view to reduce impact of construction casualties and enhance project delivery.

2. Methodology

The study adopted survey research design, with the help of structured questionnaire to the construction Professionals, construction operatives (both skilled and unskilled) on selected site in Ede, Osun state, Nigeria. A convenience sample technique was used to select the three (3) educational institutions in the study area and simple random sampling was used to select the population size. One hundred (100) numbers open-ended questionnaires were administered mainly to construction professionals and construction operatives to provide information. Data obtained from respondents was analyzed using descriptive statistics and mean score.

3. Data Presentation and Analysis

Table 1 presents the study locations, numbers of ongoing projects and number of questionnaires distributed and returned.

Table 1: Study area and questionnaire distributed and returned

Educational institutions	Projects	Administered questionnaire	Returned questionnaire	Percentage (%)
Adeleke University Ede (AU)	3	35	29	33
Redeemer University Ede (RUN)	3	35	31	36
Federal Polytechnic Ede (FPE)	2	30	27	31
Total	8	100	87	100

As shown on the table above, of the one hundred (100) questionnaires distributed eighty-seven (87) were returned, duly completed, and used for the basis of analysis of the study. Three educational institutions were selected in the study with Adeleke University (3), Redeemer University (3) and Federal Polytechnic Ede (2) numbers of projects respectively going on as at the time of the study.

In addition, the respondents includes construction professionals and site operatives in the construction sites in the study areas. As shown on Table 2, majority of the respondents were site operatives representing 73.3% of the respondents while the remaining 26.7% were professionals.

Table 2: Respondent Profile.

Categories of Respondent	Categories of operations	Frequency	Percentage (%)
Professionals	Engineers	10	11.5
	Architect	7	8.1
	Builder	3	3.5
	Quantity surveyor	3	3.5
Site operatives	Skilled labour	27	31.0
	Unskilled labour	23	26.4
	Subcontractor	6	6.9
	foreman	8	9.0
Total		**87**	100

3.1 Health and Safety Practices in Educational institutions construction sites.

The result of survey as shown on Table 3 present the Health and safety practices in the selected educational institutions construction projects. The study assessed, ranked and compared the mean scores of the professional and site operatives' respondents' perception and level of agreement on the Health and safety practices in construction projects site.

Table 3: Health and safety practices on the construction sites.

HS Practices	Site Operatives		Professionals			
	Mean Score	Ranking	Mean Score	Ranking	Total Mean score	Overall Ranking
Provision of adequate and firm scaffold for high working areas	3.94	1st	4.26	1st	4.07	1st
Proper material stacking and storage	3.92	2nd	4.12	2nd	3.96	2nd
Provision of perimeter fencing for safety of plants and equipment and prevention of intruders	3.62	3rd	3.82	4th	3.74	3rd
Provision of fire safety equipment in working areas	3.19	6th	3.78	3rd	3.73	4th
Plants & Machines only operated by authorized operative	3.42	5th	3.60	6th	3.59	5th
Provision of Emergency service in case of accident	3.51	4th	3.66	5th	3.58	6th
Regular safety awareness and training	3.13	7th	3.60	7th	3.51	7th
Regular safety inspection and supervision	3.51	4th	3.56	8th	3.50	8th

From the result of the survey on the Health and Safety practices on construction projects in Educational institutions; provision of adequate and firm scaffold for high working areas was ranked 1st by construction operatives and professionals has mostly embraced HS practice. This practice is important because according to Occupational safety and Health Administration (OSHA) about 70% of workers get injured and 60 deaths are recorded every year as a result of scaffolding accidents. In addition, the result confirm the study [1] that fall of persons from heights contributes to one of the greatest causes of fatal construction accidents among construction workers in Hong Kong. In view of this great care must be taken in the use of scaffolding on construction sites for safety of workers.

Another HS practice observed and embraced by construction operatives and professionals is the proper staking and storage of materials on sites. Proper stacking is necessary to prevent materials from falling or collapsing on workers that could lead to injure or even death. When materials are stored properly, it will enhance easy handling and usage not obstructing other activities on site. Furthermore, provision of perimeter fencing for safety of plants and equipment and prevention of intruders is another HS practices been carried on educational institutions construction projects. This practice not only have health and safety use but also as a preventive measure against theft of materials and equipment. It also provides a platform for fixing necessary safety warning signs and keep out notices [10].

In addition, provision of fire safety equipment in working areas is also a necessary HS practice, it was observed a few number of the construction sites provides fire safety equipment. The National Building Code [11] stipulate that all construction sites shall comply with the National fire safety code to prevent the occurrence of fire outbreak and loss of life and property during construction. Other HS practices that are rarely carried out on construction projects includes Plants & Machines only operated by authorized operative, Provision of Emergency service in case of accident, Regular safety awareness and training and Regular safety inspection and supervision.

3.2 *Impact of Health and Safety Practice on construction site.*

Table 4: Impact of Health and Safety Practice on construction site.

Likely Impact of HS on construction sites	Site Operatives		Professionals			
	Mean Score	Ranking	Mean Score	Ranking	Total Mean score	Overall Ranking
Reduces injuries and accident to workers	4.10	1st	4.54	1st	4.20	1st
Reduces financial loss to construction firms	4.08	2nd	4.50	2nd	4.14	2nd
Enhance easy movement and safe working environment	3.62	3rd	4.10	3rd	4.00	3rd
Reduces loss in productive hours by workers as a result of accident or injury	3.81	4th	3.70	5th	3.80	4th
Reduce injury claims by workers	3.65	5th	4.04	4th	3.75	5th
Enhance the sustainability of the structure	3.47	6th	3.56	6th	3.49	6th

The practice of Health and Safety on construction sites has great impact on the successful completion of the projects, as shown on table 4, ranked 1st; construction operatives and professionals both agreed that putting in place a good and functional Health and Safety practice could go a long way in reducing injury and accident to construction workers, this is in collaboration with [12] that Health and safety practices would reduce accidents impact on the victims and enhances safety participation of construction operatives. In addition, ranked 2nd on the impact of Health and safety practices, financial loss to construction firms could be reduced. When serious accident happens, the construction firms bear the financial implications that comes with the accident, which in turn could affect the firms' turnover.

Furthermore, Health and safety could enhance easy movement and safe working environment as reveled by the respondents when material, plants and machines are handled properly, safety sign placed in appropriate places, this will enable smooth flow of construction activities and reduce possible occurrence of accident to site operatives. In addition, proper Health and safety practices can impact the productive time of workers on site and in turn affect the general productivity of the construction project. When accident occurs work on construction sites have to stop, so as to attend to

the injured person. Study by [13] identified Health and safety practice as one of the factor that is significant to workers productivity.

Injury claims have large impact on the construction project as a result of accident to the worker. When injury happens as a result of violation of occupational safety and health administration regulations on the construction sites, the construction company can be held liable for the injuries and this in turn portraying the educational institution in a bad light where the project is been carried. Above all the practice of Health and safety will enhance the long-term sustainability of structure in the institutions, their successful completion without safety and health concerns is important to sustain the functions of the facilities for both present and future users.

4. Conclusion

It is evident in various studies that Health and safety on construction site is the duty of everyone participating in project, any in action in term of safety in the part of anyone in the project could lead to accidents, injuries and even loss of lives. This study has identified the Health and safety practices in the selected educational institutions construction projects and the implications of these practice on construction workers from site operatives and professionals point of view.

It therefore important for every stakeholder in the construction projects to adhere to Health and safety practices for the sustainability of the projects and the structures, increase productivity of workers, reduce financial loss and loss of productive hours. Furthermore, the practice of health and safety among the construction workers can be improved by better enforcement and regulation of Health and Safety in construction sites by site operatives, government and professional bodies, organizing Health and Safety enlightenment before the commencement of the projects and training and retraining of construction workers on Health and Safety practices by construction managers.

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