

Perception of Ghanaian Construction Employers' Safety Awareness

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ABSTRACT--- *The construction industry is considered one of the most exposed industries in relation to safety risks at work. The establishment of codes of standards for safety has not minimized the rate of accidents on construction sites in a developing country, like Ghana. The study sought to assess the conceptions of construction employers' safety awareness on construction sites in the Central Region of Ghana. Out of one hundred and twenty (120) questionnaires administered, only eight-six (86) questionnaires were returned which represents seventy-two percent (72%) of the response rate. The data collected were analyzed using Statistical Package for Social Science (SPSS) version 20 and Relative Importance Indices (RII) were used to rank the variables of construction employer's safety awareness. Findings show that the introduction of safety compliance rules on construction sites and adequate safety equipment to employees were the most influential factors to construction safety awareness sites and existing measures for construction safety awareness respectively. Further findings show existing measures for safety on construction site helps in the reduction of cost on construction projects. It was concluded that safety regulations and rules, safety practices, and laws must be enforced at the beginning of a project. Employees must observe and abide by all safety rules and regulations on construction sites.*

Keywords--- Construction, hazard, safety awareness, site management

1. INTRODUCTION

Construction site safety is an aspect of construction-related activities concerned with protecting construction site workers (Laryea and Mensah, 2010). Safety management has been an issue in developing countries which include poor infrastructure; problems of communication due to low literacy level; unregulated practices on construction sites; adherence to traditional methods of working; non-availability of equipment; extreme weather conditions; improper use of equipment and corruption (Muiruri and Mulinge, 2014). The borderline between health and safety is ill-defined and the two words are normally used together to indicate concern for the physical and mental well-being of the individual at a workplace (Ofosu et al., 2016). Any breach in any safety defense can lead to delay consequence of decisions at the highest levels of the system, which may remain dormant until their effects or damaging potential are activated by specific operational circumstances (ICAO Safety Management Manual, 2013). The Ghanaian society does not place high premium on the safety of construction workers on site (Laryea and Mensah, 2010). A lot of construction workers in Ghana are exposed to high risk of accidents which lead to physically handicapped (Amponsah-Tawiah and Dartey-Baah, 2011). Construction safety involves any safety procedure that is related to the construction industry and ensures the prevention of any immediate cause danger to the public close to the site (Safeopedia, 2018). The provision of adequate facilities to maintain the health and well-being of individuals at workplace is key to the construction industry (Health and Safety Executive's HSE, 2021). Any organisation with up to five employees should adopt safety requirements (OSHA, 2011). A risk is the likelihood of a substance, activity or process to cause harm and this risk can be controlled by good management (Al Hajeri, 2011). Hazards on construction sites cannot change since they are part of the job but the risks involved with these hazards could be reduced with proper control and implementation of safety principles (Al Hajeri, 2011). A hazard is generically defined by safety practitioners as a condition or an object with the potential to cause death, injuries to personnel, damage to equipment or structures, loss of material, or reduction of the ability to perform a prescribed function (ICAO Safety Management, 2013). The study sought to assess the conceptions of construction employer's safety awareness on construction sites in Cape Coast Metropolis, Ghana. The preceding section discusses about construction workers safety awareness.

2. CONSTRUCTION EMPLOYER'S SAFETY AWARENESS

Construction safety measures should be of primary concern to employers, employees, governments and project participants (Kheni, 2008). According to OSHA instructions (2011) it is important to identify that the greatest potential for exposure to hazardous chemicals involves field exposures during the course of on-site activities, therefore all containers of hazardous chemicals in the office will be properly labeled and also all employees working on hazardous materials must be properly trained in handling them. For safety reasons, any construction worker should be assigned duties in relation to his physical and mental health and skills (Langan, 2012). Site operatives should be trained in all aspects of safety and be competent in risks handling issues (HSE, 2021). The training of site operatives must be based on competency on special risks on their trades to enable them to solve various risks on site (HSE, 2021). A typical construction site may require workers to wear a hard hat, coveralls, safety footwear, gloves, eye protection and high measures use in construction sites. Report form HSC/E (2007) indicated that site-specific induction training should be completed by each worker, to point out any high-risk areas and provide instructions for emergency management. Another aspect of safety must include site security to protect pedestrians from potential construction hazards (HSE, 2013). Yanka (2012) posits that the use of Personal Protective Equipment (PPE) should be made mandatory to all site workers. IJCIET (2017) report shows that the use of PPE would aid in decreasing employee contact to hazards when engineering and administrative control measures are not effective in reducing this exposure to adequate levels. The preceding section discusses about the methods used for data collection.

3. METHODOLOGY

The population of the study consisted of five building construction companies on various projects within Cape Coast Metropolis during the field work in June 2021. The selected population was based on the unavailability of data on the number of respondents in the Central Region of Ghana, with a confidence level of 95% and a limit of error of 5%. The sample size of one hundred and twenty (120) was obtained through census sampling technique (Bryman & Bell, 2007; Mason, 2006). Sets of questionnaires were designed based on the set objectives of the study to enquire about the safety awareness of employees on construction sites within Cape Coast Metropolis (Naounm, 2007). Questionnaires were administered personally with the assistant of two field workers to contractors, consultants, managers and clients on construction sites in the Central Region of Ghana. Out of one hundred and twenty (120) questionnaires administered, only one eight-six (86) questionnaires were returned which represent seventy-two percent (72%) of the response rate. The collected data were subjected to data display, data reduction and verification. Finally, the data collated was edited, coded and analyzed (Saunders et. al (2007). Statistical Package for Social Science (SPSS) version 20 was used for the analysis and the results were presented Tables (using percentages and frequencies). Relative importance indices (RII) were used to rank the critical factors of safety awareness. The preceding section presents the findings of the research.

4. FINDINGS

Majority (75- 62.5%) of the respondents were Diploma certificate holders who were contractors (56 - 46.7%) with (6-10) years working experience (39-32.5% followed by Master's degree (32-26.7) who were consultants (30 – 25.0%) with 11-15 years working experience (29 - 32.5%). The least (1 - 8.0%) were Bachelor's degree holders who served as site managers (11- 9.2%) with 16 -20 years working experience (10 – 8.3%).

Table 1 shows that majority of the respondents ranked 'introduction of safety compliance rules on construction sites' 1st, with a **RII of 0.832** and **Mean value of 4.16** as the most influential factor pertaining to construction safety awareness. This is followed by the 'provision of all protective equipment to employees on site' which was ranked 2nd, with a **RII of 0.828** and **Mean value of 4.14**. The least ranked factor among the ten (10) factors of construction safety awareness were 'provision of safe storage, handling and disposal of hazardous substances on construction sites, with a **RII-0.78** and **Mean value of 3.9**.

Table 1: Factors of Construction Safety Awareness

FACTORS OF CONSTRUCTION SAFETY AWARENESS	W	M	RII	R
Provision of adequate Personal Protective Equipment (PPEs) at workplace.	187	3.74	0.748	4th
Effective use of PPE on site.	96	1.92	0.384	7th
Provision of first aid on construction sites.	195	3.9	0.78	9th
Provision of fall protection equipment to employees on sites.	207	4.14	0.828	2nd
Availability of safety plan for employees on sites.	210	4.2	0.84	8th
Availability of safety emergency procedures on sites.	197	3.94	0.788	3rd
Provision of safe storage, handling and disposal of hazardous substances on construction sites.	190	3.8	0.76	10th
Availability of fire safety at all units of the construction area.	179	3.58	0.716	6th
Introduction of safety compliance rules on construction sites	208	4.16	0.832	1st
Recognition and rewards schemes for hardworking and employees for complying to safety regulations.	181	3.62	0.724	5th

W-Weight, M-Mean, RII-Relative Importance Index, R-Ranking

Table 2 shows majority of the respondents ranked ‘adequate safety equipment to employees’ 1st, as the most influential factor for the existing measures for construction safety awareness, with **RII** of **0.944** and **Mean** value of **4.72**. The 2nd highest ranked factor for construction safety awareness is ‘surety of audits and inspections on the construction sites’ with a **RII-0.932** and **Mean** value of **4.66**. The least factor among the ten (10) factors of construction safety awareness was ‘provision of first aid to workers before hospitalizing them’ with a **RII** of **0.700** and a **Mean** value of **3.5**.

Table 2: Existing measures for Construction Safety Awareness

EXISTING MEASURES FOR CONSTRUCTION SAFETY AWARENESS	W	M	RII	R
Adequate safety equipment to employees.	236	4.72	0.944	1st
Organizational and safety policy to employees.	192	3.84	0.786	7th
Ensure safety audits and inspections.	233	4.66	0.932	2nd
Wearing of PPE by employees on sites.	212	4.24	0.848	4th
Employees compliance to safety regulations.	227	4.54	0.908	3rd
Organizing seminars on safety measures to construction employees.	208	4.16	0.832	5th
Periodic changing of PPE for employees.	201	4.02	0.804	6th
Creation of safe working environment for workers	193	3.86	0.772	8th
Insurance schemes for worker in case of accident	165	3.3	0.660	9th
Provision first aid to workers before hospitalizing them	175	3.5	0.700	10th

W-Weight, M-Mean, RII-Relative Importance Index, R-Ranking

Table 3 shows that majority of the respondents ranked ‘helps in the reduction of cost on construction projects’ 1st, with **RII** of **0.956** and a **Mean** value of **4.78** as the most important measure for safety on the construction site. ‘Contribution to the increase of productivity’ has been indicated as the 2nd most important safety measure, with a **RII of 0.872 and a Mean value of 4.36**. The least ranked factor among the ten (10) factors of construction safety measure on site was ‘it gives the company a good reputation in the aspect of safety’, with a **RII of 0.700** and a **Mean** value of **4.44**.

Table 3: Importance of Safety Measures on Construction Site

IMPORTANCE OF SAFETY MEASURES ON CONSTRUCTION SITE	W	M	RII	R
Contribute to accident prevention on construction site.	206	4.12	0.824	5th
Help in prevention of unnecessary injuries and illness.	188	3.76	0.752	7th
Contribute to ease at work and leads to execution of project on time.	202	4.04	0.808	6th
Contribute to increase in the profit margin of the company.	178	3.56	0.712	8th
Gives the company a good reputation in the aspect of safety.	175	3.5	0.7	10th
It provides sound mind for employees to execute their task.	222	4.44	0.88	9th
It contributes to increase productivity.	218	4.36	0.872	2nd
Helps to reduce cost on construction project.	239	4.78	0.956	1st
It creates good working environment on site	209	4.18	0.836	4th
It serves as a form of motivation to employees.	212	4.24	0.848	3rd

W-Weight, M-Mean, RII-Relative Importance Index, R-Ranking

5. SUMMARY OF FINDINGS

Most of the respondents had diploma certificates with a range of 6-10 years working experience with their respective companies. Introduction of safety compliance rules on construction sites was found to be the most influential factor pertaining to construction safety awareness site. This finding concurs with the findings of Al Hajeri (2011) and report from OSHA (2011).

While adequate safety equipment to employees was also found to be the most influential factor under the existing measures for construction safety awareness. This finding concurs with the HSE (2021) and OSHA (2011) reports on the provision of safety facilities to construction workers. Pertaining to existing measures for safety on the construction site, most of the respondents indicated that it helps in the reduction of cost on construction projects. This finding concurs with the findings of several researchers (Yanka (2012; Langan, 2012) and reports from HSE (2021) & and IJCIET, 2017)

6. CONCLUSIONS AND RECOMMENDATIONS

The study sought to assess the conceptions of construction employer’s safety awareness on construction sites in Cape Coast Metropolis, Ghana. Construction employers must create awareness on the need for proper safety management procedures on construction sites by appointing safety officers to enforce the safety regulations and rules and work closely with site engineers and other workers on site, improving on the existing safety programmes and changes to safety legislation. The implementation of safety practices and laws at each stage of any project must be enforced and ensure that employees observe and abide by all safety rules and regulations on construction sites.

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