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EMPIRICAL STUDY OF COMPLIANCE WITH OCCUPATIONAL HEALTH AND SAFETY LEGISLATION: A CASE STUDY OF THE CONSTRUCTION SITE

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ABSTRACT

In general, the construction industry is one of the world's occupational settings that has high incidents of fatalities and injury rates. Developing countries, Ghana inclusive are faced with much more challenges to effective management of occupational health and safety due to the increasing rate of industrialization and weak occupational health and safety framework. The study aims to examine compliance with occupational health and safety legislation in construction sites in Ghana. The study adopted a quantitative research strategy. Two hundred and one (201) members of construction companies and One hundred and forty-three (143) officers of Regulatory Institutions (RIs) responded to the questionnaires distributed. The findings indicated that construction companies had achieved improved H&S standards compliance because; employees use Personal Protective Equipment (PPE) effectively, construction companies allow labour interactions, observe H&S provisions in contract

conditions and other relevant safety regulations, control noxious or offensive and highly flammable substances on site. It is recommended that the government adequately resourced Regulatory Institutions (RIs) to effectively carry out their mandate to significantly reduce risk and accidents on construction sites.

Keywords: Health and Safety, Construction, Compliance, Accidents, Ghana.

INTRODUCTION

Background to the Study

An accident is usually an unplanned and unexpected event, which results from a mistake somewhere, somehow and by somebody, some of these mistakes result from easily recognizable hazards, which are preventable. The designer, the contractor, or even the worker may make the mistake (Ward, 1979 as cited in Aniekwu). Danso (2005), quoted reports that the construction industry recorded 902 accident cases in the year 2000. Comprising 56 fatal accidents and 846 non-fatal accidents. Admittedly, Construction is a dangerous industry, Worldwide, the ILO has estimated that it accounts for 100, 00 fatalities annually, some 30 to 40 per cent of fatal occupational injuries overall (ILO, 2005). Therefore, the risk of serious injury or death at work in this sector is considerably greater than in others.

in Ghana, construction workers suffer various degrees of industrial accidents leading to injuries and death. The current one happened at Cantonment in the Greater Accra Region where one person was crushed to death and twelve others sustained serious injuries after a four-story building they were constructing collapsed on them. The structure buried the deceased under tons of rubble. Keeping in view the construction site context, and safety problem, in the present study, the issue is investigated from a compliance to health and safety perspective.

Problem Statement

In Ghana, accidents occurring in the construction project site may be due to inadequate supervision and monitoring practices of the authorities tasked to track down firms who fail to observe safety standards. Construction companies per the Workmen Compensation Law(1987) must report accident cases to the Labour Department for compensation to victims, but the authorities of some of these construction companies feel reluctant to do so. Kheni (2008) option that, reporting an accident to the Labour Department is not without a problem. He points out that owners/managers of some companies fear that the disclosure of sure incidents to government departments may dent the image of their businesses and compromise their autonomy and integrity. Kheni added further that, management normally resolved the occurrence of the accident and ensured matters with the injured person and his/her family relation. This is an indication that construction companies are running away from paying big compensations to the accident victim Kheni (2008). However, when one reports accident cases, it takes too long for authorities to pay compensation and affect corrective or preventive measures. Hence, there is little effect of the influence of regulatory institutions on construction projects. The efficiency of occupational H&S administration in Ghanaian construction sites is questionable as the absence of enabling policies partly translates into a lack of compliance. This study sought to contribute to knowledge on compliance with occupational health and safety legislation in construction sites in Ghana.

Aim and Objective of the Study

The study aims to examine compliance with occupational health and safety legislation in construction sites in Ghana. The specific objective is as follows:

- ❖ To assess the extent to which contractors comply with health and safety standards contained in health and safety regulations;

Research Questions

- ❖ What is the extent of Ghanaian contractors' compliance with health and safety standards contained in health and safety regulations?

Significance of the Study

Admittedly, one of the basic goals of organizations is to optimize human resources to achieve set targets. Matters relating to health and safety within an organization are critical in achieving set goals. Industrial accidents and illness make up one of the largest parts of loss of production time in the industry and these injuries have posed major challenges to most construction projects. Companies have suffered long spells or production shortfalls, compensation payments, insurance premiums and legal battles due to injury, reduction in the quality of life, family problems and decrease in life span and other effects which qualitatively cost employees, organizations, society and the nation, in general, is impossible to evaluate. This study is therefore significant for the following reason:

- Findings from the study will add up to existing knowledge on the subject under study;
- The outcome would enhance the performance of regulatory institutors in ensuring safety standards;
- Construction industries can utilize the findings to curb the alarming rate of industrial accidents resulting in injuries and deaths;
- Increase the awareness about health and safety in the construction industry and reveal the weaknesses strategies employers adopt to enhance health and safety standards.

Limitations

The major limitations of the study were that some respondents were reluctant to answer the questionnaire which was necessary for the study for fear that providing the right information may affect their institutions directly or indirectly. In addition, the retrieval of the questionnaire distributed to respondents was a big task because most of the respondents could not answer the questionnaire due to their work schedules. Moreover, the scope of the study, which covers the entire country, was too extensive for only two years. It thus poses a big challenge for the researcher to come out with a comprehensive mixed-method design.

LITERATURE REVIEW

Health and Safety Management within the Construction Industry

Effective OHS management means developing, coordinating, and controlling a continuous improvement process by setting and adjusting OHS standards (Zimolong & Elke, 2006). According to ILO (1995), safety management in simple terms means, applying safety measures before accidents happen. Effective safety management has three main objectives: to make the environment safe, to make the job safe, and to make workers safety-conscious. Construction projects, which use subcontractors, should set out the responsibilities, duties, and safety measures that they expect of the subcontractor's workforce. These measures may include the provision and use of specific safety equipment, methods of carrying out specific tasks safely, and the inspection appropriate use of tools. According to ILO (2003), safety discourages work

habits that place individuals at risk of injury. A safety program should go beyond wearing safety helmets or safety clothing. It philosophies how to identify and eliminate hazards associated with work in corporate organizational structure and culture since these play important roles in forming the attitudes and perceptions of workers. Health and safety management forms part of a safety climate within an organization. In the study of Adjotor (2013), there exists a dynamic reciprocal relationship between psychological, behavioural, and situational factors in the organizational culture. Safety management is an external factor that one can observe. Bandura's model of reciprocal determination illustrated how an organizational safety culture looks and shows how safety management is an external observable factor that is situational.

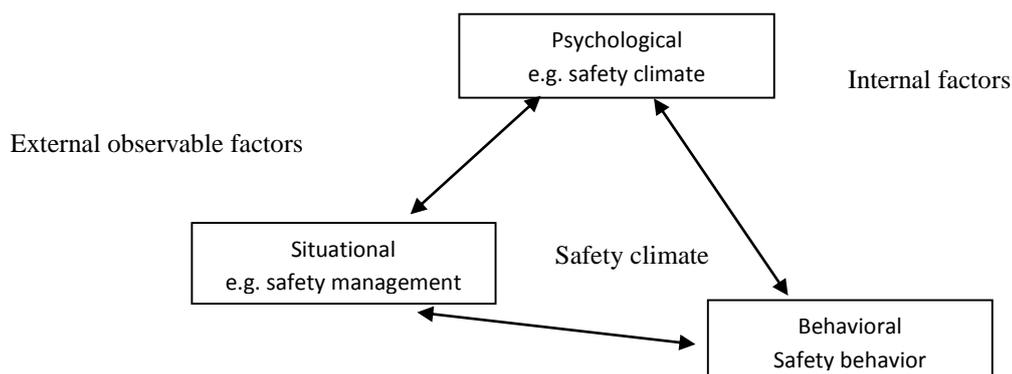


Figure 1: Bandura's model of reciprocal determination, source: Adjotor (2013)

Occupational health management is a system that tracks each incident that relates to employees' health and safety. It integrates the entire plan of an organization into a unified whole that assumes complete responsibility for each employee. This means that it is concerned with prevention as it is with health care after an accident. The goal of Occupational Health and Safety is to do everything that one can do to prevent accidents and minimize illness (Cruickshank, 2010).

Health and Safety in Ghana

The Ghanaian construction industry is playing a vital role in achieving socio-economic development goals, providing shelter, infrastructure, and employment, and above all contributing significantly to the GDP of the country. It is generally known that developing countries like Ghana lack relevant policies to adequately cater to the health and safety of employees (Quainoo, 2001). The accident rates in manufacturing and construction projects in developing countries are at levels several times higher than in industrialized countries (Clarke, 2005). Some years ago, production methods created so many work-related hazards. This led to the passage of the Factories Ordinance in 1952 to provide a code of protection for most productive workers. Its implementation started in the mining industry where workers were exposed to serious health hazards (Kheni et al, 2008).

Anna, Addai and Tulashie (2014) believed that increasing industrialization in Ghana would lead to increasing the number of Ghanaian populations exposed to workplace physical, chemical, biological, and psychological stress. In the interest of ensuring the protection of workers from work-related injuries and illnesses as well as preventing accidents in the industry, they have introduced legal instruments in various sectors to control employers and employees. These include, but are not limited to, the Mining and Minerals Regulations (1970) LI 665, the

Workman's Compensation Law (1987), the Ghana Health Services and Teaching Hospital Act (1999), and the Ghana Labour Act (2003) Act 651. Others are the Radiation Protection Instrument LI 1559 of 1993, which is an amendment of the Ghana Atomic Energy Act 204 of (1963); the Environmental Protection Agency Act (1994) Act 490, which has components that include (but are not limited to) the Pesticide Control and Management Act (1996) Act (528) which seeks to protect the environment and persons. Finally, there is also the Ghana National Road Safety Commission Act (1999) Act 567. These legislations operate under different government institutions, not necessarily under a common directive.

Impact of Compliance with Health and Safety Regulations and Contract Conditions on Accidents on Construction Project Sites in Ghana.

Construction accidents can range from minor to catastrophic and frequently result in death. The types of injuries one can sustain from these accidents include amputation, blindness, deafness, bone fracture, burns, comatose concussion, paralysis, severed spinal cord, traumatic brain injury, and so forth. These accidents can result from negligence, faulty construction equipment, defective products, defective machines, inadequate safety or equipment rain, and co-worker recklessness. A construction work site is usually a busy place with incredibly high ongoing activities. Accident rates closely correlate to the level of activities within the industry, and the dangers faced by construction workers. The construction industry records a high rate of death by injury (Amartey, 2014). One instance of death at construction worksites where safety standard was poor was in Islamabad, the capital of Pakistan (Express Tribune 2014). That accident killed four people, including a Chinese engineer, when a wall collapsed at a construction site for a major dam construction project in Kashmir. A similar accident occurred at Cantonment, suburbs of Accra, Ghana where collapsing walls of a four-story building crushed one man to death (Bokpe. 2014).

METHODOLOGY

Research Design

A research design is a blueprint for fulfilling research objectives and answering research questions. It is the master plan specifying the methods and procedures for collecting and analyzing the needed information. It ensures that the information the researcher has collected is appropriate for solving a problem (Adams, Khan, & White, 2007). The researcher adopted a quantitative method for this study. Quantitative research is concerned with measuring a quantity, or an amount; manipulating statistics; and testing a hypothesis. It deals with the manipulation of numbers to gain insight into the study (Davis, 1997).

Population

According to Fraenkel and Warren (2002), population refers to the complete set of individuals (subjects or events) having common characteristics which the researcher is interested in studying. The researcher considered organizations and government departments and agencies with functions relating to health and safety in construction projects across the length and breadth of the country for the population. These include;

Recognized Regulatory Institutions:

- Factories Inspectorate,
- Labour Department,
- Environmental Protection Agency.
- Fire Service

Contractors

- Association of Building and Civil Engineering Contractors of Ghana;
- Association Road Contractor Ghana. (ASROC).

The study's focus was on how to examine compliance with occupational health and safety legislation by preventing accidents, (if not eliminating them) in construction sites in Ghana. Currently, Ghana's ten administrative regions are subdivided into 216 distinctive metropolitans, and municipal and district assemblies. The main purpose of these assemblies is to bring local governance to the doorsteps of the people and enhance the decentralization process in Ghana. These assemblies form part of the regulatory institutions responsible for ensuring health and safety standards at construction project sites in the ten regions.

Sampling Frame

A sampling frame by definition is a list of the people or items from which one takes a statistical sample (Microsoft Encarta, 2009). The study targeted Project Managers, Architects, Structural Engineers, Quantity Surveyors, Managing Directors, Site Managers, and Civil Engineers. It targeted these respondents because, literature has established that most Project Engineers, Site Managers and Civil Engineers have the widest exposure to construction projects, and are involved in various project phases including planning, design, and construction. They are often responsible for setting up safety policies and programs on sites and work closely with contractors and regulatory institutions. Thus, their roles in safety management are explicit.

Sampling Technique and Sample Size

Kumar (1999) explains that a sample is a sub-group of the population that is an ideal representative of the entire population. The sampling approach adopted for the study followed a sequential process (Teddlie & Yu, 2007), sampling involving a systematic sampling with a random start for the selection of respondents from contractors for participating in questionnaires, and a census was conducted to select officers of regulator institutions. Systematic random sampling is by first selecting the sample element in a finite sequence at equal spacing (sample interval) from each sample. The population is then divided into subgroups, each having a total number of elements equal to the sample interval. The first member for the sample is then selected randomly from the first interval. Starting from the first member thus selected, every n th element from it is selected. The sample interval is calculated as;

$$\text{Sample Interval} = \frac{\text{population size}}{\text{sample size}}$$

Data Collection

The study employed quantitative methods for data collection. The researcher used a questionnaire for collecting techniques or instruments to elicit data from the population.

Questionnaires Development

Project Managers, Architects, Structural Engineers, Quantity Surveyors, Managing Directors, Site Managers, Civil Engineers, and Officers of Regulatory Institutions responded to two sets of questionnaires. The first part of the first set of questionnaires sought information on the Demographic characteristics of respondents. Thus, the respondent's personal/company details (e.g. type of construction works undertaken by one's firm, the association one's company belongs to, the educational level, and working experience in the industry). It also sought information on the type of construction. The second questionnaire dwelled on the opinions of

respondents on compliance to health and safety provisions in conditions of contract and legislation with particular reference to conditions in the contract documents, Factories, Offices and Shops Act (1970), Ghana Labour Act (2003), Provisions in Environmental Protection Act (2003), Fire precautions Act(1994) and the agreement of respondents on the compliance with health and safety regulations on safety standards.

Reliability

Reliability estimates the consistency of the measurement or more simply, the degree to which an instrument measures the same way each time it is used under the same conditions with the same subjects. To determine the internal consistency of each factor one has to examine how each item inter-correlates and compute Cronbach's Alpha. The minimum advisable level is 0.7 (Sproul, 1988) although may reduce to 0.6 in exploratory research (Hair et al. 2006; Conca et al., 2004). It usually eliminates anything less than 0.6 (Malhotra & Grover, 1998). The proposed success factor whose calculated Cronbach's α greater than the critical point of 0.70, is highly reliable and internally consistent. The researcher scrutinized the reliability of raw data obtained from the survey by sorting, editing, and coding to eliminate or at least minimize errors, omissions, as well as other discrepancies capable of compromising sound judgment. The Cronbach's Alpha calculated for this study was 0.812, indicating high reliability (refer to Appendix-Annex 4.).

Analysis of Data

Data were analyzed using statistical programs like the Statistical Package for Service Solution (SPSS) version 20.0 with statistical tools like Descriptive statistics. The researcher employed some measures of central tendencies such as the Mean and the Standard Deviation (SD). The study also used Factor Analysis (FA), a data reduction tool for simplification to interpret data from respondents. The researcher coded Likert scale questions before entering them into the computer.

PRESENTATION AND ANALYSIS OF RESULTS

Demographic Characteristics of Construction Companies

Construction firms undertake varied works depending on the objective and logistics of the firm. Table 1 illustrated the types of construction work undertaken by respondents who contributed to the study. A majority, i.e. 123 out of 201, representing a valid percentage of 61.2% of respondents' companies are into Building Construction. The rest of the respondents belong to Civil Engineering Construction, representing 38.8% (refer to Table 1).

Table 1

Type of Construction Works Undertaken

Construction Works	Frequency	Valid Percent (%)
Civil Engineering Construction	78	38.8
Building Construction	123	61.2
Total	201	100.0

Source: (Researcher's field Note 2015)

Educational Qualification of Respondents

Construction companies especially management members, need some level of formal education that will equip them with the requisite skills to undertake quality construction projects. The study explored respondents' educational qualifications to find out their level of education. As indicated in Fig. 4.2, fourteen persons, representing 7% of respondents attained Technician certificates; sixty-two persons, representing 30.8% of respondents attained HND status; while

one hundred and nineteen persons, representing 59.2% have obtained a first degree. This category of respondents is in majority. In addition, six persons, representing 3.0% of respondents hold a second degree. This is an indication that the majority of the respondents have high academic qualifications and therefore must be well informed about their work.

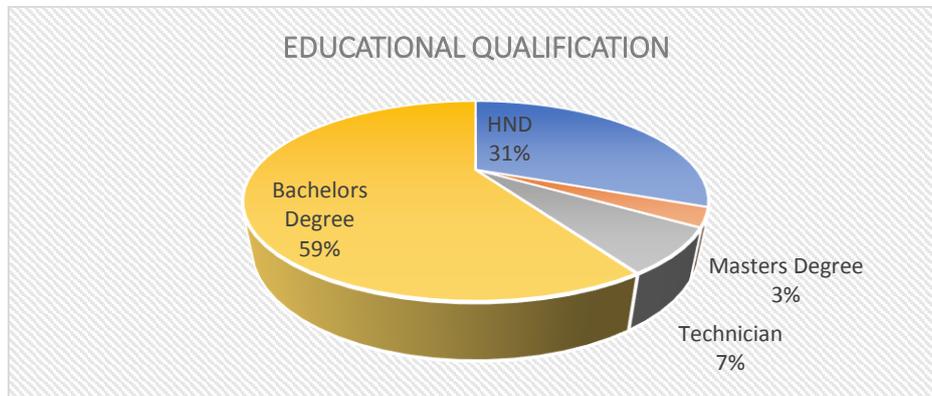


Figure 2: Educational Qualification of Respondents. Source: (Field Survey, 2015)

Job Title of Respondents

The study looked at the responsibilities of individual respondents to examine their duties and see how these duties affect health and safety standards on construction sites. The data analysis on this section of the study showed that there were thirty-three project managers, representing 16% of respondents; ten Structural Engineers, representing 5% of respondents; twenty-five Quantity Surveyors, representing 12%; and ninety-six Site Managers, representing 48% of respondents. In addition, four Architects represent 2.0% of respondents, and five Services Engineers represented 3% of respondents. Furthermore, there were six Managing Directors, representing 3% of respondents; and twenty-two Civil Engineers representing 11% of respondents (refer to Fig. 4.3). All the respondents who contributed to the study have a responsibility on-site so they can address health and safety issues.

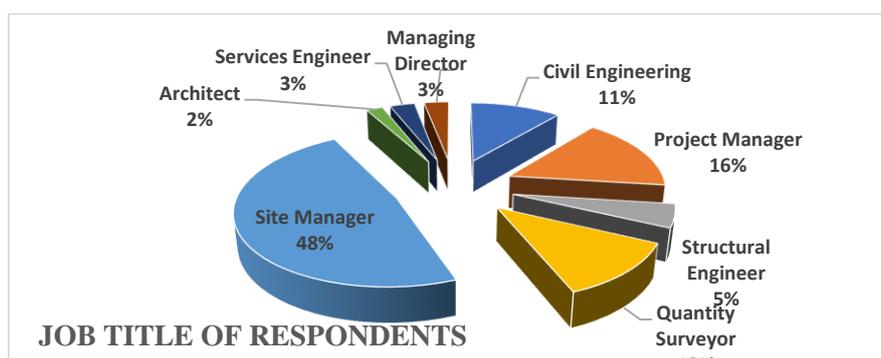


Figure 3: Job Title of Respondents. Source: (Field Survey, 2015)

Contractors' Compliance with Health and Safety Standards contained in Health and Safety Regulations

Table 2 describes construction companies' compliance and implementation of health and safety standards on construction sites. The statistics show the frequency of responses and their representative percentages for the successful implementation of health and safety standards on

construction sites. The researcher ranked the factors to determine the respondent's thoughts on compliance with health and safety provisions in conditions of contract and legislation.

Table 2

Health and Safety Standards in Construction Firms

Factors	YES(%)	NO(%)	RNK
The introduction of the Safety Awards Scheme in my construction company to reward employees has improved their health and safety standards.	189(94)	12(6)	1
My construction site is regularly inspected by the Factories Inspectorate.	156(78)	45(22)	2
I regularly invite the Factories Inspectorate to educate my employees on health and safety issues.	149(74)	52(26)	3
Contract conditions do not favour the employees in my construction company.	148(73)	53(27)	4
I notify the Inspectorate of Factories in case of an accident.	147(72)	54(28)	5
I comply with safety provisions in the Factories, Offices, and Shops Act. 1970 in my construction company.	144(72)	57(28)	6
My construction company is registered with the Factories Inspectorate.	143(71)	58(29)	7
Client involvement in contractual agreements has influenced project safety performance in my construction company.	139(69)	62(31)	8
Construction operatives are trained on the use of fire extinguishers in my construction company.	138(65)	62(35)	9
I have firefighting equipment installed on project sites where the risk of fires is considerably high.	137(67)	64(27)	10
I have put in place emergency firefighting programs on most of my construction sites.	136(68)	65(32)	11
My work activities do not normally involve hazardous chemicals that are harmful to the environment.	135(67)	66(33)	12
Elaborating on detailed health and safety provisions in the conditions of the contract has boosted the employees' safety standards in my construction company.	130(65)	71(35)	13
My construction company is registered with the Fire Service department and has a fire safety permit (certificate).	129(64)	72(36)	14
I insured my employees against occupational injuries and death.	125(62)	76(38)	15
I have an emergency exit in case of a fire outbreak on project sites where fire hazards are imminent.	124(62)	77(38)	16
Adherence to contractual safety requirements in my construction company has seen a lot of improvement.	121(60)	80(40)	17
Health and safety provisions are clear to my employees.	118(59)	83(41)	18
Workers on my construction site use a nose mask when using or are likely to be exposed to any hazardous chemicals.	116(58)	85(42)	19
I allow labour interaction in my construction company.	114(57)	87(43)	20
I provide safe working conditions on project sites as enshrined in the Labour Act 2003.	110(55)	91(45)	21
My construction company has a permit from the environmental protection agency.	108(54)	93(46)	22
I provide personal protective equipment to my employees as mandated by the Labour Act 2003.	106(53)	95(57)	23
I compensate my employees in case of an accident in my construction company.	104(52)	97(48)	24

Source: (Author's Field Note 2015)

From table 2, respondents opined that they have implemented some programs and conditions that have led to the achievement of health and safety standards at their construction sites. These conditions include the introduction of a safety awards scheme in construction companies to reward employees, (this has frequency and percentage of respondents as 189 and 94% respectively). Another is the regular inspection of the construction site by the factories Inspectorate, (this has a frequency and percentage of respondents as 156 and 78% respectively).

Yet another is the regular invitation of the Factories Inspectorate to educate construction firm employees on health and safety issues, (this has a frequency and percentage of respondents of 149 and 74% respectively). Counting on, another is the notification of the Inspectorate of Factories in case of an accident, (this has a frequency and percentage of respondents of 147 and 72% respectively). Compliance with relevant health and safety standards in factories offices and shops Act 1970 had a frequency and percentage of respondents of 144 and 72% respectively.

Construction firms' registration with the Factories Inspectorate had a (frequency and percentage of respondents of 143 and 71% respectively). Another is client involvement in contractual agreements, (139 and 69%). The training of construction operatives on the use of fire extinguishers scored 138, and 65% respectively. The instalment of firefighting equipment at project sites, (137 and 67%. The existence of emergency firefighting programmes at construction sites scored 136 and 68% respectively.

Respondents are of the view that their work did not normally involve hazardous chemicals that are harmful to the environment. This scored a frequency of 135 and 67% of their opinion. Again, they believed that there existed elaborate health and safety provisions in construction firms' conditions of contract. This scored 130 and 65%. Construction firms' registration with the Fire Service department and the existence of fire safety permits scored 129 and 64%. Ensuring employees against occupational injuries and death scored 125 and 62%. The existence of an emergency exit in case of an outbreak on project sites scored 124 and 62%. Adherence to contractual safety requirements scored 121 and 60%. The existence of clear health and safety provisions for employees scored 118 and 59%. Workers' use of nose masks against exposure to hazardous chemicals scored 116 and 58%.

The following are other scores of frequencies and their respective percentages of respondents' opinions. Allowing labour interactions in construction companies scored 114, and 57%. Adherence to relevant Health and Safety Standards in Labour Act 2003 scored 110 and 55%. Provision of safe working conditions on project sites as enshrined in the Labour Act 2003 scored 110 (55%). Construction companies with a permit from the environmental protection agency scored 108 (54%). Provision of personal protective equipment to employees as mandated by the Labour Act 2003 scored 106 and 53%. Compensation for employees in case of an accident in construction firms scored 104 and 52%

However, the only challenge here was that contract conditions do not favour the employees in construction companies. This scored 148 and 73%. This assumption is quite worrying because it can create work apathy or ill commitment.

Compliance with Health and Safety Standards contained in Health and Safety Regulations

In assessing the extent to which construction companies comply with health and safety standards as contained in health and safety regulations, the researcher has employed descriptive statistics involving frequencies, percentages, and mean and standard deviation values to analyze each statement. To determine the regulations most complied with, one has to rank the standards in ascending order. The computed mean scores in Table 3 summarise the results. A range of 3.5-4 (mean values), representing 71.4% of the total responses is an indication that over one-third of the respondents agreed to most of the statements, although not totally since some of the mean values fell below the threshold of 3.5. From table 3, the statement "Employees use

Personal Protective Equipment (PPE) effectively on project sites of my construction company” recorded the highest mean value of 3.82, and ranked first indicating compliance with health and safety regulations on construction project sites. In other words, the majority of respondents hold the view that construction companies comply most with the provision and use of personal protective equipment on site. However, it is important to interpret this and other similar responses with caution given that many construction companies would probably like to portray their companies as having a positive image. The next factor in rating (with a mean value of 3.78) is that “Noxious or offensive substances are well controlled in my company”. This attests to the fact that construction companies control the use of harmful or poisonous substances to avoid contamination and thereby improve health and safety standards.

Other factors respondents ranked high were Explosives and highly inflammable substances are well controlled on my site (3.71); I provide guard rails to all the revolving parts of machines used in my construction site (3.66); Site operatives comply with safety regulations on my project sites (3.65), and I regularly maintain tools and machinery in my construction site (3.63). These put together indicated that construction companies have improved their efforts in compliance with health and safety standards as contained in health and safety regulations contained in the Factories, Offices and Shops Act (1970) and other safety regulations.

The least assessed factors were statements such as “I have health and safety officers in my construction company, they comply with health and safety standards in my construction company. Some site operatives of my company have a positive attitude towards health and safety. I document safety procedures such as accident records, accident investigation, safety audits etc. on project sites of my company.” This has mean values of 3.43, 3.36, 3.30, and 3.21 respectively. These suggest that most respondents tended not to comply with these safety standards contained in safety regulations.

Table 3

Compliance with Health And Safety Standards Contained in Health And Safety Regulations

Factors	Rating, f(%), N = 201						Mean	SD	RK
	SD=1	D=2	U=3	A=4	SA=5				
Employees use Personal Protective Equipment (PPEs) effectively on project sites of my construction company	9(4.5)	23(11.4)	00	133(66.2)	36(17.6)	3.82	1.00	1	
Noxious or offensive substances are well controlled in my company	6(3)	38(18.9)	00	108(53.7)	49(24.4)	3.78	1.11	2	
Explosives and highly flammable substances are well controlled on my site.	14(7)	29(14.4)	3(1.5)	110(54.7)	45(22.4)	3.71	1.67	3	
I provide guard rails to all the revolving parts of machines used on my construction site.	8(4)	38(18.9)	2(1)	119(59.2)	34(16.9)	3.66	1.08	4	
Site operatives comply with safety regulations on my project sites.	8(4)	40(19.9)	4(2)	112(55.7)	37(18.4)	3.65	1.11	5	
I regularly maintain tools and machinery in my construction site.	7(3.5)	49(24.4)	4(2)	92(45.8)	49(24.4)	3.63	1.19	6	
I use effective communication skills to promote health and safety standards in my project sites.	18(9)	35(17.4)	3(1.5)	106(52.7)	39(19.4)	3.56	1.24	7	

I offer effective training/ education to employees on my construction site to boost the safety standard in the company.	7(3.5)	52(25.9)	6(3)	96(47.8)	40(19.9)	3.55	1.17	8
I have in place adequate safety signs or posters on my project sites.	14(7)	43(21.4)	2(1.0)	105(52.2)	37(18.4)	3.54	1.21	9
Health and safety regulations are spelt out to all employees in my construction company.	31(15.4)	27(13.4)	2(1.0)	91(45.3)	50(24.9)	3.51	1.39	10
I have health and safety officers in my construction company.	14(7)	47(23.4)	00	119(59.2)	21(10.4)	3.43	1.16	11
Health and safety standards are complied with in my construction company.	18(9)	56(27.9)	00	89(44.3)	38(18.9)	3.36	1.21	12
Site operatives of my company have a positive attitude towards health and safety.	19(9.5)	65(32.3)	2(1.0)	67(33.3)	48(23.3)	3.30	1.38	13
I document safety procedures such as accident records, accident investigation, safety audits etc. on project sites of my company.	17(8.5)	63(31.3)	00	105(51.2)	18(9)	3.21	1.22	14

Source: (Author's field Note 2015)

DISCUSSION

Contractors' Compliance with Health and Safety Standards Contained in Health and Safety Regulations.

Implementation of Health and Safety Standards by Construction Companies. Construction companies in their quest to implement health and safety standards at their construction project sites have implemented and ensured the existence of certain factors that have led to the achievement of health and safety standards at their sites. Respondents said that factors such as the introduction of safety awards scheme in Construction Companies to reward employees for excellence in health and safety performance promoted voluntary compliance with occupational health and safety regulation and have significantly improved health and safety standards in their company. This means respondents were emphatic that some construction companies in Ghana are already practising the scheme within their companies (internally) but not nationally. The national scheme is what most respondents wished for. Most persons interviewed saw this as a laudable idea that will motivate and boost the performance of construction companies because it will bring competition among construction companies. They also believed the winners of such awards would gain national recognition that will make the companies win more contracts. The presence of the following ensured effective safety and health at construction sites. These are regular inspections of the construction sites by the factories' inspectorate, and regular invitations of the Factories Inspectorate to educate construction employees on health and safety issues, which as evident in the interview granted RIs on their achievements in terms of health and safety.

The attitude of operatives towards health and safety is improving and I think this is a result of the education we offer them. Also, we are sensitive and disseminate information on health and safety. The level of compliance with relevant health and safety legislation is gradually picking up in my candid opinion.

Notification of the Inspectorate of Factories in case of an accident, and adherence to relevant health and safety standards in Factories Offices and Shops Act 1970 also ensured health and safety on site. Others are construction firms' registration with the Factories Inspectorate, the training of construction operatives on the use of fire extinguishers; the instalment of firefighting equipment at project sites, and the existence of emergency firefighting programmes at construction sites.

According to the International Labour Office (1995), all parties involved in the construction business need training. Subcontractors and their workers may also need training in on-site safety procedures, because a team of specialist workers may mutually affect each other's safety. Training workers on health and safety enhances compliance with occupational rules on site. Effective education and training come as an interaction between parties involved in construction projects, which affect the output of organizational goals. Respondents interviewed confirmed that regulatory institutions do not hesitate to answer their calls. These included educating and training employees on the dangers inherent in hazardous chemicals used on-site and in-service training for newly recruited workers.

The study confirmed the respondent's belief that ensuing the following factors at the site will enhance safety and health. These factors are adherence to Health and Safety Provisions in Fire Precautions Act 1994, the existence of elaborate health and safety provisions in construction firms' conditions of contract, construction firms' registration with the Fire Service Department and the existence of fire safety permits. Others are ensuring employees against occupational injuries and death, the existence of emergency exit at project sites, adherence to contractual safety requirements, the existence of clear health and safety provisions for employees and workers, use of nose masks against exposure to hazardous chemicals. As Mock, et al., (2005) noted the existence of hazards at work sites makes it prudent for construction firms to educate and train the employees on the dangers inherent in these hazards. In addition, both employers and employees need education and training on new technologies in the construction industry. To the study, construction companies have implemented the requisite health and safety standards to ensure a safe working environment.

Compliance with Health and Safety Standards Contained in Health and Safety Regulations.

Construction companies' contribution to the achievement of health and safety standards in construction firms came because of their Employees' use of Personal Protective Equipment (PPEs). This has lowered the risk of an accident on most construction project sites and was relatively ranked the highest or the first statement respondent considered most in compliance with health and safety standards (refer to table 4). This means that majority of the respondents were of the view that the effective use of PPEs by employees has lowered the risk of accidents on their construction project sites. In addition, the control of noxious or offensive substances in construction companies and the control of explosives and highly flammable substances have significantly improved health and safety standards in their project sites. This is an attestation to the fact that construction companies control the use of harmful or poisonous substances and explosives to avoid contamination and thereby improve health and safety standards. This affirms the ILO (1996) assertion that two million women and men worldwide die each year as a result of occupational accidents and work-related illnesses. Mock et al. (2005) observed that there are different types of hazards. These include insidious hazards (that is those hazards that

the dangerous but which may not be obvious), which they classified as chemical hazards arising from liquids, solids, dust, fumes, vapours and gases. There are also physical hazards such as noise, vibration, fire, poor sanitation, radiation and extreme temperatures. Again, there are also biological hazards such as bacteria, viruses, infectious waste and infestations. Psychological hazards result from stress and strain; hazards associated with the non-application of ergonomic principles, for example badly designed machinery, mechanical devices and tools used by workers, improper seating and workstation design, or poorly designed work practices.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The first objective was to assess the extent to which contractors comply with health and safety standards contained in health and safety regulations. The major findings were that construction companies had achieved improved health and safety standards because employees have been using Personal Protective Equipment (PPE) effectively. This has lowered the risk of accident cases at many construction project sites in Ghana. In addition, construction companies allow labour interactions, adherence to relevant Health and Safety Standards and provision of safe working conditions on project sites as enshrined in the Labour Act 2003, and compliance with safety provisions in the Factories Offices and Shops Act. 1970, adherence to Health and Safety Provisions in Fire Precautions Act 1994, obeying the health and safety provisions in construction firms' conditions of contract, construction industries' registration with the Fire Service department and the acquisition of fire safety permits resulted in achieving improved health and safety standards. Also, the control of noxious or offensive substances in construction companies and the control of explosives and highly flammable substances had significantly improved health and safety standards at project sites. Furthermore, the provision of guardrails to all the revolving parts of machines used at the construction site had brought improvement. Operatives' compliance with safety regulations at project sites, and good maintenance of tools and machinery at construction sites accounted for improvement. Training and education of employees on health and safety standards on construction sites has culminated in a significant reduction in the rate of accidents in construction firms. Again, construction companies' effective use of communication skills to promote health and safety standards on project sites and effective education of workers on health and safety regulations resulted in improved safety at construction sites. In addition, they have in place adequate safety signs or posters on their project sites. This is an indication that construction companies are doing their best to improve their compliance with health and safety standards as contained in health and safety regulations.

Conclusions

Construction companies realized the significance of health and safety standards in their work sites; hence, they have ensured they meet the requirements of the state and regulatory institutions such as registering with regulatory bodies and complying with the various health and safety Acts. They also realized the need to reach out to regulators for training and capacity building of staff to improve their adherence to stipulated health and safety practices. They have devised internal motivational packages for staff to ensure the maintenance of tools and equipment and the overall adherence to internal and external health and safety standards. These had significantly reduced risk and accidents at construction sites. Regulators too have ensured the implementation of health and safety standards at construction firms. They ensured enforcement compliance with the various health and safety laws, effective monitoring, supervision and sanctioning of obdurate and deviating construction companies.

Recommendations

Below are recommendations for government, regulatory bodies, and construction firms to achieve health and safety standard practices at construction sites.

- Construction companies should stimulate self-compliance to health and safety regulations;
- Construction firms need to enforce health and safety standard principles at sites without fear or favour, and should sanction defaulting workers;
- Construction firms should institute training and capacity-building programs for staff on health and safety and should be ready to call for help if need be;
- Construction firms should improve their working environment, tools and equipment to ensure health and safety at work sites;
- Management and employee should have registered dialogue about health and safety standard practices at construction sites;
- Owners or managers of construction companies should be willing to disclose fatalities or any poor performance about their companies without the fear of denting their image.

Future works

- Future researchers should study the activities of “One-Man-Contractors” in the construction industry;
- There could be further studies on the rationale behind the Construction Company’s unwillingness to disclose fatalities or poor performance on-site;
- There could be future research on the impact of regulatory institutions on the implementation of health and safety standards on construction project sites in Ghana.

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