

Strategies for health and safety management in Ghana

Health and
safety
management

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Received 31 July 2019
Accepted 19 August 2019

Abstract

Purpose – This paper aims to investigate the contemporary strategies for Health and Safety (H&S) management practices at the construction sites in Ghana.

Design/methodology/approach – The study used a mixed method approach in conducting a cross-sectional survey at 28 active construction sites in the Kumasi and Accra metropolises of Ghana using questionnaires and interview guide by using purposive, convenience and snowball sampling techniques. Data were collected from 170 survey respondents and 18 interview participants comprising artisans and management staff.

Findings – On H&S management practices, the study found that most construction sites have policies for H&S delivery and are duly followed and enforced. Nonetheless, construction workers moderately agreed that there was reward for; the avoidance and reduction of accidents and illnesses, good H&S behaviour and provision for insurance and hospital claims. It was also revealed that most of the construction sites adopt either one or a combination of mandatory H&S standards. Generally, most workers possessed a fairly positive perception about the H&S management practices at their sites and were either satisfied or very satisfied with its performance.

Research limitations/implications – Generalizing the findings beyond the study areas is limited because of the use of the non-probability sampling techniques.

Originality/value – This study focused on the active construction sites in the study areas to investigate their H&S practices against the backdrop of numerous publications describing the general H&S situation in Ghana as poor. It revealed the current H&S performance of the construction sites for the benefit of the construction industry, researchers and the academia.

Keywords Construction industry, Health and safety management systems, Satisfaction level, Management practices, Current strategies, Performance, Rewards and incentives

Paper type Research paper

Introduction and rationale

Construction industry assumes an indispensable role in the economy of nations (Lopes, 2012, p. 41) and its activities are essential to ensuring increased local employment and economic growth of a developing country (Anaman and Osei-Amponsah, 2007, p. 951).

But the industry is prone to hazards and high-risks causing greater risk of work-related fatalities or injury to its workers than other industrial workers (Choi, 2015, p. 151). For instance, Construction (30) placed second to agriculture, forestry, and fishing (32) in the number of fatal injuries to workers in 2018/19 among the seven main industries in Great Britain (HSE, 2019, p. 4). Key factors causing accidents were problems emanating from workers or the work team (70 per cent of accidents), workplace issues (49 per cent),



equipment shortcomings (including PPE) (56 per cent), problems with suitability and condition of materials (27 per cent) and deficiencies with risk management (84 per cent) (Haslam *et al.*, 2005, p. 401). Another study blamed the vulnerability of construction workplace accidents mainly on environmental factors then equipment factors, organizational factors, human factors and management factors in that order (Arifuddin *et al.*, 2019, p. 711). Hamid *et al.* (2019, p. 1) attributed the major causes of fatal accidents in construction to unsafe methods, the uniqueness of the industry and job site conditions and found working at high elevation, incorrect or lack of work procedure and structure failure as being the key sub causes. Injuries stemming from occupational accidents are in the form of incision, exposure to metal burrs, contusion, transient loss of vision, trauma and perforation and the most frequent accidents being eye, finger, foot and hand injuries (Yilmaz, 2014, p. 421). Construction related accidents result in a huge cost to the employer and the society as a whole including both the direct and indirect costs (Haupt and Pillay, 2016, p. 373). Ikpe *et al.* (2014) discovered that contractors stand to gain 62 per cent benefits of accident prevention to 38 per cent benefit loss.

Ghana's construction industry like the construction industries worldwide is fraught with accidents due to the poor state of Health and Safety (H&S) at the construction sites (Laryea and Mensah, 2010; 9). Over the last decade, many studies have contributed to Ghana's construction H&S literature. Exemplary, Kheni *et al.* (2008), Kheni *et al.* (2010), Dadzie (2013), Kheni and Braimah (2014), Donkoh and Aboagye-Nimo (2015), Mustapha *et al.* (2016), Agyekum *et al.* (2018) among others. None of them has reported on the H&S management strategies currently being implemented at the construction sites. This study therefore investigated the current mode of H&S management practices at the construction sites and the satisfaction level of the construction site workers in the Accra and Kumasi metropolises. Following that the study formulated these objectives:

Objectives

- to investigate the current H&S management practices at the construction sites; and
- to determine the satisfaction level of the construction site workers regarding the H&S situation at their various sites.

Construction H&S issues in Ghana

Numerous literature evidence has revealed the state of Ghana's Construction H&S. For example, Danso, (2005) and Asumeng *et al.* (2015, p. 60) have provided the degree of accidents reported at the Labour Department of Ghana for compensation between 1999 and 2004. More recently, workmen compensation report on industrial sector's accidents from the year 2010 to 2016 indicated that in Accra and Kumasi alone, the construction sector recorded 558 cases of the industrial sector's accidents and only 211 (37.8 per cent) were finalized (Simpson, 2017).

Kheni *et al.* (2008, p. 1104) researched into H&S management in developing countries studying the construction SMEs in Ghana and established that few SMEs adopted proactive H&S practices. The study identified accident investigation procedures, accident reporting procedures, use of H&S posters, documentation of method statement and H&S inductions as being the characteristics of the SME firms. Moreover, there were different H&S practices as a result of varied SME size and lack of resources was the major constraint of the SMEs to improving H&S.

Laryea and Mensah (2010, p. 8) also recorded the lack of strong H&S institutional framework coupled with the apparent lapses in enforcing H&S policies and procedures, not attaching much importance to construction H&S by the Ghanaian Society and its consequent rampant injuries and accidents, and moreover, the problem with compensation payment by contractors as the fundamental reasons underlying the poor state of Ghana's construction H&S.

Kheni *et al.* (2010) discovered low literacy levels, low socioeconomic status of workers, owners/managers ignorance of their responsibilities, commitment to extended family obligations and ineffective occupational H&S administration as being the key factors limiting construction SMEs to manage OH&S effectively.

Dadzie (2013, p. 34) studied the perspectives of consultants on provisions in the Labour Act of Ghana and reported of the challenges characterizing the construction industry of Ghana as follows:

lack of H&S training for workers; poor risk assessment; workers attitude towards H&S; inadequate H&S professionals; H&S policies; inadequate data collection systems; lack of H&S education in various institutions; communication difficulties; cost of providing and maintaining H&S on sites and accident reporting shortfalls.

Kheni and Braimah (2014, p. 34) studying the institutional and regulatory framework for the H&S administration in Ghana found that inadequacy of resources for the enforcing agencies, construction operatives not empowered to partake in H&S management, many government department being responsible for managing OH&S, fragmentation of construction H&S management regulations as well as lack of education regarding OH&S regulations were the five key factors making ineffective H&S management in the construction industry.

Donkoh and Aboagye-Nimo (2015, pp. 68 and 74) working on the stakeholders' role in improving Ghana's construction safety reported of the existence of conflict in the perceived functions and relations of the stakeholders in the construction process and therefore, recommended that specific individuals be identified to be in charge of the supervision and training. Additionally, H&S policies should be developed by government and contracts should clearly spell out the contractual obligations of the parties concerned including the various procurement stages (such as the planning, design, tender, contract, construction and post-evaluation) and the manner in which H&S could be incorporated in each stage.

A study on H&S compliance model for small and medium-sized enterprise contractors in Ghana established that proper positioning of tasks and equipment, provision of training, insensitivity of workers and insufficient lighting systems for enclosed areas were the high features of the model. Others were: adherence to company safety policy; formulating H&S policy for construction activities; implementation of H&S policy by government representatives and monitoring of H&S policy implementation by government representatives (Mustapha *et al.*, 2016, p. 33).

Just recently, a study dealt with the factors influencing the performance of safety programmes in the Ghanaian construction industry and realised that insufficient communication of safety programmes, lack of workers' self-protection and awareness, contractors ignoring safety due to time pressures of the project schedule, poor personal attitudes towards safety, and ineffective laws and lack of enforcement constituted the major factors negatively affecting construction firms safety programmes performance (Agyekum *et al.*, 2018, p. 40).

The above literature has painted a gloomy picture of the H&S situation in Ghana especially with the SME construction firms. With this situation in view, it is crucial that effective management systems and practices are implemented and enforced. The foregoing

are some of the management strategies capable of ensuring improved H&S performance at the construction sites.

Management strategies for controlling H&S delivery at the construction sites

H&S matters are the *sine qua non* of construction industry's success. This is because of the work environment and how complex its working practises are (Chong and Low, 2014, p. 503). It is thus important that appropriate H&S management systems are employed. The key safety elements include "upper management support", "employee involvement in safety and evaluation", "substance abuse programmes", "written and comprehensive safety and health plans", "project-specific training and regular safety meeting", "subcontractor selection and management", "job hazard analyses and communication", "record-keeping and accident analyses", "emergency response planning", "health and safety committees", "safety manager on site" "safety and health orientation training", and "frequent worksite inspections" (López-Arquillos *et al.*, 2015, p. 287; Hallowell, 2010, p. 28). The following look at some elements that ensure the successful performance of H&S practices at the construction sites.

Upper management support. Management's safety attitudes greatly influence workers' safety attitude and attitudes towards safety virtually predicts occupational injuries (Siu *et al.*, 2004). Job site safety begins in the executive suite. For a remarkable influence on workers, safety need to be a core value of the organization and Chief Executives are required to inculcate safety consciousness in every level of management that they have the responsibility to ensure safety collectively (Cesarini *et al.*, 2013, p. 3; Landrum *et al.*, 2014, p. 1).

Subcontractor selection and management. The most cost-effective safety programme elements are subcontractor selection and management and upper management support and commitment (Hallowell, 2010, p. 25). Considering H&S performance in the selection and management of subcontractors is crucial (López-Arquillos *et al.*, 2015, p. 287; Hallowell, 2010, p. 28). Cesarini *et al.* (2013, p. 4) argues that aside companies routinely pre-qualifying subcontractors for experience, qualification and financial strength, it is apt that their safety track records be a mode of selection.

Health and Safety committees. Safety committee involving upper management, risk managers, safety directors, operational staff and workers should meet regularly to deliberate and review safety performance and its continuance. If labour becomes part of the discussion, it will also reinforce the personal commitment to safety (Landrum *et al.*, 2014, p. 1; Cesarini *et al.*, 2013, p. 3). This committee should play part in planning, measuring and performance reviews and also considers the outcome of accident, ill-health, and incident investigations as well as other pertinent issues (Health and Safety Authority, 2006, p. 20).

Substance abuse programmes. According to Cesarini *et al.* (2013, p. 5), companies are required to actively fight substance abuse, in businesses involving complex equipment and noticeable heights. Companies need to war against substance abuse which has bedevilled the construction industry. According to Substance Abuse and Mental Health Services Administration as cited by Building Design and Construction (2015), construction workers (16.5 per cent) are second to mining workers (17.5 per cent) in heavy drink intake. Moreover, construction workers are the fifth illicit drug users among nineteen different jobs in the USA. Smallwood (1998, p. 353) pinpoint that substance abuse weakens workers' mental, emotional and physical state causing high absenteeism, decreased productivity, re-work and high levels of disabling and non-disabling injuries. It is no gainsaying that alcoholism and drug abuse form the key factors causing many workplace accidents in the construction industry. Therefore, to forestall that, workers should be randomly tested during work and

also tested after injury (López-Arquillos *et al.*, 2015, p. 287; Hallowell, 2010, p. 28). There is thus the need for appropriate programmes aiming at addressing the issue.

Job hazard analyses and communication. A job hazard analysis is done to integrate H&S into a given task through the identification of probable hazards as well as determining preventive measures prior to the beginning of work (Landrum *et al.*, 2014, p. 3). Information need to be communicated to organisations' workers regarding the risk identified during their risk assessments, and the precautionary and protective measures required to regulate the risk. Awareness of hazards at the workplace could be created through Jobsite talks to guard against accidents and injuries. Therefore, supervisors are required to give safety talks frequently and also follow the guidelines. Haslam *et al.* (2005, p. 17) believed that poor communication among members in the work teams caused incidents.

Safety and health orientation training. Statistically, nearly 20 per cent of all injuries to workers occur within their first 30 days on the job and therefore orientation is crucial for first time workers on any project (Construction Health and Safety Manual, 2009, p. 3). Workers ought to be well trained in using the various safety equipment, like fall arrest systems, and are supposed to be conversant with the appropriate regulations (Cesarini *et al.*, 2013, p. 5; Landrum *et al.*, 2014, p. 2). Strong H&S training programmes improve employee retention as well as compliance with H&S requirements (Wilkins, 2011, p. 1017).

Record-keeping and accident analyses. Despite a company having a safety statement, it is essential that an employer should have a clear policy and approach concerning H&S covering accidents which includes reporting and reducing of risks to eliminate future occurrence among others (Health and Safety Guide for VFI Members, 2017, p. 5).

Incidence/accidents need to be reported and investigated to prevent the existence of such problem and chances of a similar one recurring in future. Record keeping of accidents/incidences must include any reportable injury, disease or dangerous occurrence specifying the date and method of reporting, the date, time and place of the event, personal details of those involved and a brief description of the nature of the event or disease (HSE, 2019, p. 127).

Safety manager on site. It is also important to get H&S professional with the core mandate of performing and directing the implementation of H&S programme elements and as well serve as a resource personnel for the workmen (López-Arquillos *et al.*, 2015, p. 287; Hallowell, 2010, p. 28).

Reward and incentives. Incentives and rewards are one of the means for encouraging workmen for good H&S on construction site. In essence, their use ensures: compliance of H&S procedures; excellent H&S result; support for good H&S culture on site; that workers take part in safety programmes; reward for and reinforcement of a particular safe behaviours (www.hse.gov.uk/construction). Teo *et al.* (2005) applying the operant conditioning theory, pointed to the fact that positive reinforcements motivate workers to perform tasks in a safe manner hence, contractors should provide monetary rewards, bonuses and job promotions as incentives.

Review accidents and near misses. Whenever there is an accident or near misses, a review should be conducted to reveal the facts and circumstances leading to that so as to enhance identifying the root causes for onward corrective measures which aims at avoiding future incidents. This could be done by regularly holding accident review meetings between field managers and executives. In so doing, clear message of the importance of safety could be relayed to others (Cesarini *et al.*, 2013, p. 6).

Frequent worksite inspections. Probably, the most effective management tool to solve the fundamental root causes of accidents, like worn out equipment, misplaced tools or equipment or unsafe actions by workers is frequent inspections (Cesarini *et al.*, 2013, p. 6).

Emergency response planning. This involves a blueprint documenting the policies of a firm and procedures in the advent of a serious incident like fatality (López-Arquillos *et al.*, 2015, p. 287; Hallowell, 2010, p. 28). This emergency preparation facilitates minimizing the human suffering and economic losses in consequent of possible emergencies. The size and the complex nature of projects, including their access and location, influence the planning level required for emergencies. The planning development should cover these elements: hazard identification/assessment; emergency resources; communication systems; administration of the plan; emergency response procedure; communication of the procedure; debriefing and post-traumatic stress procedure (Construction Safety Association of Ontario, 2003).

Advance preparation for claims. Landrum *et al.* (2014, pp. 3-5) advocate that because accidents cannot always be avoided, companies ought to prepare in advance for claims reporting and handling, medical cost management strategies and return-to work programs so as to manage costs effectively and improve outcomes.

H&S evaluation. This concerns itself with assessing the performance of H&S conditions at the sites. It mainly aims at providing information about the current situation and the progress of the strategies, processes and activities adopted by an organization with the view to controlling H&S hazards (Raja Prasad and Reghunath, 2011).

With the literature evidence of Ghana's construction H&S being below expectation, it is believed that if the above management strategies are effectively implemented at the construction sites in Ghana, the poor construction H&S situation will be brought to the barest minimum.

Design/methodology/approach

Ministry of Water Resources Works and Housing (MWRWH)-Ghana puts construction firms into four (4) classes namely: D (building); K (civil engineering), E (electrical works), and G (plumbing works) (Ayarkwa *et al.*, 2012, p. 5). According to Asare-Yeboah (2016, p. 10), the Ministry as well stipulates four (4) financial sub-classifications within the classifications, such as Classes 1 (>500,000 USD), 2 (200,000 - 500,000 USD), 3 (75,000 - 200,000 USD) and 4 (>75,000 USD). These two classifications define the limits for the companies' assets, plant and labour holdings, including the nature and size of projects they undertake. Whilst class 1 has the highest resource base, class 4 has the least (Ayarkwa *et al.*, 2012, p. 5).

The primary data was collected using questionnaire and interview guide administered by the researchers at the construction sites in Accra and Kumasi metropolises between January and March 2019. Data was gathered on variables relating to factors that influence occupational H&S delivery practices. The study basically employed descriptive research (Isaac and Michael, 1995) and applied cross sectional survey to collect data for making inferences concerning the population at that point in time (Lavrakas, 2008) and also mixed methods approach was used to obtain complete solutions to the problem (Johnson and Onwuegbuzie, 2004, p. 17).

The study used purposive sampling (Teddlie and Yu, 2007, p. 77) as well as snowball sampling techniques (Etikan *et al.*, 2016, p. 1) to select the construction firms and their sites due to lack of a sampling frame. The researchers selected active, large construction sites which were presumed to be conscious about H&S issues. The population was drawn from 15 workgroups of artisanal gangs (such as for masonry, carpentry, plumbing, electrical, steel bending/fixing works and so on), Safety Officers, Site Managers, Civil Engineers, Quantity Surveyors, and Architects. The 170 respondents were either purposively (Teddlie and Yu, 2007, p. 77) or conveniently (Etikan *et al.*, 2016, p. 2) sampled with a response rate of 83.7 per cent. The mode of selection was based on their capability to read and understand

English language, must have not less than six months working experience with the workgroup and six months or more working experience in the construction industry. The 18 interview participants constituting the key informants were chosen purposively based on a criterion similar to the above. Due to the busy nature of the construction sites, the researchers used the H&S offices as the first port of call to explain the rationale for the study for onward administering of the questionnaires and the interview guide. In all, 36 construction sites were visited and 28 participated in the study.

Both questionnaires and the interview guide had a preamble spelling out the rationale for the study as well as a statement assuring respondents and participants of the necessary confidentiality and anonymity (David and Resnik, 2015). Though the instruments were taking through the test of validity and reliability, opportunity was given for clarification and explanations to the respondents who needed help. Respondents used between 20 and 25 min to complete one questionnaire. The questionnaire data covered:

- Bio data/Personal records (e.g. gender, age, educational qualification, Job schedule, experience in construction industry and with workgroup, company category, company classification etcetera);
- Management of H&S delivery (e.g. Policy and enforcement and Reward/incentive) with a 6 point Likert scale (1 = “Completely Disagree” and 6 = Completely Agree) using an assumed mean of 4.0; and
- Satisfaction level of construction site workers with regards to H&S management practices at their sites through a seven-point Likert scale (1= “very dissatisfied” and 7= “very satisfied”).

Questionnaire items were based on the literature. For the purpose of strengthening the data, additional information was sought from 18 key informants such as safety officers and engineers (management staff) and artisans (junior staff) who have much knowledge and expertise in site safety, through semi-structured interviews. The duration ranged between 25 and 40 min. Areas of data collection were similar to that of the above.

With the use of the SPSS software version 22, the survey data were analyzed using descriptive and inferential statistics (Hinton, 2004). The responses were aggregated to establish the workers’ perception level of H&S management practices and their level of satisfaction. Due to the enormity of the questionnaire items for the management practices, factor analysis was employed to summarize and reduce the items before the use of the other statistical tools thus helping in establishing the construct validity.

The qualitative data were also analysed using content analyses. This was done by manually transcribing the audio, comparing responses and the frequent responses considered as the general opinion. Data were triangulated by comparing the survey results with the interview findings for confirmability, complementarity and explanation (Heale and Forbes, 2013, p. 98). During the interview section, interviewees were probed further for the clarification of inconsistent issues so as to ensure the reliability of the data (Rubin and Rubin, 2005, p. 88). On many occasions, the interview guide was given to interviewees to study prior to the interview (Hill *et al.*, 1997).

Findings

Characteristics of respondents

Gender of respondents. From the sample, out of a total of 170 (100 per cent), 87.6 per cent were male with the rest (12.4 per cent) being female thus supporting the research

conducted in Australia by [Australian Bureau of Statistics \(ABS\) \(2016\)](#) reporting that 88.3 per cent of construction workers are male as compared to their female counterparts (11.7 per cent). This may be explained that because construction work demands people with high energy levels to work there. women cannot do most of the jobs except a few due to their fragile nature.

Age category. In [Table I](#), respondents from the ages of 21 to 30 years formed the majority (47.1 per cent) and nearly 75 per cent of them being between 21 and 40 years. This younger age distribution could be explained by the extremely hard physical demands of construction jobs that are often not sustainable with age.

Highest educational qualification. In [Table II](#), respondents with their highest educational qualification being Construction Technician Certificate (CTC)/Higher National Diploma (HND) were in the majority (29.4 per cent) followed by Bachelor degree (24.7 per cent) and then Senior High School (SHS) education (20 per cent), Postgraduate degree (2.9 per cent) whilst Informal or Elementary/Junior High School (JHS) or other educational qualifications formed only (13.6 per cent). Also, 87.4 per cent of the respondents had their highest educational qualifications ranging from Technical/Vocational education to Post Graduate degree implying that a higher percentage of the workers have what it takes to understand and comply with the H&S standards. Hence all things being equal, the regular H&S education and training and communication at the sites may not be that difficult and could as well mean that respondents knew what they were talking about. The result further indicates that more management staff (40 per cent) have higher educational level than the junior staff (17.1 per cent) and hence could perform their respective responsibilities.

Table I.
Respondents' age
category

Variables	Junior staff		Management staff		Total	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
<20	0	0	0	0	0	0
21-30	49	28.2	31	18.2	80	47.1
31-40	20	11.8	27	15.9	47	27.6
41-50	27	15.9	7	4.1	34	20
51-60	1	0.6	6	3.5	7	4.1
60>	0	0	2	1.2	2	1.2
<i>Total</i>	<i>97</i>	<i>57.1</i>	<i>73</i>	<i>42.9</i>	<i>170</i>	<i>100</i>

Table II.
Highest educational
qualification of
respondents

Variables	Junior staff		Management staff		Total	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
Informal	4	2.4	0	0	4	2.4
Elementary/JHS	15	10.6	0	0	15	10.6
Tech./Vocational	18	12.9	1	0.6	19	11.2
SHS	30	17.7	4	2.4	34	20
CTC/HND	25	14.7	25	14.7	50	29.4
Bachelor	4	2.4	38	22.4	42	24.7
Post Graduate	0	0	5	2.9	5	2.9
Others	1	0.6	0	0	1	0.6
<i>Total</i>	<i>97</i>	<i>57.1</i>	<i>73</i>	<i>42.9</i>	<i>170</i>	<i>100</i>

Experience of respondents in the construction industry. From Table III, many of the respondents (54.7 per cent) have worked in the construction industry between 1 and 10 years. Over 82 per cent of the sample have more than 1 year working experience in the construction industry implying that all things being equal, respondents have had a considerable experience in H&S practices at their sites that could be counted on for a study like this.

Nature of respondents' companies. It was important to explore the nature of the respondents' companies so as to determine their percentage participation. Table IV shows that 41.2 per cent of the respondents were drawn from the local contractors (main contractors and subcontractors), 37.8 per cent multinational companies whilst the rest were foreign companies. The Pearson chi-square ($\chi^2 = 68.388^a$; $p < 0.05$) shows a significant difference in the percentage participation.

Classification of respondents' companies. The classification of respondents' companies was very vital to the study. Ascertaining it could assist in knowing whether H&S consciousness of a site depends on the class of the company or not. The result in Table V

Table III.
Experience of respondents in the construction industry

Variables	Junior staff		Management staff		Total	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
<1	17	10	14	8.2	31	18.2
1-5	33	19.4	25	14.7	58	34.1
6-10	20	11.8	15	8.8	35	20.6
11-15	11	6.5	4	2.4	15	8.8
16-20	7	4.1	8	4.7	15	8.8
21-25	5	2.9	3	1.8	8	4.7
26-30	1	0.6	1	0.6	2	1.2
30>	3	1.8	3	1.8	6	3.5
<i>Total</i>	<i>97</i>	<i>57.1</i>	<i>73</i>	<i>42.9</i>	<i>170</i>	<i>100</i>

Table IV.
Nature of respondents' companies

Variables	Junior staff		Management staff		Total	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
Local	46	27.1	24	14.1	70	41.2
Foreign	20	11.8	16	9.4	36	21.2
Multinational	31	18.2	33	19.4	64	37.8
<i>Total</i>	<i>97</i>	<i>57.1</i>	<i>73</i>	<i>42.9</i>	<i>170</i>	<i>100</i>

Table V.
Classification of respondents' companies

Variables	Junior staff		Management staff		Total	
	Freq.	(%)	Freq.	(%)	Freq.	(%)
D1	69	40.6	54	31.8	123	72.4
D2	1	0.6	2	1.2	3	1.8
D3	12	7.1	6	3.5	18	10.6
D4	0	0	7	4.1	7	4.1
Others	15	8.8	4	2.4	19	11.2
<i>Total</i>	<i>97</i>	<i>57.1</i>	<i>73</i>	<i>42.9</i>	<i>170</i>	<i>100</i>

depicts that 72.4 per cent of the respondents were D1 contractors, 10.6 per cent D3 with the rest catering for the remaining categories. Implying that the study dealt with more top class construction sites which were H&S conscious.

Characteristics of participants

Out of the 18 (100 per cent), 88.9 per cent were male with the remaining being female and with their ages ranging from 21 to 40 years. Their highest educational qualification being from SHS to Post Graduate degree level. In total, 77.8 per cent of them were management members with a chunk of them being Safety Officers whilst the rest constituted junior staff members. The management member with the lowest educational qualification has HND and NEBOSH certificate whereas the management member with the highest educational qualification being masters in Occupational Health and Safety (OHS) as well as NEBOSH, IGC 1, 2 and 3 professional certificates. 92.9 per cent of the management staff have been practitioners of H&S in the construction industry between 1 and 10 years and 75 per cent of the junior staff have had 1 to 5 years in the construction industry observing and participating in H&S delivery. This gives an indication that participants were not new to H&S delivery issues at the construction sites and therefore could provide credible information in that regard. Furthermore, 61.1 per cent of them were drawn from the local contracting companies with the remaining either from the foreign or the multinational companies. Majority, (77.8 per cent) of them have been with their current workgroups between 1 and 3 years and majority (72.2 per cent) are from Accra metropolis, suggesting that there are more construction sites in Accra than in the Kumasi metropolis.

Data were collected from large construction projects sites such as for embassies, shopping malls, airport terminal, hotels, offices, lecture theatres, apartments, banks, car parks, maternity wards and towers were under construction using heavy equipment and machineries.

Management of Health and Safety delivery at the various construction sites

Respondents' perception about the management of Health and Safety at their sites. For the management of H&S at the construction sites to be ascertained, it was necessary to find out from the work groups regarding their perception about the H&S delivery practices at their various sites and their level of satisfaction. [Table VI](#) presents respondents' perception about

Indicators	Mean	St. D	Rank
<i>Policy and enforcement perception</i>			
Strict enforcement of H&S rules and regulations	5.09	1.067	1 st
Alcoholism and drug abuse is prohibited	5.08	1.104	2 nd
Provision for checking hazard and risk prior to each task	5.01	1.015	3 rd
Provision of education and training of workers to ensure competency	4.98	1.082	4 th
Investigates and report accidents and incidence promptly	4.96	1.189	5 th
Provision for good H&S information flow	4.95	1.119	6 th
There is policy for H&S delivery	4.85	1.088	7 th
<i>Average Mean Score</i>	<i>4.99</i>	<i>1.094</i>	
<i>Reward/incentive perception</i>			
Provision for insurance and hospital claims	4.47	1.539	8 th
Reward for the avoidance and reduction of accidents and illnesses	4.35	1.604	9 th
Reward for good H&S behaviour	4.33	1.534	10 th
<i>Average mean score</i>	<i>4.38</i>	<i>1.559</i>	
<i>Grand Average Mean Score</i>	<i>4.69</i>	<i>1.327</i>	

Table VI.
Respondents' perception about the management of H&S at their sites

the mode of H&S delivery practices at their construction sites. The result shows that each indicator describing how H&S practices are performed at the sites has a mean value exceeding the assumed mean of 4.0. With policy and enforcement issues, more respondents (4.99 ± 1.094) attested to these practices going on at their sites. Nonetheless, less respondents (4.38 ± 1.559) confirmed the indicators for reward/incentive practices practised at their sites as compared to the former. This may mean that workers expect more to be done with respect to the latter. On the whole, construction site workers (4.69 ± 1.327) had fairly positive perception about the H&S delivery practices at the sites. This calls for improvement.

Participants commented on the mode of H&S practices at their construction sites and many had fairly positive perception about the delivery. Though more people were satisfied with the state of affairs, some thought there was more room for improvement since H&S is a work in progress. The foregoing were some of their remarks:

With the policy issue, Safety Officer No 7 reported:

[. . .] We have so many policies [. . .] the H&S policy and under that we have specific policies-alcohol and drug policy, PPE policy, smoking policy and the like [. . .]

Safety Officer No 5 also reported on H&S education and training at the sites.

[. . .] we do in-service training for the workers periodically. We bring top officials from our company to the site for education. There are times that we invite doctors and nurses to the site to talk about the health and food issues.

Safety Officer No 6 commented on induction training at his site. He said:

[. . .] When I am inducting, I use different languages such as Twi, English, Ewe and sometimes foreign language when dealing with foreigners [. . .] I make sure that they understand what is required of them at the site. Induction is the first point and after induction I know I have 30% safety issues solved.

According to Safety Officer No 8, every morning, there is an H&S meeting-Pre start instruction (PSI).

[. . .] We go for morning prayers and then the safety officer will come and give safety talks, we check attendance and they go to work afterwards [. . .]

On the identification and assessment of hazards, investigation and reporting of incidence, participants indicated that all of these were done.

Safety Officer No 10 reported on identification and assessment of hazards as follows:

[. . .] We have the permit of work. So, in the morning before you kick start you have to inspect the working area. There are certain things you need to do before you start work [. . .] Whatever you need to do, you have to indicate on a form provided and sign it. So, everything is documented.

All the participants claimed they reported incidence and investigated it within the shortest possible time when there was one. Safety Officer No 11 continued:

[. . .] When there is any incidence the workers will report it themselves after educating them on the need to do that [. . .] We have an incident and accident register. When it happens, we record the name of the person involved, the accident nature, how it happened and the rest [. . .]

Safety Officer No 10 commented on the communication at his site as follows:

[. . .] We try to interpret the information in the workers local dialect even sometimes in French so that everybody will understand it and act accordingly. We use signs and symbols to enhance communication [. . .]

Safety Officer No 11 stated his company's stands on alcoholism and drug abuse as follows:

regulation 20 states that the abuse of drugs and alcoholism can have serious consequences for your health and that of your work colleagues. Clifton homes will not accept anybody who reports to work under the influence of alcohol or drug or bringing them into workplace. Any person found breaking these rules will be removed from the site and be dismissed. Where there are grounds to suspect that the use of drugs or alcohol by a person led to an accident, we will investigate the appropriate detection measures.

Some have award schemes in place and periodically awarded the best safety worker(s) by providing the winners with packages as reported by the Safety officer No 1:

[. . .] Concerning safety incentives, we call it best behaviour safety. We do organize awards for safe employees who go out of the normal to work safely. He is not only interested in his personal safety but tries to ensure extra effort so that his colleagues will also be safe.

Some have claims reporting systems as remarked by Safety Officer No 1:

[. . .] We do have claims reporting systems. We have insured the workers and they are aware. We are not saying we will risk them but you know it's only wise and advisable that you insure workers against the unforeseen circumstances. There is a procedure for reporting these claims.

Safety Officer No 2 reported on emergency response and return to work plans:

[. . .] In the event of an emergency, there is a private clinic that gives us emergency service. We have got a pick up on standby. We have an ambulance service with them. They can come in the event of accident. When someone gets injured, he is taken to the hospital for treatment and he is brought back. We take care of the bills too.

Most of them reported that they do self-auditing and evaluation and periodically external auditors also come for similar purpose as reported by Safety Officer No 4:

[. . .] We do performance auditing and evaluation .We have an auditor that comes every week to audit us. He is from the client. Ghana Standard Authority also comes once in a year to audit the cranes, using their experts and machines.

Management systems for controlling Health and Safety delivery at the sites

Participants claimed to be using mandatory systems because they are being guided by standards and legal regulations. While some used only one set of regulatory systems, others employed most of the international standards (OSHA, IFC, NEBOSH, EU, ILO, ISO and the like) as and when the need arise claiming that only one set of standards may not be satisfactory since different clients may come with their standards. Only one participant combined the OSHA and the Ghana labour Act.

Safety Officer No 6 stated:

We are using the mandatory system. We work with all the standards (OSHA, ILO, EU et cetera). The OSHA system might not cover everything that we have because of the differences in the projects.

Satisfaction with the state of Health and Safety delivery

The perception of the workgroups with respect to their satisfaction with H&S delivery practices at their sites was essential to the study since this could be used as a measuring rod

to determine the level of H&S performance. The result in Table VII depicts that close to 88 per cent of respondents were either “somewhat satisfied” or “satisfied” or “very satisfied” with the H&S practices at their various sites. Though the figure is high, the remaining 12 per cent of the respondents’ view cannot be discounted. Undeniably, they are not happy about certain aspect of the practices which needs to be improved. However, there is no difference between the two categories of respondents’ level of satisfaction ($\chi^2 = 110836$; $df = 108$; $p > 0.05$).

Whereas most of the participants were satisfied with the current state of H&S delivery at their sites, others were moderately satisfied and would want to wait until the end of the project before they would be totally satisfied with the H&S performance at their sites. Nonetheless one safety officer was not satisfied at all.

Artisan No 2 commented this way:

I am satisfied with the company’s management system and how they are implemented except incentive awards which should be improved.

Safety Officer No 7 reported:

I am satisfied but it needs a lot of improvement.

Safety Officer No 5 bemoaned:

[. . .] There is a common misconception when it comes to the work of a safety officer. There are times when a group does something wrong, there is an unsafe act and when you step in to address it you will be amazed how the foreman will come and measure production against the use of proper safety measures and eventually back them [. . .]

The study has so far gathered that there was fairly positive perception about the H&S delivery at their sites comparing both the survey and the interview results.

Discussion

The construction site workers reported of having good H&S policies at their sites. Though participants on the whole were happy with the policies in place, a few of them lamented on the lack of management commitment in supporting their job and apparent disregard for the Safety Officer’s job in coordinating H&S issues at the sites. This certainly affects H&S delivery because management’s safety attitude substantially influences workers’ safety attitude which in effect predicts occupational injuries (Siu *et al.*, 2004). Therefore, management commitment is very paramount regarding H&S policies.

Satisfaction level	Junior Staff		Management staff		Total	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
Very dissatisfied	4	2.35	4	2.35	8	4.71
Dissatisfied	1	0.59	0	0	1	0.59
Somewhat dissatisfied	3	1.76	0	0	3	1.77
Neutral	3	1.76	5	2.94	8	4.71
Somewhat Satisfied	3	1.76	7	4.12	10	5.88
Satisfied	72	42.35	48	28.24	120	70.59
Very satisfied	11	6.47	9	5.29	20	11.76
Total	97	57.06	73	42.94	170	100

Table VII. Respondents’ level of satisfaction with the performance of H&S delivery practices at their sites

Notes: Pearson chi square $\chi^2 = 110836$; $df = 108$; $p = 0.406$

Most of them claimed they have safety committees comprising management, representatives of the subcontractors and at some sites representatives from the workgroups which meet monthly to take H&S decisions. This outcome aligns with (Landrum *et al.*, 2014, p. 1) and Cesarini *et al.* (2013, p. 3) advocating for safety committee to constitute upper management, risk managers, safety directors, operational staff and workers who should meet regularly to deliberate and review safety performance and its continuance. Government of Alberta (2019) Law indicates that H&S Committees and H&S representatives aid in internal monitoring of occupational H&S at the workplace to ensure its effectiveness. Undoubtedly, if there are such committees at the construction sites, then it is a step in the right direction in making good H&S delivery practices.

All of them claimed they identify and assess hazards with the view to avoiding accidents and ill health. This finding is therefore in line with Landrum *et al.* (2014, p. 4) which states that the purpose of job hazard analyses is to integrate H&S into a given task through identifying possible hazards and as well determining preventive measures prior to the beginning of each work. The study believes that in so doing, many sites were able to improve their H&S performance as accident records were very good. With Ghana's unenviable H&S records, hazard identification and assessment is crucial and that enough time should be giving for that purpose and those who do not do it should be encouraged to do so.

All of them claimed they report incidence and investigate it within the shortest possible time when there is one. According to IGB accident/incident reporting and investigation plan, employees need to report all accidents, injuries, near misses and property damage immediately to their supervisor or lab manager for immediate administering of appropriate first aid or for the required medical attention. This outcome is in line with the IGB plan an indication of how serious the sites in the study areas are which is good for H&S delivery.

Participants claimed they use all forms of communication ranging from signage, symbols, and verbal to written. Most of them used communication gadgets such as the two-way radios, whistles, and flags to augment communication. Haslam *et al.* (2005, p. 401) have indicated that poor communication among work teams contributed to incidents. To forestall that so as to ensure holistic safety communication aiming at zero construction incidence/accidents, management need to communicate safety through: written (such as safety handbooks, notice boards, newspapers and safety newsletters, suggestion schemes); verbal (safety meetings, presentations at local schools and community centers, press conferences) and management actions (by attending and chairing safety meetings, questioning of staff and team members on safety related matters, conducting safety inspections and recognizing good safety performance through safety awards, safety performance appraisals and organizing social events) (Preece and Stocking, 1999, pp. 534-536). Therefore, if construction sites claim the existence of effective communication to facilitating smooth H&S delivery then it is good for occupational H&S performance.

Rules and regulations pertaining to H&S are strictly enforced at the sites and as and when necessary, disciplinary measures are taken against offenders in the form of pay cuts or suspension or outright dismissal depending on the gravity of the offence. This could be supported by the page 17 of the H&S policy and procedures manual which frowns on careless work and irresponsible behaviour. The manual is emphatic on the need for compliance with company and legislative safety standards for maintaining safe healthy work environment and stipulates appropriate punitive measures (such as verbal warnings, written warning and a day suspension or suspension or termination of appointment) for the violation of safety. Enforcement deters would-be offenders and resultantly enhances better H&S performance at the construction sites.

Alcoholism and substance abuse are frowned on and workers are closely monitored against the use of such stimulants that are recipe for ill health and accidents. [Cesarini et al. \(2013, p. 5\)](#) emphasise the requirement to actively fight substance abuse, in businesses involving complex equipment and noticeable heights. For [Smallwood \(1998, p. 353\)](#) substance abuse weakens workers' mental, emotional and physical state causing high absenteeism, decreased productivity, re-work and high levels of disabling and non-disabling injuries. Employees are thus responsible for ensuring alcohol and drug free environment and any employee or visitor found or suspected to be influenced by alcohol or illegal narcotics should be removed from the premises (OH&S policy and procedures manual, p. 16). Hence the prohibition of alcoholism and substance abuse at the construction sites is apt and must not be relaxed so that construction H&S performance could be improved.

Some have award schemes in place and periodically award the best safety worker(s) by providing the winners with packages, whereas others use applause as their reward incentives. [Preece and Stocking \(1999, p. 536\)](#) were of the view that management should demonstrate their recognition for good safety performance through safety awards, safety performance appraisals and organizing social events. [Teo et al. \(2005\)](#) applying the operant conditioning theory, indicate that positive reinforcements motivate workers to perform tasks in a safe manner hence, contractors should provide monetary rewards, bonuses and job promotions as incentives. It is thus imperative that more of such incentive packages be provided rather than just an applause to motivate the workmen.

Some have claims reporting systems and most of them claimed there are plans for emergency services and treatment of sick and injured workers and to facilitate their early recovery and return to work. This agrees with [Landrum et al. \(2014, pp. 3-5\)](#) who advised that because accidents cannot always be avoided, companies ought to make advanced preparation for claims reporting and handling, medical cost management strategies and return-to work programs so as to manage costs effectively and improve outcomes. Therefore, in a bid to improve H&S delivery, such facilities must be made available especially those who do not have it.

Most of the sites reported of doing H&S self-auditing and evaluation and periodically external auditors also come to the sites for similar exercises. Essentially, safety auditing raises the safety consciousness and compliance of an organisation ([Wright, 2003, p. 11](#)). Frequent inspections must be carried out to solve the root causes of accidents or unsafe actions by workers ([Cesarini et al., 2013, p. 6](#)). As much as frequent inspections and safety auditing are done, construction accidents and ill health will be nearing zero. With this overall result, it is obvious that the management of H&S at the construction sites in the study areas is good but there are some rough edges that need to be addressed.

Conclusion

Over the past decade, Ghana's construction H&S performance has been unenviable according to numerous literature accounts and so there was the need to investigate the contemporary H&S management strategies being implemented at the active construction sites in areas which arguably have been the hub of construction activities in Ghana.

Put together, this paper has dealt with the current mode of H&S delivery practices at the active construction sites in the Accra and Kumasi metropolises of Ghana. The study found that greater proportion of the construction site workers generally favoured the mode of H&S delivery at their sites. Most of them agreed that their sites have policies for H&S delivery, provision for education and training of workers to ensure competency, provision for checking hazard and risk before the start of each task, do investigate and report accidents/incidences promptly, do ensure good H&S information flow, strictly enforce H&S rules

and regulations and prohibit alcoholism and drug abuse. More of the construction workers moderately agreed that there was reward for the avoidance and reduction of accidents and illnesses, good H&S behaviour and provision for insurance and hospital claims. Most of the construction sites adopt either one or a combination of mandatory H&S standards (ILO, NEBOSH, ISO, IFC, EU and others), do self-auditing and evaluation of H&S periodically and so on. Disciplinary actions are taken against offenders in the form of pay cuts or suspension or outright dismissal depending on the gravity and frequency of the offence committed. This performance arguably translated into insignificant record of injuries and no fatality at the sites at the time of data collection as claimed by the H&S Officers. Nonetheless, construction workers were fairly satisfied with the H&S management practices at their sites.

Relatively, these findings suggest a better construction H&S situation in Ghana considering the practices reported in literature of which some have been highlighted in this paper. This might be due to the nature of the sites studied and their H&S consciousness. Apparently, most of such sites were expected to meet international OH&S standards, and this could be confirmed by [Kheni et al. \(2010\)](#).

Limitations

- The lack of the list of all the active construction sites in the two metropolises, the regional coordinating councils and the Ministry of Water Resources Works and Housing caused the inability to employ probability sampling techniques for the study, therefore, generalizing the result beyond the two study populations may not be appropriate.
- The difficulty in engaging the workers during work due to productivity and time issues, coupled with the scattered nature of the sites and the lack of the requisite resources, prolonged the data collection period.

Recommendations

- Construction firms should do well to cooperate with researchers and allow their workmen to volunteer information that will facilitate successful outcome for the improvement of the industry.
- Those construction sites whose H&S practices are not up to scratch should do well to improve it so that the construction industry will experience accident/incident and ill-health free environment for a holistic improvement in the H&S performance of the construction industry in Ghana.
- The mode of providing reward and incentive packages to workers needs a remarkable improvement if construction H&S performance should be improved. This could be done by providing monetary rewards, bonuses and job promotions as incentives rather than just an applause to motivate the workmen.
- List of all the active construction sites should be made available at the districts/metropolises and the other appropriate quarters in Ghana for educational purposes. The non-availability of the list prolonged the data collection duration and increased the cost of the study owing to scattered nature of the sites. It also limits the generalizability of the findings beyond the study areas.

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