

# Role of the construction project team in health and safety management: a study of construction projects in the Wa Municipality of Ghana

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## ABSTRACT

**Introduction:** The building industry is vulnerable to a variety of hazards, many of which pose a significant risk to workers' health and safety. This research aimed to examine the role of the construction project team in health and safety management in the Wa Municipality of Ghana.

**Methods:** This study used a descriptive survey with a quantitative approach as the research design. The study's population consisted of 52 construction project sites from the municipality. All 52 construction project sites in the area were chosen for the study. Descriptive and inferential statistics were used to summarize information from respondents.

**Results:** The study revealed that monitoring construction sites and ensuring the companies comply with state regulations on health and safety in the workplace obtained the highest ranking, ensuring workers comply with safety and health procedures and use personal protective equipment at construction project sites were ranked as the topmost roles of the construction project team, poor culture, and attitudes existed amongst construction workers, supervisors, and top management of companies toward health and safety.

**Conclusion:** It revealed a lack of health and safety management at all levels of the construction chain. First, there is poor culture and attitudes of construction workers, supervisors, and companies toward health and safety. Secondly, ineffective operation of safety regulation, inefficient institutional frameworks responsible for governing construction activities, and a lack of attention to safety management by main contractors/team. Despite the institutional provisions for construction safety in Ghana (the Labor Act, 2003 and the Factories, Offices, and Shops Act, 1970), there is no compliance with these Acts during construction.

**Keywords:** Construction workers, Health and safety, Hazard and risk, Occupational health, Project team, Safety management.

## Introduction

Building workers play an important role in the construction of physical infrastructure, but they are sadly exposed to a variety of hazards when working on projects. According to studies, the building industry is responsible for 30 to 40% of all fatal workplace accidents worldwide.<sup>1</sup> For construction workers, safety is also a major concern. In the construction industry, construction

workers, especially the construction project teams, have a variety of roles and responsibilities in health and safety management.<sup>2</sup>

First and foremost, some managers ensure that safety and health regulations are followed on the construction site. This role necessitates construction workers to adhere to health and safety regulations and ensure that site operatives complete tasks safely. Since it is management who

has to devise health and safety policies and devote adequate resources to sustain a robust construction safety effort, top management's dedication to worker health and safety is critical.<sup>3</sup> Even though construction workers play critical roles in the sector, many employees fail to follow safety and health policies to avoid accidents. As a result, maintaining a secure and stable work environment necessitates the concerted efforts of all team members. Employees must take a constructive, optimistic approach to prevent accidents. The Construction project team is required to be well-trained and competent in health and safety concerns related to the projects they supervise to achieve high health and safety results.

Due to the influx of multinational corporations into the region, the nation has seen some positive "Safety and Health practice infection" among some of the Ghanaian companies, given their corporate standards with clear requirements in occupational safety and health practices.<sup>4</sup> This is due to their demands that contractors and subcontractors, some of whom are Ghanaians, adhere to their health and safety regulations. For example, in the Upper West Region, many construction workers have not received occupational health and safety training to keep their skills and awareness of health and safety issues up to date on a consistent and structured basis to increase the quality of occupational health and safety services. Even though a portion of contract agreements was created to allow contractors to follow health and safety rules and regulations to minimize the problem, the issue still exists. The efficacy of construction workers in reducing construction-related accidents required further investigation, especially the workers' participation in safety training sessions and consultants' ability to enforce safety at work sites. Despite these concerns, there had been little research in the field under investigation. It indicates that little has been done to determine the current situation in Ghana's Upper West Region. Even the limited literature on the role of construction workers in reducing construction hazards and accidents in the study area is not explicitly related to actual injuries in the study

area, indicating the need to fill the void.<sup>5</sup>

The study aimed to look at construction project team roles in health and safety management. The study's specific goal was to evaluate the role of the construction project team in the Upper West Region's health and safety management of construction projects.

## **Methods**

The study was conducted in 2015 to examine the role of the construction project team in health and safety management in the Wa Municipality of Ghana.

The study adopted a quantitative approach, using a descriptive survey. Descriptive design was used because it allows researchers to determine the proportions of people in different classes and to account for the impact of participants that participate twice.<sup>6</sup>

While this design has some drawbacks, such as the difficulty in getting respondents to answer questions thoughtfully and honestly, it was chosen for the study because it deals with understanding and explaining the relationships between variables.<sup>7</sup>

The construction project team in the Region who are currently working was included in the target population. However, since the Association of Building and Civil Engineering Contractors of Ghana (ABCCG) did not have an updated list of construction firms immediately before the study, the researcher had to depend on the Municipals and Districts Assembly to obtain a list of registered construction firms. There were 52 construction companies registered with the Wa Municipal Assembly. As a result, the population consisted of all 52 construction project teams in the Region who were actively engaged by contractors and could provide information on the chosen subject.

All 52 respondents of chosen construction project team of construction firms (such as project/site managers, architects, engineers, foremen, craftsmen, laborers, and other personnel) in the study area were given a collection of questionnaires on the positions of project/site managers in health and safety management in the construction industry in the Region. The

researcher gave them an overview of the study's goals and assured them that any information they provided would be kept confidential and anonymous. The questionnaire was administered and collected over a week for all construction project teams. A total of 50 out of the 52 questionnaires distributed were successfully returned, giving a response rate of 96.2%.

The questions were organized using a five-point Likert scale format, Responses were ranked on the Likert scale from the lowest to the highest (1= strongly disagree, 2= disagree, 3= uncertain, 4= agree, and 5= strongly agree). The options reflect each respondent's level of agreement or priority with a particular question.

In terms of data processing, the data were coded and entered into the Statistical Package for the Social Sciences (SPSS version 21.0). To summarize information from respondents, descriptive statistics such as percentages, and frequencies were used. Inferential statistics like the relative importance index tool (RII) were also used to figure out how respondents felt about the analysis. The median, mode, standard deviation, and variance of each factor's responses are calculated.

**Results**

This section presents the background of the respondents. It is important to examine this to better understand the role of the team in ensuring safety at the worksite. Two major variables were examined – the gender of respondents and their educational background.

In all 46 males representing 92% and 4 females representing 8% making a total of 50 (100%) respondents were reached for the study.

In terms of educational status, the study sought to establish the highest educational level attained by respondents.

Only 10 percent of the respondents had a Senior Secondary School Certificate Examination/ West Africa Secondary school Certificate Examination (SSCE/WASSCE) qualification which is generic – not related to professional training. The remaining 90% had varied professional training and qualification. About 8 percent had National Vocational and Technical Institute (NVTI) qualifications. The percentage of those who indicated they have a Diploma qualification in the related field was 6 percent. Twenty percent (20%) indicated that they had attained Higher National Diploma (HND) qualification. On the other hand, 38 percent indicated that they had Bachelor's Degree qualification and 18 percent indicated that they had other qualifications (master's degree and Ph.D.). Their backgrounds, therefore, allowed them to at least reason from a broader perspective which will, in turn, reflect in their responses to the questions.

Table 1 describes the job titles of respondents in the survey. The respondents were made of various categories of job title holders in the construction industry such as project/site managers, architects, engineers, and quantity surveyors. The rests were foremen, laborers, craftsmen, or others.

**. Table 1.** Job Title of Respondents

Job title	Frequency	Percentage
Laborer	1	2.0
Craftsman	3	6.0
Foreman	7	14.0
Project/site manager	11	22.0
Architect	6	12.0
Others(Contractors, Engineers and Quantity Surveyors)	22	44.0
Total	50	100.0

Source: Field Data, August 2015.

Table 2 describes the years of working experience of the respondents in the study survey. Table. 3 below describes the roles of the construction project team in the construction industry in Ghana.

This analysis aimed to establish the relative importance of the various roles identified as roles of the construction project team. The score for each role is calculated by summing up the scores given to it by the respondents. The relative importance index (RII) was calculated using the following

formula:

$$RII = \frac{\sum W}{A*N} \quad (0 \leq RII \leq 1) \quad (1)$$

Where;

W – is the weight given to each role by the respondents and ranges from 1 to 4, (where “1” is “not at all important” and “4” is “very important”);

A – is the highest weight (i.e., 4 in this case) and;

N – is the total number of respondents.

**Table 2.** Experience of respondents

Years	Frequency	Percentage
under 5 years	14	28
5 -10 years	20	40
11 - 15 years	7	14
16 - 20 years	4	8
21 - 30 years	3	6
above 30 years	2	4
Total	50	100

Source: Field Data, August 2015.

**Table 3.** Roles of the construction project team in health and safety management of construction projects.

SN	Roles	Mean	Std. Deviation	Rank
1	Monitor construction sites and ensure the company complies with state regulations on health and safety in the workplace.	4.38	.725	1 <sup>st</sup>
2	Ensuring that workers comply with safety and health procedures and use safety equipment, clothing, and devices	4.32	.935	2 <sup>nd</sup>
3	Ensure a health and safety plan is in place	4.26	.828	3 <sup>rd</sup>
4	Taking necessary precautions to protect the safety and health of workers under their supervision	4.12	.982	4 <sup>th</sup>
5	Ensure health and safety awareness at all levels within the organization	4.06	1.038	5 <sup>th</sup>
6	Ensure adequate welfare facilities are on site	4.04	.925	6 <sup>th</sup>
7	Cooperating with the workplace safety and health committee or representative	3.98	.622	7 <sup>th</sup>
8	Advising workers of safety and health hazards in the work area	3.96	1.009	8 <sup>th</sup>

Source: Field Data, August 2015.

The relative importance index for all the roles of the construction project team was calculated using equation (1) above. The indexes were ranked for project/site manager. Table 4. below provides

responses from respondents in the study on the level of importance of roles played by the construction team in the construction industry in Ghana.

**Table 4.** Level of importance of the different roles played by the construction project team

S/N	Roles of the construction project team	RII	RANK
1	Ensuring that workers comply with safety and health procedures and use safety equipment, clothing, and devices	0.74	1 <sup>st</sup>
2	Monitor construction sites and ensure the company complies with state regulations on health and safety in the workplace.	0.716	2 <sup>nd</sup>
3	Ensure a health and safety plan is in place	0.704	3 <sup>rd</sup>
4	Ensure adequate welfare facilities are on site	0.692	4 <sup>th</sup>
5	Receives reports on workplace injuries, investigate the causes and may arrange for compensation for victims.	0.688	5 <sup>th</sup>
6	Taking necessary precautions to protect the safety and health of workers under their supervision	0.684	6 <sup>th</sup>
7	Organize the provision of protective clothing and equipment	0.68	7 <sup>th</sup>
8	Ensuring the company has safety and health program in place	0.672	8 <sup>th</sup>

Source: Field Data, August 2015.

Table 5 below provides responses of respondents in the survey on the challenges the construction project team faces in the management of health and safety on project sites in the region. It sorts the candid opinions of respondents on the extent to which they agree with each of the statements about challenges the construction project team

faces in the management of health and safety on construction sites. Responses were ranked on the Likert scale from the lowest to the highest (1= strongly disagree, 2= disagree, 3= uncertain, 4= agree and 5= strongly agree) for the ten statements that were posed under the challenges of management of health and safety on project sites.

**Table 5:** Challenges in managing health and safety of project sites

Challenges	Mean	Std. Deviation	Rank
Poor culture and attitudes of construction workers, supervisors, and companies toward health and safety	4.02	1.059	1st
Inefficient institutional frameworks responsible for governing construction activities	4.00	1.030	2nd
Insufficient safety training	4.00	1.050	2nd
Poor safety and conscientiousness of workers	3.96	1.087	3rd
Reluctance to input resources for safety and health	3.94	.956	4th
Ineffective operation of safety regulation	3.90	1.111	5th
Provision of health insurance for employees on construction sites	3.90	4.414	5th
Inadequate government support for regulatory institutions for health and safety standards	3.86	1.107	6th
Lack of emphasis on safety by developers/clients; no external pressure on consultants and contracts to act on safety	3.84	1.167	7th
An Inadequate number of health and safety personnel on construction sites is likely to increase the prevalence rate of construction accidents in the municipality.	3.82	1.044	8th

Source: Field Data, August 2015.

## Discussion

In this study, monitoring construction sites and ensuring the company complies with state regulations on health and safety in the workplace obtained the highest mean of 4.38, thus translating to a slightly above the 'agree' rating on the Likert scale. This indicates that the team endorsed the relevance of the practice. On ensuring that workers comply with safety and health procedures and use safety equipment, clothing, and devices, the statement pulled a statistical mean of 4.32 and ranked 2<sup>nd</sup> among the responses. It shows that ensuring workers comply with safety and health procedures and use safety equipment, clothing, and devices are the construction project team's prerogatives. This result is in line with a study that says workplace injury and illness are prevented by good management practices, by people taking personal responsibility, and by competence.<sup>8</sup> It reiterates that regular inspection and consultation between management and employees will prevent many accidents from occurring. Further on, most respondents attested that the construction project team ensures a health and safety plan is in place. This assertion was ranked 3<sup>rd</sup> with a mean of 4.26 from the table. It can be seen from the table that respondents agreed that ensuring health and safety plans in most construction companies is the privilege of employees.

Similarly, taking necessary precautions to protect the safety and health of workers under their supervision is seen to be initiated by the construction project team. With a mean value of 4.12, most respondents have agreed taking necessary precautions to protect the safety and health of workers under their supervision is construction project team driven. This result is supported by a study that says the task of setting up health and assurance procedures for the company and subsequent assessing provisions in the workplace is best separated under a different executive functional head from the departmental and the construction project team responsible for operations under different regulations.<sup>9</sup>

Ensuring health and safety awareness at all levels

within the organization was found to be an issue

in most construction companies in the survey. In this study, with a mean of 4.06 (Table 3), it is evident that the construction project team has to ensure health and safety awareness at all levels within the organization. Therefore, the construction project team should ensure health and safety awareness at all levels within the organization is nothing less, than the construction project team's prerogative.

It is important to ensure adequate welfare facilities on site as it was 'agreed to' by respondents in the survey with a 6<sup>th</sup> rank and a mean value of 4.04 (Table 3). It was further observed in this study that with a mean of 3.98 and 7<sup>th</sup> rank, cooperating with the workplace safety and health committee or representative in most construction sites remains the prerogative of the construction project team to decide who should constitute workplace safety and health committee or representative. Harris et al indicate that every employer must ensure that plant and equipment are maintained in safe conditions, training and supervision in safe working practices are provided, but it is an equal responsibility of every employee to cooperate in making proper and full use of the facilities provided.<sup>10</sup> Advising workers about safety and health hazards in the work area has a significant mean of 3.96 each and 8<sup>th</sup> rank (Table 3).

### **Level of importance of the different roles played by the construction project team.**

The section was to establish the level of importance to which the construction project team attached to their roles in the health and safety management of construction projects in Wa Municipality. The research undertaken established that ensuring that workers comply with safety and health procedures and use safety equipment, clothing, and devices in construction projects with a relative importance index of 0.74 and was ranked as the topmost role of the construction project team. This result is in line with other literature, which indicates that every employer must ensure that plant and equipment are maintained in safe conditions, training and supervision in safe working practices are provided, but it is an equal responsibility of every employee to cooperate in making proper and full

use of the facilities provided.<sup>11</sup> It has been observed in our study that the key roles that the construction project team played in construction projects were; to monitor construction sites and ensure the company complies with state regulations on health and safety in the workplace (RII = 0.716), ensure a health and safety plan is in place (RII = 0.704), ensure adequate welfare facilities are on site (RII = 0.692), receives reports on workplace injuries, investigates the causes, and may arrange for compensation for victims (RII = 0.688), taking necessary precautions to protect the safety and health of workers under their supervision and ensure that employees maintain a clean, organized and orderly workplace (RII = 0.684) each, organize the provision of protective clothing and equipment (RII = 0.68), ensuring the company has safety and health program in place with RII( 0.672), teach employees the fundamentals of safe work practices with RII( 0.672).

### **Challenges in managing the health and safety of project sites**

In our study, poor culture and attitudes of construction workers, supervisors, and companies toward health and safety obtained the highest mean of 4.02 thus translating to a slightly above the 'agree' rating on the Likert scale (table 5). This indicates that both management and construction workers endorse the elimination of the practice. This finding is also supported by another study.<sup>12</sup> Inefficient institutional frameworks responsible for governing construction activities and insufficient safety training pulled a statistical mean of 4.00 and 2<sup>nd</sup> rank from respondents' responses in this study. It signals that inefficient institutional frameworks responsible for governing construction activities and insufficient safety training are serious challenges to the construction project team. This result is in accordance with other studies, which indicate that institutional and legal frameworks governing occupational health and safety in developing countries tend to be weak and have little impact on practice.<sup>13,14,15,16</sup> Furthermore, most of the respondents attested to poor safety conscientiousness of workers. This assertion was

ranked 3<sup>rd</sup> with a mean of 3.96. It can be seen from the table that respondents agreed the poor safety and conscientiousness of workers is a challenge to the construction project team.

Reluctance to input resources for safety and health is seen to be one of the top challenges of the construction project team in this study (table 5). With a mean value of 3.94, most respondents have agreed with reluctance to input resources for safety and health is management driven. Ineffective operation of safety regulations and provision of health insurance for employees in construction sites was found to be a challenge for the construction project team in most construction sites, with a mean of 3.90 in the survey, and a mean of approximately 3.86, it is evident that there was inadequate government support for regulatory institutions for health and safety standards. Therefore, giving opportunities for construction workers to make input in their various construction sites is a management prerogative. Similarly, it was noted that there was a lack of emphasis on safety by developers/clients; no external pressure on consultants and contracts to act on safety has a mean value of 3.84. It is further observed that with a mean of 3.82 and 8<sup>th</sup> rank, an inadequate number of health and safety personnel in construction sites is likely to increase the prevalence rate of construction accidents in the municipality. Although health and safety personnel views can be solicited, it remains the prerogative of the construction project team to decide who should constitute their health and safety committee.

### **Conclusion**

The paper sought to examine the current state of health and safety management on construction sites in Wa Municipality. It revealed a lack of health and safety management at all levels of the construction chain. First, there is poor culture and attitudes of construction workers, supervisors, and companies toward health and safety. Secondly, ineffective operation of safety regulation, inefficient institutional frameworks responsible for governing construction activities, and a lack of attention to safety management by main contractors/team. Despite the institutional

provisions for construction safety in Ghana (the Labour Act, 2003 and the Factories, Offices, and Shops Act, 1970), there is no compliance with these Acts during construction. This is partly due to non-enforcement, leading to poor attitude of workers, and limited knowledge of the institutional provisions on safety at construction sites. Finally, this result compares with other studies both in Ghana and some western countries seems to indicate that the role of the construction project team in health and safety management in the construction industry can best be explained by management policies and practices.

### Recommendations

Based on the findings of the study, it is recommended that the construction project team monitors construction sites to ensure that companies comply with the institutional arrangement on health and safety in construction sites. Again, the construction team should create awareness of the institutional arrangements required to keep construction workers, supervisors, and companies in general informed of their obligations toward the health and safety of construction sites. Finally, the construction project team should provide adequate training in the correct use of machinery and equipment, safety gadgets for the employees on the job, and adequate first aid and first aiders on construction sites.

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