



ASSESSMENT OF WORKERS' ATTITUDE TOWARDS SAFETY AND HEALTH MEASURES ON BUILDING CONSTRUCTION SITES IN ABUJA

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ABSTRACT

Studies have shown that safer behaviour is reflected by a good attitude. In view of this, the study assessed workers' attitudes towards safety and health measures on building construction sites in Abuja with a view to improving construction workers' attitudes towards safety and health on construction sites. The study adopted a quantitative research approach with the use of structured questionnaire administered to 102 respondents with a response rate of 93%. The analysis of the data was carried out with the use of percentage, Mean Item Score (MIS) and Spearman rank correlations. The study identified 11 accidents peculiar to building construction sites in Abuja which often occurred (MIS = 3.88 - 4.35). Eleven (11) significant health and safety (H&S) measures required to improve construction workers' attitude on site were identified of which the most significant ones range between safety policies (MIS = 4.20) and site responsibility for H&S (MIS = 3.50). The result of the Spearman's rank correlation analysis shows a positive, fairly strong and significant relationship between workers' knowledge and H&S standards on building construction sites ($p = 0.03$; $r = 0.453$). All the identified H&S standards are averagely or partially complied with at the various building construction sites. These range from "Lifting operations and lifting equipment regulations" (MIS = 2.70) to "First aid regulations" (MIS = 4.00). The average MIS is 3.52. It was, however, concluded that workers' positive attitude on building construction sites towards H&S measures can help reduce the frequency of accidents on construction sites in Abuja. The major recommendation from the study was that construction workers should be well trained on accident preventive measures. Finally, site

workers should develop a positive attitude towards H&S measures for improved compliance to H&S standards.

Keywords: *Building, Construction Sites, Safety and Health Measures, Workers' Attitude.*

INTRODUCTION

The labour-intensive nature of the construction industry will demand more human involvement at the production stage. However, the industry compared with other sectors of the economy, due to the magnitude of casualties suffered in the execution of building projects across the globe, has made the construction industry the most dangerous or highly hazardous industry in view of (Dorcac *et al.*, 2019). The construction industry is viewed as labour-intensive because labour costs amount to 40–65% of the overall cost of a project (Fagbenle *et al.*, 2011; Ogunyemi *et al.*, 2019).

Generally, the integration of health and safety (H&S) measures into the total quality management system within the construction sector could significantly contribute to cost efficiency, quality assurance, environmental sustainability, and employee-employer relations and satisfaction. Nevertheless, divergent perceptions, behaviors, and actions exhibited by construction workers lead to serious accidents on site (Gbajobi *et al.*, 2018). Human behaviour is therefore very complex and is not fully predictable. Attitudes are judgments or sentiments that the human mind thinks about something or someone. People's attitudes toward a subject could be inferred from their behaviour and manner of thinking in various situations (Gbajobi *et al.*, 2018). The attitudes of the workers are crucial to the prevention of accidents and injuries that occur in industries. Behaviour is affected by many factors, such as environmental conditions, task and equipment characteristics, job instructions, psychological and physiological stresses, and individual factors (Gbajobi *et al.*, 2018).

The mindset and attitude vary based on the worker's roles and duties in a construction project. Engineers believe that the designer should be responsible for supervising the construction project, including the safety of the construction workers. The majority of architects support the concept; however, there are a few who do not consider themselves in charge of providing and maintaining safety on site, claiming that they were not and are not likely to affect the safety

of workers on construction sites due to the lack of direct involvement of construction site management (Wan & Mohammed, 2018). This mindset and attitude may change if they fully understand the concept of design safety and how they can affect the safety and health of a construction worker through their design. As for the other stakeholders, such as mechanical engineers, quantity surveyors, and safety officers, many agree that the contractor or construction manager is the person responsible for the safety and health of the workers. Agreeing to that, some contractors prefer to retain the freedom to be creative in the development of the construction sequence (Wan & Mohammed, 2018).

Safer behaviour is reflected by a good attitude. Many accidents and incidents that occurred in the workplace, especially in the building construction sites, were due to the inadequate adherence of workers to work procedures (Okoye, Ezeokonkwo and Ezeokoli, 2016). The workers must realise that they play an important role in contributing to the accomplishment of the building's construction. The awareness and perception of the workers toward safety, health, and their working environment are important aspects to enhance the building's construction for the betterment of the workers themselves. The safety of construction employees on the job is critical to the project's success. Work can only be done effectively when employees are in a good mood and are healthy (Okoye, Ezeokonkwo & Ezeokoli, 2016). Therefore, this research assessed workers' attitudes towards safety and health measures on building construction sites in Abuja, with the view to improving construction workers' attitudes towards safety and health and reducing accidents on construction sites. In order to achieve this aim, the following objectives were formulated:

- i. To identify and examine the safety and health measures required to improve construction workers' attitude on site.
- ii. To determine the relationship between construction workers' knowledge and health and safety (H&S) standards.
- iii. To examine the attitude of construction workers towards compliance with H&S standards.

LITERATURE REVIEW

An existing review of the literature has been undertaken in order to address the objectives of the study. This review of literature will also assist in addressing

the problem raised in the study. After a thorough review of literature on the worker's attitude towards safety and health measures on building construction sites in Abuja, the study came up with the findings that are summarised in Tables 1 - 3.

Table 1: Safety and Health Measures Required to Improve Construction Workers' Attitude on Site

S/No	Health and Safety Measures	Sources
1.	Safety policies	Iden. (2010)
2.	Workplace inspections	Iden (2010)
3.	Training and coaching	Iden (2010), Mohammed (2010)
4.	Regulatory compliance	Smallwood and Haupt (2006)
5.	Periodic safety review.	Smallwood and Haupt (2006)
6.	Site Management Safety Training	Olutuase (2014)
7.	Safety management plan	Olutuase (2014)
8.	Site responsibility on health and safety	Shamsuddi <i>et al.</i> (2015)
9.	Method used to promote and ensure compliance	Okoye <i>et al.</i> (2016)
10.	Safe working procedure	Okoye <i>et al.</i> (2016)
11.	Provision of welfare facilities on site	Sukys <i>et al.</i> (2011)

The eleven (11) identified H&S measure on construction sites are summarized in Table 2.2. It was revealed that these measures can enhance positive safety culture amongst employers and employee of construction firms, thereby leading to positive attitude towards safety and health on construction sites. The review of the literature in this study will enhance the collection of data. This is because all the variables required to address the research objectives have been identified and broken down into a comprehensive form.

Table 2: Relationship between Construction Workers' Knowledge and H&S Standards

S/No.	Relationship between Construction Workers' Knowledge and H&S Standards	Source(s)
1	Improvement of accident reporting culture	Nwachukwu and Ikeije (2016); Adeagbo <i>et al.</i> (2019)
2	Ensures that accident victims are adequately compensated	Nwachukwu <i>et al.</i> (2016); Adeagbo <i>et al.</i> (2019)
3	Improves compliance with occupational safety rules and regulation to protect workers from occupational injuries	Oluwafemi <i>et al.</i> (2017)
4	Enhances a safe construction working environment	Gbajobi <i>et al.</i> (2018)
5	Improves safety among workers in order reduce accidents impact on the victims, thereby enhancing safety participation of site operatives.	Nwachukwu <i>et al.</i> (2016); Adeagbo <i>et al.</i> (2019); Adebayo and Emoh (2019)
6	Enhances level of safety participation of site operatives	Adeagbo <i>et al.</i> (2019)
7	Determines workers' quality and productivity on construction projects	Adeagbo <i>et al.</i> (2019)

Table 2 shows the relationship between construction workers' knowledge and H&S standards. It has been established that effective orientation can improve accident reporting culture. Developing effective framework may be difficult without appropriate statistics of accident rate in every sector. Every workplace must be encouraged to report accidents. This is necessary as an enabler that will ensure that victims are adequately compensated (Nwachukwu & Ikeije, 2016). According to Oluwafemi *et al.* (2017), exposure to occupational hazards can result in work related injuries or disease. However, good knowledge on safety standards will improve workers level of awareness on the wearing of personal protective equipment in order to protect them from occupational hazards.

Therefore, good knowledge on safety standards will improve compliance with occupational safety rules and regulation to protect workers from occupational injuries. Thus, there is a need for health promotion and campaign so as to sensitize and enlighten workers on health risks (work-related injuries and diseases) attributed to poor utilization of personal protective equipment. In addition to this, Gbajobi *et al.* (2018) reported that workers' knowledge on safety standards will enhance a safe construction working environment.

According to Adebayo and Emoh (2019), training improves workers' H&S awareness. Therefore workers must be trained on safety awareness in order to improve their knowledge about safety standards. This is because this will lead to positive relationship between construction workers' knowledge and health and safety standards. In the same line of thought, Adeagbo *et al.* (2019) discovered that good knowledge on safety standards will improve safety among workers, because safety practices play vital roles in protecting workers on construction sites. Good knowledge of workers on safety standards would also reduce accidents impact on the victims, thereby enhancing safety participation of site operatives. Therefore, workers' compliance with health and safety regulations have great impact in determining workers' quality and productivity on construction projects (Adeagbo *et al.*, 2019).

RESEARCH METHODOLOGY

A quantitative research approach was adopted in this study. The population of the study was made up of participants in the building construction industry. These participant includes: safety officers and project managers involved with projects executed by construction firms registered with the Federation of Construction Industry (FOCI) in Abuja. The sample for this study was made up of professionals from chosen building and construction firms in Abuja. According FOCI (2021), 51 construction firms are registered with FOCI. In view of the fact that the population size for the study is few (51), a census of all the construction firms registered with FOCI were considered. Therefore, one (1) safety officer and one (1) project manager in the 51 building construction firms with ongoing projects were considered. This information of the population was substituted and an estimated sample of 102 respondents was arrived at. This implies that a total of 102 respondents in the selected firms were identified for sampling at the rate of 2 respondents from each of the selected building

construction firm. The use of structured questionnaires was employed for data collection in order to achieve the study's objectives. The questionnaire (designed on a five-point Likert scale format) addressed issues relating to the research objectives respectively. The collected data were analysed using the Mean Item Score (MIS) and spearman rank correlation. The decision rule adopted for the MIS analysis is summarised in Table 3.

Table 3: Decision Rule for MIS Analysis

Scale	Cut-off points	Remarks/ Decision	
		Effectiveness	Compliance
5	4.50 -5.00	Very Effective	Total compliance
4	3.50 -4.49	Effective	Average compliance
3	2.50 -3.49	Fairly Effective	Partial compliance
2	1.50 -2.49	Less Effective	Least compliance
1	1.00 -1.49	Least Effective	Non compliance

Source: Adapted and modified from Morenikeji (2006); Agumba and Haupt, (2014); and Shittu *et al.* (2016)

RESULTS AND DISCUSSION

Result on Examination of Safety Profile of Construction Firms

Awareness of worker's on safety regulations

Table 4 reveals the awareness level of the available regulations relating to worker safety in Nigeria by the sampled company. The findings showed that 78.8% of the respondents opined yes, which means they are aware of available regulations regarding worker safety. 10.2% opined no, while 11.0% of the respondents are not sure of the available regulations regarding worker safety. This implies that a majority of 79% of the respondents are aware of regulations regarding worker safety.

Table 4: Awareness of Workers on Safety Regulation

Awareness of Workers Safety Regulations	Frequency	Percentage
Yes	76	78.8
No	9	10.2
Not sure	11	11.0
Total	96	100

Inspection by government or non-governmental agencies

Table 5 reveals whether government or non-governmental agencies visit the site managed by the sampled company for inspection. The findings showed that 60.5% of the respondents opined yes, which implies the site they managed is being inspected by both government and non-governmental agencies. 30.8% opined no, while 8.7% of the respondents were not sure. This implies that a majority of 61% of the sites managed by the sampled respondents are being inspected by government or non-governmental agencies. Table 6 went further to show the kind of safety inspection carried out at the various sampled construction sites, and the findings revealed that 70% of the safety inspections carried out are for company safety, while 30% are for worker or employee safety. This implies that the majority of safety inspections carried out are company-safety kinds of inspection.

Table 5: Inspection by Government or Non-Governmental Agencies

Inspection by government or non-governmental agencies	Frequency	Percentage
Yes	76	60.5
No	9	30.8
Not sure	11	8.7
Total	96	100

Table 6: Kind of Inspection

Kind of inspection	Frequency	Percentage
Company safety	67	70.0
Worker /employee safety	29	30.0
Total	96	100

Provision of safety training for workers

Table 7 reveals if there is provision of safety training for workers before starting and the findings show 70% of the sampled companies provide safety training for their workers before they start, while 25% of the companies didn't provide safety training for their workers. Only 5% of the companies are not sure if they provide safety training or not.

Table 7: Provision of Safety Training for Workers

Provision of safety training for workers	Frequency	Percentage
Yes	67	70.0
No	24	25.0
Not sure	5	5.0
Total	96	100

Result on Health and Safety Measures Required to Improve Construction Workers Attitude on Site

The use of MIS was employed to show the level of effectiveness of H&S measures required to improve construction workers' attitudes on site. The result of the MIS analysis is presented in Table 8.

Table 8: Health and Safety Measures Required to Improve Construction Workers Attitude on Site

S/No	Health and Safety Measures	MIS	Rank	Decision
1	Safety policies	4.20	1st	Effective
2	Training and coaching	4.09	2nd	Effective
3	Site Management Safety Training	4.00	3rd	Effective
4	Safety management plan	3.99	4th	Effective
5	Method used to promote and ensure compliance	3.86	4th	Effective
6	Workplace inspections	3.64	6th	Effective
7	Site responsibility on health and safety	3.50	7th	Effective
8	Safe working procedure	3.44	8th	Fairly Effective
9	Provision of welfare facilities on site	3.31	9th	Fairly Effective
10	Regulatory compliance	2.98	10th	Fairly Effective
11	Periodic safety review	2.68	11th	Fairly Effective
Average MIS		3.60		Effective

Table 8 revealed the result of MIS for the eleven (11) identified H&S measures required to improve construction workers' attitude on site. It was shown that the significant health and safety measures are safety policies, training and coaching, site management safety training, safety management plan, method used to promote and ensure compliance, workplace inspections, site responsibility on health and safety, with MIS values of 4.20, 4.09, 4.00, 3.99, 3.86, 3.64 and 3.50, respectively. While regulatory compliance and periodic safety review, were identified to be less significant with MIS values of 2.98 and 2.68 respectively. On average, all the H&S measures required to improve construction workers' attitude on site are effective (average MIS = 3.60). The findings from the study agree with the studies Smallwood and Haupt (2006), Iden (2010), Mohammed (2010), Sukys *et al.* (2011), Oluase (2014), Shamsuddi *et al.* (2015), and Okoye *et al.* (2016) who affirmed that these measures can enhance the positive safety culture amongst employers and employees of construction firms, thereby leading to a positive attitude towards safety and health on construction sites.

Result on Relationship between Construction Workers' Knowledge and Health and Safety Standards

The analysis of the relationship between construction and construction was carried out using Spearman's rank correlation analysis. The result of the findings revealed that there exists a positive, slightly strong and significant relationship between workers' knowledge and H&S standards on building construction sites. However, the correlation result shows that there is a tendency for improved knowledge of H&S by improving the level of awareness of H&S standards. There is therefore a need for construction firms to intensify their level of compliance with the provision of the H&S standards components to improve workers' attitudes towards safety and health measures on building construction sites. The result of the Spearman's rank correlation analysis is presented in Table 9. The rank correlation value was positive and slightly strong (0.453). The correlation was therefore found to be significant at 5% (0.05) level of significance ($p = 0.03$).

Table 9: Results of Spearman's Rank Correlation Analysis

Analysis No.	Variables		Observations			Inferences	
	X	Y	R	(%)	P _{VALUE}	Strength of Relationship	Remark
1	Awareness of the available regulation regarding worker safety	Health and safety standard	0.453		0.03	Fairly Strong	Significant

The findings of the correlation analysis agrees with the study of Oluwafemi *et al.* (2017) where it was revealed that good knowledge on safety standards will improve workers level of awareness on the wearing of personal protective equipment in order to protect them from occupational hazards.

Result on Attitude of Construction Workers towards Compliance with Health and Safety Standard

The study identified eleven (11) important components of the H&S standards (average MIS = 3.52). The result of the MIS on the level of compliance with these H&S standards is presented in Table 10.

Table 10: MIS Ranking on Compliance to Health and Safety Standard

S/NO	Components Of health and safety standard	MIS	Rank	Decision
1	First aid regulations	4.00	1st	Average Compliance
2	Personal protective regulations	3.97	1st	
3	Health and safety at work	3.92	3rd	Average Compliance
4	Design and management regulations	3.81	4th	Average Compliance
5	The reporting of injuries and dangerous occurrences	3.75	5th	Average Compliance
6	Regulatory reform (fire safety) order	3.60	6th	Average Compliance

7	The control of noise	3.50	7th	Average Compliance
8	The gas safety regulations	3.42	8th	Partial Compliance
9	Confined space regulations	3.30	9th	Partial Compliance
10	Control of vibration regulation	2.80	9th	Partial Compliance
11	Lifting operations and lifting equipment's regulations	2.70	11th	Partial Compliance
	Average	3.52		Average Compliance

Table 10 shows that all the identified H&S standards are averagely and partially complied with at the various building construction sites. These range from "Lifting operations and lifting equipment regulations" (MIS = 2.70) to "First aid regulations" (MIS = 4.00). The average MIS is 3.52. This implies that the construction firms should improve their level of compliance. The finding of this study here agrees with that of Nwachukwu and Ikeje (2016) and Oluwafemi and *et al.* (2017) where it was established that a good attitude towards safety standards will improve workers' level of awareness on the wearing of personal protective equipment in order to protect them from occupational hazards.

CONCLUSION AND RECOMMENDATIONS

This study identified challenges of poor attitude towards compliance with health and safety (H&S) standards in the construction industry, resulting in an increase in the rate of accidents and general poor H&S performance in the Nigerian construction industry. In view of this, the study assessed workers' attitudes towards safety and health measures on a building construction site in Abuja. The result of the findings revealed that there exists a significant relationship between workers' knowledge and H&S standards on building construction sites. Finally, the level of compliance with these H&S standards on sites showed that there was average compliance with all the components of H&S standards on building construction sites in Abuja. It can therefore be concluded that workers' positive attitude on building construction sites towards safety and health measures can help reduce the frequency of accidents on construction sites in Abuja. In view of the findings and conclusions of this study, the following recommendations were made:

- i. To reduce the occurrences of site accidents, workers on building construction sites should be well trained and sensitized about accidents unique to construction sites.
- ii. The workers on building construction sites should develop a positive attitude towards health and safety measures required to improve construction workers' attitudes on site by complying with health and safety standards.

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