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Development of Safety Measures Implementation Model for Small and Medium Size Construction Firms in Abuja, Nigeria

YANDALU, M. M.[1], JIBBRIL, A. M.[2]
[1, 2]*Department of Quantity Surveying, Niger State Polytechnic, Zungeru, Niger State.*

Abstract*—The construction industry in developing nations like Nigeria has a high rate of fatal injuries and continues to be the highest among all industries; this is owing to the fact that Nigeria's current Occupational Health and Safety(OHS) laws is not functional. This paper aims to examine the factors influencing the implementation of safety measures on construction site by construction small and medium size construction firms (SMEs) in Abuja. Questionnaire survey approach was used to obtained data from the targeted respondents; data collected were analysed using mean item, descriptive statistics was used to show the frequencies and mean of reaction to questions. The findings from the study showcase that, low level of compliance with occupational health and safety regulations is the most severe factor influencing the implementation of safety measures, followed by weak national OHS standards, poor policy implementation, and beliefs as the fairly severe by SMEs in Abuja. Non-compliance with OHS is a major contributor to the poor state of safety implementation in construction SMEs in Nigeria.

Keywords* — Construction firm, Implementation, Nigeria, Safety measure, and Small and medium

I. INTRODUCTION

The construction industry is known for its hazardous activities; its accident record is on the increase which make it the highest across other industries (ILO, 2018). For instance, the preliminary data from the Health and Safety Executive (HSE) (2018) for 2017/2018 shows that the construction industry in Britain recorded 38 fatal injuries in 2017/2018, which was greater than for any other industry (HSE, 2018). Construction industry is been regarded by some economists as a leading driver of economic development in a country. This is basically because virtually all other economic sectors are completely dependent on the products and services offered by the construction industry to carry out their activities. For example, it would be impossible for the manufacturing industry to thrive without appropriate buildings and infrastructure such as office buildings, and all other products of the construction industry (Kawuwa *et al.*, 2018).

Amiri *et al.* (2017) affirm that, construction industry had the greatest rate of casualties globally, compared to other industries. However, despite contributing significantly to the country's economic prosperity, the construction industry has also contributed to high fatality rates due to a high number of accidents. Thus, safety becomes one of the significant concerns in the construction sector.

Health and Safety in Construction Site

Construction industry's H&S performance remains a significant concern, in many countries' development initiatives, including Nigeria's. Workplace H&S is a global problem to our societies and civilisations long-term growth. According to the ILO (2012), work-related injuries and illnesses account for 3.9 percent of all deaths, with 25% of the global population experiencing a minor or major occupational injury or disease in any given year. Aside from moral problems, the financial cost is enormous. Workplace injuries cost the United States 125.1 billion dollars (1.5 percent of GDP) in 1998 and the United Kingdom between 14.5 and 18 billion pounds (2.1 percent to 2.6 percent of GDP) each year (Okojie, 2010). This jeopardizes the industry's efforts to build and develop in a sustainable manner. The construction industry has long been connected with major issues such as top management's lack of safety knowledge, lack of training, low contractors' safety awareness, management and worker attitudes, and a reluctance to allocate funding for safety. As a result, serious accidents at the construction sites are generated, which will harm others.

Overview of Nigerian Construction Industry

Developing countries have a poor record in terms of H&S (Manu *et al.*, 2018). For example, Okoye (2018) reported on a study of 236 construction workers from various trades in one of Nigeria's 36

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states, Anambra, which found that carpenters, masons, iron benders, and steel fixers all have very high-risk levels of 13.7, 13, and 12.3, respectively. This was measured against the risk scale recommended by the Code of Practice on Workplace Safety and Health Risk Management (Manu *et al.*, 2018). The data presented is representative of the situation in Nigeria, as most accidents go unreported (ILO, 2017).

The Nigerian construction industry has maintained its importance in the country's economy. The construction sector contributed approximately ₦121, 900.86million Naira to Gross Fixed Capital Formation in 2012, and employed 6,913,536 people (excluding casual workers) National Bureau of Statistics, (NBS) (2015).

Factors influencing the implementation of safety measures in construction site

The implementation of Occupational Health and Safety (OHS) measures in the industry is critical for the protection of all project stakeholders (Lingard *et al.,* 2015). OHS has been defined by the ILO (2012) as: *"*The prevention and maintenance of the highest degree of physical, mental and social well-being, the prevention of ill-health among workers caused by their working conditions, the protection of employees against workplace hazards that could be harmful to their health, as well as the establishment and maintenance of work environments that were already individualized for each employee and psychological conditions." However, the construction site has been faced with the implementation challenges, such as; Low level of compliance with OHS regulations, weak national OHS standard, poor policy implementation, poor budgetary and implementation, shortage and wrong use of safety equipment, and beliefs.

Safety measures implementation theories

Researchers have studied safety implementation theory as one of the most common frameworks used in the research studies for conceptualizing and understanding issues concerning accident prevention (Decamp and Herskovitz 2015). Interestingly, safety theories have been developed by different researchers. However, most of the theories developed by several researchers revolve around six main categories of safety theory as classified by Osei-Asibey *et al.* (2021), namely the behaviour Theory of Safety; Heinrich's Domino Theory of Safety (HDTS); Energy Release Theory of Safety (ERTS), also known as Dr. William Haddon's Theory; Systems Theory of Safety (STS)/Reason's Swiss Cheese Model; Epidemiological Theory (ET); and Human Factor Theory of Safety (HFTS) which includes Accident/Incident Theory. Therefore the safety theories considered suitable for underpinning this study are Behaviour Theory of Safety (BTS).

The research method

The study adopt the quantitative methods of approach because the data generated from the numeric measurement of the level of implementation of safety measures on construction SMEs, first handed source of data collection follow through the establishment of well-structured questionnaires to 353 randomly registered construction firms of small and medium sized categories with corporate affairs commission (CAC) selected respondents with a response rate of 56%. Mean Item Score (MIS) were statistical tools employed for the analysis of data. Table is the medium use to present the findings of the study.

II. DATA ANALYSIS

Total questionnaire distributed was 353 out of which 199 returned and was used for analysis as shown below.

Table 1: Breakdown of Research Data

S/No.	Category of Data Collected	Frequency	Percentage (%)
1.	Not returned	154	43.62
2.	Returned and used for analysis	199	56.38
	Total	*353*	*100*

Source: Researcher's Field Survey (2025)

Years of respondent's experience

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Table 2: shows that 62.56% of the respondents had between 1 to 10 years' experience, 36.92% has between 11-20 years, while 0.5% has above 20 years' experience.

Table 2: Years of Experience of Respondents

Years of Experience	Frequency	Percentage (%)
1 - 5 Years	43	22.05
6 - 10 Years	79	40.51
11 - 15 Years	42	21.54
16 - 20 Years	30	15.38
Above 20 Years	5	0.52
Total	199	100.00

Source: Researcher's Field Survey (2025)

Years of company's experience

Table 3. Shows that 62.32% of the company had between 1 to 10 years' experience, 30.15% has between 11-20 years, 7.45% has above 20 years' experience.

Table 3: Age of Firms

Firms' Age	Frequency	Frequency (%)
1 - 5 Years	53	26.63
6 - 10 Years	71	35.68
11 - 15 Years	40	20.10
16 - 20 Years	20	10.05
Above 20 Years	15	7.54
Total	199	100

Source: Researcher's Field Survey (2025)

Results and Discussion on the factors influencing the Implementation of Safety Measures by Construction SMEs

Table 1 gives a summary of results for the MIS ranking of the factors influencing the implementation of safety measures by construction SMEs based on the respondents' perception. The result of the analysis is presented in Table 1.

Table 4: factors influencing the Implementation of Safety Measures by Construction SMEs

S/NO	FACTORS INFLUENCING SAFETY MEASURES IMPLEMENTATION	MIS	RANK	DECISION
CS1	Low level of compliance with occupational health and safety regulations	4.21	1st	Severe
CS2	Weak national OHS standards	4.08	2nd	Severe
CS15	Poor policy implementation	4.03	3rd	Severe
CS14	Poor budgetary provision and implementation	4.02	4th	Severe
CS19	Low priority given to safety of construction workers by contractors	4.00	5th	Severe
CS9	Management commitment.	3.91	6th	Severe
CS3	Lack of adequate information on OHS	3.89	7th	Severe
CS12	Lack of enabling environment (Social, Political, Legislative, macroeconomic and bureaucratic obstacles etc.).	3.87	8th	Severe

CS11	Lack of funding for inspecting and H&S plan in a construction site	3.79	9th	Severe
CS21	Failure to include the safety personnel into the design of the building	3.77	10th	Severe
CS18	Shortage and wrong use of protective equipment	3.74	11th	Severe
CS22	Contractor low awareness to health and safety requirements	3.72	12th	Severe
CS13	Low capitalization	3.69	13th	Severe
CS20	Failure to report accident to appropriate authority	3.67	14th	Severe
CS10	Absence of safety representatives	3.66	15th	Severe
CS17	Absent or ineffective communication	3.57	16th	Severe
CS5	Weak legal structures	3.54	17th	Severe
CS16	Lack of organisational structure	3.51	18th	Severe
CS8	Awareness and proper medium of information dissemination.	3.50	19th	Fairly Severe
CS7	Provision of safety facilities	3.40	20th	Fairly Severe
CS23	Underpayment of the safety personnel	3.40	21st	Fairly Severe
CS4	Bribery and corruption	3.06	22nd	Fairly Severe
CS6	Beliefs	2.64	23rd	Fairly Severe
	Average	*3.68*		*Severe*

Source: Field survey (2025)

Twenty-three (23) factors were identified from the literature review, in order to determine the factors influencing the implementation of safety measures by construction SMEs, and ranked with the aid of MIS as shown in Table 1. Low level of compliance with occupational health and safety regulations (MIS = 4.21) is the most severe factor influencing the implementation of safety measures by Construction SMEs in Abuja, as shown in Table 1, and the beliefs (MIS = 2.64) ranked 23rd as the fairly severe.

III. RECOMMENDATIONS AND CONCLUSION

The findings reveals that the factors influencing the implementation of safety measures by Construction SMEs are low level of compliance with OHS regulations, weak national occupational H&S standards, poor policy implementation and poor budgetary provision and implementation. Communication of H&S policy and programs to staff, provision of personal protective equipment's, collective protective equipment, such as scaffolding, safety net, fencing and accessibility, and dealing with any hazards promptly are some of the strategies for the improvement of the level of safety measures implementation.

Recommendation

To ensure effective implementation of safety measures for construction SMEs, the following recommendations are drawn from the conclusions of the study:

i. Construction firms should encourage and enhance the implementation/use of first aid kits, personal protective equipment (PPE) and safety policy as they have been identified as the effective safety measures required on construction sites to further reduce accidents and unnecessary expenses that may amount as result of accident.
ii. Since it has been identified that; low level of compliance with OHS regulations, management commitment, lack of adequate information on occupational health and safety (OHS), weak national occupational health and safety (OHS) standards, and weak legal structures are the major challenges affecting the implementation of safety measures by construction SMEs. This

study recommends that firms should have a more stringent in-house rules by incorporating the 'carrot and stick' approach (that is, a combination of reward and punishment) to induce good behaviour. In addition, reduction in cost of safety training, adoption of seminars and workshops to engage SMEs to be part of OHS activities, and ensuring the right safety culture for professionals/site workers is crucial for the advancement of OHS and for the wellbeing of the workers.

i. Finally, This study recommend that construction firms should ensure provision of adequate personal protective equipment, communication of H&S policy and programs to staff, encourage the use of building codes of practice, provide collective protective equipment such as scaffolding, safety nets fencing and accessibility, provide first aid supplies, deal with any hazards promptly, training and enforcement risk awareness, management and tolerance, and conduct safety inspections at predetermined intervals so as to improve the level of implementation of safety measure on construction sites by SMEs.

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