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Assessing Health and Safety Management Compliance In Private Building Projects In Lagos State, Nigeria

Posun, O.A.
Department of Quantity Surveying
University of Ibadan
Ibadan, Nigeria.
E-mail: ao.posun@ui.edu.ng

ABSTRACT

The construction industry is distinguished by different occupational hazards that can negatively affect personnel, project performance and the successful delivery of building projects. Thus, effective health and safety management is vital for preventing accidents, safeguarding workers and boosting project success. This study examined the level of health and safety management compliance in private building projects in Lagos State, Nigeria. A quantitative cross-sectional survey design was used. Construction players in private building projects in Lagos State were presented with a standardised questionnaire. The number of distributed questionnaires was 90, retrieved was 75 and valid replies preserved for analysis were 70, reflecting a useful response rate of 77.8%. Convenience sampling was used. Descriptive statistics and Relative Importance Index (RII) were used to analyse the data. Results demonstrated relatively high perceived adoption of some health and safety practices. Basic safety training was rated highest among the compliance factors (RII = 0.880), while adequate maintenance of safety records was rated lowest (RII = 0.751). Unsafe crane operations were the most significant factor identified in health and safety management (RII = 0.882), followed by inadequate implementation of health and safety policies and absence of innovative technology (RII = 0.857). The use of experienced field supervisors to enforce safety standards was given the highest rank (RII = 0.894). The survey reveals that although numerous safety procedures are believed to be relatively well implemented, there are gaps in safety documentation, ongoing safety communication, and the enforcement and management of high-risk activities. The research advises, among other things, increased site-level oversight and regular staff training.

Keywords: Construction Safety; Health and Safety Management; Safety Compliance; Private Building Projects; Lagos State; Relative Importance Index; Nigeria

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1. INTRODUCTION

The construction business is a complex and dynamic field that involves multidisciplinary activities, changing working environments and diversified construction operations with the involvement of personnel with different levels of abilities and experience. These qualities put construction workers at risk for several occupational dangers.

Building is recognised by the International Labour Organisation as a sector with widespread and serious occupational safety and health hazards, and it is actively campaigning for preventative safety and health management throughout the life cycle of the building project (International Labour Organisation [ILO], 2022). Construction activities may involve work at height, lifting operations, construction plant, electrical installations, hazardous substances, excavation, moving vehicles and other site operations. Poor management of these dangers can result in injuries, fatalities, project delays, increased expenses, decreased productivity and harm to reputation. Effective health and safety management is therefore as much a part of construction project management as any other management process. Health and safety performance is a major concern in Nigeria. One of the significant challenges facing the Nigerian construction sector is inadequate compliance with health and safety laws (Umeokafor, Umeadi and Isaac, 2014). Their work shows that the persistence of safety concerns is related to context and regulatory elements that influence compliance. The dilemma is not only an issue of lack of awareness. Adebiyi et al. (2020) reported that Nigerian construction workers had an average understanding of health and safety information but relatively poor compliance. Their findings also suggest that compliance alone may not be enough to ensure worker safety, highlighting the need for wider management and organisational controls.

Health and safety management includes hazard identification, risk assessment, safety training, provision and use of personal protective equipment, supervision, safety communication, equipment maintenance, emergency preparedness, documentation, and enforcement. In a study of the Nigerian construction industry, Olutuase (2014) identified shortcomings in the organisation and documentation of its safety management system and stressed the need for strengthening and standardising safety management. Commitment from management and stakeholders is also critical. Barriers to client participation in health and safety in Nigeria, according to Umeokafor (2017) include legislation that is silent on client duties, low awareness, procurement challenges, attitudes of project participants and resource limits. Umeokafor (2018) also observed that customer involvement in health and safety may be linked to lower rates of accidents and compensation claims, decreased rework, and improved relations between clients and contractors.

Lagos State offers an essential environment for the study of these issues given the magnitude and diversity of construction activity and the number of private building projects completed inside the state. But there is insufficient research that brings together perceived compliance, issues affecting safety management and improvement measures in private building projects in Lagos State. This study consequently looks at the level of compliance with health and safety management in private building projects in Lagos State, Nigeria.

2. LITERATURE REVIEW

Construction Health & Safety Management

Health and safety management is an important component of construction project management since construction operations entail several hazards that may influence workers, project performance and other project stakeholders. ILO (2022) highlights a preventive approach to construction safety and health, involving cooperation between governments, employers, workers and their representatives.

Effective health and safety management comprises hazard identification, risk assessment, safety planning, worker training, provision of PPE, supervision, communication, emergency readiness, incident reporting, documentation and ongoing monitoring. In a study of a Nigerian organization, Olutuase (2014) found that although the safety management system was in place, organisational and documentation shortcomings hindered the system's efficacy. Research in Nigeria has also indicated that safety management is influenced by the wider institutional and project context. Umeokafor and Isaac (2016) stated that in Nigeria, self-regulation can be achieved through a variety of processes, including industry-led, client-led, community-led and voluntary. Some volunteer techniques may be unstructured or confined to the adoption of standards.

Health and safety in construction projects: Compliance

Health and safety compliance is about how closely safety rules and procedures are implemented in practice. It's important to differentiate compliance from knowledge, as workers may comprehend safety information and not apply it consistently. Adebiyi et al. (2020) studied the knowledge and adherence to health and safety information among construction workers in Nigeria, and found out average knowledge and low adherence. Their findings are important to the present investigation since they show that safety information does not inevitably lead to safe behaviour. Organisational conditions are as important for compliance as individual behaviour. Supervision, management commitment, communication, monitoring, punishments and availability of adequate resources can strengthen the compliance of workers. Similarly, Umeokafor et al. (2014) observed that adherence to health and safety requirements is a major obstacle in Nigeria's construction industry.

Factors determining the management of Health and Safety

Organisational Factors and Management Commitment

The importance of safety, the resources allocated to it, and the safety policies are all influenced by management commitment. Umeokafor (2018) showed that there were different attitudes and commitment to construction health and safety between public and private clients, and more client involvement was related to better project outcomes.

Training, Knowledge and Behaviour of Workers

Training is vital in helping workers to recognise hazards and learn the appropriate ways to prevent them. Adeagbo, Dakas and Izam (2019) studied safety practices in building construction sites in Nigeria and pointed out the relevance of safety practices for sustainable construction. Adebiyi et al. (2020) further showed that knowledge and compliance should be considered as connected but distinct elements of construction safety.

Supervision and Enforcement

Supervision is a direct relationship between the safety criteria of an organisation and the behaviour of day-to-day site operations. Good supervisors can identify unsafe practices, reinforce safety procedures, and ensure corrective actions are taken. Regulatory enforcement matters also because organisational policies operate within a wider institutional framework. Umeokafor et al. (2014) found that compliance with regulations is a major issue in Nigeria.

Unsafe Operations and Equipment and Machines

Construction machinery and lifting operations can pose serious hazards where machinery is poorly operated, poorly maintained or poorly supervised. Competent operators, inspection, maintenance, safe operating procedures and supervision are all part of effective equipment management

Working Environment and Site Conditions

The physical work environment can impact on safety performance. Poor housekeeping, poor access, unsafe storage, congestion and other poor site conditions increase exposure to hazards. Therefore, safety management must consider both the behaviour of the workers and the physical environment in which construction activities are performed.

Technology & Innovation

Construction technologies can help to support safety management through better monitoring, communication, hazard identification and control. Recent Nigerian research has also studied the possibility of artificial intelligence for dynamic monitoring of safety compliance, highlighting the expanding significance of digital technology to construction safety management.

Strategies for Improving Health and Safety Management

Effective safety improvement involves a combination of training, supervision, communication, management commitment, monitoring and enforcement. The ILO (2022) supports preventive safety and health management systems and cooperation among project parties. Client participation might also be significant. Umeokafor (2018) observed that customer involvement in health and safety can contribute to improved outcomes, including decreases in accidents, compensation claims and rework. This emphasises that safety responsibility should not be placed primarily on contractors or personnel. Other practical tactics include frequent safety audits, toolbox meetings, safety seminars, good documentation, emergency readiness, competent supervision and the construction of platforms for worker participation. These measures are compatible with the broader literature on construction safety management.

3. METHODOLOGY

Research Design

The study employed a quantitative cross-sectional survey design. The respondents' views on health and safety management practices, variables influencing safety management and measures for enhancing safety performance were obtained through a structured questionnaire. A cross-sectional survey was chosen since the data were obtained from construction stakeholders at a given time.

Study Population and Sample Size

The study was carried out in Lagos State, Nigeria, with a focus on private building projects. Lagos was selected because of the large population of construction stakeholders and a lot of construction activity.

Target Audience
The target market was construction stakeholders who were participating in private building projects. For example, site managers, foremen, safety personnel, safety officials, project managers and other relevant construction experts. The survey targeted individuals with experience or engagement in construction management operations.

Sampling Technique and Sample Size
The sampling method was convenience sampling on the basis that the respondents were easily available and accessible. Ninety questionnaires were issued, of which 75 were returned and 70 deemed sufficiently complete and eligible for analysis. The usable answer rate, therefore, was 77.8 per cent.

The usable answer rate was (70/90) x 100 = 77.8%.

Methods of Data Collection
Primary data were acquired using a structured questionnaire, which was constructed on the basis of difficulties highlighted in the literature. The instrument consists of respondents' characteristics and items related to the three objectives of the research: perceived conformance to health and safety management procedures, variables impacting health and safety management and measures for improvement.

Level of Measurement
A 5-point Likert-type scale (1 to 5) was employed. The Relative Importance Index was calculated using the numerical weights. The precise wording of the response categories must be reproduced exactly as they were on the original questionnaire.

Procedure for Data Collection
Questionnaires were presented to accessible construction players in private building projects in Lagos State. The returned surveys were screened for completeness and 70 usable replies were retained for study.

Data Analyses
Data were coded and analysed using descriptive statistics and Relative Importance Index (RII). The RII was used to rank the variables in each study objective. RII is a common method used in building research to rank factors based on questionnaires (see for example recent construction implementations of the method).

Relative Importance Index
For the five-point scale, the RII was determined as:
RII = (5n5 + 4n4 + 3n3 + 2n2 + 1n1) / (5N) Where, where n5, n4, n3, n2 and n1 are the number of respondents picking answer weights 5, 4, 3, 2 and 1, respectively, and N is the total number of valid responses. The obtained RII ranges from 0 to 1, where the greater the RII, the stronger the respondent's assessment.

4. RESULT AND DISCUSSION OF FINDINGS

This study aimed to examine the level of compliance of health and safety management in private building projects in Lagos State with a view of improving on health and safety management in private building projects. The findings are presented in Table1.

Table 1. Level of compliance on health and safety management in private building projects in Lagos State

S/N	LEVEL OF COMPLIANCE ON HEALTH AND SAFETY	5	4	3	2	1	RII	RANK
1	Possession of basic safety training	39	20	11	0	0	0.880	1
2	Safety equipment handled with utmost care	40	17	13	0	0	0.877	2
3	Observation of safety rules and regulation on site	32	27	11	0	0	0.860	3
4	Strict monitoring of safety policy	31	28	11	0	0	0.857	4
5	Disciplinary policy	33	24	12	1	0	0.854	5
6	Compulsory use of personal protective equipment on site	32	23	15	0	0	0.848	6
7	Maintenance and replacement of protective equipment	31	22	17	0	0	0.840	7
8	Availability of first aid treatment	28	27	13	2	0	0.831	8
9	Organizing safety conference/safety weeks	26	21	13	10	0	0.780	9
10	Proper keeping of safety records	24	18	16	11	1	0.751	10

Table 1 above it can be observed that possession of basic safety training ranked first among the variables on level of compliance on health and safety management in private building project, with the highest relative important of (0.8880). so therefore, the need for possession of safety training is very important.

The next variable safety equipment handled with utmost care is also one of the level of compliance on health and safety as it is ranked second of all the 10 levels of compliance. And with the highest relative important of (0.877).

While the lowest relative important index (RII) of the ten variables is proper keeping of safety records with the relative important of (0.751).

Table 2: Factors Affecting Health And Safety Management In Private Building Project in Lagos State

S/N	FACTORS AFFECTING HEALTH AND SAFETY MANAGEMNET	5	4	3	2	1	RII	Rank
1	Unsafe crane operations	37	25	8	0	0	0.882	1
2	Poor implementation of health and safety policies	34	22	14	0	0	0.857	2
3	Lack of innovative technology	36	18	16	0	0	0.857	3
4	Safety law enforcement	34	20	16	0	0	0.856	4
5	Non compliance to standard safety rules and regulations	31	24	15	1	0	0.851	5
6	Management structure of the construction company	29	26	14	1	0	0.837	6
7	Poor general site condition	35	17	15	2	1	0.837	7
8	Work environment of the employees	30	21	19	0	0	0.831	8
9	Improper supervision	28	26	15	1	0	0.831	9

From Table 2, unsafe crane operations was ranked first among the factors affecting health and safety management in Lagos State, with the highest relative index of (0.882), followed by another two variables with the same relative index: poor implementation of health and safety management and lack of innovative technology, with an important relative index of (0.857). While the least among the above variables is improper supervision with a relative index of (0.831).

Table 3: Methods Of Improving Health and Safety Management In Private Building Project In Lagos State

S/N	METHODS OF IMPROVING HEALTH AND SAFETY MANAGEMNT	5	4	3	2	1	RII	Rank
1	Use of experienced field supervisors for enforcing safety rules on site	40	23	7	0	0	0.894	1
2	Encouragement of strict compliance to company safety rules on site	34	23	13	0	0	0.860	2
3	Improper of internal communication channel	31	27	12	0	0	0.854	3
4	Adequate training of workers	33	24	11	2	0	0.851	4
5	Proper site management	33	23	12	2	0	0.848	5
6	Visible top management commitment to organizational safety issues	29	27	13	1	0	0.840	6
7	Regular site safety audits	28	26	15	1	0	0.831	7

S/N	METHODS OF IMPROVING HEALTH AND SAFETY MANAGEMNT	5	4	3	2	1	RII	Rank
8	Availability and adequacy of clinical services	29	25	14	2	0	0.831	8
9	Employment of a safety manager on site	27	26	11	4	2	0.806	9
10	Creation of localized health and safety committees	29	21	14	4	2	0.802	10
11	Conducting periodic safety seminars	26	21	18	4	1	0.791	11
12	Establishment of safety committees	28	14	11	9	8	0.729	12

Table 3 shows that making use of an experienced field supervisors for enforcing safety rules on site is the most important to improve health and safety management on construction project in Lagos state with the highest relative index of (0.894), followed by encouraging strict compliance to safety rules on site with the relative index of (0.860), and the least from the variables above is establishment of safety committees with the lowest relative index of (0.729).

Discussion of Results

The compliance findings are generally consistent with the Nigerian literature which states that construction safety involves more than just the availability of safety knowledge. Adebiyi et al. (2020) found that Nigerian construction workers had an average level of knowledge but low level of compliance and concluded that compliance alone cannot considerably ensure worker safety. The present study rated basic safety training as highest and safety records and safety-awareness activities as lower, thereby reinforcing the relevance of organisational structures that perpetuate safety behaviour.

The majority of unsafe crane operations among the variables impacting safety management emphasises the importance of competent operation, equipment inspection, maintenance and close supervision of lifting activities. The result is consistent with the wider construction safety literature identifying equipment, dangerous circumstances and labour habits as significant sources of risk. Umeokafor (2018) further supports the relevance of management and stakeholder involvement, finding that client involvement in health and safety was connected with improved project outcomes. Similarly, the high ranking of policy implementation, enforcement and management structure in the present study implies that safety performance is dependent on organisational commitment and not solely on individual worker conduct.

Finally, the high ranking of experienced field supervisors is in line with a preventive approach to construction safety. Supervisors can transform corporate policies into site level behaviour through monitoring, communication and remedial action. The results thus support a systems approach that incorporates supervision, training, communication, management commitment and regulatory enforcement.

Conclusion

The study investigated compliance of health and safety management in private building projects in Lagos State, Nigeria. It investigated perceived conformity with selected safety practices, factors influencing health and safety management, and methods to improve safety performance. Findings suggest reasonably high perceived implementation of several health and safety practices. The highest RII (0.880) was recorded on basic safety instruction, followed by careful handling of safety equipment (0.877) and observation of safety rules and regulations (0.860). Safety documentation and regular safety-awareness campaigns, in contrast, scored quite low.

The most significant factor affecting the health and safety management was the unsafe crane operation (RII = 0.882), followed by poor implementation of health and safety policies and absence of innovative technology (RII = 0.857 each). The results show that operational, organisational, technological and regulatory circumstances influence health and safety management. Experience field supervision for enforcement of safety standards (RII = 0.894) was the best improvement measure. Therefore, the study suggests that better construction safety involves good control of high-risk operations, sufficient documentation, regular monitoring, strong management commitment, effective communication, continual training and competent supervision.

Proposals

1. Contractors must translate health and safety standards into practical procedures on site and monitor their implementation regularly.
2. Crane and lifting operations shall be planned by qualified persons, using appropriate equipment, and subject to inspection and maintenance and to safe operating procedures and strict supervision.
3. Workers should be given frequent training on hazard identification, safe work methods, usage of PPE and emergency response.
4. Contractors should enhance internal safety communication through toolbox meetings, safety briefings and other relevant communication channels.
5. Keep detailed safety records of training, inspections, incidents, near misses, PPE provision, equipment inspections and corrective actions.

Study Contribution

The study provided evidence-based information on the management of health and safety in private building projects in Lagos State. It has three dimensions: perceived compliance, variables impacting safety management and improvement strategies. It points to experienced field supervision, risky crane operations, policy implementation and safety documentation as areas that require managerial attention.

Study Limitations

The study was based on self-reported questionnaire responses and so reflects the respondents' impressions rather than objectively audited compliance at the sites. Convenience sampling restricts statistical generalisation outside the sample. The study was geographically confined to private building projects in Lagos State with a sample size of 70 valid replies.

Recommendations for Future Research

Further studies might compare health and safety management of private and public building projects. Future studies could look at the distinctions between small, medium and big construction firms. Future studies may explore digital technologies such as artificial intelligence for dynamic monitoring of construction safety compliance.

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