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Stakeholders' Roles in Safety Management of Building Construction Projects in Abuja, Nigeria

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Abstract

The construction sector demonstrates poor safety management practices in building construction endeavours. Accidents in construction sites are common which result in loss of lives, injuries and damages to properties. Construction stakeholders have a duty to improve safety performance. The existing literature has paid less attention to the involvement of stakeholders in safety management. The investigation aimed at analysing the stakeholders' contributions to the safety management in building construction projects. The study was conducted in Abuja, Nigeria using a quantitative approach. Data were collected using a survey approach through a questionnaire. 360 surveys were distributed to Architects, Builders, Engineers, and Quantity Surveyors from clients, contractors, and government agencies and 217 of them were returned completed. Quantitative data were analysed Mean Ranking, one-way ANOVA and post hoc multiple comparisons. The findings revealed that the main safety related functions of the government in preventing construction accidents were the provision of technical assistance (3.78), safety training (3.59) and minimum standards enforcement (3.55). Moreover, the client's main safety functions include risk assessments (3.67), regular assessment on plant and equipment (3.66), safety resources provision (3.63) and supervisory contractor safety compliance (3.61). Finally, the main contractor safety responsibilities are compliance with safety operational guidelines (4.06) and accident reporting. Hence, the study recommends that the prevention and management of the construction accidents should be a joint effort of all stakeholders through systematic and synergistic coordination.

Keywords: Occupational Health and Safety, Construction Safety Governance, FCDA, Abuja.

Introduction

The construction industry is a significant contributor to Nigeria's economic growth and infrastructure development. In Nigeria, the construction sector contributed 10.17% to

nominal GDP in 2021 (National Bureau of Statistics (NBS), 2021). The sector provides physical structures and employs millions of workers thereby creating source of revenue and conducive environment for economic growth and development (Agbede, et al., 2016). However, the industry is plagued by a high rate of accidents and fatalities on construction sites (Akanbi, et al., 2022; Ibrahim, et al., 2022; Zakariyya, et al., 2023). Faleye (2025) reported that over 150 construction sites deaths were officially recorded in Nigeria in 2024 alone. The report added that, Nigeria experiences an average of 50 to 70 major construction accidents annually. Despite efforts to improve safety measures, the number of accidents and injuries remains alarmingly high, resulting in loss of lives, damage to property, and project delays.

The unique challenges facing the Nigeria construction industry including inadequate safety training and enforcement of safety regulations exacerbate the risk of accidents on building construction sites (Akanbi, et al., 2022; Ibrahim, et al., 2022; Zakariyya, et al., 2023). Considering the poor safety performance of the sector, which is measured in terms of accident, injury and fatality rates with corresponding financial loss, construction safety management has become an important area of policy concern and academic research worldwide (Bhattacharjee, et al., 2023). Although construction work is inherently high-risk, the frequent occurrence of accidents suggests that one or more stakeholders may not be adequately fulfilling their safety management responsibilities. Therefore, Faleye (2025) called on stakeholders to develop measures to halt accidents in construction sites.

Stakeholders' Safety Management Roles in Building Project Development Lifecycle

All construction project stakeholders have a vital safety management role to play toward the success of the project. Donkoh and Aboagye-Nimo (2016) reported that government, client contractor and employees are the key project stakeholders with vital roles and responsibility toward safe delivery of construction project. However, this study has embedded the roles of employees into that of contractor because they are not part of the major stakeholders of building projects. These roles pass across stages of planning, design, bill preparation, tender, contract, construction and commission. Also, these stages are considered as the most important in construction safety management. Therefore, to achieve maximum performance in construction safety management, the process must be considered as a unified system of control, with input from various stakeholders at different stages of project development aiming to achieve safe delivery in construction operation.

Governments' Roles in Safety Management of Building Construction Projects

Government has to enact safety laws through legislative approval in order to have an established laid down procedure that will guide safety practices on building construction projects. The laws should cover all aspect of the project lifecycle, especially hazardous areas with high risk of accident. Ringen et al. (2018) reported that government regulation is the backbone of any occupational health and safety system. The 1999 Constitution of the Federal Republic of Nigeria in Section 17 Subsection 3 explicitly mentioned that the State shall direct its policy towards ensuring that the health, safety and welfare of all employed persons are safeguarded and not endangered or abused (ILO, 2016). The provisions are enshrined in Factory Act 1990, Employee Compensation Act 2011 and Welfare Bill 2012. Jacobus et al. (2017) found that legislation must be enforced and regularly communicated for improved construction safety performance. However, the poor status of safety on some of the investigated Nigerian construction sites could be attributed to lack of functional legislation (Waziri, 2015).

Establishment of safety regulatory agencies is another important role of government to ensure compliance with the safety laws. In Nigeria the primary national competent authority charged with the responsibilities of promoting and enforcing Occupational Safety and Health (OSH) in the country is the Department of Occupational Safety and Health of the Federal Ministry of Labour and Employment (ILO, 2016). Also, the Nigerian Social Insurance Trust Fund (NSITF) is the leading public social security institution responsible for compensating workers concerning diseases, injury or death from such accidents. ECA will function effectively when employers of labour in both private and public sectors abide by the guidelines of NSITF and report accidents in their work places.

Also, all construction professional bodies were recognised by government to carry out regulatory practices of providing safety according to their constituted ethics of practice. One of the great contributions of these professional bodies is the drafting of National Building Code (NBC). The Nigerian National Building Code spell out some rules, regulations, specifications and ethics concerning the design, construction and maintenance of buildings in Nigeria. This code specified standards that should guide building construction works in Nigeria. However, the Building Code is yet to have full legal backing nationwide because it is presently a Bill before the Nigerian National Assembly. However, the Code is receiving acceptance by some states of the Federation (Adebowale, et al., 2016). The enforcement of occupational safety and Health in Nigeria has not been effective over the years, which could be attributed to lack of proper funding and lack of basic resources and training (Dodo, 2014).

Many international organisations and institutions were established to regulate workplace safety. These organisations are also stakeholders in promoting safety practices in places of work (ILO, 2016). The international organisations for safety regulations are: International Labour Organisation (ILO), International organisation standards (ISO), British Standard International (BS) and Health and Safety Executive (HSE). Some of the duties and responsibilities of these international organisations are as follows: Provision of minimum standard/specification example British Standard (BS), Provision of safety training for workforce example ILO, HSE, conducting research in accident statistics, promoting standards for appropriate national legislation and provide technical assistance for safe place of work.

Clients' Roles in Safety Management of Building Construction Projects

Client is the owner of the project with roles and responsibilities of engaging competent professionals that will help him to achieve project objectives of time, quality and cost performance in a safe and dispute free manner from inception to completion. Unfortunate, majority of the clients do not give priority to safety issues, instead of that they concentrate on project time, cost and quality (Liu, 2017). The client is the initiator of the project and he is involved in all stages of the development life cycle. It is his responsibility to collaborate with other stakeholders in establishing effective safety criteria and monitor its implementation from inception to completion (Donkoh & Aboagye-Nimo, 2016). The client should specify how safety is to be addressed in the tendering, select safe contractor, appoint a safety team, participate in site-based safety and perform regular check of plant and equipment (Vontano & Sunindijo, 2014). It is also the responsibility of the client to ensure safety is considered in the design and feasibility stage in order to avert accident caused as a result of defective design. Hayne, et al. (2015) reported that 42% of construction fatalities had a link to the design in UK. Also, half of 100 accidents in US could have been mitigated through design. Liu (2017) stated that the owner of the project should lead and coordinate safety practices in pre-construction stage, provide safety resources to the contractor and participate in daily safety activities in the construction stage.

Contractors' Roles in Safety Management of Building Construction Projects

The project contractor is responsible for the physical erection of the project as specified in the contract documents. It is the role of contractor to hire the services of different categories of labour, mobilise materials and equipment, organised construction site for safe delivery of the construction work. Traditionally, contractor is seen as the only stakeholder responsible for the safety of construction work. That is why must of the construction safety management-related studies concentrate at construction stage (Liang, et al., 2018). Construction site is the place for the physical implementation of all safety activities under the influence of the contractor.

In order to control the persistent rate of accidents in construction sites, an effective Health and Safety Management system is needed. Health and safety management is the policies, strategies, procedures and activities implemented or followed by an organisation's management targeting safety in place of work. Manu et al. (2018) reports that health and safety management systems were developed in two main streams: the development of laws requiring systematic implementation of health and safety management systems and the introduction of some health and safety management models. The model has seven (7) interconnected elements. These are policy, planning, risk assessment, organising, implementing, measuring performance and auditing.

Hollnagel (2018) grouped safety practices into two (2): safety I and II. Safety I is the traditional safety management that focuses on providing measures to prevent accident occurrence in places of work (proactive approach). On the other hand, safety II is resilience engineering, which is the ability of an organisation to function as required under expected or unexpected conditions (reactive approach). Resilience engineering is a new approach to safety management. Organisations resist potential threats through resilient safety management system. In other words, workers will develop a skill to resist or bounce back after an attack. Organisations become stronger with flexible skills to resist or return to normal after an incident. Trinh, et al. (2018) reported that resilient engineering was developed and work under the principles of: anticipation, monitoring/attention, response and learning.

Construction sites employees are the various categories of labour employed by the contractor. Semi-skilled and unskilled labour are the people that are doing the physical erection of the project. These categories of workers are more exposed to hazards, have a high risk of accidents and are the majority of construction accident victims (Wu et al., 2015). Therefore, the safe work behaviour of employees is one of the most important determinants of safety performance (Althaqafi & Abunar, (2017). Safety roles and responsibilities of employees fall under safety knowledge, compliance and participation (Shin, et al., 2015; Patel & Jha, 2016). Also, employees' obligation is to know and adhere to safety rules and regulations.

Methodology

The focus of the study centred on construction stakeholders' safety management practices roles and responsibilities on building projects development life cycle in FCT Abuja. It examines construction safety management in line with Factories Act 1990, Employee Compensation Act 2011, Welfare Bill 2012, National Building Code, (2006) and international best practices that guide safety management of building construction projects. The study considered stakeholders 'roles in safety management practices of public building construction projects under the Department of Building, Federal Capital Development Authority (FCDA) Abuja. The primary project stakeholders that were considered are: the project owner known as client, the contractor and government agencies responsible for the regulation of building construction work in Abuja. The roles of the employees were embedded in that of contractor.

Semi-skilled and unskilled employees that are working on site are directly under the main contractor; therefore, they cannot stand as a major stakeholder of construction projects.

The study adopted a pure quantitative methodological approach. Questionnaire was the instrument used for data collection in the survey strategy. The variables used in the development of questionnaire were extracted from literature review and health and safety acts. The reliability test result using Cronbach's alpha value was presented in Table 1. All the constructs have a Cronbatch alpha value of > 0.9, which is an excellent result.

Table 1: Reliability Statistics for the Study Constructs

Item category	Number of items	Cronbatch alpha value	Reliability Remark
Roles of Government	14	0.959	Excellent
Roles of Clients	9	0.966	Excellent
Roles of Contractors	26	0.991	Excellent

The composition of the target respondents comprises primary stakeholders of the projects which includes: Architects, Builders, Engineers, and Quantity Surveyors from clients, contractors, and government agencies. This is in line with the study of Kibremoges and Bewuketu (2026) and Giri at al. (2025) that targeted selected project stakeholders as respondents. Each project has a minimum of one (1) representative of Architects, Builders, Engineers and Quantity Surveyors from clients, contractors and government in thirty (30) on-going public building construction projects under FCDA, Abuja. These four (4) core professionals of building construction projects are responsible for building design, cost estimate and production management as specified in the National Building Code (2006). . The composition and sample frame of the study is presented in Table 2. Therefore, the target respondents of the study have a total of three hundred and sixty (360). Mean ranking was used for the analysis of the roles of project stakeholders in safety management of building construction projects. One-way ANOVA and Post Hoc multiple comparisons were used to test the significant variation among the perception of the respondent (hypothesis).

Table 2: Sample Size of the Study Drawn from 30 Construction Sites

Stakeholder	Architect	Builder	Engineer	Quantity Surveyor	Total
Client	30	30	30	30	120
Contractor	30	30	30	30	120
Government	30	30	30	30	120
					360

Results and Discussions

Out of the three hundred and sixty (360) questionnaires distributed to selected construction stakeholders of building projects in Abuja, a total of two hundred and seventeen (217) were completed and returned, representing a response rate of approximately 60.3%. This response rate is considered satisfactory and adequate for quantitative data analysis, as it surpasses the minimum acceptable benchmark of 60% commonly recommended for survey-based research in construction management and social sciences (Moyo & Musonda, 2021; Sekaran & Bougie, 2020).

Governments' Roles in Safety Management Practices

Referring to Table 3, notably, the highest-rated roles are provision of technical assistance for a safe workplace, provision of safety training through professionals and enforcement of minimum safety

standards reflects the government's perceived strength in technical facilitation and regulatory standard-setting. These findings imply that stakeholders acknowledged some governmental commitment to providing regulatory direction and capacity development. These results align with Ringen et al. (2018) that government regulation is the backbone of any health and safety system. Also the stakeholders acknowledged the effectiveness of research on accident statistics, constitutional safety provisions in procurement and strengthening supervisory roles of professional agencies in accidents prevention and control. The results agreed with Okello et al. 2025 and Turner et al. 2021 that lack of sustained research on accidents and the distribution of safety knowledge stifles policy refinement and evidence-based decision-making. Lower rated items like national policy for achieving safety in building construction and coordination among government agencies emphasises a lack of priority given to inter-agency synergy and post-incident accountability. Umeokafor (2023) and Akinradewo et al. (2021) affirm that Nigeria's regulatory agencies, though formally established, often suffer from fragmented coordination that diminish the practical impact of safety regulations. This situation continues to weaken public trust in regulatory institutions. Collectively, these insights reveal that while Abuja's regulatory environment provides a necessary structural foundation for safety governance, ongoing procedural inefficiencies and poor inter-agency collaboration significantly impact its overall effectiveness. Thus, it is vital to shift towards evidence-driven policymaking, strengthen institutional cooperation, and enforce regulations rigorously to transform governmental interventions from mere reactive compliance oversight to proactive mechanisms aimed at accident prevention within Nigeria's construction industry.

Table 3: Government Roles in Safety Management Practices of Building Construction Projects

S/N	Government Safety Management Roles	Mean	Std. Deviation	Rank	Effectiveness Level
1	Provide technical assistance for a safe place of work	3.78	1.11	1	Effective
2	Provision of safety training for workforce by organizations (e.g., ILO, HSE)	3.59	1.23	2	Effective
3	Provision for use of minimum standards/specifications (e.g., British Standard - BS)	3.55	1.13	3	Effective
4	Conducting research on accident statistics	3.52	1.08	4	Effective
5	Provision for use of National Building Code (NBC) in all construction work	3.52	1.27	5	Effective
6	Constitutional provision for inclusion of safety measures in procurement processes	3.50	1.10	6	Effective
7	Strengthening functions of supervisory agencies (e.g., Ministry of Works)	3.47	1.01	7	Effective
8	Strengthening functions of construction professional regulatory bodies (e.g., CORBON)	3.46	1.14	8	Effective
9	Promoting standards for appropriate national legislation	3.41	1.13	9	Effective
10	Provision for protection of workers' health	3.35	1.36	10	Moderately Effective
11	Constitutional provision for safety measures in building construction	3.35	1.34	11	Moderately Effective
12	National policy for achieving safety in building construction	3.35	1.13	12	Moderately Effective

S/N	Government Safety Management Roles	Mean	Std. Deviation	Rank	Effectiveness Level
13	Strengthening functions of coordinating agencies	3.34	1.18	13	Moderately Effective
14	Provision for compensation of accident victims	3.26	1.38	14	Moderately Effective

Scale Range (Mean): (1.00 – 1.80) =Not Very Effective, (1.81 – 2.60) =Slightly Effective, (2.61 – 3.40) =Moderately Effective. (3.41 – 4.20) =Effective, (4.21 – 5.00) =Very Effective

Clients' Roles in Safety Management Practices

The results displayed in Table 4 revealed that the highest-rated practices of client are conducting risk assessments, performing regular checks on plant and equipment and providing safety resources to contractors. Accordingly, Okorie et al. (2020) and Olawumi and Chan (2022) clearly indicated that clients are perceived as active contributors to accidents prevention, particularly in the early and implementation stages of projects. Similarly, Aduwo et al. (2020)

observed that clients' limited participation in safety risk evaluation stages weakens the institutionalisation of proactive hazard control measures. Other important roles such as participation in incident investigations, definition of stakeholders' safety roles. ensure safety method in specification and consideration of safety during design scored moderate mean. Fang et al. (2019) and Zhou et al. (2021) also confirmed that the absence of clearly defined stakeholder safety roles leads to accountability ambiguity, thereby diluting collective responsibility for accident prevention. Although, ensuring safety is considered in design stages scored least, but Hanye et al. (2015) confirmed that it is also critical in accidents prevention. To strengthen these advancements, client organisations must adopt a systems-thinking approach that integrates safety considerations from the outset of design and procurement processes, fosters transparent collaboration with contractors, and institutionalises continuous performance evaluation as a fundamental metric of project success.

Table 4: Clients' Roles in Safety Management of Building Construction Projects

S/N	Clients' Safety Management Roles	Mean	Std. Deviation	Rank	Effectiveness Level
1	Conduct risk assessment	3.67	1.16	1	Effective
2	Perform regular checks on plant and equipment	3.66	1.15	2	Effective
3	Provide safety resources to contractors	3.63	1.23	3	Effective
4	Monitor contractors' safety compliance	3.61	1.19	4	Effective
5	Participate in incident investigations	3.58	1.10	5	Effective
6	Clearly define safety roles of all stakeholders	3.58	1.08	6	Effective
7	Participate in Behaviour Observation Surveys (BOS) for workers	3.54	1.13	7	Effective
8	Ensure inclusion of safety methods in project specifications	3.53	1.04	8	Effective
9	Ensure safety is considered in design stages	3.46	1.18	9	Effective

Scale Range (Mean): (1.00 – 1.80) =Not Very Effective, (1.81 – 2.60) =Slightly Effective, (2.61 – 3.40) =Moderately Effective. (3.41 – 4.20) =Effective, (4.21 – 5.00) =Very Effective.

Contractors' Roles in Safety Management Practices

The results presented in Table 5 highlight that contractors' adherence to safety procedure is most active role in ensuring safety of building construction site. The findings align closely with Him et al. (2023), that contractors are foundational to safety implementation, as they directly oversee labour, equipment, and work sequences in executing on-site safety responsibilities. Furthermore, the consistently high mean scores for roles such as organising safety meetings, employing safety personnel, and evaluating risks and health and safety measures reveal a maturing organisational commitment to structured safety governance. These results align with the recommendations of Adeabgo et al. (2019) on the need for safety personnel in every construction sites.

Çeküç et al. (2024) caution that, many contractors in Nigeria tend to prioritise production efficiency over fostering a deeper safety culture, which results in superficial compliance rather than meaningful behavioural change. Additionally, Ijaola et al. (2020) highlight that the integration of behaviour-based safety practices is crucial for sustainable accident reduction, which supports the need for contractors to move beyond minimal compliance. Furthermore, Gemechu et al. (2024) underscore that exemplary contractors combine strict enforcement with empowerment strategies that promote open communication and peer accountability, thereby facilitating a learning-oriented safety culture. Likewise, Yap and Zhang (2023) highlighted that sustainable accident reduction depends on integrating behaviour-based safety approaches with a behavioural reinforcement practice. Moreover, Olawumi and Chan (2022) emphasised that effective contractors combine enforcement with empowerment. Therefore, achieving true excellence will require a paradigm shift toward nurturing a participatory, learning-driven safety culture. Such a transition is vital for not only enhancing accident prevention efforts but also for embedding safety as a core value in Nigeria's construction sector.

Table 5: Contractors' Roles in Safety Management Practices

S/N	Contractors' Safety Management Roles	Mean	Std. Dev.	Rank	Effectiveness Level
1	Adhere to safety operation procedures	4.06	0.98	1	Effective
2	Report incidents or accidents	4.04	0.90	2	Effective
3	Provide first aid arrangements	4.00	0.92	3	Effective
4	Provide personal protective equipment (PPE)	3.99	0.95	4	Effective
5	Always use PPE	3.95	1.07	5	Effective
6	Avoid hazardous work without proper training	3.95	0.98	6	Effective
7	Ensure adequate site organization	3.95	0.91	7	Effective
8	Employ safety personnel	3.93	1.00	8	Effective
9	Acquire requisite safety training	3.90	1.02	9	Effective
10	Understand safety rules and procedures	3.90	0.97	10	Effective
11	Organize safety training for workers	3.88	0.92	11	Effective
12	Perform tasks safely as directed by supervisors	3.84	1.04	12	Effective
13	Know the location of safety devices	3.84	0.98	13	Effective
14	Organize site safety meetings	3.82	0.97	14	Effective
15	Evaluate risks & establish H&S measures	3.79	0.95	15	Effective
16	Provide H&S plans before work commences	3.79	1.09	16	Effective
17	Learn from incidents	3.79	0.97	17	Effective
18	Know penalties for disobeying safety rules	3.78	0.91	18	Effective
19	Measure safety performance	3.78	1.02	19	Effective
20	Apply Behaviour-Based Observation (BBO)	3.72	0.94	20	Effective
21	Enforce punishment for unsafe behaviour	3.72	0.98	21	Effective
22	Review safety performance (auditing)	3.69	1.07	22	Effective

S/N	Contractors' Safety Management Roles	Mean	Std. Dev.	Rank	Effectiveness Level
23	Provide written in-house safety policy	3.69	0.92	23	Effective
24	Acquire skills for anticipating accidents	3.64	1.06	24	Effective
25	Acquire skills for responding to accidents	3.64	0.90	25	Effective
26	Acquire special skills for monitoring accidents	3.64	0.90	26	Effective

Scale Range (Mean): (1.00 – 1.80) =Not Very Effective, (1.81 – 2.60) =Slightly Effective, (2.61 – 3.40) =Moderately Effective. (3.41 – 4.20) =Effective, (4.21 – 5.00) =Very Effective.

Hypothesis Test

H_0 (Null Hypothesis): There is no significant difference among construction stakeholders (government, client, and contractor representatives) in their perception of safety management practices for mitigating accidents in Abuja's building construction projects.

H_1 (Alternative Hypothesis): There is a significant difference among construction stakeholders (government, client, and contractor) in their perception of safety management practices for mitigating accidents in Abuja's building construction projects.

The results in Table 6 test the hypothesis that there is no significant difference among the three stakeholder groups (government, client, and contractor) in their perceptions of safety management practices for accident mitigation on Abuja's building construction projects. The ANOVA analysis shows statistically significant variation across all three stakeholder groups, with p-values below 0.05 for government ($F = 18.75$, $p = 0.000$), client ($F = 15.74$, $p = 0.000$), and contractors ($F = 21.03$, $p = 0.000$). These results clearly indicate that stakeholders differ significantly in their level of involvement and effectiveness in implementing safety practices throughout the project lifecycle. Specifically, the relatively higher F-values across categories suggest that perceptions of safety performance are not uniform but are shaped by distinct operational, administrative, and regulatory experiences among the stakeholder groups. This variation is not surprising, as the scope and influence of each stakeholder's role in safety management differ in both responsibility and proximity to on-site activities.

Table 6: One-Way ANOVA Results on Differences among Stakeholders on Safety Management Practices Perceptions

Safety Practice Category	Sum of Squares	Mean Square	F-Value	Sig. ($p < 0.05$)	Decision
Government Roles	28.72	14.36	18.75	0.000	Significant
Client Roles	27.95	13.98	15.74	0.000	Significant
Contractor Roles	23.89	11.95	21.03	0.000	Significant

Table 7 presents the results of the Post Hoc Multiple Comparisons of Stakeholders' perceptions in Safety Management Practices. The results of the post hoc multiple comparisons offer valuable insights into differing perceptions of safety management practices among key construction stakeholders. The findings revealed statistically significant differences among contractors, clients, and government representatives, with contractors consistently rating their safety practices higher than the other groups. This elevated perception reflects their proximity to day-to-day operations, direct involvement in site supervision, and frequent participation in safety-related decision-making. These findings align with established literature emphasising that stakeholders who engage more closely in field activities often demonstrate stronger safety commitment and awareness. The results further suggest that contractors' frontline experience enhances their understanding of the practical implications of safety protocols,

leading to a more concrete appreciation of safety measures than policymakers' and clients', whose perspectives are shaped primarily by regulatory or administrative considerations.

Table 7: Post Hoc Multiple Comparisons of Stakeholders' Safety Management Practices perceptions

Dependent Variable	Stakeholder Comparison (I–J)	Mean Difference (I–J)	Std. Error	Sig. (p < 0.05)	Interpretation
Safety Practices of Government Roles	Government – Client	-0.12	0.16	0.433	Not significant
	Government – Contractor	0.80*	0.15	0.000	Significant difference – Contractors rated higher
	Client – Contractor	0.92*	0.17	0.000	Significant difference – Contractors rated higher
Safety Practices of Client Roles	Government – Client	-0.08	0.17	0.635	Not significant
	Government – Contractor	0.81*	0.16	0.000	Significant difference – Contractors rated higher
	Client – Contractor	0.89*	0.19	0.000	Significant difference – Contractors rated higher
Safety Practices of Contractors' Roles	Government – Client	0.06	0.13	0.665	Not significant
	Government – Contractor	0.80*	0.13	0.000	Significant difference – Contractors rated higher
	Client – Contractor	0.74*	0.15	0.000	Significant difference – Contractors rated higher

The significant divergence among stakeholder perceptions corroborates earlier findings in construction safety literature, which emphasise that the degree of engagement in safety management is often hierarchical and context-specific. For instance, Akinlolu et al. (2021) observed that contractors, being at the execution front, tend to perceive and practice safety measures more actively than clients or government representatives, who typically operate at policy or supervisory levels. Similarly, Umeokafor (2023) and Olawumi and Chan (2022) reported that clients and government agencies often exhibit lower levels of direct involvement due to institutional bureaucracy and fragmented oversight mechanisms, leading to uneven safety enforcement. Moreover, Yap and Zhang (2023) noted that such stakeholder disparity contributes to inconsistent safety cultures, in which responsibility for accident prevention is diffused across multiple actors. In Abuja, the significant ANOVA results suggest a systemic disconnect between regulatory intent, administrative monitoring, and operational implementation.

Therefore, bridging these gaps requires a more integrated approach where government agencies strengthen enforcement and data-driven policymaking. Clients embed safety performance indicators into contract frameworks. Moreover, contractors institutionalise continuous safety education and behaviour-based supervision. Collectively, these findings reaffirm that collaborative synergy, rather than isolated compliance, is pivotal to advancing a sustainable safety management framework within Abuja's construction industry.

In contrast, government and client stakeholders, despite holding strategic oversight roles, may lack the operational insight and immediacy of field exposure required to evaluate the implementation and impact

of safety protocols fully. This perceptual divergence indicates an underlying structural gap in safety governance, where on-site realities do not always inform policy frameworks. The observed hierarchy in safety perception, favouring contractors, aligns with the argument by Ijigah et al. (2023) that continuous training and participatory engagement in safety audits significantly strengthen practitioners' confidence in safety measures. Consequently, the results highlight the urgent need for enhanced collaboration and information exchange among all stakeholders to ensure alignment between regulatory intent and field-level practice. As Zhang et al. (2020) argue, an integrative and participatory safety governance model anchored on shared responsibility, transparent communication, and mutual learning can substantially improve safety performance across construction projects.

Conclusion

Collectively, effective roles of government require a paradigm shifts toward evidence-driven policy, strengthened institutional collaboration, and real-time regulatory enforcement as indispensable if governmental interventions are to evolve from reactive compliance oversight to proactive accident prevention mechanisms within the Nigerian construction industry. Client organisations effective roles must adopt a systems-thinking approach that integrates safety considerations from the outset of design and procurement processes, fosters transparent collaboration with contractors, and institutionalises continuous performance evaluation as a fundamental metric of project success. Contractors demonstrates commendable effectiveness in procedural aspects of safety, true excellence will require moving beyond regulatory compliance toward cultivating a participatory, learning-driven, and adaptive safety culture. This study is limited to stakeholder' roles in public building projects in Abuja. Future research should focus on stakeholder' roles in private building projects and use this study as the bases for comparison.

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