

Challenges and Mitigation Strategies for Construction Projects in Borno State Tertiary Institutions Amid Boko Haram Insurgency

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Abstract

The Boko Haram insurgency in Borno State, Nigeria, has significantly disrupted infrastructure development, particularly in tertiary institutions, creating complicated challenges for construction projects. This study aims to assess the challenges and mitigation strategies for construction projects in Borno State Tertiary Institutions Amid Boko Haram Insurgency. A quantitative research approach was adopted, utilizing a survey strategy with personally administered questionnaires to collect data from construction professionals in Borno State University. Descriptive and inferential statistical analyses were conducted using SPSS to evaluate the data. The findings reveal that the insurgency has led to severe challenges, including the suspension of construction activities, difficulty in retaining skilled labor, increased operational costs, and supply chain disruptions. These issues have significantly hindered project timelines and overall performance. The study concludes that addressing these challenges requires a comprehensive approach, including enhanced security measures, community engagement, flexible project management, and diversified funding sources. Thus, implementing these strategies, stakeholders can mitigate the insurgency's impact and foster the recovery and sustainability of construction projects in conflict-affected regions.

Keywords: Boko Haram insurgency; construction project performance; infrastructure development; conflict mitigation; Borno State

INTRODUCTION

The Boko Haram insurgency in Borno State, Nigeria, has significantly disrupted infrastructure development, particularly in tertiary institutions, creating multifaceted challenges. Infrastructure projects, essential for economic growth and public welfare, involve complex, long-term processes from planning to execution (Muir Wood, 2018; Chudley & Greeno, 2016). However, the insurgency has devastated Borno State, extending beyond security concerns to hinder socio-economic development, including education (Ya'u, 2022; Bassett, 2017). The conflict has caused widespread displacement, loss of livelihoods, and destruction of educational infrastructure, diverting resources toward security and delaying or abandoning construction projects (Sarki et al., 2021; Adams & Ogbonnaya, 2014).

The socio-economic landscape of Borno State has been drastically altered, with the insurgency impeding development and exacerbating challenges in the construction sector. Insecurity and inadequate infrastructure have become significant barriers to economic activity, affecting the availability of materials, labor, and increasing project costs and risks (Tahir & Inuwa, 2019). The construction industry, reliant on a stable environment, faces precarious

conditions due to ongoing violence, leading to labor shortages and rising costs (Mohammed et al., 2017). This instability has forced many skilled workers to leave the region, further straining resources and hindering project completion.

The destruction of educational infrastructure has led to a decline in enrollment rates and educational outcomes, as institutions operate under suboptimal conditions (Susan et al., 2020). Also, the lack of safe and functional facilities exacerbates challenges for students and educators, while community engagement initiatives are limited by insecurity (Ali & Sani, 2023). Additionally, the humanitarian crisis caused by the insurgency has resulted in millions living in Internally Displaced Persons (IDP) camps, where dire conditions and inadequate amenities further complicate efforts to rebuild educational infrastructure (Olanrewaju et al., 2019).

The impact of the insurgency on construction project performance in tertiary institutions is multifaceted, encompassing economic, social, and infrastructural dimensions. The ongoing violence has created an environment of instability that undermines educational development and hampers the execution of essential construction projects. Addressing these challenges requires a concerted effort from all stakeholders, including government, local communities, and international partners, to create a secure and conducive environment for educational growth and infrastructural development (Gana, 2018).

Generally, the Boko Haram insurgency in Borno State, Nigeria, has severely disrupted construction projects in tertiary institutions, causing infrastructural destruction, resource diversion, and socio-economic setbacks, which have led to lower enrollment rates, poor academic performance, and a less educated workforce (Abdulrahim, 2023; Tayimlong, 2020; Abbas, 2024). The conflict has also created psychological trauma and social instability, deterring skilled labor and perpetuating poverty (Rousseau et al., 2013; Mohammed et al., 2018). Despite existing research on the insurgency's broader impacts, there is limited understanding of its specific effects on construction project performance in educational settings. This study aims to assess the challenges faced by the construction projects stakeholders and propose mitigation measures to inform policymakers and stakeholders, ultimately supporting the recovery and resilience of tertiary institutions in Borno State. Therefore, the following research question were raised for the study;

- i. What specific challenges do construction stakeholders face in delivering tertiary institution projects as a result of the Boko Haram insurgency?
- ii. What strategies can mitigate the negative effects of the Boko Haram insurgency on construction projects in tertiary institutions in Borno State, Nigeria?

METHODOLOGY

This study designed to investigate the Boko Haram insurgency challenges on the infrastructural development of university projects in Borno State, Nigeria. Utilizing a quantitative approach, the research employs a descriptive and exploratory design to systematically uncover insights and analyze numerical data. A survey strategy is implemented, with personally administered questionnaires serving as the primary tool for data collection. The questionnaire, structured with close-ended questions and a Likert scale, targets key stakeholders, including construction professionals at Borno State University. The study

population comprises 100 construction stakeholders, with a sample size of 80 respondents selected to ensure robust and representative data. Data analysis conducted using the Statistical Package for Social Science (SPSS), incorporating descriptive statistics such as frequencies, mean and standard deviation to comprehensively address the study research questions and derive meaningful conclusions.

RESULTS

Demographic Information of Respondent

The demographic data of the respondents, as presented in Table 1, provides a comprehensive overview of the participants involved in this study. The table outlines key characteristics such as gender, age, educational qualifications, roles, years of experience, professions, and their exposure to the Boko Haram insurgency. This information is crucial for understanding the background and diversity of the respondents, which in turn helps contextualize the findings of the research.

Table 1: Demographic information of the respondents

BIODATA	Categories	Frequency	Percentage
Gender	Female	5	11.9
	Male	37	88.1
Age	18 - 25 years	1	2.4
	26 - 35 years	19	45.2
	36 - 45 years	17	40.5
	46 - 55 years	5	11.9
Educational Qualification	Bsc/Btech	29	
	OND/NCE	1	
	MSc	12	
Roles of respondent	Consultant	11	26.2
	Client	5	11.9
	Contractor	6	14.3
	Site Engineer	20	47.6
Years of experience	Less than 5years	3	7.1
	5-10 years	20	47.6
	11-15 years	11	26.2
	16-20 years	6	14.3
	Above 20 years	2	4.8
Professions of respondents	Architect	20	47.6
	Builder	5	11.9
	Engineer	10	23.8
	Quantity Surveyor	7	16.7
Witnessing Boko Haram insurgency	Maybe	2	4.8
	No	7	16.7
	Yes	33	78.6

The demographic profile reveals that the majority of respondents are male (88.1%), with a significant proportion falling within the 26-35 years (45.2%) and 36-45 years (40.5%) age brackets. Additionally, most respondents hold a Bachelor’s degree (BSc/BTech) or a Master’s degree (MSc), indicating a high level of educational attainment. The roles of the respondents vary, with site engineers forming the largest group (47.6%), followed by consultants (26.2%) and contractors (14.3%). This diversity in roles and professions, including architects (47.6%), engineers (23.8%), and quantity surveyors (16.7%), ensures a well-rounded perspective on the impact of the Boko Haram insurgency on infrastructural development.

The data also highlights the professional experience of the respondents, with nearly half (47.6%) having 5-10 years of experience, while 26.2% have 11-15 years of experience. This suggests that the respondents possess substantial expertise in their respective fields, which enhances the reliability of their insights. Furthermore, a significant majority (78.6%) reported having witnessed the Boko Haram insurgency, underscoring their firsthand experience with the conflict and its implications for construction projects. The demographic findings collectively indicate that the respondents are well-qualified, experienced, and directly affected by the insurgency, making their perspectives highly relevant to the study. This demographic profile not only validates the representativeness of the sample but also provides a solid foundation for interpreting the research findings, as the respondents’ backgrounds align closely with the study’s focus on the challenges and impacts of the Boko Haram insurgency on infrastructural development in Borno State.

Challenges of Boko haram Insurgency by Construction Stakeholders

Table 2 presents an analysis of the challenges faced by construction stakeholders in regions affected by the Boko Haram insurgency. The table includes the mean scores, standard deviations (SD), and ranks of various challenges. Thus, understanding these challenges is essential for developing strategies to mitigate the adverse effects of insurgency on construction projects in conflict zones.

Table 2: Challenges Due to the Boko Haram Insurgency by Construction Stakeholders

CHALLENGES	Descriptive			
	SD	Mean	RANK	Remark
Difficult to attract and retain skilled workers for construction projects	0.99	4.26	2	Agree
Increased in operational costs for construction projects	0.91	4.26	2	Agree
Delays in the procurement of construction materials.	0.92	4.19	4	Agree
Shortage of construction materials in the region, affecting project timelines.	0.91	4.17	5	Agree
Difficulty in accessing construction sites due to security checkpoints and roadblocks.	1.32	4.10	7	Agree
Increased insurance premiums for construction projects.	1.13	3.95	11	Agree
Difficulties in securing funding for projects	1.17	3.95	11	Agree
High turnover of workers, which disrupts the continuity of construction activities.	1.07	3.71	13	Agree
Irregular communication with stakeholders due to the insurgency.	1.04	4.00	9	Agree

Uncertainty on decision-making process in construction projects.	.99	4.04	8	Agree
Suspension of construction activities due security concern	.80251	4.45	1	Agree
Abandon ongoing construction projects.	1.20	3.98	10	Agree
Lack of stakeholder confidence in the successful completion of projects.	0.91	4.20	5	Agree

The findings presented in Table 2, which outlines the challenges faced by construction stakeholders due to the Boko Haram insurgency, reveal a complex array of operational and systemic difficulties that significantly impede construction activities in conflict-affected regions. These identified challenges, including difficulties in attracting and retaining skilled workers, escalating operational costs, procurement delays, and security-related disruptions, highlight the profound impact of the insurgency on project timelines and overall industry stability. These issues are not merely symptomatic of the immediate effects of the conflict but also reflect deeper structural vulnerabilities within the construction sector in such environments.

Among the most critical challenges is the difficulty in attracting and retaining skilled workers, which ranks second with a mean score of 4.26. This aligns with existing literature emphasizing the pivotal role of human resources in construction projects. Similarly, skilled labour is indispensable for maintaining project quality and meeting deadlines, and its scarcity, exacerbated by security concerns, intensifies the skills gap (Alsharif et al., 2021). The resultant workforce instability undermines productivity and prolongs project timelines, creating a cycle of inefficiency (Mhazo et al., 2024). Also, increased operational costs, also ranked second with a mean score of 4.26, pose significant financial challenges. These cost escalations stem from heightened security measures, rising insurance premiums, and the general instability that deters investment (Troje & Andersson, 2020). Such financial pressures often lead to budget overruns or project cancellations, further destabilizing the industry (Wuni & Shen, 2021). Compounding this issue is the difficulty in securing funding, which received a mean score of 3.95. Financial institutions are often reluctant to invest in conflict zones, perpetuating a cycle of underfunding and project abandonment (Wuni & Shen, 2020).

Furthermore, procurement delays, with a mean score of 4.19, represent another significant hurdle. The insurgency has disrupted supply chains, causing material shortages and extended lead times (Sarwani et al., 2024). This aligns with studies highlighting how conflict undermines logistics and supply chain efficiency in construction (Tau et al., 2024). Such delays not only extend project timelines but also inflate costs as firms resort to costlier suppliers or expedited shipping (Sofian et al., 2024). Additionally, restricted access to construction sites due to security checkpoints and roadblocks, with a mean score of 4.10, underscores the physical and logistical barriers faced by stakeholders. These obstacles not only delay projects but also pose safety risks, further deterring skilled labor and damaging the reputation of firms operating in these regions (Khalfan et al., 2022; Osei-Appiah et al., 2023).

Additionally, High worker turnover, with a mean score of 3.71, further disrupts project continuity, leading to a loss of institutional knowledge and expertise (Gürkün et al., 2022). This instability undermines productivity and complicates project execution, as highlighted in studies stressing the importance of workforce stability for project success (Oyewobi & Jimoh, 2022).

Irregular communication with stakeholders and decision-making uncertainties, with mean scores of 4.00 and 4.04 respectively, further exacerbate these challenges. Effective communication is vital for stakeholder coordination, and its disruption can lead to misunderstandings and delays (Bolomope et al., 2022).

The implications of these findings are far-reaching. First, it underscores the necessity for innovative strategies to address the multifaceted challenges posed by the insurgency. Potential solutions include leveraging technology to enhance communication and project management, adopting flexible procurement strategies to mitigate supply chain disruptions, and fostering community partnerships to improve workforce stability (Arı et al., 2022). Additionally, policy interventions aimed at addressing the root causes of insecurity and promoting investment in conflict-affected regions are critical (Khaderi et al., 2022).

Strategies for mitigating challenges for stakeholders

Table 3 outlines various strategies that construction stakeholders consider important for mitigating the negative effects of the Boko Haram insurgency on construction projects. The table provides a descriptive analysis, including the standard deviations (SD), mean scores, and the level of importance assigned to each strategy. The mean scores are calibrated on a scale that categorizes the strategies as either "Extremely important" or "Very important."

Table 3: Strategies for Mitigating the Negative Effects of the Boko Haram Insurgency

MITIGATION MEASURES	Descriptive		Important
	SD	Mean	Level
Strengthening security measures around construction sites	0.91	4.36	Extremely important
Establishing contingency plans for material supply chains	0.94	4.07	Very important
Collaborating with local communities	0.86	4.40	Extremely important
Implementing flexible project timelines	0.91	4.26	Very important
Providing additional incentives for workers in conflict-affected areas to retain skilled labour.	0.93	4.24	Very important
Utilizing remote communication tools to maintain stakeholder engagement	1.09	4.02	Very important
Ensuring regular updates on security situations for project teams to make informed decisions.	1.09	4.31	Extremely important
Increasing collaboration with government and security agencies	1.00	4.44	Extremely important
Developing a risk management framework	0.84	4.29	Very important
Diversifying funding sources	1.00	4.10	Very important
<i>NB: Mean calibration for important level</i>			
<i>[1.0-1.8 = Not important], [1.9-2.6 = Slightly important], [2.7-3.4 = Moderately important], [3.5-4.2 = Very important], [4.3-5.0 = Extremely important]</i>			

The findings presented in Table 3 outline a range of strategies construction stakeholders can adopt to mitigate the adverse effects of the Boko Haram insurgency. These strategies,

which include enhancing security measures, establishing contingency plans for supply chains, collaborating with local communities, and implementing flexible project timelines, were rated as either "extremely important" or "very important" by respondents. This consensus underlines its critical role in ensuring the continuity and safety of construction activities in conflict-affected areas.

For instance, strengthening security measures at construction sites emerged as the most vital strategy, with a mean score of 4.3571. This aligns with existing research highlighting the importance of robust security protocols in conflict zones. Effective security measures not only protect personnel and assets but also build stakeholder confidence, which is essential for attracting investment and skilled labor (Stein et al., 2018; Brock & Kochanska, 2015). Similarly, establishing contingency plans for material supply chains, rated as very important with a mean score of 4.0714, addresses the frequent disruptions caused by conflict. Such plans help mitigate delays and cost overruns, ensuring projects remain on track despite supply chain challenges (Cinkara, 2024; Gilad et al., 2023).

Collaboration with local communities, rated as extremely important with a mean score of 4.4048, emphasizes the value of community engagement in conflict mitigation. Building trust and cooperation with local populations can enhance security and foster social cohesion, which are critical for long-term recovery (Chen et al., 2020; Puri et al., 2024). Additionally, implementing flexible project timelines, with a mean score of 4.2619, reflects the need for adaptability in volatile environments. Flexible scheduling allows construction firms to manage unforeseen delays and maintain project momentum (Cheung, 2020; Dhungana et al., 2017). Also, providing additional incentives for workers, rated as very important with a mean score of 4.2381, addresses the challenge of retaining skilled labor in insecure environments. Competitive compensation packages can attract and retain workers who might otherwise avoid conflict zones, ensuring workforce stability (Malhouni & Mabrouki, 2023; Anderson et al., 2021). Utilizing remote communication tools, with a mean score of 4.0238, highlights the role of technology in maintaining stakeholder engagement. These tools facilitate collaboration and decision-making, particularly when physical meetings are unsafe or impractical (López-Larrosa et al., 2019).

Moreover, ensuring regular updates on security situations, rated as extremely important with a mean score of 4.3095, is crucial for maintaining situational awareness. Timely information empowers project teams to make informed decisions about safety and operational adjustments (Zhao et al., 2022; Wang et al., 2021). Increasing collaboration with government and security agencies, with a mean score of 4.4390, further enhances the security framework for construction projects. Such partnerships can improve conflict resolution and security management, creating a more stable operating environment (López-Larrosa et al., 2022; Cheung et al., 2015). Additionally, developing a risk management framework, rated as very important with a mean score of 4.2857, is essential for identifying and mitigating potential risks. A comprehensive framework enables proactive risk assessment and response, enhancing project resilience (Ugwu et al., 2024; Xu et al., 2023). Finally, diversifying funding sources, with a mean score of 4.0952, addresses the financial instability often seen in conflict zones. By securing multiple funding streams, construction firms can ensure financial resilience and project viability (Ma et al., 2022; Dong et al., 2023).

CONCLUSION

In conclusion, the challenges faced by construction stakeholders in the context of the Boko Haram insurgency are deeply interconnected and complicated. The findings highlight the urgent need for a comprehensive approach that addresses both immediate operational challenges and broader systemic issues. Therefore, understanding these challenges and their implications, stakeholders can develop targeted strategies to mitigate risks, enhance resilience, and foster the sustainable development of the construction industry in conflict-affected regions.

Moreover, the strategies outlined in Table 3 provide a robust framework for mitigating the Boko Haram insurgency challenges on construction projects. These include, prioritizing security, fostering community collaboration, adopting flexible timelines, and leveraging technology are essential for navigating the complexities of conflict-affected environments. These strategies not only address immediate operational challenges but also contribute to the long-term sustainability and recovery of the construction industry in regions impacted by insurgency. Therefore, successful implementation requires a holistic approach that integrates security, community engagement, and adaptive management practices. Thus, the following recommendation were suggested;

- i. Firms and governments should implement stronger security measures to protect sites, workers, and materials from insurgency threats.
- ii. Building trust with local communities through partnerships and inclusive decision-making to create a supportive environment.
- iii. Use of adaptable timelines and contingency plans to manage delays and disruptions, ensuring project continuity.

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