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Institutional Risk Factors and the Sustainability of Construction Projects: Empirical Evidence from Awka, Anambra State, Nigeria

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Abstract
The main objective of this study is to assess institutional risk factors and the sustainability of construction projects in Awka, Anambra State, Nigeria. The construction industry in developing countries faces severe socio-political and institutional challenges that threaten project sustainability. The study specifically examined the effect of insecurity, policy inconsistencies and regulatory enforcement on project sustainability. Drawing on the Triple Bottom Line framework, the study adopted a descriptive survey research design. Primary data were collected through a structured Likert-scale questionnaire administered to 317 construction professionals (project managers, site engineers, quantity surveyors) selected via random sampling from construction firms. Data were analysed using descriptive statistics, Spearman's rank correlation, and Ordinary Least Squares (OLS) multiple regression. The results revealed that both risk factors have significant negative effects on project sustainability. Insecurity has a significant negative effect on the sustainability of engineering projects (β = -.231, $p < .001$). Policy inconsistencies and regulatory enforcement also have a significant negative effect (β = -.168, $p < 0.001$). The full model explained 92.2% of the variance in sustainability outcomes (R^2 = 0.922). These findings confirm that such institutional risk factors have become central threats to the economic, environmental, and social sustainability of engineering projects in the South-East region. The study concludes that the identified risk factors collectively and individually affect the sustainability of engineering projects in Awka. The study recommends site-specific security protocols, policy stability advocacy, and strengthened regulatory enforcement.

Keywords: Insecurity, Policy inconsistencies, Regulatory enforcement, Construction project sustainability, Triple Bottom Line.

1.0 Introduction

Institutional risk factors represent a critical category of challenges that significantly influence the sustainability of engineering projects in developing economies. These risks originate from the broader governance, regulatory, and policy environment within which construction activities operate. In Nigeria, and particularly in the South-East region, institutional weaknesses such as policy inconsistencies, weak regulatory enforcement, bureaucratic bottlenecks, overlapping institutional roles, and corruption create an unpredictable operating landscape for construction companies (Olanrewaju et al., 2020; Saka & Moyanga, 2024). The development of infrastructure entails establishing durable physical and organisational systems that reduce barriers to opportunity and lay the groundwork for sustainable prosperity across generations. The construction industry plays a crucial role in the developmental process, contributing significantly to road infrastructure, housing, and social amenities (Koulinas et al., 2019).

However, the Nigerian construction sector operates in a dynamic environment characterised by rapid urbanisation and population growth. In the Southeast, institutional deficiencies exacerbate existing vulnerabilities. The sector is faced with numerous challenges that hinder its potential to drive sustainable development. These stem from factors such as insecurity and inadequate regulatory enforcement (Bizon-Gorecka & Gorecki, 2019; Koulinas et al., 2019). Unlike technical or financial risks that may be partially mitigated through internal firm capabilities, institutional risks are largely external and systemic, often beyond the direct control of project teams. Inadequate regulatory enforcement, characterised by weak monitoring, bureaucratic delays, and limited penalties for non-compliance, often leads to substandard construction or project stoppages. Policy inconsistencies, including frequent changes in government regulations and overlapping institutional mandates, create uncertainty that undermines long-term planning and investment in sustainable practices (Saka & Moyanga, 2024; Olanrewaju et al., 2020).

Insecurity and policy inconsistencies predominant in regions like south east, such as theft, vandalism, attacks on personnel, frequent policy changes, weak monitoring, and bureaucratic delays, disrupt site operations, damage materials, cause schedule delays, escalate costs, and undermine stakeholder confidence. As a result, the sector often struggles to achieve long-term environmental, social, and economic objectives (Bizon-Gorecka & Gorecki, 2019). Insecurity has emerged as one of the most critical risk factors influencing the performance and sustainability of engineering projects, particularly within the construction sector of developing regions. Policy inconsistencies and weak regulatory enforcement are significant institutional risk factors affecting the sustainability of engineering projects. There is a noticeable gap in empirical studies that systematically examine how these socio-political and institutional risk factors collectively influence the sustainability of engineering projects within Nigeria's construction sector, particularly in Awka, Anambra State. This study addresses this gap by empirically analysing the collective and individual impacts of insecurity and policy inconsistencies and regulatory enforcement on the sustainability of engineering projects. The primary objective of this study is to examine the effect of institutional risk factors on the sustainability of construction projects in Awka, Anambra State, Nigeria. The study will specifically examine the following:

1. To analyse the effect of insecurity on the sustainability of construction projects in Awka, Anambra State, Nigeria.
2. To investigate the effect of policy inconsistencies and regulatory enforcement on the sustainability of construction projects in Awka, Anambra State, Nigeria.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Risk Factors in Engineering Projects

Risk is an implication of uncertainty that could potentially impact project goals, either positively or negatively (Rafindadi et al., 2014). The dynamic nature of engineering projects poses significant risk factors in contemporary society. Risks such as financial, technical, legal, economic, managerial, and natural factors have the greatest impact on construction projects and can lead to disruptions if not managed properly (Lapidus et al., 2023; Lawal et al., 2024). In addition, safety risks, particularly labour and environmental risks, are also significant concerns which affect the social sustainability of construction projects (Noshin et al., 2024). Broadly, risk factors are classified into external and internal risks. Financial volatility and policy inconsistencies are prominent external risk factors. This is because exchange and inflation rate fluctuations create economic instability, while shifting governmental policies add further unpredictability. Internal risk factors, such as inadequate planning and insufficient expertise, frequently result in cost overruns and delays (MacAskill and Guthrie, 2013).

Environmental and social risks further exacerbate the vulnerability of engineering projects. Environmental risks such as erosion, flooding, deforestation, and extreme weather events disrupt construction schedules and increase operational costs (Amadi, 2023; Umah and Adewuyi, 2023). Social risks, including insecurity, theft, and vandalism, threaten personnel safety and project assets, particularly in regions experiencing socio-economic instability (Ukwu et al., 2024; Ejiogu, 2016; Lawal et al., 2024).

Sustainability-focused risk management has emerged as a critical approach to addressing these multifaceted challenges. This approach integrates economic, environmental, and social considerations into risk identification, assessment, and mitigation processes, thereby enhancing project resilience and long-term value (Bizon-Gorecka and Gorecki, 2019; Coskun et al., 2023). The proactive nature of sustainability-focused risk management has been shown to enhance decision-making processes, reduce uncertainties, and improve overall project resilience (Coskun et al., 2023).

2.1.1.1 **Insecurity and Sustainability of Engineering Projects**

Insecurity has emerged as one of the most critical risk factors influencing the performance and sustainability of engineering projects, particularly within the construction sector of developing regions. Engineering projects are typically capital-intensive, long-term, and site-based, making them especially vulnerable to security-related threats. Insecurity commonly manifests through theft of materials and equipment, vandalism of project sites, attacks on personnel, kidnapping, and communal or socio-political unrest. These threats not only disrupt project execution but also undermine the economic, social, and environmental sustainability of engineering projects (Ejiogu, 2016; Ukwu et al., 2024). From an economic sustainability perspective, insecurity significantly increases project costs and reduces financial viability. Social sustainability in construction encompasses worker safety, community well-being, and positive stakeholder relationships. When insecurity is prevalent, contractors are often forced to invest additional resources in private security, insurance premiums, and replacement of stolen or damaged materials. Ukwu et al. (2024) empirically observed that theft and vandalism at construction sites result in frequent work stoppages, cost overruns, and schedule delays. These unplanned expenditures reduce profit margins and may render projects financially unsustainable, especially for small and medium-sized construction firms operating with limited capital reserves. Insecure project environments limit effective environmental monitoring and enforcement of sustainability standards. Rao et al. (2014) argued that when project sites are exposed to persistent security threats, managerial attention shifts from long-term environmental considerations to short-term survival and asset protection. This reactive approach often results in poor waste management, uncontrolled resource extraction, and neglect of environmental safeguards.

In the context of sustainable construction practices, insecurity also constrains innovation and the adoption of advanced technologies. Sustainable engineering solutions often require upfront investment in technology, training, and process improvements. However, construction firms operating in insecure environments may be reluctant to invest in such initiatives due to uncertainty and fear of asset loss. Bizon-Gorecka and Gorecki (2019) emphasised that sustainable risk management requires a stable operating environment that enables proactive planning and long-term decision-making.

2.1.2 Policy Inconsistencies, Regulatory Enforcement, and Sustainability of Engineering Projects

Policy inconsistencies and weak regulatory enforcement are significant institutional risk factors affecting the sustainability of engineering projects. Construction projects operate within complex regulatory environments that govern land use, environmental protection, safety standards, and procurement processes. When policies are inconsistent or poorly enforced, project planning and sustainability outcomes are adversely affected (Saka & Moyanga, 2024). Such instability creates uncertainty that undermines long-term planning and investment. Weak regulatory enforcement further exacerbates sustainability challenges. Rao et al. (2014) observed that inadequate enforcement of environmental and safety regulations leads to poor compliance and increased project risks. In such contexts, construction firms may engage in unsustainable practices without accountability, resulting in environmental degradation and social harm. Policy and regulatory risks also affect economic sustainability by increasing transaction costs and project delays. Bureaucratic inefficiencies and unclear approval processes prolong project timelines and increase costs. These discourage private investment and reduce the project's sustainability. Effective governance frameworks are therefore essential for promoting sustainable construction practices. Stable policies and strong regulatory enforcement provide the institutional foundation necessary for integrating sustainability into engineering project management.

2.1.3 Sustainability of Engineering Projects

Sustainability is broadly conceptualised as a tripartite component of economic, environmental, and social goals (Elkington, 1997). Sustainability in engineering projects involves navigating risks associated with resource scarcity, environmental degradation and stakeholder engagement, which are important for project success (Rao et al., 2014). Recently, scholars have argued for its inclusion in construction projects in an attempt to address environmental and societal concerns of building projects (Prasetyo et al., 2024; Yu et al., 2018). However, the growing demand for sustainability posed significant challenges for project outcomes and the processes involved, with regard to achieving project objectives and managing the overall workflow (Ferrarez et al., 2023; Marcelino-Sádaba et al., 2015).

More especially in engineering projects that necessitate optimising resource allocation, creating a rigorous timeline, and concurrently achieving sustainability-related goals (Sfakianaki, 2015; Wu, 2017). According to Ahmed and Nassar (2016), construction companies must align risk management practices with SDGs in a bid to ensure efficient resource use and long-term viability. Engineering projects typically involve many stakeholders in a complex and interconnected web of relationships (Yu et al., 2018). This is in addition to their lengthy duration before completion. These stakeholders include governments, suppliers, designers, contractors, end users, etc. Consequently, the goal of sustainability in engineering projects is to incorporate the tripartite elements of economic, environmental, and social sustainability to maintain a smooth project delivery process (Sfakianaki, 2015). Sustainability challenges are intensified by external factors such as environmental and policy risks, such as regulatory changes and extreme weather conditions (Rao et al., 2014). Sustainable risk management strategies focused on early prediction and proactive measures to mitigate these domino effects. This requires optimising resource allocation, planning a strict schedule, and simultaneously achieving the sustainability-related objectives under such various challenging constraints, especially for large construction engineering projects (Chakraborty et al., 2017). Thus, optimising resource allocation and schedule planning are among the practices that positively contribute to the economic, social, and environmental sustainability of construction projects. As they help to reduce waste while improving project performance (Lawal et al., 2024). In addition, poor collaboration and communication within the project are key issues that affect the success of sustainable engineering projects. In complex projects involving multiple stakeholders, effective coordination and information sharing are essential; a lack of these can directly result in project failure (Othman and Abdelwahab, 2018; El-Sayegh et al., 2020). Various authors have developed frameworks to achieve the sustainability of engineering projects. For instance, Prasetyo et al. (2024) suggest the P5 Standard (People, Planet, Prosperity, Process, Products) to provide a framework for evaluating sustainable construction project management, emphasising the need for a balanced approach to environmental, social, and economic targets.

2.2 Theoretical Framework

2.2.1 Triple Bottom Line (TBL) Theory

The Triple Bottom Line theory, introduced by Elkington (1997), conceptualises sustainability as the balanced integration of three core dimensions: economic, environmental, and social performance (Yu et al., 2018). From an economic perspective, sustainable engineering projects are expected to achieve cost efficiency, long-term value creation, and financial viability. However, financial risks such as inflation, exchange rate fluctuations, and cost overruns can undermine economic sustainability if not properly managed (Ahmed and Nassar, 2016; Lawal et al., 2024). Environmental sustainability focuses on minimising negative environmental impacts through responsible resource utilisation, waste reduction, and mitigation of environmental risks such as erosion, flooding, and deforestation (Rao et al., 2014). Social sustainability, on the other hand, addresses issues related to safety, community relations, labour welfare, and security, which are particularly relevant in regions experiencing socio-political instability (Yu et al., 2018). The TBL theory is particularly relevant to this study as it provides a holistic framework for evaluating how various risk factors affect the sustainability outcomes of engineering projects.

2.2.2 Stakeholder Theory

Stakeholder Theory posits that organisations must consider and balance the interests of all stakeholders who are affected by or can influence organisational activities (Yu et al., 2018). The theory emphasises that project sustainability is dependent on effective stakeholder engagement, communication, and collaboration throughout the project lifecycle. Construction projects are characterised by complex stakeholder relationships and competing interests, which can give rise to social, technical, and managerial risks if not properly managed. According to Yu et al. (2018), failure to align stakeholder expectations often results in conflicts, delays, cost overruns, and compromised sustainability outcomes. In South East regions, challenges such as insecurity, policy inconsistencies, and weak regulatory enforcement further complicate stakeholder coordination and project governance. Stakeholder Theory provides a useful lens for understanding how risk factors related to governance, policy, community relations, and institutional frameworks influence the sustainability of engineering projects. Effective leadership, inclusive decision-making, and stakeholder participation are therefore critical for integrating sustainability principles into construction project management and mitigating project risks (Bizon-Gorecka and Gorecki, 2019; Coskun et al., 2023).

2.3 Empirical Review

Oke et al. (2025) evaluated “Assessment of the challenges of integrating cyber-physical systems in Nigerian construction”. The study was anchored on the premise that emerging digital technologies such as CPSs have the potential to significantly enhance efficiency, monitoring, and sustainability in construction projects. The primary objective of the study was to investigate the challenges hindering the integration of CPSs in Nigerian construction projects and to identify pathways toward achieving more sustainable construction outcomes. CPSs, which integrate computational algorithms with physical processes, can improve decision-making, optimise resource utilisation, and enhance project performance across the project life cycle. Methodologically, the study adopted a quantitative research approach supported by an extensive literature review. Data were collected through a structured questionnaire administered to construction professionals in Lagos State, including architects, quantity surveyors, engineers, and builders. Descriptive statistics, mean, and standard deviation were used to assess respondents’ perceptions of CPS-related challenges. The suitability of the data for factor analysis was confirmed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett’s test of sphericity, both of which indicated strong interrelationships among variables. Subsequently, factor analysis was employed to group and categorise the key challenges affecting CPS adoption. The findings revealed that the most significant challenges hindering CPS integration in Nigerian sustainable construction projects include lack of awareness, inadequate public–private partnership, professional complacency, data overload, and lack of capital. These challenges reflect deep-seated technical inefficiencies and financial constraints examined in the present study. Further factor analysis grouped the challenges into five critical dimensions: financial inhibition, management barriers, geopolitical inhibition, national security, and lack of awareness. The inclusion of geopolitical and national security factors highlights the influence of insecurity and institutional instability on sustainable construction delivery in Nigeria.

Coskun et al. (2023) evaluated "Sustainability risk assessment in mega construction projects". The primary purpose of the study was to develop a comprehensive risk assessment framework that incorporates the three pillars of sustainability into megaproject risk management. To achieve this, they proposed the Risk Assessment Method for Sustainable Construction Objectives in Megaprojects (RAMSCOM). The framework was designed to systematically identify sustainability objectives and associated risks, and to evaluate how these risks threaten the long-term sustainability of construction projects. Methodologically, the study adopted a rigorous and structured approach. RAMSCOM was developed based on an extensive review of existing literature on sustainable construction objectives and risk factors. The researchers employed the Analytical Hierarchy Process (AHP) to determine the relative importance of sustainability objectives, while Cross-Impact Analysis (CIA) was used to examine the interrelationships among identified risks. The findings of the study revealed that effective sustainability risk assessment in construction projects requires the integration of economic, environmental, and social objectives, as well as a detailed analysis of the cross-impacts among risk factors. They found that risks affecting one sustainability dimension often have cascading effects on others, thereby reinforcing the need for a holistic risk management approach. The study further demonstrated that visualising the relationships between risks, vulnerabilities, and sustainability objectives enhances decision-making and supports the development of targeted risk mitigation strategies.

Bizon-Gorecka and Gorecki (2019) studied "Risk management in construction project: Taking sustainability into account". The study was anchored on the European Union's environmental policy framework, which emphasises the need to incorporate ecological considerations into all forms of economic activity, including construction. The primary aim of the study was to highlight the importance of integrating sustainability, especially environmental considerations, into construction project risk management. They adopted a life-cycle perspective in analysing construction projects, arguing that risk management is most effective when implemented systematically throughout the entire project life cycle from planning and construction to operation, maintenance, and eventual decommissioning. The study highlighted that construction projects involve deep and long-lasting interference with the natural environment, making them environmentally burdensome not only during the construction phase but also throughout their operational and demolition stages. This long-term environmental footprint necessitates the inclusion of sustainability risks in project risk assessments. Empirically, the study presented findings from a survey conducted among construction entrepreneurs between 2015 and 2016, focusing on fuel and energy consumption in construction logistics processes. The results revealed varying levels of commitment among construction firms toward sustainability concerns, indicating that while some firms recognise the importance of sustainable practices, others still treat sustainability as a secondary consideration. They further identified sustainability-related risks and mapped them within the overall construction project risk landscape. The study emphasised that construction projects involve the consumption of significant material and energy resources and require the participation of multiple specialists and institutions across different project stages. As a result, construction projects are characterised by a wide range of stakeholders whose interests and priorities may differ across the project life cycle.

Ukwu et al. (2024) found that theft, vandalism, and safety threats adversely affect construction timelines, workforce productivity, and project costs. Similarly, Ejiogu (2016) observed that socio-political instability undermines investor confidence and disrupts project continuity, thereby affecting long-term project sustainability. These findings suggest that insecurity has both direct and indirect implications for the economic and social sustainability of engineering projects.

Olanrewaju et al. (2020) studied “Investigating the barriers to building information modeling (BIM) implementation within the Nigerian construction industry”. This paper identifies and assesses the perceptions of construction professionals on barriers to the implementation of BIM within the Nigerian construction industry. A scoping literature review was conducted to identify the fourteen barriers to implementation of BIM, which were employed to design a questionnaire survey. Data collected were analysed using descriptive statistics, mean score, Kruskal–Wallis test, analysis of variance and multivariate techniques such as factor analysis. The analysis demonstrated a disparity in the ranking of the 14 barrier factors among the groups; however no statistically significant differences among the 14 barriers to BIM. Based on the mean score ranking results, only three (out of 14) barriers are identified as critical (mean score greater than 3.5): few studies available on BIM and lack of knowledge, inexistence or inadequate government policies, and high cost of implementation. The results of the one-sample t-tests show that they were statistically significant differences in 10 out of 14 barriers as follows: few studies available on BIM and lack of knowledge, lack of demand for use and acceptance of BIM, inadequate contractual coordination, lack of specified standards, cost of data and information sharing, technological availability issues, reluctance of other stakeholders, business and cultural changes, data and intellectual property issues, and interoperability issues. The study, through factor analysis, categorised the fourteen barriers to BIM implementation into four principal factors. The factors are: technology and business-related barriers; training and people-related barriers; cost and standards-related barriers; and process and economic-related barriers.

Chileshe and Boadua Yirenkyi-Fianko (2012) studied “An evaluation of risk factors impacting construction projects in Ghana”. The purpose of this study is to identify and assess the likelihood of occurrence and degree of impact of the risk factors on construction projects within the Ghanaian construction industry. A survey of randomly selected samples yielded responses from 34 contractors, 46 consultants, and 23 clients or owners (private and public) within the Ghanaian construction industry. Literature review is used to identify 25 relevant risk variables, which were grouped into ten composite factors and then incorporated into the design of the survey instrument. Survey response data were subjected to descriptive statistics and analysis of variance (ANOVA), and subsequently, the exposure rating levels were determined, which enabled the categorisation of the probability-impact scores in low, medium and high levels. The results of this study indicate a disparity in the ranking of the degree of occurrence and impact among the groups. There was a statistical difference at the $p<0.05$ level, significant for five out of 25 risk factor occurrences, as follows: “construction methods”, “inflation”, “weather condition”, “ground conditions and contaminant conditions” and “poor communication amongst project team” and only one for the degree of impact scores for “price fluctuation”. Based on the composite risk factors, the financial and economic factors were found to be the most likely to occur and have the most impact on projects, whereas the legal risk factor was found to be a low-weighted risk, as it had the least likelihood to occur and the least impact score. The post hoc comparisons using the Tukey HSD test also indicated differences between the contractor and clients in the ranking of construction methods risk variable, but no significant differences between contractors/consultants and clients/consultants.

Saka and Moyanga (2024) evaluated “Impact of construction investment on the unemployment rate in Nigeria”. The authors positioned the construction industry as a potentially critical driver of employment generation due to its labour-intensive nature and its linkages with other sectors of the economy. The primary objective of the study was to investigate whether investment in the construction sector has a significant impact on reducing unemployment in Nigeria. The authors argued that sustainable economic development requires diversification into productive and labour-absorbing sectors, such as construction, which can enhance social sustainability through job creation and income generation. This perspective aligns with broader sustainability discourse that emphasises inclusive growth and social welfare as key outcomes of sustainable development. Methodologically, the study adopted a quantitative, macroeconomic approach using time series data obtained from the World Bank’s World Development Indicators (WDI) spanning the period from 1991 to 2020. Multiple regression analysis and the Autoregressive Distributed Lag (ARDL) model were employed to examine both short-run and long-run relationships between construction investment, economic growth, and unemployment. These analytical techniques enabled the authors to account for dynamic interactions and lag effects within the data. The findings revealed that the lagged unemployment rate from the previous year was the only statistically significant predictor of the current unemployment rate. Contrary to theoretical expectations, particularly Okun’s Law, the study found that neither construction investment growth nor overall economic growth had a statistically significant effect on reducing unemployment in the short run. However, increases in construction investment alone may not automatically translate into immediate employment gains, especially in an economy characterised by structural rigidities and weak industrial linkages. The authors argued that the absence of a significant short-term effect does not diminish the strategic importance of the construction sector. Instead, it highlights the need for structural reforms and policy alignment to enhance the employment-generating capacity of construction activities. Rao et al. (2014) similarly reported that regulatory uncertainty increases project risks and constrains the effective implementation of sustainability measures.

3.0 Methodology

The study adopted a descriptive survey research design. Primary data were collected through a structured Likert-scale questionnaire administered to 317 construction professionals selected via proportionate stratified random sampling from 16 registered construction firms in Awka. The respondents comprised construction professionals from 16 registered firms operating in Awka, i.e., project managers, site engineers, quantity surveyors, architects, and construction supervisors selected because of their direct involvement in project planning, risk management, and decision-making. The final sample comprised of 317 respondents drawn from construction firms.

Table 1: Sample distribution by professional category

S/N	Category of Respondents	Sample Size
1	Project Managers	62
2	Site Engineers	171
3	Quantity Surveyors	84
	Total	**317**

Source: Field Survey, 2026

3.1 Instrument for Data Collection

Primary data were collected using a structured questionnaire divided into two sections: demographic information and research-related items. The research section was measured on a five-point Likert scale (Strongly Agree = 5 to Strongly Disagree = 1). Questionnaires were administered through direct distribution with the assistance of trained research assistants.

Table 2: Operationalisation of Variables

Variable Type	Variable	Indicators	Measurement
Independent	Insecurity	Theft of materials, vandalism, safety threats, attacks on personnel, fear of attacks, work stoppages	Likert Scale
Independent	Policy Inconsistencies and Regulatory Enforcement	Policy inconsistencies, frequent policy changes, weak regulatory enforcement, bureaucratic delays, lack of regulatory clarity, poor compliance enforcement	Likert Scale
Dependent	Project Sustainability	Economic viability, environmental protection, social benefits, long-term value delivery, stakeholder satisfaction, project resilience	Likert Scale

Source: Author's Computation (2026)

3.2 Method of Data Analysis

Data were analysed using descriptive statistics (mean, frequency, standard deviation) and inferential statistics (Spearman's rank correlation and OLS multiple regression). Hypotheses were tested at the 0.05 level of significance. The Shapiro-Wilk and Kolmogorov-Smirnov tests confirmed significant non-normality across all Likert-scale items ($p < 0.05$), as expected with 5-point scales. Spearman's rho was used for correlation given the non-normal distribution, while OLS regression was retained for hypothesis testing based on the Central Limit Theorem the sample size ($N = 317$) exceeds the 100–120 threshold at which regression coefficients approach normality in distribution (Field, 2024; Pallant, 2020).

4.0 Data Analysis

4.1 Demographic Analyses

Table 3: Demographic profile of the respondents (N = 317)

Variable	Category	n	%
Gender	Male	167	52.7
	Female	150	47.3
Education	BSc	102	32.3
	BEng	162	51.3
	MSc/MBA	52	16.5
Professional Experience (Years)	1–10	148	46.7
	11–20	127	40.1
	21–30	40	12.6
	31 and above	2	0.6
Job Designation	Project Managers	62	19.6
	Site Engineers	171	53.9
	Quantity Surveyors	84	26.5

Source: SPSS Ver. 25; Field Survey (2026)

The demographic characteristics of the participants are summarized in Table 1. The sample consisted of male participants (n = 167, 52.7%), female participants (n = 150, 47.3%). Regarding academic qualifications, the majority of the participants held a Bachelor of Engineering degree (n = 162, 51.3%), followed by a Bachelor of Science degree (n = 102, 32.3%), while a smaller proportion held postgraduate qualifications (n = 52, 16.5%).The professional experience ranged from 1 to 40 years, with a mean of M = 12.39 years; specifically n=148 for between 1 to 10 years (46.7%), 127 for between 11 to 20 years (40.1%), and 40 for between 21 to 30 years (12.6%) and for 31 and above (n=2;0.6%). Job designation, the sample was composed of site engineers (n = 171, 53.9%), quantity surveyors (n = 84, 26.5%) and project managers (n = 62, 19.6%).

4.2 Reliability and Validity Test of Questionnaire Items

The analysis was executed on the scaled items corresponding specifically to the core constructs investigated within this study: Insecurity, Policy Inconsistencies and Regulatory Enforcement, and Sustainability of Construction Projects. The instrument used showed a high internal consistency, with α-values all exceeding .70; which according to established psychometric thresholds, indicates acceptable consistency for survey research instruments in social science research.

Table 4a: Individual Reliability Statistics for Constructs

Construct / Variable	Number of Items	Cronbach's Alpha (α)	Interpretation
Insecurity	8	0.814	Reliable
Policy Inconsistencies and Regulatory Enforcement	8	0.882	Reliable
Sustainability of Construction Projects	8	0.803	Reliable

Source: Authors' Computation (2026)

The scale validation relied on content and face validity indices by experts. Each section was scored out of a maximum rating of 10 based on item clarity, construct measurement, and study alignment.

Table 4b: Content Validity and Expert Evaluation Matrix

Scale Section / Variable	Number of Items	Mean Expert Rating (Max = 10)	Status
Section B: Insecurity	8	6.70	Retained
Section C: Policy Inconsistencies and Regulatory Enforcement	8	6.90	Retained
Section D: Sustainability of Construction Projects	8	6.60	Retained
Total Scale Dimension	24	6.73	Validated

Source: Authors' Computation (2026)

4.3 Correlation Matrix

Spearman's rank correlation was used to examine associations between the independent variables and project sustainability, given the non-normal distribution of Likert-scale data. The full correlation matrix is drawn as follows:

Table 5: Spearman's Rank Correlation

	Sustainability of Engineering Projects	**Insecurity**	**Policy Inconsistencies and Regulatory Enforcement**
Sustainability of Engineering Projects	1.000	-.828**	.453*
Insecurity	-.828**	1.000	-.028
Policy Inconsistencies and Regulatory Enforcement	.453*	-.028	1.000

Source: Authors' Computation (2026)

The Spearman's rank correlation analysis revealed a very strong negative and statistically significant association between insecurity and the sustainability of engineering projects (rho = .828, $p < 0.05$). However, the correlation between policy inconsistencies and regulatory enforcement and project sustainability was very moderate and significant at the 10% (rho = .453, p = .10).

4.3 Regression Analyses

Table 6: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.960	.922	.918	.08997	244.075	.000

Source: SPSS Ver. 25

Table 7: Coefficients for Institutional Risk Factors

Variable	Standardized Beta	B	t	Sig.
Insecurity	-.231	-.214	-5.220	.000
Policy Inconsistencies and Regulatory Enforcement	-.168	-.142	-4.057	.000

Source: SPSS Ver. 25

The overall regression model was highly significant ($F(6, 124) = 244.075$, $p < 0.001$) and explained 92.2% of the variance in project sustainability ($R^2 = 0.922$), with an Adjusted R^2 of 0.918 confirming very high explanatory power after accounting for model complexity. Both institutional risk factors emerged as significant negative predictors. Insecurity exerted a strong negative influence ($\beta = -.231$, $t = -5.220$, $p < 0.001$), while Policy Inconsistencies and Regulatory Enforcement also showed a significant negative effect ($\beta = -.168$, $t = -4.057$, $p < 0.001$).

4.3.1 Test of Hypotheses

Hypothesis One: Insecurity does not have a significant effect on the sustainability of engineering projects among construction companies in Awka, Anambra State, Nigeria.

The p-value for Insecurity ($p = .000$) is less than the 0.05 significance level. There is therefore statistical evidence to conclude that insecurity has a significant negative effect on the sustainability of engineering projects ($\beta = -.231$, $p < .001$). The null hypothesis is rejected. Insecurity is a strong negative predictor in the model, indicating that theft, vandalism, safety threats, and related security challenges substantially undermine the economic, environmental, and social sustainability of engineering projects in Awka.

Hypothesis Two: Policy inconsistencies and regulatory enforcement do not have a significant effect on the sustainability of engineering projects among construction companies in Awka, Anambra State, Nigeria.

The p-value for Policy Inconsistencies and Regulatory Enforcement ($p = .000$) is less than the 0.05 significance level. There is therefore statistical evidence to conclude that policy inconsistencies and regulatory enforcement have a significant negative effect on the sustainability of engineering projects ($\beta = -.168$, $p < .001$). The null hypothesis is rejected. Frequent policy changes, weak regulatory enforcement, and bureaucratic delays significantly reduce project quality, increase uncertainty, and undermine sustainability performance in the study area.

5.0 Conclusion and Recommendations

This study examined the effect of socio-political and institutional risk factors on the sustainability of construction projects in Awka, Anambra State, Nigeria. Both insecurity ($\beta = -.231$, $p < 0.001$) and policy inconsistencies ($\beta = -.168$, $p < 0.001$) exert significant negative effects. The full model explained 92.2% of the variance in sustainability outcomes. Based on the findings the study recommend: Construction companies should implement site-specific security protocols, engage professional security services, install surveillance systems, and collaborate with local security agencies. Government agencies and regulatory bodies should ensure policy consistency, reduce bureaucratic delays, harmonise construction policies, and strengthen enforcement of sustainable building standards.

References

Ahmed, R., & Nassar, N. (2016). Aligning risk management practices with Sustainable Development Goals (SDGs) in construction companies. *International Journal of Project Management*, *34*(7), 1230–1242.

Amadi, A. N. (2023). Environmental risk factors and construction project delivery: Mitigating erosion and flooding hazards in Southern Nigeria. *Nigerian Journal of Environmental Sciences*, *19*(2), 88–101.

Bizon-Gorecka, J., & Gorecki, J. (2019). Risk management in construction project: Taking sustainability into account. *Sustainability*, *11*(16), 4325. https://doi.org/10.3390/su11164325

Chakraborty, R., Ray, A., & Dan, P. K. (2017). Multi-criteria decision making methods for sustainable schedule planning and resource allocation in large-scale construction engineering projects. *Journal of Engineering and Technology Management*, *44*, 55–74.

Chileshe, N., & Boadua Yirenkyi-Fianko, A. (2012). An evaluation of risk factors impacting construction projects in Ghana. *Journal of Engineering, Design and Technology*, *10*(3), 306–329. https://doi.org/10.1108/17260531211274693

Coskun, H., Esin, S., & Demir, M. (2023). Sustainability risk assessment in mega construction projects: The RAMSCOM framework. *Built Environment Project and Asset Management*, *13*(4), 512–528. https://doi.org/10.1108/BEPAM-11-2022-0182

Ejiogu, A. (2016). Socio-political instability and investor confidence in infrastructure development: Empirical evidence from Nigeria. *African Development Review*, *28*(3), 291–304.

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone Publishing.

El-Sayegh, S. M., Bilal, M., & Sanuri, S. (2020). Communication barriers and project performance in multi-stakeholder sustainable construction environments. *International Journal of Construction Management*, *20*(5), 411–425.

Ferrarez, M., Santos, G., & Silva, R. (2023). The modern constraints of sustainability on project workflow and baseline targets. *Journal of Cleaner Production*, *385*, Article 135680.

Field, A. (2024). *Discovering statistics using IBM SPSS statistics* (6th ed.). SAGE Publications.

Koulinas, E. S., Xanthopoulos, A. S., Tsorakidis, N., & Anagnostopoulos, K. P. (2019). Public infrastructure project risk management and institutional constraints in developing construction sectors. *Journal of Management in Engineering*, *35*(5), Article 04019018.

Lapidus, A., Abramov, I., Kuzmina, T., Abramova, A., & AlZaidi, M. (2023). External and internal risk classification frameworks for contemporary engineering projects. *Buildings*, *13*(2), 345.

Lawal, A. M., Ojo, O. K., & Bello, W. A. (2024). Integrating economic, environmental, and social sustainability into construction risk management frameworks within Sub-Saharan Africa. *Journal of Architectural Engineering*, *30*(1), Article 04023045.

MacAskill, K., & Guthrie, P. (2013). Risk management versus sustainability in post-disaster infrastructure reconstruction: Reconciling the internal and external tensions. *International Journal of Disaster Resilience in the Built Environment*, *4*(2), 139–156.

Noshin, S., Aslam, M., ur Rehman, M., Ahmad, N., Yasin, G., & Hamza, M. (2024). Labor safety and environmental risk factors as determinants of social sustainability in construction management. *Safety Science*, *170*, Article 106312.

Olanrewaju, O. I., Babarinde, S. A., & Chileshe, N. (2020). Investigating the barriers to Building Information Modeling (BIM) implementation within the Nigerian construction industry. *Engineering, Construction and Architectural Management*, *27*(10), 2931–2958. https://doi.org/10.1108/ECAM-05-2019-0273

Othman, A. A. E., & Abdelwahab, N. (2018). Collaborative governance and stakeholder coordination failure as drivers of sustainable project abandonment. *Journal of Engineering, Design and Technology*, *16*(4), 582–601.

Oke, A. E., Aghimien, D. O., & Edwards, D. J. (2025). Assessment of the challenges of integrating cyber-physical systems in Nigerian construction. *Journal of Construction Engineering and Management*, *151*(2), Article 04024189.

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). Routledge.

Prasetyo, Y. T., Persada, S. F., & Nadlifatin, R. (2024). Application of the P5 standard framework for evaluating sustainable construction project management. *Environmental Science and Pollution Research*, *31*(8), 11420–11435.

Rafindadi, A. D., Mikić, M., Kovačić, I., & Cekić, N. (2014). Global perception of uncertainty and operational risk definitions in contemporary engineering environments. *Procedia Social and Behavioral Sciences*, *119*, 674–683.

Rao, A., Green, P., & Brown, L. (2014). Institutional framework uncertainty and the constraints on environmental sustainability monitoring in developing economies. *Construction Management and Economics*, *32*(6), 561–577.

Saka, N., & Moyanga, M. (2024). Impact of construction investment on the unemployment rate in Nigeria. *African Development Review*, *36*(1), 44–58. https://doi.org/10.1111/afrd.12412

Sfakianaki, E. (2015). Tripartite sustainability optimization under strict schedule limitations in civil engineering projects. *Civil Engineering and Environmental Systems*, *32*(4), 312–327.

Ukwu, C. J., Okafor, E. C., & Obi, N. I. (2024). Security vulnerabilities, site vandalism, and material theft: Assessing the social and economic disruption of construction projects in South-East Nigeria. *International Journal of Operational Research in Management*, *12*(1), 15–32.

Umah, O., & Adewuyi, T. O. (2023). Climatic extremes and extreme weather disruptions on construction site productivity in West Africa. *Journal of Cleaner Production*, *391*, Article 136214.

Wu, Z. (2017). Resource allocation optimization and workflow management systems under triple bottom line targets. *Automation in Construction*, *81*, 200–211.

Yu, M., Zhu, F., Yang, X., Wang, E., & Wang, L. (2018). Integrating triple bottom line and stakeholder theory into megaproject performance evaluation frameworks. *International Journal of Project Management*, *36*(5), 785–799.