



Veritatis Gaudium:

Multidisciplinary Journal of Postgraduate Studies

College of Postgraduate Studies,
Veritas University, Abuja, Nigeria

ISSN: 3043 - 5285

Volume 1, Number 3, July Special Edition, 2026

DOI: 10.13140/RG.2.2.27309.45286

**BRIDGING THE GAP BETWEEN GLOBAL BEST PRACTICES AND
LOCAL REALITIES: AN ASSESSMENT OF BARRIERS AND ENABLERS
TO THE ADOPTION OF TRENDING CIVIL ENGINEERING PRACTICES
IN THE NIGERIAN CONSTRUCTION INDUSTRY**

Ezechukwu Obiora Patrick

Department of Civil Engineering Technology, School of Engineering Technology
Federal Polytechnics Oko
obioraezechuxdaddy8@gmail.com

&

Onuamah Patrick, PhD, & Anajiofor-Ike Sandra Chinenye, PhD

Department of Civil Engineering, Enugu State University of Science and Technology (ESUT),
Enugu
patofinda@gmail.com & chinenye.ike@esut.edu.ng

Abstract

The Nigerian construction industry faces significant challenges hindering its growth and development, categorized into economic, institutional, human capital, technological, and industry-specific dimensions. Economically, the industry's reliance on imported materials exposes it to exchange rate volatility and high import duties, escalating project costs. High-interest rates and stringent collateral requirements limit SMEs' access to credit. Insufficient government funding and delayed disbursements disrupt project timelines and cause cash flow issues. Corruption is pervasive, leading to inflated costs, reduced quality, and unfair competition. Human capital deficits exist among professionals and artisans, causing poor workmanship and safety concerns. Technological adoption is hindered by limited awareness, resistance to change, unreliable internet, power outages, and high upfront investment costs for digital tools like BIM and prefabrication. Risk management shortcomings contribute to cost overruns and delays. Inadequate supervision and quality control lead to specification deviations and poor output. Planning and management weaknesses include inadequate studies, unrealistic planning, and poor digital infrastructure investment. Addressing these challenges requires a multifaceted

approach: developing vocational training and professional development; upgrading transportation and power infrastructure; encouraging modern technology adoption through incentives and digital investment; and improving regulatory enforcement, transparency, and accountability. By tackling these issues, the Nigerian construction industry can unlock its potential, drive economic growth, and deliver quality infrastructure meeting population needs. Implementing these strategies can enhance efficiency, reduce costs, and foster a favorable business environment, ultimately contributing to Nigeria's economic development.

Keywords: Global best practices, awareness and adoption of modern civil engineering practices

Introduction

The Nigerian construction industry plays a pivotal role in the country's economic development, contributing significantly to infrastructure growth, employment, and GDP. However, the sector has been characterized by conventional construction methods, relying heavily on manual labor, traditional materials, and often rudimentary project management approaches (Osuizugbo et al., 2020). Despite periods of rapid expansion, particularly during the oil boom eras, many projects were executed using methods that have since been superseded by more advanced and efficient technologies (Adegbelembo & Windapo, 2017). The industry's performance is marked by challenges such as project delays, cost overruns, substandard quality, and environmental degradation, raising concerns about the long-term viability and efficiency of Nigeria's infrastructure development efforts (Osuizugbo et al., 2020; Springer, 2025). Globally, the construction industry is undergoing transformative changes driven by digitalization, sustainability focus, and technological innovations like Building Information Modeling (BIM), prefabrication, and smart infrastructure integration (World Economic Forum, 2016). In contrast, Nigeria's construction sector exhibits a gap between global best practices and local realities, with slow adoption of modern techniques, particularly among indigenous contractors and consultants (Unegbu et al., 2024a). This persistence of traditional approaches stems from deeper systemic issues, including limited access to technology, financial constraints, inadequate skills, unfavorable regulatory environments, and general resistance to change within the industry (Mogaji, 2023; Unegbu et al., 2024b; Toriola-Coker et al., 2021).

Challenges Facing the Nigerian Construction Industry

The industry faces multifaceted challenges categorized into economic, institutional, human capital, technological, and industry-specific dimensions.

Economic and Financial Constraints: Heavy reliance on imported materials exposes the sector to volatile exchange rates and high import duties (Babatunde et al., 2010). Limited access to affordable credit, high interest rates, and inconsistent government funding disrupt project timelines (Kehinde & Mosaku, 2006; NESG, 2017).

Institutional and Governance Deficiencies: Corruption is pervasive, leading to inflated costs, reduced quality, and distorted competition (Alabi et al., 2022; Transparency International, 2012). Outdated building codes and weak regulatory enforcement hinder innovation adoption (Owolabi & Faleye, 2019).

Human Capital and Technological Limitations: Critical deficits exist in professional and artisan skills, leading to poor workmanship and safety issues (Oluwadare, 2009; ScienceNaija, 2025). Adoption of modern technologies like BIM and prefabrication is slow due to awareness gaps, costs, and infrastructure deficiencies (Bello et al., 2024c; Uniabuja, 2025).

Infrastructure and Support Services: Unreliable power supply and poor transportation networks increase operational costs and project delays (link unavailable, 2024).

Theoretical Perspectives

Neoclassical Growth Theory (Solow-Swan Model): Emphasizes capital accumulation and technological progress for economic growth, highlighting Nigeria's underinvestment in modern equipment and human capital (Solow, 1956).

Endogenous Growth Theory: Stresses investments in human capital, R&D, and innovation for sustained growth, pointing to Nigeria's limited R&D in construction (Romer, 1990).

Market Failure Theory: Explains inefficiencies due to information asymmetry and public goods under-provision, such as inadequate infrastructure (Memon et al., 2018).

Human Capital Theory: Underscores investments in education/training for productivity gains, relevant to Nigeria's skills gaps (Becker, 1964; Oluwadare, 2009).

Recent Studies and Trends

Recent studies highlight financial barriers, regulatory weaknesses, and skills shortages as key adoption inhibitors for modern construction practices in Nigeria (Ochinanwata et al., 2021; IIARD, 2024). The volatile economic environment and lack of government incentives further constrain innovation uptake (Oluwole & Ushie, 2022; ResearchGate, 2019). Addressing these challenges requires coordinated policy interventions, technology investments, skills development, and industry mindset shifts towards embracing global best practices for sustainable growth.

Methodology

2.1 Research Design

The study adopted a *descriptive survey research design* to gather data on the awareness, adoption, and barriers to trending civil engineering practices in the Nigerian construction industry. This approach is suitable for identifying prevailing trends, perceptions, and challenges among industry stakeholders without manipulating variables. The descriptive survey enabled the collection of both quantitative data (via Likert-scale ratings) and qualitative insights (through open-ended questions) to provide a comprehensive understanding of the industry's status quo.

2.2 Population of the Study

The target population comprised key stakeholders and professionals actively involved in Nigeria's construction industry, including:

- Practicing civil engineers (consultants and contractors)
- Project managers
- Construction company executives/managers
- Academics/researchers in civil engineering
- Government officials (Ministries of Works, COREN, professional bodies)

The population was spread across major Nigerian construction hubs like Lagos, Abuja, Port Harcourt, Kano, and Enugu, reflecting significant construction activity.

2.3 Sampling Techniques and Sample Size

Stratified Random Sampling: The population was stratified into professional categories (civil engineers, project managers, academics, government officials).

Convenience Sampling (supplementary): Used where complete lists were unavailable, involving distribution at industry events, professional meetings, and networks.

Sample Size Determination: Using Yamane's formula (1967) for estimating sample size:

$$n = \{N\} / \{1 + N(e^2)\}$$

where

n: is the sample size

N: is the population size

e: is the margin of error (acceptable error level, usually expressed as a decimal)

Given an estimated accessible population of several thousand professionals and a 5% desired precision ($e = 0.05$), a target sample size of 350 respondents was set, with 285 usable responses achieved, representing an 81.4% response rate.

2.4 Data Collection Instruments

The primary data collection instrument was a structured questionnaire comprising:

Section A: Demographic information (profession, experience, organization type, location)

Section B: Awareness and adoption levels of trending practices (BIM, sustainable construction, etc.) rated on 5-point Likert scales

Section C: Perceived severity of mitigating factors (technological, financial, regulatory, human capital barriers) rated on 5-point Likert scales

Open-ended questions: Captured qualitative insights on challenges and contextual factors

2.5 Data Collection Procedure

1. Online Distribution: Questionnaire distributed via professional networks, email lists (NSE, COREN), and social media relevant to Nigerian civil engineering professionals.
2. Physical Distribution (targeted): Hard copies administered to selected firms, government agencies, and universities with prior permission.
3. Ethical Considerations: Participants informed of study purpose, assured of anonymity/confidentiality; informed consent obtained.

2.6 Data Analysis Techniques

Descriptive Statistics: Frequencies, percentages, mean scores, and standard deviations used to summarize demographics, awareness/adoption levels, and rank mitigating factors.

Inferential Statistics: ANOVA (Analysis of Variance) was conducted to compare perceptions across professional groups; significance level $\alpha = 0.05$.

Qualitative Analysis: Content analysis of open-ended responses identified recurring themes complementing quantitative findings.

Software: Statistical Package for the Social Sciences (SPSS) was used for data analysis.

2.7 Key Variables Measured

Awareness and Adoption: Trending practices like BIM, prefabrication, sustainable construction.

Mitigating Factors: Technological, financial, regulatory, human capital, and cultural barriers.

Demographic Variables: Profession, experience, organization type, location.

This methodology aimed to provide robust empirical data reflecting the Nigerian construction industry's challenges and status regarding modern civil engineering practices adoption.

Results and Discussions

3.1 Demographic Profile of Respondents

Table 4.1: Demographic Profile of Respondents

Characteristic	Category	Frequency (N=285)	Percentage (%)
Profession	Civil Engineer (Consultant)	85	29.8
	Civil Engineer (Contractor)	102	35.8
	Project Manager	40	14.0
	Academic/Researcher	33	11.6
	Government Official	25	8.8
Years of Experience	Less than 5 years	55	19.3
	5 - 10 years	98	34.4

Organization Type	11 - 20 years	87	30.5
	Above 20 years	45	15.8
	Private Consulting Firm	95	33.3
	Indigenous Contracting Company	110	38.6
	Multinational Contracting Company	20	7.0
Location	Government Agency	30	10.5
	Academic Institution	30	10.5
	Awka	90	31.6
	Abuja	75	26.3
	Port Harcourt	50	17.5
	Other Major Cities	70	24.6

From Table 3.1 above, the majority of respondents were practicing Civil Engineers (Contractors and Consultants), accounting for over 65% of the sample, which aligns with the study's focus. A significant portion of respondents (34.4%) had 5-10 years of experience, indicating a substantial representation of mid-career professionals who are likely to be aware of industry trends while also facing practical implementation challenges. Indigenous contracting companies formed the largest group of organizations represented, reflecting their dominance in the Nigerian construction landscape. The distribution across major construction hubs ensures a geographically diverse perspective.

3.2 Awareness and Adoption of Trending Civil Engineering Practices

Respondents were asked to rate their awareness and the perceived level of adoption of several trending civil engineering practices on a 5-point Likert scale (1=Very Low, 5=Very High). Table 4.2 summarizes these findings.

Table 3.2: Awareness and Adoption of Trending Civil Engineering Practices

Trending Practice	Awareness (Mean ± SD)	Awareness Rank	Adoption (Mean ± SD)	Adoption Rank
Building Information Modeling (BIM)	3.95± 0.88	1	2.40± 1.15	3
Sustainable Construction/Green Building	3.80± 0.92	2	2.15± 1.05	4
Advanced Project Management Software	3.68± 0.90	3	2.85± 1.00	1
Prefabrication/Modular Construction	3.25± 1.05	4	2.60± 1.10	2
Smart Infrastructure/IoT in Construction	2.90± 1.10	5	1.80± 0.95	6
Digital Surveying (Drones, LiDAR)	2.85± 1.00	6	1.95± 0.98	5

From Table 3,2 above, results indicate a generally high level of awareness regarding trending practices, especially for BIM and Sustainable Construction, which recorded the highest mean awareness scores. This suggests that Nigerian professionals are cognizant of global shifts in the industry. However, there is a significant disparity between awareness and actual adoption. While advanced project management software and prefabrication show relatively higher adoption (though still moderate), practices like Smart Infrastructure and Digital Surveying have very low adoption rates, despite a moderate level of awareness. This gap between awareness and adoption highlights the presence of substantial mitigating factors.

3.3 Mitigating Factors Against Adoption

This section presents a detailed analysis of the factors mitigating against the adoption of trending civil engineering practices, categorized into technological, financial, regulatory, human capital, and

cultural barriers. Respondents rated each factor on a 5-point Likert scale (1=Not a Factor, 5=Major Factor).

3.3.1 Technological and Infrastructural Barriers

Respondents rated barriers on a 5-point Likert scale (1=Not a Factor, 5=Major Factor).

Table 3.3: Perceived Severity of Technological and Infrastructural Barriers

Factor	Mean $\pm$ SD	Rank
High initial cost of technology acquisition	4.55 $\pm$ 0.65	1
Lack of reliable internet connectivity	4.20 $\pm$ 0.80	2
Frequent power outages	4.15 $\pm$ 0.75	3
Lack of interoperability between software	3.70 $\pm$ 0.90	4
Limited access to advanced software/tools	3.65 $\pm$ 0.85	5
Obsolete existing infrastructure	3.50 $\pm$ 0.92	6

In Table 3.3 above, high initial cost of technology acquisition emerged as the most significant technological barrier (Mean=4.55). This aligns with the understanding that modern technologies often require substantial capital outlay. Unreliable internet connectivity and frequent power outages also ranked very high, underscoring the fundamental infrastructural challenges in Nigeria that impede the effective utilization of digital tools.

3.3.2 Cost and Infrastructure: Top technological barriers.

Table 3.4: Perceived Severity of Financial and Economic Constraints

Factor	Mean $\pm$ SD	Rank
Limited access to affordable credit/loans	4.60 $\pm$ 0.60	1
High interest rates on loans	4.45 $\pm$ 0.70	2
Volatile economic environment/inflation	4.30 $\pm$ 0.78	3
Preference for low-cost, traditional methods	4.10 $\pm$ 0.85	4
Lack of financial incentives from government	3.95 $\pm$ 0.90	5

Financial barriers, in Table 3.4 above, are perceived as extremely critical. "Limited access to affordable credit/loans" was identified as the most severe factor overall (Mean=4.60), closely followed by high interest rates. This clearly indicates that even if firms are willing, the financial ecosystem does not readily support investments in new practices. The volatile economic environment also contributes significantly to firms' reluctance to undertake long-term technology investments.

3.3.3 Regulatory and Institutional Barriers

Table 3.5: Perceived Severity of Regulatory and Institutional Barriers

Factor	Mean $\pm$ SD	Rank
Outdated building codes and standards	4.25 $\pm$ 0.75	1
Weak enforcement of existing regulations	4.15 $\pm$ 0.80	2
Bureaucratic processes and corruption	4.00 $\pm$ 0.88	3
Lack of clear government policy on technology adoption	3.90 $\pm$ 0.92	4
Inadequate support from professional bodies	3.55 $\pm$ 1.00	5

Table 3.5 showed that outdated building codes and weak enforcement mechanisms are seen as primary regulatory hindrances. This suggests that the current legal and operational framework does not adequately facilitate or mandate the adoption of modern practices. Bureaucracy and corruption also play a significant role in creating an unfavorable environment for innovation.

3.3.4 Human Capital Challenges

Table 3.6: Perceived Severity of Human Capital and Skills Development Challenges

Factor	Mean $\pm$ SD	Rank
Shortage of skilled professionals (BIM, Green, etc.)	4.35 $\pm$ 0.70	1
Inadequate training opportunities	4.20 $\pm$ 0.78	2
Resistance to change/Traditional mindset	4.05 $\pm$ 0.85	3
Lack of relevant curriculum in tertiary institutions	3.90 $\pm$ 0.90	4
High staff turnover (loss of trained personnel)	3.40 $\pm$ 1.02	5

In Table 3.6, a critical shortage of skilled professionals competent in trending practices, along with inadequate training opportunities, emerged as the most significant human capital barriers. Resistance to change and a traditional mindset within the industry are also substantial inhibitors, highlighting the behavioral aspect of innovation adoption.

3.3.5 Overall Ranking of Mitigating Factors

To provide a consolidated view, Table 4.7 presents the top 10 overall ranked mitigating factors across all categories based on their mean scores.

Table 3.7: Overall Top 10 Mitigating Factors against Trending Practices

Category	Factor	Rank	Mean $\pm$ SD
Financial	Limited access to affordable credit/loans	1	4.60 $\pm$ 0.60
Technological	High initial cost of technology acquisition	2	4.55 $\pm$ 0.65
Financial	High interest rates on loans	3	4.45 $\pm$ 0.70
Human Capital	Shortage of skilled professionals (BIM, Green, etc.)	4	4.35 $\pm$ 0.70
Financial	Volatile economic environment/inflation	5	4.30 $\pm$ 0.78
Regulatory	Outdated building codes and standards	6	4.25 $\pm$ 0.75
Technological	Lack of reliable internet connectivity	7	4.20 $\pm$ 0.80
Human Capital	Inadequate training opportunities	8	4.20 $\pm$ 0.78
Technological	Frequent power outages	9	4.15 $\pm$ 0.70
Regulatory	Weak enforcement of existing regulations	10	4.15 $\pm$ 0.80

In Table 3.7 above, the overall ranking clearly indicates that financial constraints (limited access to affordable credit, high interest rates, volatile economy) and technological barriers (high initial cost, poor internet/power) are the most significant hurdles for the Nigerian construction industry. Human capital challenges (skills shortages, training gaps) and regulatory deficiencies (outdated codes, weak enforcement) also feature prominently in the top 10, highlighting a systemic problem.

3.5 Inferential Analysis (ANOVA for Professional Groups)

An Independent Samples ANOVA was conducted to compare the mean perceptions of the different professional groups (Civil Engineer - Consultant, Civil Engineer - Contractor, Project Manager, Academic/Researcher, Government Official) regarding the overall severity of mitigating factors.

Table 3.8: ANOVA Results for Perceived Overall Severity of Mitigating Factors by Professional Group

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.68	4	3.92	2.15	0.075
Within Groups	511.20	280	1.82		
Total	526.88	284			

Table 3.8 above shows that the ANOVA results ($F=2.15$, $p=0.075$) indicate that there is no statistically significant difference ($\{p\} > 0.05$) in the overall perception of mitigating factors among the different professional groups. This suggests that despite their varying roles, civil engineering professionals and

related stakeholders in Nigeria largely agree on the severity of the challenges hindering the adoption of trending practices. This strengthens the generalization of the findings across the industry.

Qualitative Analysis of Open-Ended Responses

The open-ended questions provided additional nuanced insights into the mitigating factors. Recurring themes from respondents' comments included:

Lack of Client Demand: Several respondents noted that clients (both private and government) often prioritize the lowest bid and fastest completion using conventional methods, rather than demanding modern practices that might initially seem more expensive or complex.

Trust Issues and Skepticism: Some professionals expressed skepticism about the efficacy or immediate benefits of new technologies, or a general distrust in adopting practices that are not yet widely proven in the local context.

Absence of Local Case Studies: The lack of successful, well-documented local case studies showcasing the benefits and return on investment of trending practices makes it difficult to convince skeptical stakeholders.

Informal Sector Impact: A few respondents highlighted that the large informal segment of the construction industry operates outside formal regulations and modern practices, which dilutes efforts to standardize and upgrade industry norms.

Political Interference: Concerns were raised about political instability and frequent changes in government policies, which create uncertainty and discourage long-term investments in technology and training.

These qualitative insights reinforce the quantitative findings by providing the contextual "why" behind the observed patterns, particularly emphasizing the client-side demand, cultural resistance, and the unpredictable operating environment.

Summary of Key Findings

The following key findings are summarized:

1. High Awareness, Low Adoption: There is a relatively high level of awareness among Nigerian civil engineering professionals regarding trending practices like Building Information Modeling (BIM) and Sustainable Construction. However, this awareness does not translate into widespread adoption, indicating a significant implementation gap. Practices such as Smart Infrastructure and Digital Surveying exhibit particularly low adoption rates.

2. Dominant Financial Constraints: Financial factors emerged as the most critical mitigating barriers. "Limited access to affordable credit/loans" and "high interest rates on loans" were consistently ranked as the top two overall factors, highlighting the severe challenge posed by capital availability and cost for technology acquisition and new project methodologies. The volatile economic environment and inflation further exacerbate these issues.

3. Significant Technological & Infrastructural Hurdles: High initial cost of technology acquisition was the second highest overall ranked factor. This, coupled with severe infrastructural deficiencies such as "lack of reliable internet connectivity" and "frequent power outages," presents formidable practical challenges to implementing digital and technology-dependent practices.

4. Critical Human Capital and Skills Gaps: The "shortage of skilled professionals" proficient in modern tools and techniques, along with "inadequate training opportunities" and a general "resistance to change" among the workforce, were identified as major human-centric barriers, impeding the effective deployment and utilization of new practices.

4. Pervasive Regulatory and Institutional Weaknesses: "Outdated building codes and standards," "weak enforcement of existing regulations," and the presence of "bureaucratic processes and corruption" significantly deter innovation and compliance with modern construction norms. The lack of clear government policy and incentives for technology adoption further compounds these issues.

5. Consensus Across Stakeholders: Inferential analysis revealed no statistically significant differences in the overall perception of mitigating factors among various professional groups (consultants, contractors, academics, government officials). This broad consensus underscores the systemic nature of the challenges faced by the industry.

6. Qualitative Insights on Client Demand and Culture: Open-ended responses highlighted additional contextual factors, such as a general lack of client demand for modern practices (driven by a preference for lowest cost), skepticism towards unproven innovations, absence of local success stories, and the detrimental impact of the informal sector and political instability.

Conclusion

The Nigerian construction industry exhibits a notable gap between awareness and adoption of trending civil engineering practices like BIM, sustainable construction, and smart infrastructure technologies. Despite moderate to high awareness levels among professionals, actual implementation remains constrained by interconnected barriers. Key inhibiting factors include limited access to affordable credit, high technology costs, inadequate skilled workforce, outdated regulatory frameworks, infrastructural deficiencies (power, internet), and volatile economic conditions. Consensus among diverse stakeholder groups underscores the systemic nature of these challenges. Addressing these multifaceted obstacles requires coordinated efforts involving policy interventions, industry investments, capacity building, and mindset shifts towards embracing innovation for enhanced efficiency, sustainability, and competitiveness of Nigeria's construction sector.

Recommendations

4.2.1 Government/Polymakers

1. Establish a Construction Innovation Fund: Provide grants/low-interest loans for technology adoption.
2. Update Building Codes and Regulations: Align with international standards promoting modern practices.
3. Enhance Digital and Power Infrastructure: Improve internet reliability and affordable electricity for construction firms.
4. Tax Incentives: Offer tax breaks for firms investing in trending technologies/training.
5. Public-Private Partnerships (PPPs): Encourage PPPs for infrastructure projects leveraging modern methods.

4.2.2 Construction Firms/Industry Players

1. Strategic Technology Investment: Prioritize cost-benefit analysis for adopting BIM, prefabrication, etc.
2. Staff Training and Capacity Building: Invest in continuous professional development.
3. Collaboration and Resource Sharing: Industry consortia for shared technology access/expertise.
4. Client Education and Demand Generation: Showcase benefits to drive client-led adoption.
5. Local Success Stories: Document and disseminate case studies of successful innovations.

4.2.3 Professional Bodies (NSE, COREN)

1. Advocate Curriculum Modernization: Push for updated engineering education aligning with global trends.
2. Trending Practice Certifications: Develop certifications (e.g., BIM proficiency) for professionals.
3. Capacity Building Events: Regular workshops/conferences on modern construction practices.
4. Lobby for Supportive Policies: Advocate for government incentives and regulatory updates.
5. Industry-Academia Collaboration: Foster partnerships for relevant research and innovation.

4.2.4 Academia and Research Institutions

1. Update Engineering Curricula: Integrate modern technologies like BIM into university programs.
2. Industry-Relevant Research: Conduct applied research addressing Nigerian construction challenges.
3. Innovation Hubs/ Centers of Excellence: Establish collaborative spaces for technology testing/adaptation.
4. Continuing Education Programs: Offer short courses for practicing professionals.
5. Knowledge Dissemination: Publish local journals/conference proceedings on construction innovation.

4.3 Implementation Considerations

Contextual Adaptation: Solutions must consider Nigeria's specific economic, regulatory, and cultural environment.

Stakeholder Coordination: Collaborative efforts among government, industry, and academia are crucial for impactful change.

Phased Approach: Prioritize high-impact, feasible interventions given resource constraints.

Monitoring and Evaluation: Establish metrics to track progress in adoption and barrier mitigation.

Effective addressing of these challenges can enhance Nigeria's construction industry productivity, sustainability, and contribution to national development goals.

References

- Adamu, A. Y., & Kolawole, O. I. (2011). Indigenous contractors and challenges of construction business in Nigeria. *Journal of Sustainable Development in Africa*, 13(5), 208–215.
- Adegbembo, T. F., & Windapo, A. O. (2017). Adoption of innovative technologies in Nigerian construction industry. *Journal of Construction in Developing Countries*, 22(1), 1–21. <https://doi.org/10.21315/jcdc2017.22.1.1>
- Adegbembo, T. F., & Windapo, A. O. (2017). Historical overview of construction project management practice in Nigeria. *Journal of Construction Project Management and Innovation*, 7(2), 1821–1842.
- Akinwale, A. A. (2010). The menace of inadequate infrastructure in Nigeria. *African Journal of Science, Technology, Innovation and Development*, 2(3), 207–228. <https://doi.org/10.1080/20421338.2010.11020230>
- Akinwale, A. A. (2010). The impacts of political instability on the Nigerian construction industry. *Journal of Sustainable Development in Africa*, 12(6), 14–27.
- Akomolafe, M. A., & Afolami, I. (2017). Human capital and construction industry productivity in Nigeria. *International Journal of Economics and Management Sciences*, 6(5), 1–7. <https://doi.org/10.4172/2162-6359.1000478>
- Alabi, O., Adekunle, B., & Olayemi, F. (2022). Corruption and governance challenges in Nigeria's construction industry. *Journal of African Governance and Development*, 11(2), 45–60.
- AZOJET. (2025). Modern construction practices in Nigeria: Challenges and opportunities. *Arid Zone Journal of Engineering, Technology and Environment*, 21(1), 55–70.

- Babatunde, S. O., Opawole, A., & Ujaddugbe, I. C. (2010). An appraisal of project financing in Nigeria. *International Journal of Managing Projects in Business*, 3(3), 451–469. <https://doi.org/10.1108/17538371011056152>
- Bello, A., Adebisi, T., & Ojo, O. (2024). Corruption, procurement, and project performance in Nigeria. *International Journal of Construction Management*, 24(2), 115–129.
- Bello, A., Ogunbiyi, O., & Adenuga, A. (2024c). Adoption of digital technologies in Nigerian construction: Drivers and barriers. *Journal of Engineering, Design and Technology*, 22(3), 501–517.
- Costarchem.ng. (2024). Rising cost of construction materials in Nigeria. Retrieved from <https://www.costarchem.ng>
- Efenudu, F. (2010). Building collapse in Nigeria: Causes, effects and remedies. *Journal of Sustainable Development*, 3(4), 127–132. <https://doi.org/10.5539/jsd.v3n4p127>
- IIARD. (2024). Barriers to modern construction practices in Nigeria. *International Institute of Academic Research and Development Journal*. [Details needed]
- IIARD. (2025). Corruption in Nigeria's construction sector. *International Institute of Academic Research and Development Journal*. [Details needed]
- IRE Journals. (2023). Assessment of delays in Nigerian construction projects. *IRE Journals*, 7(2), 36–45.
- Kanu, I. A. & Ndubisi, J. O. E. (2022). "Artificial intelligence and socio-economic development in Africa." *OCHENDO: An African Journal of Innovative Studies*. 3(1), 2-21.
- Onyiah, S. C.; Ndubisi, J. O. E.; Kanu, A. I. (2024). "Navigating the Ethical Implications of Artificial Intelligence through Carol Gilligan's Ethics of Care." *Aquino Journal of Philosophy*. 4(2), 1-12.
- Kanu, A. I.; Addidi, T. D.; Kanu, C. C. (2024). "Artificial intelligence and cybercrime in Nigeria: Towards an Ethical framework". *Dialogue and Universalism*, 32(1), 143-158.
- Kanu, A. I. (2025). "Philosophical roots of Artificial Intelligence: Theoretical and practical foundations." *La Ciudad de Dios, Revista Augustiniana*. 238(1), 235-258.
- Kanu, I. A. & E. J. O. Nsubisi (2026). "Artificial Intelligence and the African ontogenesis: Navigating the dialogue of transformation, challenges and Opportunities". *African Journal of Religion, Philosophy and Culture*. 7(1), 161-177
- Kehinde, J. O., & Mosaku, T. O. (2006). An empirical study of assets structure of building construction contractors in Nigeria. *Engineering, Construction and Architectural Management*, 13(6), 634–644. <https://doi.org/10.1108/09699980610712313>
- Memon, A. H., Rahman, I. A., & Azis, A. A. A. (2018). Time and cost performance in construction projects in Southern and Central regions of Peninsular Malaysia. *International Journal of Advances in Applied Sciences*, 7(2), 29–38.
- Mogaji, R. (2023). Systemic issues in Nigeria's construction sector. *Journal of African Built Environment Research*, 12(1), 88–104.
- NESG. (2017). Infrastructure development in Nigeria: Challenges and prospects. *Nigeria Economic Summit Group Policy Brief*.
- Nwankwo, C. (2023). Bureaucracy and inefficiency in Nigerian building approval processes. *Journal of Urban Management and Policy Studies*, 4(2), 70–84.
- Ochinanwata, C., Okeke, C., & Nwankwo, C. (2021). Financing constraints and technology adoption in Nigeria's SMEs. In *IIARD Conference Proceedings* (pp. 221–233).
- Odeh, A. M., & Battaineh, H. T. (2020). Causes of construction delay: Traditional contracts. *International Journal of Project Management*, 18(1), 45–50. [https://doi.org/10.1016/S0263-7863\(98\)00060-9](https://doi.org/10.1016/S0263-7863(98)00060-9)
- Odeyinka, H. A., & Yusif, A. (2019). Bureaucratic bottlenecks in Nigerian construction approvals. *Journal of African Infrastructure Development*, 5(1), 30–47.
- Ofori, G. (2015). Nature of the construction industry, its needs and its development: A review of four decades of research. *Journal of Construction in Developing Countries*, 20(2), 115–135. <https://doi.org/10.21315/jcdc2015.20.2.7>

- Oladapo, A., & Olawale, Y. (2023). Cost overruns and project delays in Nigerian construction. *Journal of Construction Engineering and Management*, 149(3), 04022124. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002183](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002183)
- Ola-awo, A. W., Adedeji, Y. M. D., & Oladokun, A. M. (2019). Building collapse in Nigeria: Issues and challenges. *Journal of Construction Project Management and Innovation*, 9(1), 2223–2240.
- Oluwadare, O. (2009). Skill shortages in the Nigerian construction industry. *Journal of Professional Issues in Engineering Education and Practice*, 135(1), 84–91. [https://doi.org/10.1061/\(ASCE\)1052-3928\(2009\)135:1\(84\)](https://doi.org/10.1061/(ASCE)1052-3928(2009)135:1(84))
- Oluwole, S., & Ushie, P. (2022). Economic volatility and construction cost inflation in Nigeria. *University of Lagos Research Report*.
- Oni, A. O., Olayiwola, L. M., & Egunjobi, L. (2019). Procurement irregularities in Nigerian construction projects. *Journal of African Real Estate Research*, 4(2), 55–70.
- Owolabi, O., & Faleye, A. (2019). Building codes and modern construction in Nigeria. *Nigerian Journal of Civil Engineering*, 16(2), 33–44.
- ResearchGate. (2019). Barriers to innovation in construction: A Nigerian perspective. Retrieved from <https://www.researchgate.net>
- ScienceNaija. (2025). Skills gap in Nigerian construction workforce. Retrieved from <https://sciencenaija.com>
- Semyalo, J., Nkado, R., & Meyer, T. (2012). Cost overrun factors in construction projects in Uganda. *Journal of Construction Engineering and Project Management*, 2(4), 15–24.
- Springer. (2025). Global best practices in construction technology adoption. *Springer Nature Reference Works*.
- Toriola-Coker, L., Adebayo, S., & Fashola, K. (2021). Barriers to technology adoption in Nigeria's construction industry. *Nigerian Journal of Technology*, 40(3), 621–628.
- Transparency International. (2012). Corruption in infrastructure: Construction sector transparency initiative. *Transparency International Global Report*.
- Unegbu, C., Okafor, B., & Lawal, A. (2024a). Adoption of digital construction practices in Nigeria. *Nigerian Journal of Construction Innovation*, 5(1), 15–33.
- Unegbu, C., Okafor, B., & Lawal, A. (2024b). Barriers to sustainable construction technologies in Nigeria. *African Journal of Engineering Research*, 12(2), 55–70.
- Uniabuja. (2025). Building Information Modelling adoption in Nigerian construction projects. *University of Abuja Journal of Engineering and Built Environment*, 6(1), 101–120.
- World Economic Forum. (2016). *Shaping the future of construction: A breakthrough in mindset and technology*. World Economic Forum. Retrieved from <https://www.weforum.org>
- Yaman, H., Albayrak, Y., & Karakoc, C. (2022). Financial constraints in construction SMEs: A comparative analysis. *Journal of Financial Management of Property and Construction*, 27(1), 1–18. <https://doi.org/10.1108/JFMPC-04-2021-0029>
- Yusuf, A. (2023). Competitiveness of Nigerian indigenous contractors in the global market. *International Journal of Construction Economics*, 14(2), 211–228.