



BARRIERS TO THE ADOPTION OF CONSTRUCTION

CONTRACT AUDITING FOR SUSTAINABLE DEVELOPMENT

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Abstract

The construction industry is a vital driver of economic growth, yet it faces persistent challenges such as cost overruns, delays, and poor-quality deliverables, which hinder sustainable development. Construction Contract

Auditing (CCA) has emerged as a critical mechanism to address these issues by ensuring adherence to contractual terms, enhancing

transparency,

and promoting accountability.

Despite its potential, the adoption of CCA in Nigeria, particularly in government-funded projects,

remains limited due to various barriers. This study

comprehensive ly examines the

inhibitors to CCA adoption in Nigeria, focusing on their implications for sustainable development. Using a

Keywords:

construction contract auditing, sustainable development, corruption, regulatory frameworks, stakeholder resistance, resource efficiency

mixed-methods approach, data were collected from 127 construction professionals in Nigeria's north-central region and the Federal Capital Territory (FCT). The findings reveal that corruption and lack of political will (NV=1.00) and the absence of comprehensive contract auditing frameworks (NV=0.75) are the most severe barriers. Other significant inhibitors include resistance from project stakeholders and low awareness of CCA benefits. The study underscores the need for institutional strengthening, legislative reforms, and stakeholder education to overcome these barriers. By addressing these challenges, CCA can promote transparency, accountability, and resource efficiency, aligning with broader sustainable development goals. This research contributes to the literature by providing a ranking of barriers based on their severity and linking CCA to sustainable development, offering actionable insights for policymakers and industry stakeholders.

Introduction

The construction industry is a cornerstone of economic growth, contributing significantly to GDP in both developed and developing nations (Bondinuba *et al.*, 2017; Usman & Sani, 2015). However, it is plagued by persistent challenges such as cost overruns, delays, and poor-quality deliverables, which undermine project outcomes and economic sustainability. Construction contract auditing (CCA) has emerged as a critical mechanism to address these issues by ensuring adherence to contractual terms, enhancing transparency, and promoting accountability (Nalewaik, 2007; Cai *et al.*, 2012). By identifying inefficiencies and mitigating risks, CCA safeguards project delivery and aligns with broader sustainable development goals, such as resource efficiency, ethical governance, and long-term project viability (Eze *et al.*, 2021).

Despite its potential, the adoption of CCA in Nigeria remains limited, particularly in government-funded construction projects. Studies have

identified various inhibitors, including corruption, lack of political will, resistance from stakeholders, and weak regulatory frameworks (Ayine, 2019; Bondinuba *et al.*, 2017). These barriers not only hinder effective project delivery but also impede progress toward sustainable development in the construction sector. For instance, corruption and lack of accountability contribute to resource wastage, while weak frameworks undermine the institutionalization of best practices (Nwobioko *et al.*, 2022; Adamaagashi and Erezi, 2023).

This study aims to comprehensively examine the inhibitors to the adoption of CCA in Nigeria, with a focus on their implications for sustainable development. By identifying and ranking these barriers, the research provides actionable insights for policymakers and industry stakeholders to enhance transparency, accountability, and sustainability in government-funded construction projects.

LITERATURE REVIEW

The Role of Construction Contract Auditing in Sustainable Development

Construction contract auditing (CCA) plays a pivotal role in ensuring project accountability, transparency, and efficiency, which are essential for sustainable development. By verifying compliance with contractual terms and identifying areas of risk, CCA helps mitigate fraud, reduce resource wastage, and ensure that projects align with environmental and social sustainability goals (Nalewaik, 2007; Eze *et al.*, 2021; Agu, 2022). For instance, effective auditing can identify practices that lead to material wastage or non-compliance with environmental regulations, thereby promoting sustainable resource use (Cai *et al.*, 2012). Furthermore, CCA supports the United Nations Sustainable Development Goals (SDGs), particularly SDG 9 (Industry, Innovation, and Infrastructure) and SDG 16 (Peace, Justice, and Strong Institutions), by fostering transparency and ethical governance in public projects (UN, 2015).

Inhibitors to the Adoption of Construction Contract Auditing

Despite its benefits, the adoption of CCA faces significant barriers, particularly in developing countries like Nigeria. These inhibitors can be categorized into institutional, political, and technical factors.

Institutional Factors

Weak Legislative and Regulatory Frameworks

The absence of dedicated laws or policies mandating construction contract auditing (CCA) is a significant barrier to its institutionalization. In many developing countries, including Nigeria, the regulatory environment for construction projects is often fragmented and lack enforcement mechanisms (Ayine, 2019; Akpan, 2020). For instance, while countries like the United Kingdom and the United States have established comprehensive frameworks for public procurement and auditing, Nigeria's regulatory landscape remains underdeveloped, with limited emphasis on construction-specific audits (Bondinuba *et al.*, 2017; Nwobioko *et al.*, 2022). This gap in legislation creates ambiguity and inconsistency in the application of CCA. Without clear guidelines, stakeholders are often unsure of the scope, objectives, and procedures of contract auditing, leading to its underutilization (Sohail & Cavill, 2008). Furthermore, the lack of enforceable penalties for non-compliance reduces the incentive for contractors and project owners to adopt CCA practices. For example, in Ghana, the absence of a dedicated construction audit policy has been identified as a key challenge, resulting in inconsistent application and limited impact (Nwobioko *et al.*, 2022).

To address this, Nigeria could adopt a model like South Africa's *Public Audit Act*, which mandates regular audits of public projects and establishes clear guidelines for implementation (Dye & Stapenhurst, 1998). Additionally, capacity-building initiatives should be introduced to ensure that regulatory bodies have the expertise and resources to enforce compliance (Ayine, 2019).

Low Awareness and Institutional Acceptance

Another critical institutional barrier is the low awareness and acceptance of CCA among construction industry stakeholders. Many professionals, including

project managers, contractors, and policymakers, are either unaware of the benefits of CCA or perceive it as an unnecessary bureaucratic hurdle (Sohail & Cavill, 2008). This lack of awareness is particularly pronounced in developing countries, where auditing practices are often associated with punitive measures rather than value addition (Bondinuba *et al.*, 2017). For example, in Nigeria, stakeholders often view CCA as an intrusive process that disrupts project timelines and increases costs, rather than a tool for improving project outcomes (Ayine, 2019). This perception is exacerbated by the limited dissemination of success stories and best practices, which could demonstrate the tangible benefits of CCA, such as cost savings, fraud prevention, and improved project quality (Nwobioko *et al.*, 2022).

To overcome this barrier, targeted awareness campaigns and training programs are needed to educate stakeholders about the value of CCA. These initiatives should emphasize the role of CCA in promoting transparency, accountability, and sustainability, and highlight case studies where CCA has led to positive outcomes. For instance, the success of CCA in reducing cost overruns in Ghana's *Bui Dam Project* could serve as a model for Nigeria (Bondinuba *et al.*, 2017). Additionally, professional bodies and industry associations can play a key role in advocating for the adoption of CCA and integrating it into industry standards and practices (Sohail & Cavill, 2008).

Political Factors

Corruption and Lack of Political Will

Corruption is one of the most pervasive barriers to the adoption of CCA in government-funded construction projects. In Nigeria, corruption manifests in various forms, including inflated contract costs, kickbacks, and collusion between contractors and public officials (Olusegun *et al.*, 2011). These practices not only undermine the integrity of the construction process but also create a hostile environment for auditing, as corrupt actors often resist scrutiny to protect their interests (Bondinuba *et al.*, 2017). The lack of political will to enforce audit findings further exacerbates this problem. In many cases,

audit reports are ignored or suppressed, and recommendations for corrective action are not implemented (Nwobioko *et al.*, 2022). This lack of accountability sends a message that corruption will go unpunished, thereby discouraging the adoption of CCA. For instance, in South Africa, the effectiveness of auditing institutions has been hampered by political interference and the shielding of corrupt officials (Montinola & Jackman, 2002).

Addressing this barrier requires strong political leadership and a commitment to transparency and accountability. Governments must demonstrate the political will to enforce audit findings and hold corrupt actors accountable. This can be achieved through the establishment of independent anti-corruption agencies, the strengthening of audit institutions, and the promotion of a culture of integrity within the public sector (Dye & Stapenhurst, 1998; Shehu & Khairul, 2020). For example, Nigeria's *Economic and Financial Crimes Commission (EFCC)* could be empowered to investigate and prosecute cases of corruption in construction projects (Ogwiji, 2023).

Political Interference

Political interference is another significant barrier to the effectiveness of CCA. In many cases, auditing processes are influenced by political considerations, leading to biased or incomplete audits (Dye & Stapenhurst, 1998). For example, auditors may be pressured to overlook irregularities in projects that are politically sensitive or have strong backing from influential figures. This interference undermines the independence and credibility of auditing institutions, making it difficult for them to perform their functions effectively. In Nigeria, political interference has been identified as a major challenge, with audit findings often being ignored or manipulated to protect the interests of powerful stakeholders (Ayine, 2019).

To address this issue, there is a need for institutional reforms that safeguard the independence of auditing bodies. This could include measures such as fixed-term appointments for audit officials, transparent funding mechanisms,

and legal protections against political interference (Montinola & Jackman, 2002). Additionally, civil society and the media can play a key role in holding politicians and public officials accountable for their actions (Rose-Ackerman, 1999).

Technical Factors

Shortage of Skilled Auditors

The shortage of skilled auditors with the necessary technical expertise is a major barrier to the adoption of CCA. Construction auditing requires a unique combination of skills, including knowledge of construction processes, financial auditing, and risk management (Bondinuba *et al.*, 2017). However, in many developing countries, there is a lack of training programs and professional development opportunities for construction auditors, leading to a skills gap in the industry (Sohail & Cavill, 2008). For example, in Nigeria, most auditors are trained in general accounting or finance, with limited exposure to the complexities of construction projects (Ayine, 2019). This lack of expertise can result in ineffective audits that fail to identify key risks or provide actionable recommendations.

To address this barrier, targeted training programs and certification schemes for construction auditors are needed. These programs should be designed in collaboration with industry stakeholders and should cover topics such as construction project management, contract law, and risk assessment (Nwobioko *et al.*, 2022). Additionally, professional bodies can play a key role in promoting the development of construction auditing as a specialized field (Bondinuba *et al.*, 2017).

Resource Constraints

Insufficient funding and resources are another significant barrier to the implementation of robust CCA practices. Many government agencies and construction firms lack the financial resources to invest in auditing infrastructure, such as software tools, training programs, and dedicated audit teams (Sohail & Cavill, 2008). This is particularly true in developing countries, where budget constraints and competing priorities often limit the allocation of resources to auditing activities (Ayine, 2019). For example, in Ghana, the

lack of funding for auditing institutions has been identified as a key challenge, resulting in limited capacity and poor-quality audits (Nwobioko *et al.*, 2022). Similarly, in Nigeria, many government agencies rely on outdated auditing methods and lack access to modern tools and technologies, which hampers their ability to conduct effective audits (Bondinuba *et al.*, 2017).

To overcome this barrier, governments and industry stakeholders must prioritize investment in auditing infrastructure and capacity building. This could include the allocation of dedicated budgets for CCA, the adoption of modern auditing tools and technologies, and the establishment of public-private partnerships to share resources and expertise (Dye & Stapenhurst, 1998). For instance, Nigeria could learn from India's *National Financial Reporting Authority (NFRA)*, which has successfully leveraged technology to improve audit quality and efficiency (Pratama *et al.*, 2018).

METHODOLOGY

This study employed a mixed-methods approach to investigate the inhibitors to the adoption of construction contract auditing (CCA) in government-funded construction projects in Nigeria. The methodology was designed to collect both quantitative and qualitative data, ensuring a comprehensive understanding of the barriers to CCA adoption. The research design, data collection, and analysis procedures are detailed below.

The study adopted a descriptive survey design, which is well-suited for exploring the perceptions and experiences of construction professionals regarding CCA (Tan, 2011). This design allowed for the collection of quantitative data through a structured questionnaire, complemented by qualitative insights from open-ended questions. Data were collected through an online questionnaire survey, which was distributed to construction professionals in Nigeria's north-central geopolitical zone and the Federal Capital Territory (FCT). The questionnaire was divided into two sections: Section A: Collected demographic information, including profession, years of experience, and educational qualifications. While Section B: Assessed the severity of inhibitors to CCA adoption using a 5-point Likert scale (1 = Not Severe, 5 = Extremely Severe).

The questionnaire was developed based on an extensive review of literature and was pretested through a pilot survey involving 24 industry and academic experts. Feedback from the pilot survey was used to refine the questionnaire, ensuring clarity and relevance. Given the absence of a comprehensive database of construction professionals in the study area, a non-probabilistic snowball sampling technique was employed (Heckathorn, 2011). This approach involved initially contacting known professionals in the construction industry, who then referred other qualified participants. The inclusion criteria required respondents to have at least five years of experience in the construction sector, ensuring that participants had sufficient expertise to provide informed responses.

The collected data were analysed using descriptive and inferential statistics. The following steps were taken: Descriptive Statistics: Frequencies, percentages, and mean scores were calculated to summarize the demographic characteristics of respondents and their perceptions of the inhibitors to CCA adoption.

1. **Relative Importance Index (RII):** The RII was used to rank the severity of the inhibitors based on respondents' ratings. The RII was calculated using the formula:

$$RII = \frac{\sum(W \times f)}{N \times 5}$$

where W is the weight assigned to each response (1 to 5), f is the frequency of responses, and N is the total number of respondents.

2. **Normalization Value (NV):** The NV technique was used to standardize the mean scores of the inhibitors, allowing for a more accurate comparison of their severity. The NV was calculated using the formula:

$$\text{Normalised Value (NV)} = \frac{\text{Mean value of barrier} - \text{Minimum mean value}}{\text{Maximum mean value} - \text{Minimum mean value}}$$

A critical threshold of 0.60 was used to identify the most significant inhibitors (Hu et al., 2014).

Data analysis was conducted using SPSS IBM Version 20, a widely used statistical software for social science research.

The study adhered to ethical research practices, including obtaining informed consent from participants, ensuring confidentiality, and allowing respondents to withdraw from the survey at any time. The research was conducted in compliance with the ethical guidelines of the Federal University of Technology, Minna, and the University of Westminster.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Table 1: Basic information of respondents.

Variables	Option	Frequency (No)	Percentage (%)
Professionals	Engineers	68	53.6
	Architects	20	15.7
	Quantity Surveyors	39	30.7
	Total	127	100
Highest Educational Qualification	HND	28	22.0
	B.Sc/B.Tech	54	42.5
	M.SC	36	28.7
	PHD	9	6.8
	Total	127	100
Years of Experience	5 - 10 years	14	11.0
	11 - 15 years	31	24.4
	16 - 20 years	32	25.2
	> 21 years	50	39.4
	Total	127	100
Professional Affiliation	Chartered	100	78.7
	Probationer	27	21.3
	Total	127	100

The survey yielded 127 usable responses from construction professionals in Nigeria's north-central geopolitical zone and the Federal Capital Territory (FCT). The demographic profile of the respondents is summarized in Table 1. Most of the respondents were engineers (53.6%), followed by quantity surveyors (30.7%) and architects (15.7%). This distribution reflects the multidisciplinary nature of the construction industry and ensures a

comprehensive perspective on the barriers to CCA adoption. Most respondents held a Bachelor's degree (42.5%) or Master's degree (28.7%), indicating a high level of technical expertise and understanding of construction processes. A significant proportion of respondents had over 21 years of experience (39.4%), followed by those with 16–20 years (25.2%) and 11–15 years (24.4%). This extensive experience underscores the reliability of the responses. And many respondents were chartered professionals (78.7%), further validating their expertise and credibility. These demographic characteristics highlight the suitability of the respondents to provide informed insights into the barriers to CCA adoption in Nigeria's construction sector.

Evaluation of the severity of the inhibitors to adopting contract auditing practices based on a Relative Important Index (RII) and Normalised Value (NV).

The severity of the inhibitors to CCA adoption was evaluated using the Relative Importance Index (RII) and Normalized Value (NV) techniques. The results are presented in Table 2 and discussed below.

Corruption and Lack of Political Will (RII: 0.86, NV: 1.00) was identified as the most severe barrier, consistent with findings from previous studies (Bondinuba *et al.*, 2017; Nwobioko *et al.*, 2022). Corruption undermines the integrity of the construction process, while the lack of political will hinders the enforcement of audit findings. For example, inflated contract costs and collusion between contractors and public officials are common in Nigeria, creating a hostile environment for CCA (Olusegun *et al.*, 2011). Followed by Lack of Comprehensive Contract Auditing Frameworks (RII: 0.86, NV: 0.75). The absence of dedicated laws or policies mandating CCA was ranked as the second most severe barrier. This finding aligns with Ayine (2019), who highlighted the fragmented regulatory environment in Nigeria as a key challenge. Without clear guidelines, stakeholders are often unsure of the scope and procedures of CCA, leading to its underutilisation.

Resistance from Project Stakeholders (RII: 0.82, NV: 0.50) and Low Awareness and Institutional Acceptance (RII: 0.81, NV: 0.50) are considered as moderately Severe Inhibitors because Stakeholders often view CCA as intrusive and unnecessary, leading to resistance. This is particularly true in

Nigeria, where professionals may perceive auditors as threats to their autonomy or financial interests (Nalewaik, 2007). Whereas Many stakeholders lack awareness of the benefits of CCA, resulting in low adoption rates. This barrier is exacerbated by the limited dissemination of success stories and best practices (Sohail & Cavill, 2008).

Also, the inhibitors deemed less impactful include "Size/technical requirement of the project," "Cumbersomeness of applying Contract Auditing techniques," "Contractors' desire to maximise profit," and "Client requirement or influence," with the RII values ranging from 0.75 to 0.78. While these inhibitors are ranked lower, they nonetheless have high significance, considering how they can affect the practical implementation of CCA practices. For example, a project's size and technical requirements could dictate the complexity and feasibility of applying CCA techniques. In contrast, contractors' profit motives and client requirements might influence the willingness to adopt such practices.

Table 2: Ranking of the severity of the inhibitors to the adoption of contract auditing practices

Inhibitors to Adopting Contract Auditing Practices	Weight/Responses					(Σf)	Mean	SD	RII	Rank	NV ^a
	1	2	3	4	5						
Corruption and lack of political will	0	0	7	97	28	127	4.32	0.86	0.86	1	1.00 ^b
Lack of comprehensive Technical auditing framework	0	4	7	95	25	127	4.20	0.95	0.86	2	0.75 ^b
Resistance from Project stakeholders	3	4	9	80	32	127	4.08	0.92	0.82	3	0.50
Political influence and interference	3	2	11	90	22	127	4.02	0.96	0.80	5	0.37
Cumbersomeness of applying Contract Auditing techniques	1	3	5	110	8	127	3.95	1.01	0.78	9	0.23
Complexity of the project	0	5	4	108	9	127	3.93	1.01	0.79	6	0.19
Cost of applying Contract Auditing techniques	2	2	4	112	7	127	3.94	1.09	0.79	6	0.21
Client requirements or influence	4	0	5	110	8	127	3.93	0.96	0.78	9	0.19
The need to train people to implement Contract Auditing	3	2	2	115	5	127	3.92	1.03	0.79	6	0.17
Size/ technical requirement of the project	4	4	3	113	3	127	3.84	1.09	0.75	12	0
Contractors' desire to maximise profit	1	1	7	110	8	127	3.97	1.02	0.78	9	0.27
Low awareness of institutional acceptance	4	3	9	84	29	127	4.08	0.95	0.81	4	0.50

For the Normalised Value analysis, NV^a where NV^b Indicate the factors' severity based on the normalised value ≥ 0.60 .

Notwithstanding the relative ranking of the severity of inhibitors by the respondents, the Nominalised Value premised on the maximum, minimum and average mean values of 4.32 (86.40%), 3.84 (76.80%), and 4.02 (80.03%), respectively, only two inhibitors with normalised values ≥ 0.60 are “Corruption and Lack of Political will” and “Lack of comprehensive contract auditing framework” which though corresponded with the leading factors from the RII result, but however, was against its position that all the factors have a high significance in their effectiveness in hindering the adoption and deployment of CCA for GfCP.

The findings of this study have significant implications for sustainable development in Nigeria’s construction sector. By addressing the identified barriers, CCA can contribute to transparency and accountability by reducing corruption and enhancing political will can foster a culture of transparency, ensuring that public funds are used efficiently and ethically (Dye & Stapenhurst, 1998); Resource efficiency as CCA can identify and rectify practices that lead to resource wastage, promoting sustainable resource use and reducing environmental impact (Eze *et al.*, 2021); And institutional strengthening through the development of comprehensive frameworks for CCA and building stakeholder awareness can institutionalize best practices, ensuring long-term sustainability (Ayine, 2019).

The findings of this study are consistent with previous research on CCA in developing countries. For example, Bondinuba *et al.* (2017) and Nwobioko *et al.* (2022) identified corruption and weak regulatory frameworks as key barriers in Ghana and Nigeria, respectively. Similarly, Sohail and Cavill (2008) highlighted the importance of stakeholder awareness and acceptance in promoting CCA adoption. However, this study extends the existing literature by providing a ranking of barriers based on their severity and linking them to sustainable development. This approach offers actionable insights for policymakers and industry stakeholders, making a unique contribution to the field.

CONCLUSION

This study has identified and ranked the key inhibitors to the adoption of construction contract auditing (CCA) in government-funded construction projects in Nigeria, with a particular focus on their implications for sustainable development. The findings reveal that corruption and lack of political will (NV=1.00) and lack of comprehensive contract auditing frameworks (NV= 0.75) are the most severe barriers to CCA adoption. These findings align with existing literature, which highlights the pervasive impact of corruption and weak regulatory environments on auditing practices in developing countries (Bondinuba *et al.*, 2017; Nwobioko *et al.*, 2022). Additionally, resistance from project stakeholders and low awareness and institutional acceptance were identified as significant barriers, underscoring the need for targeted interventions to build stakeholder trust and awareness.

The study makes several important contributions to the field. First, it provides a ranking of barriers based on their severity, offering policymakers and industry stakeholders a clear roadmap for addressing the most critical challenges to CCA adoption. Second, it explicitly links CCA to sustainable development, demonstrating how effective auditing practices can promote transparency, accountability, and resource efficiency in the construction sector. Finally, the study highlights the importance of institutional strengthening and capacity building in overcoming the identified barriers, emphasizing the need for legislative reforms, stakeholder education, and investment in auditing infrastructure.

Future research should explore the long-term impact of CCA on project outcomes and sustainability, as well as the role of technology (e.g., blockchain, AI) in enhancing auditing efficiency and transparency. By addressing these gaps, researchers can further advance the understanding and implementation of CCA, contributing to the sustainable development of the construction sector in Nigeria and beyond.

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