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Evaluation of Cost Control Techniques in Building Projects in Nigeria

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Abstract- ***This study evaluated cost control techniques in building projects in Nigeria with emphasis on their usage, effectiveness, and the challenges affecting their implementation. A descriptive survey research design was adopted, and data were collected from quantity surveyors, project managers, and contractors using a structured questionnaire. The data were analyzed using mean score and Relative Importance Index (RII) to determine and rank the variables. Findings revealed that traditional cost control techniques such as budgeting, cost planning, and cost reporting are the most commonly used in building projects. Value engineering, cost monitoring, and budgetary control were identified as the most effective techniques. However, the study found that cost control practices are constrained by challenges such as inflation, poor project planning, and inadequate cost monitoring systems. In addition, the adoption of modern digital tools such as Building Information Modeling (BIM) remains low within the industry. The study concludes that effective cost control in building projects requires the integration of traditional methods with modern technologies and improved professional capacity. The study recommends the adoption of integrated cost control systems, continuous training of professionals, and strengthened project planning and monitoring practices.***

Keywords: Cost Control, Building Projects, Quantity Surveying, Construction Management, Nigeria

I. INTRODUCTION

The construction industry remains one of the most important drivers of economic development in any nation, contributing significantly to infrastructure provision, employment generation, and urban growth. In developing countries such as Nigeria, the building construction sector plays a particularly critical role in addressing housing deficits and expanding public infrastructure. However, despite its importance, the industry continues to experience persistent challenges related to project cost overruns, delays, and inefficiencies in financial management (Odeyinka & Yusif, 2019). Cost control is a central function in construction project management, aimed at ensuring that project expenditures are planned, monitored, and regulated within approved budgets. It involves a systematic process of estimating costs, setting budgets, tracking actual expenditures, and implementing corrective measures where deviations occur. According to Ashworth and Perera (2018), effective cost control is not only about reducing expenses but also about ensuring value for money while maintaining required quality standards throughout the project lifecycle.

In Nigeria, however, achieving effective cost control in building projects remains a major concern. Studies have shown that many construction projects exceed their initial budgets due to inadequate planning, poor financial monitoring systems, inflation, and unstable prices of building materials (Olawale & Sun, 2015). These challenges are further compounded by issues such as corruption, weak contract administration, and poor communication among project stakeholders (Alu et al., 2024). Recent empirical evidence also suggests that cost estimation inaccuracies and material price volatility significantly affect project financial performance in Nigeria's construction industry (Ejiofor & Nnadi, 2025). These factors create uncertainty in cost forecasting and often lead to financial strain on both clients and contractors. As a result, many projects either suffer abandonment or require substantial additional funding to reach completion. To address these challenges, various cost control techniques have been adopted within the

industry. Traditional methods such as budgeting, cost planning, cost reporting, and cash flow forecasting remain widely used. These techniques provide a structured framework for monitoring project expenditures and ensuring adherence to financial plans. However, their effectiveness is often limited when applied in isolation without integration with modern tools and technologies.

In recent years, the construction industry has witnessed the emergence of digital technologies aimed at improving cost management efficiency. One of the most significant innovations is Building Information Modeling (BIM), which integrates design, scheduling, and cost data into a unified digital environment. BIM enhances transparency, improves cost forecasting accuracy, and enables real-time monitoring of project financial performance (Eastman et al., 2011). Despite its advantages, the adoption of BIM and other digital tools remains relatively low in many developing countries, including Nigeria, due to limited technical capacity and high implementation costs. Furthermore, value engineering has been identified as one of the most effective cost control strategies in construction projects. It focuses on optimizing project value by improving function while minimizing unnecessary costs. Studies have shown that when properly implemented, value engineering can significantly reduce project costs without compromising quality (Olawale & Sun, 2015). Nevertheless, its application in Nigeria is still inconsistent across construction firms.

Given these persistent challenges, there is a clear need to critically evaluate the effectiveness of cost control techniques in building projects within the Nigerian construction industry. Understanding which techniques are most commonly used, how effective they are, and the constraints affecting their implementation will provide valuable insights for improving project financial performance and reducing cost overruns. Therefore, this study evaluates cost control techniques in building projects in Nigeria with a view to identifying the most effective practices and the factors limiting their successful implementation. The findings are expected to contribute to improved cost management strategies, enhanced project delivery, and better decision-making in the construction industry.

II. LITERATURE REVIEW

2.1.1 Cost control in construction projects

Cost control remains a critical function in construction project delivery, particularly in developing economies where financial uncertainties are prevalent. It involves systematic processes of planning, monitoring, and regulating project expenditures to ensure alignment with approved budgets. Recent studies emphasize that cost control is not only about limiting expenditure but also about optimizing resource utilization to achieve value for money (Amoah & Pretorius, 2022).

In the context of building projects, cost control plays a significant role in preventing budget overruns and ensuring project sustainability. According to Oke, Aigbavboa, and Thwala (2021), effective cost control mechanisms enhance decision-making by providing real-time financial insights, thereby enabling project stakeholders to take corrective actions promptly. This is particularly relevant in Nigeria, where project environments are often characterized by economic instability and fluctuating material costs.

2.1.2 Cost Control Techniques in Building Projects

Cost control techniques are essential tools used by construction professionals to manage financial resources effectively. These techniques can be broadly categorized into traditional and modern approaches. Traditional techniques such as budgeting, cost planning, and cost reporting continue to dominate practice in many developing countries due to their simplicity and familiarity. However, recent studies suggest that relying solely on these methods may not be sufficient in handling the complexities of modern construction projects (Aigbavboa et al., 2022).

Modern techniques, driven by technological advancements, have significantly improved cost control processes. One of the most impactful innovations is Building Information Modeling, which integrates cost, time, and design information into a unified system. Research shows that BIM enhances

cost accuracy, improves collaboration, and reduces financial risks in construction projects (Saka & Chan, 2020). Despite these benefits, adoption levels in Nigeria remain low due to barriers such as high costs and limited technical expertise.

2.1.3 Traditional Cost Control Methods

Traditional cost control methods remain widely used in construction projects, particularly in developing economies. Budgetary control, for instance, provides a structured framework for financial planning and expenditure tracking. Cost planning ensures that project resources are allocated efficiently, while cost reporting promotes transparency and accountability. Recent studies have reaffirmed the relevance of these traditional methods. For example, Ezeokoli et al. (2021) found that budgeting and cost reporting are still the most frequently used cost control techniques in Nigerian construction projects. However, the study also noted that these methods are often applied in isolation, limiting their overall effectiveness. While traditional methods are reliable, they tend to be reactive rather than proactive. This limitation highlights the need for integrating them with modern techniques that allow for real-time monitoring and predictive analysis.

2.1.4 Modern Cost Control Techniques in Construction

The construction industry is increasingly adopting digital technologies to enhance cost control practices. Modern techniques such as BIM, Earned Value Management (EVM), and project management software have transformed cost management processes. BIM, in particular, has gained significant attention due to its ability to provide accurate cost estimates and real-time project data. According to Saka and Chan (2020), BIM adoption improves cost predictability and reduces the likelihood of budget overruns. Similarly, Aghimien et al. (2021) highlighted that digital tools enhance efficiency and improve collaboration among project stakeholders. Earned Value Management (EVM) is another important technique that integrates cost, time, and performance metrics to provide a comprehensive view of project progress. Studies indicate that EVM enables early detection of cost deviations, allowing for timely corrective actions (Abbas et al., 2023). Despite these advancements, the adoption of modern cost control techniques in Nigeria is still limited. Factors such as lack of training, resistance to change, and inadequate technological infrastructure continue to hinder their implementation.

2.1.5 Causes of Cost Overruns in Building Projects

Cost overruns remain a major challenge in construction projects worldwide. Recent studies have identified several factors contributing to cost escalation in building projects. In Nigeria, inflation and material price fluctuations are among the most significant factors affecting project costs. A study by Ejiofor and Nnadi (2025) revealed that economic instability significantly impacts cost estimation accuracy and project financial performance. Similarly, Aghimien et al. (2020) identified poor project planning, design changes, and inadequate cost monitoring as major contributors to cost overruns. Other factors include poor communication among stakeholders, weak contract management, and lack of skilled personnel. According to Oke et al. (2021), ineffective coordination and decision-making processes further exacerbate cost control challenges in construction projects. These findings suggest that cost overruns are not caused by a single factor but rather by a combination of technical, managerial, and economic issues. Empirical studies conducted in recent years have consistently highlighted the importance of effective cost control techniques in improving project performance. Aghimien et al. (2021) found that the adoption of digital technologies significantly improves cost management efficiency in construction projects. Similarly, Abbas et al. (2023) demonstrated that integrating cost control techniques with project management tools enhances project performance and reduces financial risks. In the Nigerian context, Ezeokoli et al. (2021) reported that while traditional cost control techniques are widely used, their effectiveness is limited by external factors such as inflation and poor project planning. The study recommended the integration of modern technologies to improve cost control practices. Furthermore, recent research by Amoah and Pretorius (2022) emphasized that effective cost control requires a holistic approach that combines technical expertise, proper planning, and the use of advanced tools. These studies collectively highlight the need for continuous improvement in cost control practices to address emerging challenges in the construction industry.

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III. METHODOLOGY

This study adopted a descriptive survey design to evaluate cost control techniques in building projects in Nigeria, enabling the collection of quantitative data from construction professionals. The study covered selected states with active construction activities, and the target population comprised quantity surveyors, project managers, and contractors, with a total of 130 respondents considered. A stratified random sampling technique was used to ensure proportional representation of each professional group, with 50 questionnaires distributed to quantity surveyors, 40 to project managers, and 40 to contractors. Out of these, 110 questionnaires were retrieved, representing an overall response rate of 84.6%, which was considered adequate for analysis. Data were collected using a structured questionnaire developed from relevant literature, covering respondents' background, cost control techniques, their effectiveness, and associated challenges. The instrument was validated by experts, and reliability was confirmed using Cronbach's alpha. Data collection was conducted through both physical and online administration of questionnaires to enhance response rate. The data obtained were analyzed using mean score (MS) and Relative Importance Index (RII) to determine and rank the effectiveness of cost control techniques.

IV. RESULTS AND FINDINGS

4.1.1 Response Rate of Respondents

Table 1: Response Rate of Respondents

Category of Respondents	Number Distributed	Number Retrieved	Percentage (%)
Quantity Surveyors	50	42	84.0
Project Managers	40	33	82.5
Contractors	40	35	87.5
Total	130	110	84.6

The response rate analysis shows that out of 130 questionnaires distributed, 110 were successfully retrieved, representing an overall response rate of 84.6%. This is considered high and acceptable for survey-based research in construction management studies, indicating strong engagement from professionals in the industry. Among the respondent categories, contractors recorded the highest response rate (87.5%), suggesting their strong involvement and accessibility within active construction sites. Quantity surveyors followed closely with 84.0%, while project managers recorded 82.5%, which is still within an acceptable range. The relatively balanced response distribution across the three professional groups enhances the reliability and representativeness of the data, thereby strengthening the validity of the study's findings.

4.1.2 Cost Control Techniques Used in Building Projects

Table 2: Cost Control Techniques Used

Cost Control Technique	Mean Score (MS)	RII	Rank
Budgeting	4.52	0.90	1st
Cost Planning	4.45	0.89	2nd
Cost Reporting	4.30	0.86	3rd
Value Engineering	4.18	0.84	4th
Cash Flow Forecasting	4.05	0.81	5th
Earned Value Analysis	3.72	0.74	6th
Digital Tools (BIM)	3.40	0.68	7th

The results indicate that budgeting emerged as the most widely used cost control technique, followed closely by cost planning and cost reporting. This suggests that construction professionals in Nigeria still rely heavily on traditional financial control systems, which are straightforward, familiar, and relatively easier to implement in practice. The high ranking of budgeting and cost planning reflects their foundational role in construction cost management, as they provide the initial financial structure upon which project execution is based. Cost reporting also ranked highly, indicating that periodic financial tracking remains an important tool for monitoring project expenditure and ensuring accountability during project delivery.

However, modern cost control tools such as earned value analysis and digital technologies (including BIM) ranked lower. This indicates a limited integration of advanced technological systems in cost management practices. The low adoption of digital

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tools may be attributed to inadequate technical capacity, resistance to change, and limited investment in construction technology. Overall, the findings reveal a clear dominance of traditional cost control methods over modern digital approaches in Nigeria's construction industry.

4.1.3 Effectiveness of Cost Control Techniques

Table 3: Effectiveness of Cost Control Techniques

Cost Control Technique	Mean Score (MS)	RII	Rank
Value Engineering	4.60	0.92	1st
Cost Monitoring	4.48	0.90	2nd
Budgetary Control	4.35	0.87	3rd
Cost Reporting	4.20	0.84	4th
Cash Flow Analysis	4.08	0.82	5th
Earned Value Analysis	3.85	0.77	6th
Digital Cost Tools (BIM)	3.55	0.71	7th

The analysis shows that value engineering is perceived as the most effective cost control technique, indicating its strong influence in improving project value while reducing unnecessary costs. This finding highlights the importance of systematic cost optimization strategies that do not compromise project quality. Cost monitoring and budgetary control also ranked highly, demonstrating that continuous supervision of project expenditures and strict adherence to budgetary provisions are essential for effective cost management. These techniques allow professionals to detect cost deviations early and implement corrective actions promptly.

Cost reporting and cash flow analysis were also rated positively, suggesting that regular financial documentation and liquidity management are important components of cost control practices. However, advanced techniques such as earned value analysis and BIM-based tools recorded lower effectiveness ratings, which may reflect limited usage rather than inefficiency of the tools themselves. This indicates that effectiveness is closely linked to the level of awareness, training, and adoption within the industry.

4.1.4 Challenges Affecting Cost Control

Table 4: Challenges Affecting Cost Control

Challenges	Mean Score (MS)	RII	Rank
Inflation and Material Price Fluctuation	4.70	0.94	1st
Poor Project Planning	4.55	0.91	2nd
Inadequate Cost Monitoring	4.40	0.88	3rd
Lack of Skilled Personnel	4.25	0.85	4th
Scope Changes	4.10	0.82	5th
Poor Communication	3.95	0.79	6th
Limited Use of Technology	3.80	0.76	7th

The findings reveal that inflation and fluctuations in material prices represent the most critical challenge affecting cost control in building projects. This reflects the unstable economic environment in Nigeria, where sudden increases in material and labour costs significantly disrupt project budgets and financial planning. Poor project planning and inadequate cost monitoring also emerged as major challenges, indicating weaknesses in the early and continuous stages of project management. These issues often lead to inaccurate budgeting, poor forecasting, and eventual cost overruns. The presence of skill gaps among professionals further contributes to ineffective cost control, suggesting the need for continuous professional development and training in modern cost management techniques. Additionally, scope changes and poor communication among stakeholders were identified as contributing factors that distort cost plans during project execution.

Although limited use of technology ranked lowest among the challenges, it still indicates an underlying issue in the industry, particularly regarding the adoption of modern digital tools for cost management. Overall, the findings show that cost control challenges in Nigeria are a combination of economic instability, managerial inefficiencies, and technological limitations.

V. CONCLUSION

This study evaluated cost control techniques in building projects in Nigeria, focusing on their usage, effectiveness, and the challenges affecting their implementation. The findings reveal that traditional techniques such as budgeting, cost planning, and cost

reporting remain the most widely used methods in the construction industry. These techniques continue to dominate practice due to their simplicity and familiarity among professionals. However, despite their widespread use, the effectiveness of cost control practices is significantly constrained by challenges such as inflation, poor project planning, and inadequate cost monitoring. The study also highlights the low adoption of modern digital tools such as Building Information Modeling (BIM), indicating that the industry is still largely dependent on conventional approaches. Overall, effective cost control in building projects requires improved integration of traditional methods with modern technologies and stronger professional capacity development.

5.2 Recommendations

1. Construction professionals should combine traditional methods with modern digital tools such as BIM to improve accuracy, efficiency, and real-time cost tracking.
2. Continuous training programs should be provided for quantity surveyors, project managers, and contractors to enhance their competence in modern cost control techniques and digital technologies.
3. Greater emphasis should be placed on detailed project planning and effective cost monitoring systems to reduce cost overruns and improve financial control in building projects.

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