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Investigating Cost Management Practices on Construction Sites in Edo State, Nigeria

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Abstract

The construction industry plays a pivotal role in the economic development of regions, including Edo State, Nigeria. However, it faces numerous challenges related to cost management, which significantly impact the sustainability of construction projects. This study, therefore, explores the enhancement of cost management practices within the context of sustainable construction in Edo State. The objectives were to identify and analyse the current challenges faced by the construction industry in managing costs effectively, and to explore the opportunities for adopting effective cost management practices in the study area. A questionnaire survey was developed and conducted to a specific group of respondents. A total of one hundred stakeholders, including architects, builders, engineers, quantity surveyors and project managers from the study area, were selected using a purposive sampling technique to collect their responses. The sampling frame consisted of a list of construction professionals in the study area. The data collected from the respondents were analysed using descriptive statistics, specifically frequency tables and percentages. The study's findings revealed that corruption, poor governance, and inefficient resource allocation are significant challenges to cost management practices in Edo State. The study concluded that effective cost management practices are crucial for advancing sustainable construction in Edo State. By embracing sustainable methods and addressing barriers related to capital costs, construction projects can significantly contribute to regional development while improving overall project outcomes.

Keywords: capital Cost, Cost management, Management practices, Sustainable construction.

Introduction

The construction industry plays a vital role in the economic development of Nigeria, particularly in Edo State. The industry contributes significantly to the state's GDP and provides employment opportunities for many citizens (Isa *et al.,* 2013; Abdullahi and Bala, 2018). Effective cost management practices is crucial in construction projects including various practices such as budget estimation, cost control measures, and financial reporting (Okereke and Zakariyau (2022), Understanding these practices can help stakeholders make informed decisions that align with sustainability goals. However, the construction industry in Edo State faces numerous challenges, including inadequate infrastructure, environmental degradation, and inefficient cost management practices (Azis *et al.,* 2012; Omopariola *et al.,* 2024) These challenges hinder the industry's ability to deliver sustainable construction projects that meet the needs of the state's growing population. Edo State is one of the 36 states in Nigeria, with a population of approximately 3.5 million (Bain *et al.,* 2015). The state is richly endowed with natural resources, including oil, gas, and solid minerals (Egba *et al.,* 2023; Edo *et al.,* 2024). However, the state's infrastructure is in a state of disrepair, with many roads, bridges, and buildings needing renovation or replacement (Enoma and Idehen, 2018). According to a report, Nigeria's lack of adequate infrastructure is a significant constraint to economic growth and development (Ola, 2020; Olaseni and Alade, 2012). According to a study by Okereke and Zakariyau (2022), the lack of effective cost management practices is a significant concern in the construction industry, as it can lead to cost overruns, delays, and abandonment of projects. There is a lack of existing literature on this

topic in the study area, which highlights the importance of conducting this research. This study is significant because it will contribute to the existing knowledge on cost management practices for sustainable construction in Edo State, Nigeria. The findings of this study will provide insights into the challenges and opportunities for effective cost management practices in the state. They will inform policymakers and stakeholders on the need for effective cost management practices. According to a report by Ogunmakinde *et al*., (2022) and Willar *et al*., (2021), sustainable construction practices are essential for reducing cost, environmental impacts and promoting sustainable development. The aim is to explore cost management practices within the context of sustainable construction in Edo State. The aim of this paper will be achieved through the following objectives:

1. To identify and examine the challenges facing cost management practices on construction sites in Edo State, Nigeria.
2. To examine the role of effective cost management practices in promoting sustainable construction in the study area.
3. To explore the opportunities for adopting effective cost management practices in the study area.

Literature Review

Challenges facing cost management practices

Cost management is a crucial aspect of organisational efficiency, reflecting how effectively a company or entity can allocate resources to achieve its objectives (Okereke and Zakariyau, 2022). However, a variety of challenges hinder the implementation of effective cost management practices across different sectors. Alu, (2023) in his study, explored the key obstacles: corruption, poor governance, inefficient resource allocation, inadequate infrastructure, and environmental degradation, drawing on relevant research to highlight their impacts on cost management.

Corruption is often cited as a formidable challenge to effective cost management. It undermines the principles of fairness and transparency, leading to poor decision-making in resource allocation (Olaseni and Alade, 2012). According to a study by Nwogbo and Ighodalo (2021) corruption can increase project costs by as much as 25-30%, primarily due to bribery and mismanagement. This distortion not only affects public projects but also extends to private enterprises, where unethical practices can lead to inflated budgets and reduced accountability (Enoma and Idehen, 2018). The repercussions of corruption create an environment where cost management practices are circumvented, ultimately resulting in financial losses and reduced operational efficiency (Omopariola *et al.,* 2024)

Weak governance structures exacerbate the challenges of cost management. Governance encompasses the frameworks, processes, and relationships that regulate organizations and their interactions with stakeholders (Nwogbo and Ighodalo (2021). When governance is characterized by a lack of clarity in roles and responsibilities, it can lead to inefficiencies and increased costs. For instance, a study by the Ruddock and Ruddock (2022). demonstrated that countries with poor governance tend to experience higher levels of fiscal mismanagement, which directly affects budget accuracy and resource allocation. Effective governance is essential for establishing accountability and ensuring that resources are utilized efficiently, thereby enabling better cost management.

Inefficient resource allocation remains a significant barrier to effective cost management. Allocation inefficiencies arise when resources are not deployed where they are most needed or when they are spread too thinly across multiple projects (Ezeanokwasa *et al.,* 2024). This misallocation can lead to increased operational costs and reduced effectiveness of resource use. In their analysis, Ahmed *et al.,* (2024) noted that organizations frequently misjudge the necessary resources for projects, leading to budget overruns and project failures. As organizations strive to enhance their cost management practices, addressing resource allocation inefficiencies is critical to optimizing performance and achieving strategic objectives.

Inadequate infrastructure poses a major challenge for effective cost management, particularly in developing countries (Borowy, 2013). According to Fagbemi *et al.* (2022) and Chotia and Rao (2017), poor transportation networks, unreliable utilities, and insufficient technological infrastructure can significantly elevate operational costs. A study by Shan *et al.,* (2020) highlighted that inadequate infrastructure can

increase the operational expenses of businesses by up to 40%, limiting their competitiveness. Furthermore, inadequate infrastructure may lead to delays and inefficiencies, complicating budget management and forecasting (Iwaro and Mwasha, 2013). Addressing infrastructure deficits is essential for organizations seeking to implement robust cost management practices and enhance overall productivity.

Environmental degradation is an emerging challenge that organizations must contend with in their cost management practices (Iqbal *et al.* 2021). The implications of environmental issues, such as climate change and pollution, increasingly affect businesses' cost structures (Ruddock and Ruddock, 2022). For example, companies may face higher costs due to regulatory compliance, environmental lawsuits, or the need for costly remediation efforts. A study by the Amaral *et al.* (2020) showed that companies that integrate sustainability into their cost management practices can enhance their operational efficiency, ultimately leading to long-term financial benefits. As awareness of environmental issues continues to grow, businesses must develop strategies to mitigate environmental risks while ensuring effective cost management (Hussin *et al.* 2013).

Role of effective cost management practices

Effective cost management has emerged as a vital component in the field of construction, especially concerning sustainable practices (Shurrab *et al.,* 2019; Opoku and Ahmed, 2015). With the increasing emphasis on sustainability in construction, the integration of effective cost management practices (ECMP) has garnered significant attention (Okereke and Zakariyau, 2022). This literature review examines various studies and perspectives on the role of cost management in promoting sustainability, reducing costs, improving efficiency, and enhancing decision-making processes.

Sustainable construction encompasses various strategies, techniques, and practices aimed at minimizing the environmental impact of construction activities while promoting economic viability and social equity (Hussin *et al.* 2013). Effective cost management is essential for achieving these sustainability goals, as it helps organizations allocate resources efficiently, thereby contributing to long-term viability (Shan *et al.*, 2020). According to Okereke and Zakariyau (2022). the adoption of effective cost management practices allows construction firms to accurately estimate project costs and identify potential cost overruns. This proactive approach aids in minimizing waste and enhances resource utilization, thus supporting sustainable construction objectives. Proper cost management ensures that funds are allocated toward environmentally friendly materials and energy-efficient technologies, further promoting sustainability in construction projects (Enoma and Idehen, 2018).

One of the most significant advantages of effective cost management practices is their capacity to reduce overall project costs. A study by Alu, (2023) reveals that incorporating systematic cost control measures can lead to substantial savings in construction projects. By implementing techniques such as value engineering and life-cycle cost analysis, firms can identify areas where expenditures can be minimized without sacrificing quality. Furthermore, (Enoma and Idehen, 2018). argue that ECMP facilitates better budget forecasting and resource allocation, which translates into fewer financial surprises during project execution. This reduction in unforeseen costs ultimately enhances a firm's competitive advantage, paving the way for more sustainable financial practices within the construction industry.

Efficiency is another key benefit of effective cost management practices. Efficient operations not only save money but also lead to time savings and improved project delivery timelines. Research by Alu, (2023) highlights that implementing rigorous cost management strategies can streamline construction processes and reduce idle time. Efficient resource allocation ensures that labour and materials are utilized effectively, allowing projects to run on schedule and within budget (Ruddock and Ruddock, 2022). Moreover, the use of advanced technologies, such as Building Information Modeling (BIM) and project management software, has been shown to enhance cost management efficiency (Shan *et al.,* 2020) These tools allow project managers to visualize costs in real time, thus enabling them to make informed decisions quickly. Such efficiency not only leads to cost savings but also positively impacts sustainability, as projects can adhere more closely to environmental standards and timelines.

Effective cost management practices significantly enhance decision-making processes within construction projects. By providing accurate and timely financial data, decision-makers can assess the viability of projects and identify potential risks more effectively (Okereke and Zakariyau, 2022). Cost management systems allow for real-time tracking of expenses, which helps project managers make informed choices regarding scope changes, resource allocation, and scheduling (Amaral *et al.*, 2020). Additionally, by integrating cost management with project management practices, firms can foster a culture of accountability and transparency (Shan *et al.*, 2020). Enhanced decision-making capabilities lead to better overall project outcomes and contribute to sustainable development within the construction sector.

Opportunities for adopting effective cost management practices

Cost management is an essential aspect of organisational success, particularly in sectors that are sensitive to fluctuations in pricing and resource availability, such as construction and manufacturing (Shurrab *et al.*, 2019; Opoku and Ahmed, 2015). Effective cost management practices can not only bolster a company's profitability but also enhance its competitiveness and sustainability. This write-up explored various opportunities for adopting effective cost management practices, focusing on infrastructure development, sustainable construction, improved governance, and enhanced resource allocation.

Investing in infrastructure is a critical opportunity for organizations looking to adopt effective cost management practices (Amaral *et al.* 2020) Economically sound infrastructure lays the foundation for operational efficiency and cost reduction. According to Shurrab *et al*., (2019) nations that invest in quality infrastructure experience enhanced economic growth, which often leads to cost savings through improved logistics, transportation, and utilities management. As infrastructure development tends to widen access to resources and markets, companies can reduce operational costs associated with delays and inefficiencies (Fagbemi *et al.* (2022) and Chotia and Rao (2017). Moreover, well-planned infrastructural investments foster synergy among different cost management elements. For example, a robust transportation network can minimize logistics costs by streamlining the supply chain (Opoku and Ahmed, 2015). Therefore, organizations should approach infrastructure investment not merely as an expenditure but as a long-term cost-saving strategy.

Sustainable construction practices present another avenue for effective cost management (Shurrab, *et al.*, 2019). According to Iqbal *et al.* (2021), the global push for environmentally friendly construction methods has not only gained traction due to regulatory pressures but also because it offers long-term cost benefits. As evidenced by a study conducted by Halliday, (2008) organizations that embrace sustainability in their construction processes often witness a decrease in operating costs through energy efficiency and waste reduction. Using sustainable materials and adopting practices such as waste recycling can lead to significant cost savings over time (Ruddock and Ruddock, 2022). According to Amaral *et al.*, (2020) sustainable construction can save costs associated with energy consumption and materials procurement, and even mitigate expenses from regulatory compliance failures. Organisations aiming for effective cost management should incorporate sustainability into their operational frameworks, allowing them to gain a competitive edge while minimising their ecological footprint (Opoku and Ahmed, 2015).

Governance plays a pivotal role in the effective management of costs within organizations. Effective governance frameworks can lead to more prudent financial decision-making, risk management, and operational efficiency (Nwogbo and Ighodalo, 2021). As highlighted by Amaral *et al*., (2020) good governance practices create transparent processes that assist in aligning the organization’s objectives with its cost management strategies. Enhancements in governance can lead to better accountability and resource allocation, reducing instances of waste and mismanagement. For instance, adopting standardized procedures for cost estimation and budget allocation can help organizations streamline their processes and maintain financial discipline (Opoku and Ahmed, 2015). Therefore, focusing on improving governance should be a priority for organizations looking to harness cost management opportunities.

Effective resource allocation is central to successful cost management. Properly allocating resources, whether financial, human, or material which enables organizations to optimize their operations and reduce

unnecessary expenditures (Alu, 2023). Research by Egba *et al.,* (2023) emphasized the importance of employing data-driven approaches to resource allocation, ensuring that resources are deployed where they can yield the highest returns. For instance, utilizing data analytics to assess resource utilization can help identify areas where costs can be minimized without affecting quality or output. Additionally, organizations should consider implementing innovative technologies, such as automation and artificial intelligence, to enhance resource management (Hussin *et al.,* 2013). By embracing these technologies, organizations can optimize their labour costs and improve efficiency, ultimately leading to substantial savings.

Materials and Methods

Research design

This research took a positivist philosophical stance, which informed the use of a descriptive research survey design. According to Creswell (2014), as cited by Ishtiaq (2019), descriptive research designs describe a phenomenon or situation. This design was suitable for this study as it aims to describe the challenges and opportunities for sustainable construction in Edo State. The population of this study consists of architects, builders, engineers, project managers, and quantity surveyors in Edo State. The sampling frame was based on a list of construction professionals working in Edo State, obtained from their respective professional secretariats. A sample size was determined by selecting 30% of this sampling frame. A sample of 100 respondents was selected using a purposive sampling technique. According to Rahman (2023), purposive sampling is a non-probability sampling technique that involves selecting knowledgeable respondents about the research topic. A structured questionnaire was used to collect data from the respondents. The questionnaire was designed to gather information on the challenges facing effective cost management practices, the role of cost management practices in promoting sustainable construction and opportunities for sustainable construction in Edo State. The questionnaire was administered to the respondents through online and offline methods. The online method involved sending the questionnaire to respondents via email, while the offline method involved distributing the questionnaire to respondents in person. The administered questionnaires were all retrieved, and data collected from respondents were analysed using descriptive statistics, including frequency tables and percentages. According to Cooksey and Cooksey (2020) and Mishra *et al.,* (2019), descriptive statistics are used to summarise and describe the basic features of a dataset.

Validity and Reliability

The validity and reliability of the research instrument were ensured through a pilot study. According to Hazzi and Maldaon (2015); Gani *et al.,* (2020), a pilot study is a small-scale study conducted to test a research instrument's validity and reliability, before the main questionnaires are administered. The pilot study involved administering a questionnaire survey to ten respondents and analysing the results to ensure the instrument's validity and reliability.

Ethical Considerations

This study strictly adhered to informed consent and confidentiality principles, crucial for ethical research practices. According to Ogunsanwo and Bello (2024), informed consent involves providing participants with comprehensive information about the purpose of the study, the procedures involved, and any potential risks that may arise. This allows respondents to make an informed decision about their participation. Additionally, confidentiality plays a vital role in protecting respondents' personal information, ensuring that their identities and responses are kept secure and that their privacy is respected throughout the research process.

Results and Discussion

The findings are presented in tables, and the narratives are discussed.

Table 1: Demographic characteristics of respondents

Respondent	Frequency	Percentage
Quantity Surveyors	60	60%
Builders	20	20%
Project Managers	10	10%
Engineers	5	5%
Architects	5	5%
Total	100	100%

Source: Author's work (2025)

Table 1 presents the demographic characteristics of respondents involved in the study. The table categorises respondents into five groups: Quantity Surveyors, Builders, Project Managers, Engineers, and Architects. Quantity Surveyors constitute the majority, with 60 respondents accounting for 60% of the total; builders follow with 20 respondents (20%); Project Managers contribute 10 respondents (10%); engineers and Architects are the minor groups, each with five respondents (5%). The high percentage of Quantity Surveyors indicates they play a crucial role in the construction industry in Edo State, likely influencing cost management practices significantly. Builders, representing 20%, also have a notable presence, suggesting that their perspectives are essential in understanding the dynamics of construction costs. Project Managers, making up 10%, provide insights from the perspective of those who manage the projects, which is necessary for evaluating cost-effectiveness and sustainability. While lower at 5% each, the representation of Engineers and Architects shows that their specialised knowledge still adds value to the overall analysis. The dominance of Quantity Surveyors suggests that any cost management strategies need to consider their practices and decision-making processes. A balanced representation would ideally involve more input from Engineers and Architects to bridge the technical and design aspects with cost management. Understanding clients' perspectives is critical, as their requirements can significantly impact cost considerations. Overall, this demographic breakdown highlights the need for a comprehensive approach to cost management that incorporates insights from all stakeholder groups, mainly focusing on the most represented group: Quantity Surveyors.

Table 2: Challenges facing cost management practices in Edo State

Challenges	Frequency	Percentage
Corruption	40	40%
Poor governance	25	25%
Inefficient resource allocation	18	18%
Inadequate infrastructure	10	10%
Environmental degradation	7	7%
Total	100	100%

Source: Author's work (2025)

Table 2 analyses the challenges facing cost management practices in the study area. Corruption is the most significant challenge identified, with 40% of respondents citing it as a major issue. Corruption can lead to misallocation of funds, inflated project costs, and, ultimately, compromised quality in construction practices. Addressing this challenge is crucial for improving cost management in the sector. Poor governance comes in second; poor governance accounts for 25% of the challenges. This can encompass a lack of regulatory frameworks, inadequate enforcement of policies, and overall ineffective leadership in the construction industry. Enhancing governance structures could lead to better oversight and accountability in

cost management practices. Inefficient resource allocation is noted by 18% of respondents, indicating that resources may be ineffective, leading to wastage and increased costs. Improved planning and strategic allocation of resources could help mitigate this issue. Inadequate infrastructure, with 10% of respondents highlighting this challenge, hampers construction projects by causing delays and increasing expenses. Investment in proper infrastructure is needed to support efficient cost management. Environmental degradation is the least cited challenge, at 7%, reflecting concerns about the environmental impact of construction practices. While it may not be perceived as a primary issue compared to others, it is still significant for promoting sustainable construction practices. Addressing these issues could lead to significant advancements in cost efficiency and project outcomes in the region.

Table 3: Role of effective cost management practices in promoting sustainable construction

Role of Cost Management Practices	Frequency	Percentage
Essential for sustainable construction	45	45%
Helps to reduce costs	36	36%
Improves efficiency	12	12%
Enhances decision-making	7	7%
Total	100	100%

Source: Author's work (2025)

Table 3, titled "Role of cost management practices in promoting sustainable construction", presents data on how various cost management practices are perceived about sustainable construction in Edo State, Nigeria. Findings revealed that cost management practices are essential for sustainable construction, with the highest frequency at 45%, indicating that most respondents view cost management practices as crucial for achieving sustainable construction. Efficient cost management in construction projects can improve material utilisation and reduce waste. This not only decreases the consumption of natural resources but also lowers the environmental impact, paving the way for more sustainable construction practices. This suggests that stakeholders recognise these practices' foundational role in ensuring that construction projects are financially viable and environmentally and socially responsible. Findings revealed that cost management practices help to reduce costs, which is the second-largest response (36%), indicating that cost management practices are primarily seen as a means to cut expenses. This highlights a practical aspect of cost management, where effective budgeting and resource allocation can lead to significant savings, making projects more feasible and attractive to investors. Improves efficiency (12%), a smaller proportion (12%) acknowledges that these practices enhance operational efficiency. While still relevant, this suggests that improving efficiency is not the primary focus for most respondents compared to the other cost management roles. However, recognising efficiency is essential, contributing to overall project timelines and productivity. Enhances decision-making (7%) is the least mentioned role (7%) in improving decision-making capabilities through cost management practices. Although this is vital, it might be perceived as a secondary benefit compared to the more direct impacts of cost reduction and sustainability. It also suggests that stakeholders may not fully appreciate how cost management directly influences strategic decision-making in construction projects. In summary, the table illustrates that respondents primarily view cost management practices as essential for sustainability and cost reduction, with less emphasis on efficiency and decision-making enhancement. This may indicate areas where further education or awareness could be beneficial, particularly regarding the implications of effective cost management in construction projects.

Table 4: Opportunities for effective cost management practices in Edo State

Opportunities	Frequency	Percentage
Investing in infrastructure development	53	53%
Adopting sustainable construction practices	27	27%
Improving governance	15	15%
Enhancing resource allocation	5	5%
Total	100	100%

Source: Author's work (2025)

The table presents opportunities for effective cost management practices in the study area, categorised by frequency and percentage. Investing in infrastructure development received 53 responses; this is the most cited opportunity, indicating that most respondents believe infrastructure development is crucial for promoting sustainable construction in Edo State. This suggests that enhancing physical frameworks can lead to better sustainability outcomes. Adopting sustainable construction practices (27 responses, 27%), this opportunity ranks second, highlighting a strong interest in incorporating sustainability into construction methodologies. While not as dominant as infrastructure investment, it still represents a substantial portion of the views, emphasising a shift towards eco-friendly practices in building and development. Improving governance (15 responses, 15%) indicates some recognition of effective governance's role in enabling sustainable construction. However, it attracted fewer responses than the first two categories, suggesting it may not be as immediate a concern or that they feel governance improvements are already at some level of progress. Enhancing resource allocation (5 responses, 5%) is the least mentioned opportunity, indicating that while resource allocation is essential, it may not be viewed as a primary area for improvement or investment in the context of sustainable construction. The low frequency suggests it may be considered more of an underlying factor that supports other initiatives. Overall, the data suggests a clear prioritisation of direct investment in infrastructure and adopting sustainable practices, with governance and resource allocation viewed as less critical among the respondents. This could inform policy decisions and focus areas for stakeholders looking to promote sustainable construction in Edo State.

Implications for Policy and Practice

The study's findings affect policymakers, construction professionals, and stakeholders seeking to promote sustainable construction in Edo State. The study highlights the need for effective cost management practices and sustainable construction practices to promote sustainable development. According to Alu (2023), effective cost management practices are essential for sustainable construction, as they help to reduce costs and improve efficiency.

Contribution to the Body of Knowledge

This study contributes to the knowledge of sustainable construction in Edo State, Nigeria. The study's findings provide insights into the challenges and opportunities for sustainable construction in the state and highlight the need for effective cost management and sustainable construction practices.

Conclusion

The findings of this study highlight the challenges and opportunities for effective cost management practices in Edo State, Nigeria. The study reveals that corruption, poor governance, and inefficient resource allocation are major challenges to sustainable construction in the state. However, the study also identifies opportunities for sustainable construction, including investing in infrastructure development and adopting sustainable construction practices. The study's findings are consistent with the literature on sustainable construction, which emphasises the importance of effective cost management practices and sustainable construction practices in promoting sustainable development. Based on the findings of this study, several

recommendations are proposed to enhance cost management practices on construction sites in Edo State, Nigeria. These suggestions are directed towards policymakers, construction professionals, and stakeholders, advocating for effective cost management practices in the construction sector.

i. The policymakers should establish a supportive regulatory framework that incentivises the adoption of effective cost management practices and sustainable construction methods. This could include tax benefits or grants for projects that meet sustainability criteria.

ii. There should be collaboration among stakeholders, including government agencies, construction companies, and educational institutions. Establishing partnerships can drive innovation and share best practices in cost management, benefiting the entire sector.

iii. Construction professionals should launch awareness campaigns focused on the importance of effective cost management practices and sustainability in construction. Raising awareness among both professionals and the public can create a more supportive environment for sustainable practices.

By implementing these recommendations, effective cost management practices and sustainable construction practices can be effectively encouraged in Edo State, Nigeria.

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