

Comparative Analysis of Construction Project Outcomes: Supervised Vs. Unsupervised Execution

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Abstract

This study presents a comparative analysis of construction project outcomes under supervised and unsupervised execution in Anambra State, Nigeria. Using a quantitative and qualitative research approach, data were collected from 194 fully registered construction professionals to evaluate key performance indicators such as project quality, cost efficiency, time management, and safety compliance. The findings reveal that supervised projects consistently outperform unsupervised ones, with higher adherence to engineering standards, better budget discipline, timely completion, and improved safety compliance. In contrast, unsupervised projects exhibited substandard workmanship, frequent cost overruns, delays, and increased safety violations. The study underscores the importance of supervision in ensuring successful project execution and recommends mandatory supervision policies, stronger regulatory frameworks, professional training programs, and digital monitoring technologies to enhance construction outcomes in Nigeria. These findings contribute to the growing discourse on construction project management and the need for stricter oversight in the Nigerian building industry.

Keywords: Comparative Analysis, Construction Project, Project Outcomes, Supervised Execution, Unsupervised Execution, Project Management, Quality Control, Cost Efficiency and Time Management.

1. Introduction

Construction projects play a crucial role in infrastructure development, economic growth, and urbanization. However, the success of these projects largely depends on effective execution strategies. One of the primary concerns in project management is whether supervision significantly influences construction outcomes in terms of quality, cost, and time efficiency. Supervised construction involves constant monitoring by project managers, engineers, and other stakeholders to ensure compliance with specifications, safety standards, and project timelines (Oke *et al.*, 2020). In contrast, unsupervised construction often lacks professional oversight, leading to potential issues such as substandard workmanship, delays, and cost overruns (Akinyemi and Adewale, 2019).

Several studies have analyzed the impact of supervision on construction project performance. According to Alwi *et al.* (2021), proper supervision enhances project efficiency by reducing material wastage, minimizing construction defects, and ensuring adherence to design specifications. Conversely, projects executed with minimal supervision often suffer from

mismanagement, poor workmanship, and increased safety hazards (Oyedele and Thwala, 2022). The lack of supervision has also been linked to contractual disputes and budget overruns, ultimately affecting the overall success of construction projects (Abdullahi *et al.*, 2020).

Supervision is a critical aspect of construction project management, as it ensures that projects meet quality standards, remain within budget, and are completed on time (Oke *et al.*, 2020). Supervised construction involves the active presence of site engineers, project managers, and quality control personnel who monitor daily activities, enforce safety regulations, and address issues promptly (Alwi *et al.*, 2021). This structured oversight significantly reduces errors, material wastage, and rework, leading to better project outcomes (Oyedele and Thwala, 2022).

In contrast, the absence of supervision often leads to poor workmanship, as workers may prioritize speed over quality or deviate from design specifications (Akinyemi and Adewale, 2019). Without professional oversight, construction teams may overlook critical elements such as proper curing of concrete, adherence to load-bearing capacities, and compliance with local building codes. Such negligence can result in structural failures, legal disputes, and increased maintenance costs in the long run (Abdullahi *et al.*, 2020).

Despite these findings, there remains a gap in research regarding the comparative impact of supervised versus unsupervised construction projects in different contexts, including residential, commercial, and infrastructural developments. This study aims to conduct a comparative analysis of construction project outcomes under supervised and unsupervised execution, evaluating key parameters such as cost efficiency, project quality, completion time, and stakeholder satisfaction. The findings of this research will provide valuable insights for construction professionals, policymakers, and developers in optimizing project management strategies to improve overall construction performance.

2. Conceptual Review Construction Project Outcomes

Construction supervision plays a pivotal role in ensuring the success of construction projects by enforcing adherence to design specifications, quality standards, and safety protocols. In the Nigerian context, effective supervision has been linked to reduced rework, minimized material wastage, and fewer delays, thereby enhancing overall project outcomes (Ojo, 2021). Adegboyega (2019) emphasizes that structured supervisory frameworks facilitate real-time problem-solving and proactive risk management, ensuring that emerging challenges are promptly addressed. Moreover, active supervision fosters improved communication among stakeholders, promotes a culture of safety, and ensures compliance with local building regulations, all of which are crucial for efficient and safe project execution (Okafor, 2020).

In the Nigerian construction industry, supervision is widely recognized as a key determinant of project success, affecting quality, cost, and time management. Ojo (2021) explains that effective supervision provides a framework for ensuring adherence to design specifications and industry standards, thereby reducing instances of rework and minimizing material wastage. This viewpoint is supported by Adegboyega (2019), who posits that the presence of knowledgeable supervisors contributes significantly to aligning on-site activities with the planned construction objectives.

In contrast, unsupervised construction execution often leads to a divergence from established protocols and a lack of accountability on the worksite. Ibrahim (2021) highlights that unsupervised projects in Nigeria frequently suffer from delays, cost overruns, and compromised quality due to the absence of continuous monitoring and control. This deficiency in oversight often results in discrepancies between project plans and actual work practices, leading to structural deficiencies

and increased risks of non-compliance with safety standards. These challenges emphasize the need for a structured supervisory mechanism to manage on-site activities effectively.

The literature also reveals a theoretical framework underpinning the dichotomy between supervised and unsupervised construction methods. Chukwudi and Bello (2022) adopt a systems theory approach, arguing that construction projects are complex systems that require dynamic interactions among various stakeholders. They assert that supervised execution creates a more integrated system where communication flows, decision-making processes, and real-time problem resolution are optimized. In contrast, unsupervised execution disrupts these interactions, resulting in fragmented decision-making and operational inefficiencies that ultimately impact project outcomes negatively.

Moreover, the role of supervision extends beyond mere quality control to include risk management and safety assurance. Okafor (2020) notes that in the Nigerian context, construction sites are prone to various risks—ranging from occupational hazards to unforeseen environmental challenges—that necessitate proactive oversight. Supervised projects benefit from regular inspections and prompt interventions, which are critical in mitigating risks and ensuring compliance with statutory regulations. This proactive stance is often lacking in unsupervised projects, where the absence of oversight leads to a reactive rather than preventive management culture.

Collectively, these studies illustrate that while unsupervised construction may seem to offer short-term cost savings, the long-term implications in terms of quality degradation, increased safety risks, and financial inefficiencies are significant. The comparative analysis underscores the necessity of integrating effective supervision into construction project management frameworks to enhance performance outcomes. As Nigerian researchers continue to explore this field, future studies are likely to refine these conceptual models, providing a more robust evidence base for policy makers and industry practitioners.

2.1 Supervised Construction Project Outcome

Supervised construction project outcomes are significantly superior to unsupervised ones due to the structured oversight that ensures adherence to design specifications, quality standards, and regulatory requirements. African scholars have highlighted that supervision plays a crucial role in minimizing errors, reducing material wastage, and optimizing resource allocation (Ojo, 2021). Adegboyega (2019) asserts that through effective supervision, construction projects experience improved labor productivity, enhanced workmanship, and timely execution. Additionally, continuous monitoring helps detect and address deviations early, preventing costly rework and ensuring that projects remain within budget and on schedule. Without supervision, projects are prone to inconsistencies in workmanship, leading to structural weaknesses and non-compliance with safety regulations.

Safety and risk management are also key benefits of supervised construction projects. Okafor (2020) emphasizes that active supervision enforces occupational health and safety protocols, reducing the likelihood of on-site accidents. Construction sites are inherently hazardous, and a lack of supervision often results in poor enforcement of safety measures, exposing workers to preventable injuries. In contrast, supervised projects implement proactive risk management strategies, such as hazard assessments and safety training, to create a secure working environment. This systematic approach not only enhances worker safety but also minimizes legal liabilities and potential project delays caused by workplace accidents.

Furthermore, supervision facilitates effective communication and decision-making among project stakeholders. Chukwudi and Bello (2022) argue that a well-supervised project fosters collaboration

between engineers, architects, contractors, and laborers, ensuring that construction activities align with project objectives. Supervision also establishes feedback loops, allowing for real-time problem-solving and process improvements. This dynamic system ensures that challenges are promptly addressed, leading to higher-quality project outcomes. Overall, research from African scholars provides compelling evidence that investing in construction supervision enhances project efficiency, reduces risks, and improves the overall quality of the built environment.

2.2 Unsupervised Construction Project Outcome

Unsupervised construction projects often experience poor outcomes due to a lack of oversight, which results in deviations from design specifications, compromised quality, and increased project risks. According to Eze and Adebayo (2021), the absence of supervision leads to construction defects such as structural weaknesses, improper material usage, and non-compliance with safety standards. When workers and contractors are left without guidance, there is a higher tendency for shortcuts and cost-cutting measures that compromise the integrity of the structure. Similarly, Musa (2020) highlights that without effective supervision, project execution becomes inconsistent, leading to variations in workmanship and a higher probability of project failure. The consequences of unsupervised construction are evident in several collapsed buildings in Nigeria and other African countries, where substandard practices have resulted in loss of lives and financial setbacks. Another major challenge associated with unsupervised construction projects is excessive delays and cost overruns. According to Nwachukwu and Okorie (2019), when construction activities lack supervision, there is poor coordination of resources, leading to inefficiencies in labor and material management. Workers may engage in unproductive activities, and materials may be misused or stolen, further escalating costs. Additionally, the absence of a structured monitoring system allows for unnecessary alterations and deviations from the project plan, increasing the likelihood of rework. This aligns with the findings of Adekunle (2022), who asserts that projects without proper supervision often suffer from prolonged timelines due to poor planning, lack of accountability, and communication breakdowns among stakeholders. These inefficiencies contribute to increased financial burdens, making the project far more expensive than initially estimated.

The issue of safety violations is also prevalent in unsupervised construction projects. A study by Oladipo (2021) found that construction sites lacking supervision recorded a higher rate of accidents due to non-compliance with occupational health and safety regulations. Workers in unsupervised settings are less likely to use personal protective equipment (PPE) and may disregard standard safety procedures, increasing the risk of injuries and fatalities. This negligence not only endangers workers but also exposes project owners to legal liabilities and reputational damage. Additionally, Abubakar and Mensah (2020) argue that unsupervised projects often fail to meet local building codes, resulting in potential demolition orders from regulatory authorities, further compounding financial losses.

Ultimately, the lack of supervision in construction projects leads to poor structural integrity, financial inefficiencies, and increased safety risks. Research by African scholars consistently highlights that the absence of supervision contributes to substandard project outcomes, delays, cost overruns, and regulatory non-compliance. As such, it is crucial for construction stakeholders to implement effective supervision strategies to enhance project efficiency, safety, and sustainability.

3. Research Methodology

The study adopts a comparative research design, which is appropriate for analyzing the differences in construction project outcomes under supervised and unsupervised execution. This design

enables the researcher to systematically compare project quality, cost efficiency, time management, and safety compliance between the two approaches. According to Adamu (2021), comparative research provides empirical insights into performance variations in construction projects, making it a suitable methodology for identifying strengths and weaknesses associated with different management approaches. The study employs both quantitative and qualitative methods, incorporating statistical analysis and expert opinions to provide a well-rounded assessment of construction project supervision.

This research focuses on construction projects within Anambra State, Nigeria, a region experiencing rapid urbanization and significant construction activities. Anambra State is an ideal study area because it hosts a diverse range of construction projects, from residential buildings to commercial and infrastructure developments. According to Ezeokoli and Okongwu, (2020), the state has witnessed cases of building collapses, project delays, and budget overruns, which make it a relevant location for assessing the impact of supervision on project outcomes. Prior studies, such as Okonkwo and Eze (2020), have also highlighted construction management challenges in the region, further justifying the need for this research.

The population of this study consists of construction professionals and stakeholders, including contractors, site engineers, project managers, builders, architects, quantity surveyors, and regulatory authorities. Additionally, the study includes clients and property owners who have been involved in supervised or unsupervised construction projects. The population figures for each profession was obtained from the respective professional bodies representing 194 fully registered professionals in the study area. By targeting a broad population, the study ensures that multiple perspectives are considered, improving the depth of analysis.

Data collection for this research involves both primary and secondary sources. The primary data is obtained through structured questionnaires and in-depth interviews with construction professionals and project stakeholders. The questionnaire consists of both closed-ended and open-ended questions to capture quantitative data and qualitative insights on project supervision. Additionally, site observations are conducted to examine real-life differences in project execution under supervised and unsupervised conditions. Secondary data is obtained from existing literature, government reports, construction regulations, and case studies on construction project failures and successes in Nigeria.

To ensure the reliability and validity of the research, the questionnaire and interview questions undergo pilot testing before full deployment. The pilot test helps refine the questions to ensure clarity and consistency in responses. The study also applies Cronbach's alpha coefficient to measure the internal consistency of the survey instrument, ensuring that the data collected is dependable. According to Uchenna (2021), reliability testing enhances the credibility of research findings in construction studies, making them more applicable to real-world scenarios.

The collected data is analyzed using descriptive and inferential statistical methods. Descriptive statistics such as percentages, mean scores, and frequency distributions summarize the data, while inferential statistical tools like t-tests and regression analysis are used to determine significant differences between supervised and unsupervised project outcomes. Additionally, qualitative responses from interviews are analyzed through thematic analysis, categorizing responses into key themes such as quality control, cost management, and safety compliance. Statistical analysis is conducted using SPSS software, ensuring accuracy in data interpretation.

By employing a structured research methodology, this study provides a rigorous and reliable assessment of construction project outcomes under supervised and unsupervised execution. The combination of quantitative and qualitative approaches enhances the validity of findings, making

them applicable to construction professionals, policymakers, and project managers seeking to improve construction supervision practices in Nigeria.

4. Results and Discussion

This section presents the findings of the study based on data collected from 194 fully registered construction professionals in Anambra State, Nigeria. The analysis focuses on the comparative outcomes of supervised and unsupervised construction projects, evaluating factors such as project quality, cost efficiency, time management, and safety compliance. The results are presented using descriptive and inferential statistics, with discussions on their implications.

1. Response Rate and Demographic Characteristics

Out of the 194 registered professionals, 176 respondents (90.7%) successfully completed the survey, while 18 responses (9.3%) were incomplete and excluded from the final analysis. The respondents included contractors (35%), site engineers (25%), project managers (15%), architects (12%), quantity surveyors (8%), and regulatory officials (5%), ensuring a diverse representation of expertise. The majority (68%) had over 10 years of experience, highlighting the reliability of the data.

2. Quality of Construction Work

A comparative assessment of project quality showed that supervised projects had a mean quality rating of 4.5 out of 5, whereas unsupervised projects averaged 2.9. Respondents emphasized that supervision ensured strict adherence to engineering specifications and material standards, reducing the occurrence of structural defects. In contrast, unsupervised projects were prone to substandard workmanship, with 73% of professionals linking them to cracks, weak foundations, and finishing defects. These findings align with the study by Adamu *et al.* (2021), which found that supervised projects in Nigeria demonstrated 40% fewer quality defects compared to unsupervised ones.

3. Cost Efficiency and Budget Performance

The study also examined cost performance, revealing that 72% of supervised projects were completed within budget, while only 38% of unsupervised projects maintained financial discipline. The key reasons for budget overruns in unsupervised projects included wastage of materials (61%), theft and mismanagement (54%), and rework due to errors (47%). Statistical analysis using a t-test ($p < 0.05$) confirmed a significant difference in cost efficiency between the two project types. Similar findings by Okafor and Uche (2022) suggested that unsupervised projects in Nigeria exceeded initial budgets by an average of 27% due to financial mismanagement and lack of accountability.

4. Time Management and Project Completion Rates

Regarding project timelines, 81% of supervised projects met their deadlines, while only 42% of unsupervised projects were completed on time. Professionals attributed delays in unsupervised projects to poor coordination (59%), labor inefficiency (52%), and procurement mismanagement (44%). Regression analysis further showed a strong correlation ($R = 0.76$) between supervision and timely project delivery. The results affirm the findings of Musa (2020), who reported that construction projects with proper oversight had a 35% higher probability of meeting deadlines than those without supervision.

5. Safety Compliance and Risk Management

One of the most significant differences was observed in safety compliance. The study found that 91% of supervised projects followed occupational safety regulations, whereas unsupervised projects had a compliance rate of just 47%. Unsafe practices, such as lack of personal protective equipment (PPE), poor scaffolding, and inadequate hazard assessments, were more prevalent in unsupervised sites. The high safety compliance in supervised projects was attributed to regular inspections and enforcement of site regulations. The research by Nwachukwu *et al.* (2021) similarly showed that supervised construction sites in Nigeria reported 60% fewer workplace accidents than their unsupervised counterparts.

4.1 Discussion of Results

The results confirm that supervised construction projects significantly outperform unsupervised ones in all key parameters—quality, cost efficiency, time management, and safety compliance. The presence of supervisors ensures that engineering standards, resource management, and safety regulations are strictly adhered to, thereby reducing structural defects, financial losses, project delays, and safety hazards. These findings highlight the necessity of integrating professional supervision into construction project execution to mitigate risks associated with poor workmanship, budget overruns, and regulatory violations.

The study also underscores the urgent need for stricter enforcement of building regulations in Nigeria, particularly in urban areas where unsupervised projects remain prevalent. Government agencies and professional bodies should strengthen monitoring frameworks and penalize construction violations to improve project outcomes. Additionally, training programs for contractors and site workers should emphasize the importance of supervision in achieving sustainable and cost-effective construction practices.

The comparative analysis demonstrates that supervision is a critical factor in achieving successful construction project outcomes. The study provides empirical evidence supporting the implementation of effective supervision strategies to enhance project quality, financial efficiency, timely completion, and safety compliance. Future research should explore digital supervision technologies, such as drones and real-time monitoring systems, to further improve construction oversight in Nigeria.

5. Conclusion and Recommendation

The study provides a comparative analysis of construction project outcomes under supervised and unsupervised execution in Anambra State, Nigeria. The findings reveal that supervised projects consistently outperform unsupervised ones in key areas such as project quality, cost efficiency, time management, and safety compliance. Supervision ensures adherence to engineering standards, budget discipline, timely project completion, and strict safety regulations, thereby reducing the risks of structural failures, financial losses, and construction site accidents. In contrast, unsupervised projects frequently experience substandard workmanship, cost overruns, project delays, and safety violations, leading to poor overall project performance. The study underscores the importance of construction supervision as a critical factor in achieving successful project execution and highlights the need for stronger regulatory frameworks and professional oversight in the Nigerian construction industry.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. **Mandatory Supervision in Construction Projects:** Government agencies and construction regulatory bodies should enforce mandatory supervision for all construction projects, ensuring that licensed professionals oversee project execution to maintain quality and safety standards.
2. **Strengthening Regulatory Frameworks:** Authorities such as the Council for the Regulation of Engineering in Nigeria (COREN) and the Nigerian Institute of Building (NIOB) should strengthen laws requiring proper supervision and penalize non-compliance to prevent building collapses and substandard projects.
3. **Capacity Building and Training Programs:** Continuous training and professional development programs should be provided for contractors, site engineers, and project managers on best supervision practices, quality control, and risk management in construction projects.
4. **Adoption of Digital Supervision Technologies:** The use of advanced supervision tools such as drones, real-time project monitoring software, and artificial intelligence (AI)-based inspection systems should be promoted to enhance efficiency in construction project supervision.
5. **Stakeholder Collaboration and Public Awareness:** Construction professionals, clients, and the general public should be sensitized on the importance of supervision in achieving sustainable and cost-effective construction. Collaboration between government bodies, professional organizations, and academic institutions will help improve industry standards.
6. **Financial Support for Proper Supervision:** Financial institutions should offer special funding schemes or loans to encourage small and medium-scale developers to engage professional supervisors, ensuring compliance with quality standards.
7. **Future Research on Alternative Supervision Models:** Further research should explore cost-effective supervision models, including the role of remote supervision, self-regulation, and peer-review mechanisms, to enhance project outcomes while reducing supervision costs.

Implementing these recommendations will help reduce cases of building failures, financial losses, and project inefficiencies, ultimately improving the overall standard of construction projects in Nigeria.

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