

Effect of Price Fluctuations On Project Performance in Selected Construction Firms in FCT, Nigeria

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Abstract: *This seminar paper critically examines the effect of price fluctuations on project performance in selected construction firms in the Federal Capital Territory (FCT), Nigeria. The study focuses on four major cost components—building materials, labour, plant and equipment, and energy—and evaluates their influence on project delivery outcomes, particularly in terms of cost, time, and quality. A quantitative research design was adopted, with primary data collected through structured questionnaires administered to 150 professionals across selected construction firms. Statistical tools including regression analysis and Analysis of Variance (ANOVA) were employed to test the formulated hypotheses. The findings reveal that price fluctuations significantly affect project performance, with material price volatility emerging as the most critical factor influencing cost overruns and procurement disruptions. Labour cost fluctuations were found to affect productivity and workmanship quality, while energy cost instability significantly increased operational expenses and project delays. The regression model produced a high coefficient of determination ($R^2 = 0.957$), indicating that approximately 95.7% of variations in project performance can be explained by fluctuations in construction input costs. The study concludes that price fluctuations constitute a major risk factor in construction project management within Nigeria's volatile economic environment. It recommends the adoption of robust cost forecasting techniques, flexible contract pricing mechanisms, and improved financial risk management strategies to enhance project performance. The study contributes to existing knowledge by providing empirical evidence within the Nigerian context and offers practical insights for industry stakeholders.*

Keywords: price fluctuation, project performance, construction industry, cost overrun.

INTRODUCTION

The construction industry is widely recognized as a key driver of economic growth and development, particularly in developing countries. It provides critical infrastructure such as roads,

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housing, bridges, and public facilities that support economic activities and improve societal well-being. In Nigeria, the construction sector contributes significantly to Gross Domestic Product (GDP) and serves as a major source of employment for both skilled and unskilled labour (Oladipo, 2012). Despite its importance, the performance of construction projects in Nigeria has been consistently below expectations. Many projects are characterized by cost overruns, time delays, and quality deficiencies. These challenges not only reduce the efficiency of resource utilization but also undermine public confidence in the construction industry.

One of the most critical factors contributing to poor project performance is price fluctuation. Price fluctuation refers to the continuous and unpredictable changes in the cost of construction inputs such as materials, labour, plant and equipment, and energy. In Nigeria, these fluctuations are largely driven by macroeconomic instability, inflation, exchange rate volatility, and policy inconsistencies (Ayodele, 2021). The impact of price fluctuation on construction projects is profound. Sudden increases in material costs can disrupt procurement plans, while fluctuations in labour costs can affect workforce stability and productivity. Similarly, rising energy costs increase operational expenses, making it difficult for contractors to adhere to project budgets.

In recent years, the Nigerian construction industry has experienced heightened price volatility due to factors such as fuel subsidy removal, currency depreciation, and global supply chain disruptions. These developments have further complicated project management processes and increased the risk of project failure. Given these challenges, there is a need for a comprehensive understanding of how price fluctuations affect project performance in Nigeria's construction industry. This study therefore seeks to examine the effect of price fluctuations on project performance in selected construction firms in the Federal Capital Territory (FCT), Nigeria.

The persistent inability of construction projects in Nigeria to meet cost, time, and quality targets has become a major concern for stakeholders. Projects are frequently delayed, budgets are exceeded, and quality standards are often compromised. A key factor contributing to these issues is the instability in the prices of construction inputs. The cost of materials, labour, energy, and equipment is highly volatile, making it difficult for contractors to plan and execute projects effectively. This volatility disrupts budgeting processes, weakens cost control mechanisms, and increases the likelihood of project failure. Although previous studies have examined factors affecting project performance, limited attention has been given to the combined effect of price fluctuations across multiple cost components. Furthermore, many studies focus on macroeconomic variables without adequately addressing the direct impact of price changes on construction activities. This study addresses these gaps by examining the effect of price fluctuations on project performance in selected construction firms in the FCT.

The main objective of this study is to examine the effect of price fluctuations on project performance in selected construction firms in FCT, Nigeria. The specific objectives are to:

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- i. Examine the effect of fluctuation in the price of building materials on quality project delivery in selected construction firms in FCT, Nigeria
- ii. Ascertain the effect of fluctuation in the cost of labour on quality project delivery in selected construction firms in FCT, Nigeria
- iii. Determine the effect of variation in price of plant and equipment on quality project delivery in selected construction firms in FCT, Nigeria
- iv. Ascertain the effect of fluctuation in energy cost on quality project delivery in selected construction firms in FCT, Nigeria

Based on the objectives of the study, the following null hypothesis were raised for the study:

H01: Material price fluctuation has no significant effect on quality project delivery

H02: Labour cost fluctuation has no significant effect on quality project delivery

H03: Equipment cost fluctuation has no significant effect on quality project delivery

H04: Energy cost fluctuation has no significant effect on quality project delivery

The study is significant to key stakeholders in the construction industry—including contractors, clients, consultants, policymakers, and researchers—as it provides valuable insights into cost management practices and supports informed decision-making in project execution. It focuses specifically on selected construction firms in the Federal Capital Territory (FCT), Nigeria, examining how fluctuations in the prices of materials, labour, equipment, and energy influence project performance within this context.

LITERATURE REVIEW

This section critically examines existing literature on the relationship between price fluctuations and project performance in the construction industry. It explores key concepts, theoretical perspectives, and empirical findings relevant to the study. The review is structured into conceptual clarification, theoretical review, empirical review, and identification of literature gaps. The purpose of this section is not just to summarize previous studies, but to analyze, compare, and synthesize them in order to establish a strong academic foundation for the study.

Conceptual Review

Project Performance

Project performance is a multidimensional concept that reflects the extent to which a project achieves its predefined objectives. Traditionally, it is evaluated using the “iron triangle” of cost, time, and quality (Kerzner, 2022). A project is considered successful when it is completed within the approved budget, delivered on schedule, and meets the required quality standards. However, contemporary scholars argue that project performance extends beyond these traditional indicators to include stakeholder satisfaction, safety, sustainability, and value for money (Olanrewaju et al., 2021). This broader perspective is particularly important in construction projects where multiple

Publication of the European Centre for Research Training and Development-UK stakeholders are involved. In the Nigerian construction industry, project performance has been persistently poor. Studies indicate frequent occurrences of cost overruns, delays, and substandard quality (Akinradewo et al., 2022). These issues are often linked to weak project management practices, inadequate planning, and unstable economic conditions. Importantly, recent research highlights that price fluctuation is a major determinant of project performance, as it directly affects resource availability, cost control, and project execution (Ayodele, 2021).

Price Fluctuation

Price fluctuation refers to the continuous variation—either increase or decrease—in the prices of goods and services over time due to changes in market conditions (Tardi & Ganti, 2022). In the construction industry, price fluctuations primarily affect materials, labour, equipment, and energy. These fluctuations are driven by several factors, including Inflation, Exchange rate volatility, Supply and demand dynamics, Government policies and Global economic. In developing economies like Nigeria, price fluctuations are more severe due to economic instability and heavy dependence on imported construction materials (CBN, 2024). Price fluctuation introduces uncertainty into project planning and budgeting. Contractors often struggle to predict costs accurately, leading to financial risks and project disruptions. As noted by Myers (2020), persistent price volatility reduces contractors' ability to maintain profitability and deliver projects efficiently.

Price of Building Materials and Project Performance

Building materials constitute a significant portion of construction project costs, often accounting for 50–70% of total project expenditure. As such, fluctuations in material prices have a direct and substantial impact on project performance. In Nigeria, the prices of key materials such as cement, steel, and aggregates are highly volatile due to inflation, transportation costs, and exchange rate fluctuations. Studies show that material price increases often lead to Cost overruns, Project delays and use of lower-quality substitutes. Adebayo et al. (2022) observed that contractors frequently resort to material substitution when faced with rising costs, which negatively affects project quality. Similarly, Love et al. (2020) found that material price instability complicates procurement planning and disrupts project schedules. Thus, material price fluctuation remains one of the most critical challenges affecting construction project performance.

Labour Cost Fluctuation and Project Performance

Labour is another essential component of construction projects, and its cost is influenced by factors such as wage policies, skill availability, inflation, and productivity levels. Labour cost fluctuation affects project performance in several ways such as Increased labour costs can lead to budget overruns; Labour shortages can cause delays as well as reduced workforce quality can affect project outcomes. According to Salihu et al. (2021), labour cost overruns are a major contributor to construction project delays in Nigeria. Similarly, Oke et al. (2020) found that fluctuations in labour costs often force contractors to reduce workforce size or hire less skilled workers, leading

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to compromised quality. In addition, labour productivity is closely linked to cost efficiency. Poor productivity increases project duration and overall cost, thereby affecting performance.

Plant and Equipment Cost Fluctuation

Construction projects rely heavily on machinery and equipment for efficient execution. The cost of plant and equipment is influenced by exchange rates, fuel prices, maintenance costs, and import duties. Fluctuations in equipment costs affect project performance by limiting access to modern machinery; Increasing operational costs and reducing efficiency and productivity Windapo and Moghayedi (2020) noted that high equipment costs often force contractors to use outdated machinery, which negatively affects project quality and safety. In Nigeria, where most construction equipment is imported, exchange rate depreciation significantly increases equipment costs, further complicating project execution.

Energy Cost Fluctuation and Project Performance

Energy is a critical input in construction activities, powering machinery, transportation, and material production. Fluctuations in energy costs, particularly fuel prices, have far-reaching effects on construction projects. In Nigeria, recent increases in fuel prices have significantly raised transportation and operational costs. This has led to: Increased project costs, Delays in material delivery and reduced profitability. According to the International Energy Agency (IEA, 2022), energy cost fluctuations have a cascading effect on construction costs, as they influence both production and logistics. Thus, energy cost instability is a major factor affecting construction project performance.

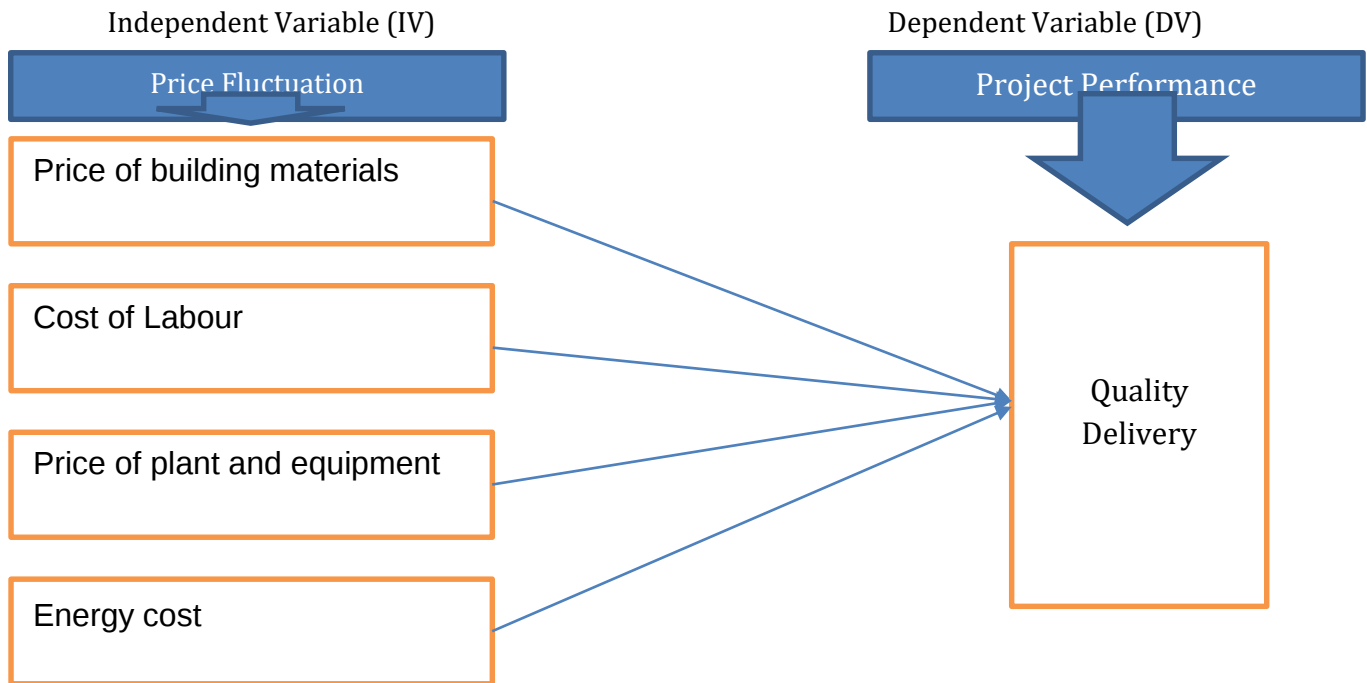


Fig. 1: Conceptual Framework on the Impact of the independent variable on dependent variable
Source: Researcher, 2026.

From the Figure 2.1, the independent variables of this study are price of building materials, cost of labour, price of plant and equipment, and energy cost. The dependent variable is project performance. As depicted in the figure above it is proposed that fluctuations in the price of building materials, fluctuations in the cost of labour, fluctuations in the price of plant and equipment, and fluctuations in energy cost all affect project performance.

Theoretical Review

Contingency Theory posits that there is no single best way to manage an organization; rather, effectiveness depends on the alignment between organizational strategies and environmental conditions (Donaldson, 2021). In the context of construction, price fluctuations represent environmental uncertainties that require adaptive management strategies. Firms that are flexible and responsive to cost changes are more likely to achieve better project outcomes. Prospect Theory explains decision-making under uncertainty, emphasizing that individuals tend to avoid losses more strongly than they pursue gains (Kahneman et al., 2021). In construction projects, managers often make decisions under price uncertainty, such as whether to proceed with procurement or delay activities. These decisions directly affect project performance. Systems Theory views construction projects as interconnected systems where changes in one component affect others

Publication of the European Centre for Research Training and Development-UK (Gibson, 2024). For example, an increase in material cost can affect labour allocation, project scheduling, and overall cost performance. This interdependence highlights the need for integrated project management approaches.

Literature Gap

Despite extensive research, several gaps were identified such as Limited focus on combined effects of multiple cost variables; Insufficient studies within the Nigerian context and the lack of emphasis on micro-level cost components. This study addresses these gaps by providing a comprehensive analysis of price fluctuations and project performance in FCT, Nigeria.

METHODOLOGY

This study employs a quantitative, cross-sectional research design to examine the effect of price fluctuations on project performance among selected construction firms in the Federal Capital Territory (FCT), Nigeria. The population of the study comprises construction professionals such as project managers, engineers, quantity surveyors, and site supervisors, from which a sample size of 150 respondents was drawn using a combination of purposive and simple random sampling techniques to ensure relevance and representativeness. Data were obtained from both primary sources, through structured questionnaires, and secondary sources, including journals, textbooks, and official reports. The instrument for data collection was a well-structured questionnaire designed on a 5-point Likert scale to capture respondents' perceptions on price fluctuations and project performance. Data collected were analyzed using descriptive statistics (such as mean and frequency) and inferential statistics, particularly regression analysis and ANOVA, to test the hypotheses and determine relationships between variables. Despite its strengths, the methodology is subject to certain limitations, including its restriction to the FCT, reliance on self-reported data, and the possibility of response bias, which may affect the generalizability of the findings.

RESULTS AND DISCUSSION

Chapter Four presents the analysis and interpretation of data collected from respondents on the effect of price fluctuations on project performance. The descriptive analysis shows that all major cost components—materials, labour, equipment, and energy—have noticeable impacts on construction projects. Among these, material price fluctuation emerged as the most significant, with respondents indicating that frequent increases in the cost of cement, steel, and other inputs disrupt procurement plans and lead to cost overruns and delays. Labour cost fluctuations were also found to affect productivity and quality, while changes in equipment and energy costs contributed to inefficiencies and increased operational expenses.

The inferential analysis, particularly the regression results, revealed a very strong relationship between price fluctuations and project performance, with a coefficient of determination ($R^2 =$

Publication of the European Centre for Research Training and Development-UK 0.957). This indicates that approximately 95.7% of the variation in project performance can be explained by fluctuations in construction input costs. The ANOVA results further confirmed that the overall model is statistically significant, meaning that the combined effect of material, labour, equipment, and energy cost fluctuations has a meaningful impact on project outcomes. All the formulated null hypotheses were rejected, showing that each of the independent variables has a significant effect on project performance.

The discussion of findings highlights that price fluctuation is a critical determinant of construction project success in Nigeria. The dominance of material price instability aligns with existing studies, while the effects of labour and energy costs reflect current economic realities such as inflation and rising fuel prices. The findings also support relevant theories, including contingency and systems theory, by demonstrating how external economic changes influence project management decisions and outcomes. Overall, the results emphasize the need for adaptive strategies, improved cost control, and effective risk management to mitigate the negative effects of price volatility on construction projects.

CONCLUSION AND RECOMMENDATIONS

This study set out to examine the effect of price fluctuations on project performance in selected construction firms in the Federal Capital Territory (FCT), Nigeria. The analysis focused on four key cost components: building materials, labour, plant and equipment, and energy. Based on the findings, it is evident that price fluctuations have a significant and pervasive impact on construction project performance. The study revealed that fluctuations in material prices are the most influential factor, followed by labour, energy, and equipment costs. These fluctuations disrupt project planning, increase costs, delay timelines, and compromise quality. The regression analysis further confirmed that price fluctuations account for a substantial proportion of variation in project performance, indicating that cost instability is a major determinant of project outcomes in the Nigerian construction industry. From a broader perspective, the study demonstrates that the challenges facing construction project performance in Nigeria are not merely managerial but are deeply rooted in the economic environment. Inflation, exchange rate volatility, and policy inconsistencies create a dynamic and uncertain cost environment that complicates project execution. In conclusion, price fluctuation is not just an operational issue but a strategic risk factor that must be proactively managed by construction firms and policymakers. Addressing this challenge is essential for improving project delivery, enhancing industry performance, and supporting national development.

Based on the findings of this study, the study recommends that construction firms adopt advanced cost forecasting techniques, such as trend analysis and predictive tools, to better anticipate and manage price fluctuations. Incorporating price adjustment or escalation clauses in construction contracts is also essential to protect contractors from unexpected increases in input costs and reduce financial risks. In addition, firms should improve their procurement planning by adopting

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strategic approaches such as bulk purchasing and early sourcing of materials to minimize the impact of rising prices. Furthermore, contractors are encouraged to diversify their sources of materials, particularly by exploring locally available alternatives, in order to reduce dependence on imported inputs and exposure to exchange rate volatility. Strengthening financial risk management practices is also crucial, including setting aside contingency funds and developing flexible budgeting systems. Investment in modern construction technologies and equipment should be prioritized to enhance efficiency and reduce long-term operational costs. Finally, government intervention is necessary through the implementation of policies aimed at stabilizing the economy, controlling inflation, and improving access to foreign exchange, thereby reducing the overall level of price volatility in the construction sector.

Suggestions for Further Studies

While this study provides valuable insights, further research Further studies should expand the scope of research beyond the Federal Capital Territory to include other regions in Nigeria in order to enhance the generalizability of findings. Future research could also examine differences between large construction firms and small and medium-sized enterprises to provide a more comprehensive industry perspective. In addition, there is a need to explore other dimensions of project performance such as safety, sustainability, and stakeholder satisfaction. Longitudinal studies are recommended to assess the long-term effects of price fluctuations over time, while further investigation into the use of digital tools and innovative technologies for managing cost volatility in construction projects would also be valuable.

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