# Unleashing Economic Reforms Ripple on Building Materials in Nigeria Construction Industry.

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## Abstract
Nigeria construction sector plays a crucial role in gross domestic product (GDP), employment, and infrastructure development; however, it is highly susceptible to macroeconomic reforms that influence the cost and availability of building materials. This study looks at how building materials, which make up more than 60% of construction expenses, are affected by economic reforms such as trade liberalization, changes to foreign exchange policy, and the elimination of fuel subsidies. A standardized and verified questionnaire was used to gather quantitative data from 217 construction experts (Cronbach's Alpha = 0.934). For analysis, descriptive statistics and Pearson's correlation were used. Results show that reforms have weakened domestic output, raised energy and transportation costs, and significantly raised the cost of imported materials. Cost overruns, project delays, and fluctuations in material prices have resulted from these disturbances. The analysis shows a substantial positive relationship between material market instability and reform actions. It concludes that whereas reforms aim for macroeconomic stability, they unintentionally cause instability in the building industry. The study emphasizes theoretical, practical, and policy implications, such as the necessity of bolstering domestic manufacturing, encouraging material innovation, and implementing stability measures to mitigate the effects of industry.

## Keywords
Building materials, Construction industry, Economic reform, Inflation, Fuel subsidy.

## 1. Introduction

Nigeria economy depends heavily on the building sector, which also significantly boosts GDP, employment, and infrastructure development. However, it is extremely vulnerable to changes in the socioeconomic environment and governmental reforms, especially when it comes to the cost and availability of building supplies (Oni et al., 2024a). The stability of building materials is crucial for project completion because they usually account for more than 60% of overall construction expenses (Akanni et al., 2014). The construction industry has been directly impacted by Nigeria economic reforms, including trade liberalization, changes to the country's foreign exchange policy, and the removal of fuel subsidies. For example, trade reforms frequently promote increased importation of goods like electrical fittings, steel, and cement additives, which can drive down prices through competition. However, local producers find it difficult to compete with lower-priced imports due to such liberalization, which weakens domestic supply chains (Oni et al., 2024a; Tope, 2024).

Foreign exchange policies are also quite important. The cost of imported inputs has skyrocketed due to the Naira's depreciation, driving up project expenses nationwide (Oladipo & Oni, 2012). For instance, the prices of aluminum and steel reinforcement, two materials that are mainly imported, have increased significantly, resulting in project delays and cost overruns. Similar to this, the elimination of fuel subsidies has raised production prices for energy-intensive industries like cement and aluminum as well as transportation costs for the distribution of commodities like cement, gravel, and blocks (Haruna et al., 2018). These measures' combined impact has resulted in ongoing volatility in building material prices and affordability. Costs are rising for developers and contractors, and government projects are going over budget. Fewer studies have looked at how macroeconomic reforms in Nigeria directly affect the markets

for building materials, even though many have studied them in general (Okonjo-Iweala & Osafo-Kwaako, 2007). Because of this disparity, a more thorough examination of how reforms alter the supply, pricing, and sustainability of building materials in Nigeria is required.

Therefore, this study aims to examine how Nigeria economic reforms have affected building materials, paying particular attention to price swings, supply issues, and their wider effects on the completion of construction projects. The study intends to offer insights that can direct planners, politicians, and industry practitioners in stabilizing the sector and advancing sustainable building by linking reform strategies to tangible market outcomes.

## 2. Literature review

Previous studies have shed light on the opportunities and difficulties associated with the interaction between economic reforms and the dynamics of Nigeria construction material markets. By connecting inflation and fiscal measures to the rising costs of commodities like cement and reinforcement bars, Akanni et al. (2014) highlight the disruptive impact of macroeconomic policies on housing deliveries in Lagos State. Their results demonstrate how the wider impacts of national economic policies are amplified by regional market conditions. Analyzing pricing changes for important inputs in Adamawa State, Haruna et al. (2018) show how national reforms and local supply chain problems combine to make material procurement more difficult, especially for cement and gravel. A more comprehensive view is provided by Oladipo and Oni (2012), who investigate how macroeconomic variables, such as trade policies and currency devaluation, raise the price of imported steel and aluminum, impacting building budgets in developing nations like Nigeria. A recurrent issue in the literature, their work highlights the sector's susceptibility to fluctuations in foreign exchange rates. In addition to this, Sanusi 2024 examines the performance implications for the construction industry, pointing out that a significant structural weakness is the over-reliance on imported items, which is a result of trade liberalization and undermines local manufacturers.

A macro-level analysis of Nigeria reform initiatives since the 1980s, including structural adjustment plans and subsidy withdrawals, is given by Okonjo-Iweala and Osafo-Kwaako (2007). They contend that although these policies are intended to increase efficiency, they unintentionally fuel material price instability. According to Haruna et al. (2018), this volatility is most noticeable in energy-intensive sectors like cement manufacturing, where the elimination of subsidies has raised operating costs. According to the literature, these reforms also make inflationary pressures worse and make it more difficult for contractors to estimate costs and plan their procurements, a problem that has not yet been fully examined. The scholarship identifies important gaps despite these contributions. Most of the research pays little attention to the combined effects of trade, energy, and fiscal policies on material markets, instead concentrating on either specific regional cost increases (Akanni et al., 2014; Haruna et al., 2018; Oni et al., 2024c) or broader macroeconomic trends (Okonjo-Iweala & Osafo-Kwaako, 2007). Although Sanusi 2024 emphasizes the necessity of measures to support local production and infrastructure resilience, there isn't a thorough framework in the literature that connects reform-induced volatility to the affordability and availability of materials. To stabilize Nigeria building material markets and promote the development of sustainable infrastructure, this assessment thus highlights the urgent need for focused research to address these interconnections.

## 2. Methodology

This study uses a quantitative research approach to examine how economic reforms affect building materials in Nigeria construction industry. This method works well for gathering quantifiable information and identifying statistical correlations between important factors like reform laws and the building materials (Oni *et al*., 2024b). Because they actively participate in the operational facets of construction management and are most likely to be impacted by macroeconomic changes, the study focuses on construction professionals, such as engineers, architects, project managers, site supervisors, and quantity surveyors. Respondents were chosen using a purposive sampling technique in accordance with their experience and participation in building projects that have been impacted by economic reforms. This guarantees that the information acquired represents well-informed viewpoints and real-world experience. The main tool for gathering data was a structured questionnaire. Demographic information and opinions regarding the effects of these reforms made up its two main sections. A 5-point Likert scale from "Strongly Disagree" to "Strongly Agree" was used to frame the questionnaire's items. The questions were taken from the body of existing literature and modified accordingly.

The questionnaire was examined by academic researchers and construction experts with knowledge of building materials and economic policy to guarantee content validity. To find any ambiguities or inconsistencies in the instrument, a pilot study with 15 participants was also carried out. The required modifications were made to improve

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clarity considering the pilot's findings. Cronbach's alpha was used to evaluate the instrument's reliability; an internal consistency threshold of 0.7 was deemed acceptable. To increase response rates, data was gathered both electronically and in person. To enable sufficient statistical analysis, a total of 200 to 250 responses were sought. After two months, 217 responses in all were collected. Both descriptive and inferential statistical analyses were performed on the gathered data. Descriptive statistics such as frequencies, means, and percentages were used to summarize the data, while inferential statistics, including Pearson's correlation, were used to explore the relationships between economic reforms and building materials. The statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS). Strict adherence to ethical standards was maintained during the entire data collection and analysis process. All participants were made aware of their right to withdraw at any time, and participation was completely voluntary. All respondents gave their informed consent, and confidentiality was guaranteed. Neither the analysis nor the results reporting contained any personal identifiers. In Nigeria high-risk construction environment, this methodological approach offers a systematic way to assess how changes in macroeconomic policy affect building materials. The study seeks to offer evidence-based insights that can support industry-level and policy-level improvements in building materials by utilizing the expertise of experts and applying rigorous statistical analysis.

## 4. Results

### 4. 1 Results (Respondents Background)

As shown in figure 1, 99.5% of the respondent's possess a diploma qualification and above, while more than 60% have bachelor's degree and above. This is an indication that the respondents are academically qualified to fill the question correctly, and this increases confidence in their responses

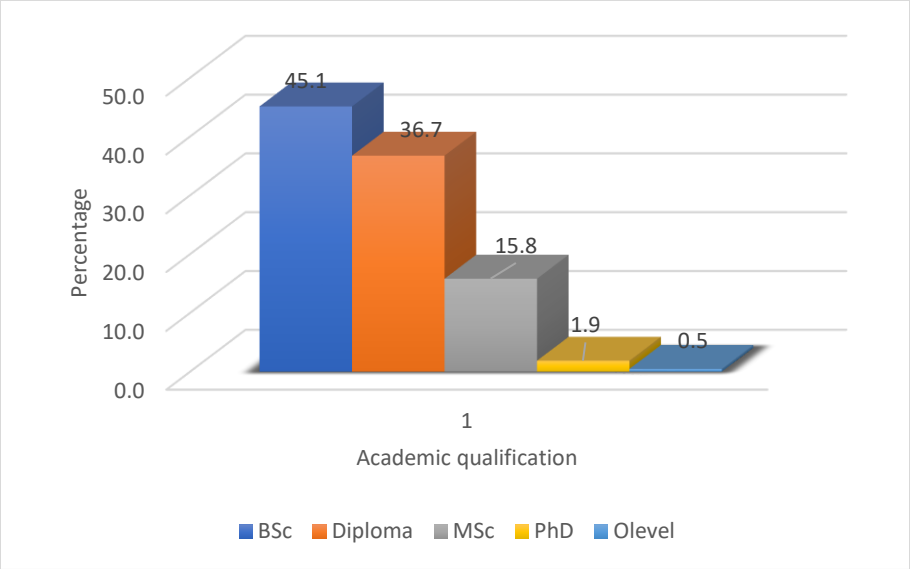


**Fig. 1.** Academic qualification

Figure 2 shows that the respondents appear to reflect a variety of roles within the organization, particularly key executives who are familiar with economic reforms and sustainable construction, this further increase the confidence in that the responses are a representative of different key designation in construction industry.

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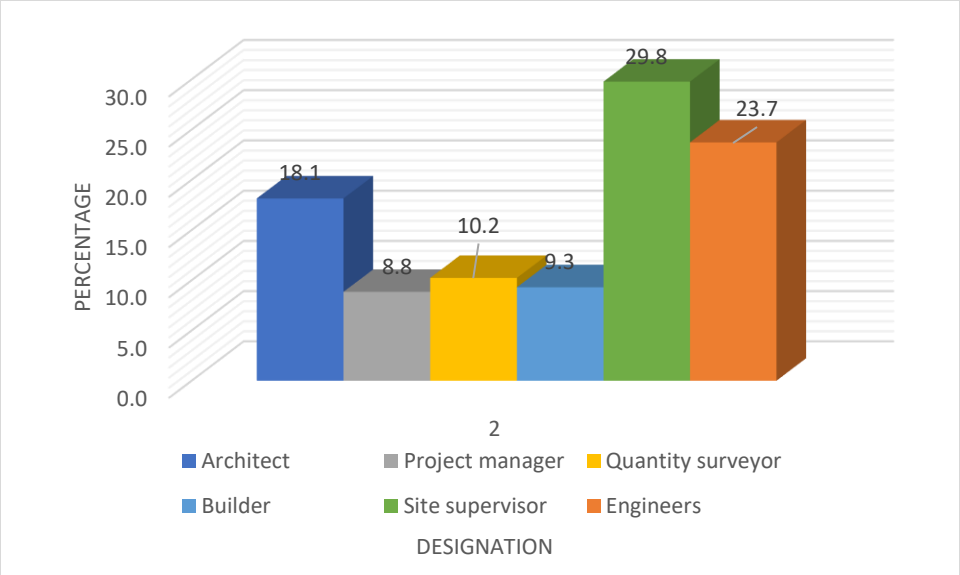


**Fig. 2.** Designation of respondents

### 4.2 Results Descriptive statistics)

As contained in Table 1, the 20 items' Cronbach's Alpha rating of 0.934 denotes exceptional internal consistency, exceeding the generally recognized cutoff point of 0.7 (Oni et al., 2024b). Similarly, strong construct validity is indicated by validity values (Sig. = 0.000) for each variable, indicating that the items measure the intended concepts in a significant way (Table 2). The validity and generalizability of later findings are improved by this high dependability, which confirms the questionnaire's strength in assessing the impact of economic reforms on building materials in Nigeria construction sector.

**Table 1:** Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| .934 | 20 |

As contained in Table 2, strong agreement among respondents is revealed by descriptive analysis, with mean scores for the majority of items topping 4.0 on a 5-point Likert scale. Serious worries about import dependency and supply chain costs are reflected in the highest-rated impacts, which include increased import material costs (M = 4.23, SD = 1.001), higher transportation costs (M = 4.22, SD = 1.189), and material price volatility (M = 4.19, SD = 0.975). These findings are consistent with those of Oladipo and Oni (2012) and Haruna et al. (2018), who connected rising steel, aluminum, and cement prices to changes in foreign exchange rates and the elimination of subsidies. On the other hand, policy uncertainty (M = 2.89) and import-related environmental effects (M = 3.19) were rated lower, indicating that short-term financial strains take precedence over long-term factors.

**Table 2:** Descriptive Statistics

| Code | Variable name | Cronbach's Alpha if Item Deleted | Validity | Mean | Std. Deviation |
|---|---|---|---|---|---|
| IBM1 | Increased Cost of Imported Materials | .930 | 0.000 | 4.23 | 1.001 |
| IBM2 | Higher Transportation Expenses | .930 | 0.000 | 4.22 | 1.189 |
| IBM3 | Volatility in Material Prices | .930 | 0.000 | 4.19 | .975 |
| IBM4 | Reduced Local Production Capacity | .930 | 0.000 | 4.15 | .972 |
| IBM5 | Inflation-Driven Cost Escalation | .930 | 0.000 | 4.15 | .946 |
| IBM6 | Supply Chain Disruptions | .929 | 0.000 | 4.14 | .949 |
| IBM7 | Elevated Energy Costs for Production | .929 | 0.000 | 4.11 | .989 |
| IBM8 | Delayed Project Timelines | .930 | 0.000 | 4.10 | .890 |
| IBM9 | Reduced Affordability for Developers | .930 | 0.000 | 4.09 | .911 |
| IBM10 | Increased Budget Overruns | .929 | 0.000 | 4.07 | .903 |

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|---|---|---|---|---|---|
| IBM11 | Shift to Substandard Materials | .930 | 0.000 | 4.06 | .918 |
| IBM12 | Weakened Indigenous Supply Chains | .929 | 0.000 | 4.06 | .870 |
| IBM13 | Higher Import Duties Variability | .930 | 0.000 | 4.03 | .879 |
| IBM14 | Reduced Investment in Local Innovation | .931 | 0.000 | 4.01 | .895 |
| IBM15 | Increased Reliance on Informal Markets | .931 | 0.000 | 4.01 | 1.225 |
| IBM16 | Erosion of Profit Margins | .932 | 0.000 | 3.97 | 1.207 |
| IBM17 | Delayed Payment to Suppliers | .931 | 0.000 | 3.91 | 1.235 |
| IBM18 | Higher Borrowing Costs | .932 | 0.000 | 3.83 | 1.258 |
| IBM19 | Environmental Impact from Imports | .935 | 0.000 | 3.19 | 1.340 |
| IBM20 | Policy Uncertainty Affecting Planning | .936 | 0.000 | 2.89 | 1.422 |

As contained in Table 3, the effects of economic reform factors (ERF1–ERF6) and building materials (IBM1–IBM20) are significantly correlated, according to Pearson correlation analysis. First ERF2–ERF6 (trade liberalization, removal of subsidies, and forex policy) show moderate-to-strong positive correlations with inflation-driven cost escalation ($r = 0.375–0.461$, $p<0.01$), increased import material costs ($r = 0.448–0.457$, $p<0.01$), and decreased developer affordability ($r = 0.320–0.468$, $p<0.01$), supporting the findings of Okonjo-Iweala and Osafo-Kwaako (2007) and Akanni et al. (2014) regarding cost pressures brought on by reform. Likewise, subsidies and forex reforms have a strong correlation with decreased local production capacity (IBM4, $r = 0.404–0.471$, $p < 0.01$) and weakened indigenous supply chains (IBM12, $r = 0.379–0.451$, $p < 0.01$), which supports Sanusi 2024 on the susceptibility of local manufacturers to imports. Furthermore, in line with Haruna et al. (2018) on planning uncertainty, ERF2–ERF6 correlates with both increased budget overruns (IBM10, $r = 0.317–0.393$, $p < 0.01$) and delayed project deadlines (IBM8, $r = 0.317–0.393$, $p < 0.01$). Finally, environmental impacts (IBM19, weak correlations) and policy uncertainty (IBM20, $r = 0.139$, $p < 0.05$) show secondary concerns, probably eclipsed by current economic difficulties.

**Table 3:** Correlation analysis

| | | ERF1 | ERF2 | ERF3 | ERF4 | ERF5 | ERF6 |
|---|---|---|---|---|---|---|---|
| IBM1 | Pearson Correlation | 0.074 | .448** | .438** | .457** | .426** | .453** |
| | Sig. (2-tailed) | 0.277 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM2 | Pearson Correlation | 0.022 | .358** | .434** | .399** | .425** | .429** |
| | Sig. (2-tailed) | 0.749 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM3 | Pearson Correlation | 0.081 | .380** | .408** | .419** | .428** | .415** |
| | Sig. (2-tailed) | 0.233 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM4 | Pearson Correlation | 0.083 | .384** | .409** | .404** | .471** | .409** |
| | Sig. (2-tailed) | 0.225 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM5 | Pearson Correlation | 0.061 | .375** | .390** | .401** | .461** | .451** |
| | Sig. (2-tailed) | 0.375 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM6 | Pearson Correlation | .168* | .330** | .404** | .414** | .435** | .418** |
| | Sig. (2-tailed) | 0.013 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM7 | Pearson Correlation | .141* | .321** | .385** | .319** | .415** | .354** |
| | Sig. (2-tailed) | 0.039 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| IBM8 | Pearson Correlation | 0.115 | .317** | .289** | .351** | .336** | .361** |
| | Sig. (2-tailed) | 0.091 | 0 | 0 | 0 | 0 | 0 |

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|---|---|---|---|---|---|---|---|
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.044 | .320** | .411** | .335** | .468** | .393** |
| IBM9 | Sig. (2-tailed) | 0.516 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.127 | .329** | .332** | .317** | .393** | .359** |
| IBM10 | Sig. (2-tailed) | 0.061 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.102 | .365** | .347** | .315** | .451** | .370** |
| IBM11 | Sig. (2-tailed) | 0.135 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.062 | .392** | .421** | .379** | .451** | .425** |
| IBM12 | Sig. (2-tailed) | 0.364 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.058 | .423** | .452** | .366** | .498** | .444** |
| IBM13 | Sig. (2-tailed) | 0.397 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | -0.047 | .397** | .387** | .308** | .394** | .409** |
| IBM14 | Sig. (2-tailed) | 0.489 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.012 | .304** | .374** | .287** | .387** | .367** |
| IBM15 | Sig. (2-tailed) | 0.866 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.02 | .343** | .336** | .277** | .371** | .331** |
| IBM16 | Sig. (2-tailed) | 0.774 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.087 | .342** | .365** | .296** | .397** | .368** |
| IBM17 | Sig. (2-tailed) | 0.201 | 0 | 0 | 0 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | 0.086 | .260** | .235** | .192** | .277** | .242** |
| IBM18 | Sig. (2-tailed) | 0.205 | 0 | 0 | 0.005 | 0 | 0 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | .261** | 0.042 | 0.072 | 0.072 | 0.112 | 0.083 |
| IBM19 | Sig. (2-tailed) | 0 | 0.539 | 0.289 | 0.289 | 0.1 | 0.222 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |
| | Pearson Correlation | .332** | 0.047 | .139* | 0.077 | 0.12 | 0.111 |
| IBM20 | Sig. (2-tailed) | 0 | 0.495 | 0.041 | 0.258 | 0.078 | 0.103 |
| | N | 217 | 217 | 217 | 217 | 217 | 217 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

ER1 = Fuel Subsidy Removal; ER2 = Foreign Exchange Market Liberalization; ER3 = Petroleum Industry Act (PIA) Implementation; ER4 = Finance Act Reforms; ER5 = Central Bank Monetary Policy Tightening; ER6 = Economic Recovery and Growth Plan

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## 5. Discussion

The study's findings highlight how Nigeria economic reforms specifically, the elimination of fuel subsidies, foreign exchange (forex) policies, and trade liberalization have had a significant impact on the construction industry, as evidenced by increased material costs, strained supply chains, and longer project completion times. These results are consistent with more general trends seen in developing nations, where major disruptions in the provision of infrastructure are frequently caused by macroeconomic shocks (Oladipo & Oni, 2012). The sharp rise in the price of imported goods like steel and aluminum, as well as higher transportation costs once subsidies were eliminated, indicate a systemic vulnerability made worse by currency devaluation and exposure to international markets. This is consistent with the findings of Oladipo and Oni (2012) regarding the cascade impacts of exchange rate changes, which strain local procurement processes and raise input prices. This is a problem that is especially severe in Nigeria import-dependent construction sector. The findings of Okonjo-Iweala and Osafo-Kwaako (2007) are supported by the substantial correlations between reform factors and material price volatility ($r = 0.448–0.457$, $p < 0.01$). These correlations offer solid proof of unintended inflationary pressures. Their research shown how, despite their stated goal of promoting economic stability, structural adjustment plans, and the removal of subsidies frequently have unintended consequences like cost increases that reverberate across the material markets. By quantifying these processes, this study expands on previous findings and shows how trade liberalization and FX volatility increase price volatility, making it more difficult for contractors to estimate costs and plan projects.

Additionally, this study provides factual support for the qualitative claims made by Saka and Olanipekun 2021, who warned about the negative effects of reforms on the performance of the construction industry. The work fills a crucial research gap indicated by Sanusi by establishing statistical links between policy changes and effects such as delayed timelines ($r = 0.317–0.393$, $p < 0.01$) and weakened indigenous supply chains ($r = 0.379–0.451$, $p < 0.01$). Prior research frequently relied on theoretical or anecdotal discussions and lacked the quantitative rigor necessary to identify causal correlations. In addition to confirming local manufacturers' susceptibility to lower-priced imports, this study's data-driven methodology draws attention to the wider implications for project affordability and sustainability areas that were previously understudied. The results indicate that the construction industry is still vulnerable to long-term instability in the absence of focused interventions, highlighting the necessity of policy recalibration to strike a balance between reform goals and industry resilience.

## 6. Conclusions

This study looked at how building materials in the construction sector were affected by Nigeria economic reforms, such as trade liberalization, foreign exchange regulations, and the elimination of fuel subsidies. The results show that these measures have undermined local manufacturing capability, caused supply chain disruptions, extended project timeframes, and dramatically raised the cost of imported inputs. While correlation results confirmed strong statistical links between reforms and the affordability, availability, and sustainability of construction materials, descriptive analysis revealed that professionals strongly perceive import costs, transportation expenses, and price volatility as the most significant impacts. These findings highlight the paradox of reforms: although they are meant to boost productivity, draw in capital, and stabilize the macroeconomy, they frequently cause unpredictability and instability in vital industries like construction. Reforms have increased inflationary pressures, tightened affordability for both public infrastructure projects and private developers, and increased cost constraints. This result is consistent with previous research (Akanni et al., 2014; Haruna et al., 2018; Oladipo & Oni, 2012), but it adds to the body of knowledge by offering quantitative proof of the relationship between Nigeria reform and material market.

In addition to confirming earlier findings, the study highlights how vital it is to strike a balance between sector-specific protections and economic reforms. The delivery of construction projects, profit margin erosion, and the competitiveness of domestic businesses will all be weakened in the absence of such steps due to the volatility of the building material markets. This study adds to the theoretical knowledge of policy market interactions by statistically connecting reforms to material market instability. It also provides industry practitioners and policymakers with useful advice on how to mitigate disruptions brought on by reforms. The study therefore recommends:

- To lessen reliance on imports and increase local production, there is need to implement financial incentives for domestic producers of steel, aluminium, and cement, such as targeted subsidies, low-interest loans, and infrastructure support.
- To prevent cost increases due to currency fluctuations, there is need to create a specific foreign exchange window for the construction industry.

- To lessen the effects of the elimination of fuel subsidies, there is need to offer tax breaks or subsidies to manufacturers of energy-intensive materials and logistics.
- To monitor fluctuations and direct procurement plans for both public and private projects, there is need to create a nationwide building materials pricing index.

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