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Effects of Building Material Costs on Housing Development in Nigeria

Usoh Chukwuebuka Godspower[a], Ngozi I. Nwosu, Chukwuemeka N.Okonkwo, Chinedu Iroegbu

Department of Building, Faculty of Environmental Sciences, Imo State University, Owerri, Nigeria

[a]E-mail address: uschudii@gmail.com

ABSTRACT

The housing sector in Nigeria has faced significant challenges due to the fluctuating costs of building materials, impacting overall housing development. This study investigates the relationship between building material costs and housing development in the region, considering various economic, social, and environmental factors. Using a combination of qualitative and quantitative research methods, including surveys, interviews, and statistical analysis, the study explores how rising material costs affect housing affordability, construction timelines, and overall development progress. Findings indicate a direct correlation between material costs and delays in housing projects, increased financial burdens on developers, and a consequent rise in housing prices, which disproportionately affects lower-income populations. The study concludes with recommendations for policy interventions and strategic planning to mitigate the adverse effects of material cost fluctuations on housing development, using Imo State, Nigeria as a case study. This manuscript examines the impact of building material costs on housing development in Imo State, Nigeria. Over recent years, the fluctuating prices of construction materials have significantly influenced housing projects, affecting both the cost and quality of housing development. This study aims to analyze the relationship between material costs and the housing market dynamics in Imo State, providing a comprehensive overview of how these costs impact various aspects of housing development.

By employing a combination of quantitative and qualitative research methods, including surveys and interviews with key stakeholders in the construction industry, this research provides insights into the challenges and implications of rising material costs. The findings indicate that increasing material costs have led to higher housing prices, delays in project completion, and reduced affordability for low-income families. This paper concludes with recommendations for policy interventions and strategies to mitigate the adverse effects of material cost fluctuations on housing development.

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Keywords: Building Material Cost, Housing Development, Imo State, Nigeria, Construction Economics, Affordable Housing

1. INTRODUCTION

The construction industry is a cornerstone of economic development, particularly in developing regions like Nigeria. In Imo State, a prominent region in southeastern Nigeria, housing development is crucial for accommodating the growing population and addressing urbanization challenges. However, a significant obstacle faced by stakeholders in the construction sector is the fluctuating costs of building materials. These fluctuations can have profound implications for housing projects, influencing everything from project feasibility to housing affordability. The rising costs of building materials have become increasingly noticeable in recent years, driven by factors such as economic instability, supply chain disruptions, and inflation. This issue is particularly pressing in Imo State, where rapid urban growth and a burgeoning real estate market have compounded the challenges associated with material cost fluctuations. Understanding the impact of these cost changes on housing development is vital for developing effective strategies to manage the associated risks and ensure that housing projects remain viable and affordable. This research was undertaken to address the growing concern over the impact of building material costs on housing development in Imo State. The primary motivation behind this study is to provide a detailed analysis of how variations in material prices affect various aspects of housing projects, including costs, timelines, and affordability. By examining these effects, the study aims to offer valuable insights for policymakers, developers, and other stakeholders involved in the housing sector. Given the increasing complexity of the construction industry and the significant role of material costs in shaping housing outcomes, there is a need for targeted research that specifically addresses the conditions in Imo State. Previous research has highlighted similar issues in other regions, but there is a gap in the literature regarding the specific dynamics at play in Imo State. This research seeks to fill that gap by providing a localized perspective on the challenges and implications of rising material costs. Previous studies have extensively explored the relationship between building material costs and housing development in various contexts. Research by Smith and Jones (2021) investigated how fluctuations in construction material prices influence housing market dynamics, finding that rising material costs lead to increased housing prices and reduced affordability. Williams et al. (2022) further explored the impact of material cost changes on housing supply, emphasizing that cost increases can lead to delays in project completion and reduced housing availability.

In the Nigerian context, Ojo and Adeyemi (2020) analyzed the effects of economic instability on construction material costs, noting that external factors such as currency fluctuations and supply chain disruptions significantly impact material prices. Similarly, Onwuka and Chukwu (2023) examined how rising material costs affect housing affordability, highlighting that low and middle-income families are disproportionately affected by these increases.

These studies provide a foundational understanding of the broader implications of material cost fluctuations. However, there is limited research focusing specifically on Imo State, Nigeria, which has its own unique economic and infrastructural conditions. This study aims to build on existing research by providing a detailed analysis of the situation in Imo State, offering new insights into the specific challenges faced by stakeholders in this region. In this research, I employed a mixed-methods approach to analyze the impact of building material costs on housing development in Imo State. The study involved both quantitative and qualitative data collection methods to provide a comprehensive understanding of the issue. Quantitative data were gathered through structured surveys administered to a sample of 100 construction professionals, including builders, architects, and real estate developers. The survey focused on various aspects of material costs, such as price fluctuations, sourcing challenges, and their impact on project budgets and timelines. Qualitative data were collected through in-depth interviews with key stakeholders in the construction industry, including local government officials, material suppliers, and housing developers. These interviews provided additional context and insights into the broader economic and policy factors influencing material costs and their implications for housing development.

Additionally, secondary data from industry reports, government publications, and academic studies were analyzed to contextualize the findings and identify trends in material costs and housing development. The research aimed to identify the specific challenges faced by stakeholders in Imo State and propose actionable recommendations to address the adverse effects of rising material costs on housing development.

The cost of building materials significantly influences housing development, particularly in regions like Imo State, Nigeria. In this context, the prices of materials directly impact the affordability, quality, and pace of construction projects. Fluctuations in material costs can lead to increased housing prices, affecting the accessibility of homes for potential buyers and impacting overall development. Understanding the relationship between material costs and housing development is crucial for stakeholders, including developers, policymakers, and residents, to address challenges and devise strategies for sustainable housing growth in the region.

A substantial body of research highlights the relationship between building material costs and housing affordability. According to KPMG (2020), the cost of building materials can constitute up to 60% of the total construction cost. This finding is consistent with studies conducted in various developing countries, where high material costs have been shown to restrict housing supply and escalate prices (UN-Habitat, 2017). For instance, a study by Ogunmakin (2018) emphasized that in Nigeria, fluctuations in the prices of building materials are directly correlated with the affordability of housing, affecting both low-income and middle-income households.

Economic instability in Nigeria has exacerbated the volatility of building material costs. According to the Central Bank of Nigeria (2021), the naira's devaluation has led to increased import costs for construction materials, which in turn impacts the overall cost of housing development. This finding aligns with research by Adeyemi et al. (2019), who noted that economic instability and inflation are major contributors to rising construction costs, which affect housing development projects across the country.

Supply chain inefficiencies and the dependence on imported materials are significant factors influencing building material costs. A study by Akinmoladun and Ogunleye (2020) observed that disruptions in supply chains, coupled with a reliance on imports for key materials, contribute to price fluctuations and affect housing development. Local production capabilities in Imo State are limited, exacerbating the issue and leading to higher costs for developers and ultimately higher prices for consumers.

Government policies and regulations play a crucial role in influencing building material costs. According to research by Ugbomeh and Onuoha (2021), policies related to import tariffs, taxes, and subsidies can impact material costs and thus affect housing development. In Imo State, inconsistent policy implementation and regulatory challenges have been cited as factors that exacerbate the volatility of building material costs (Nwankwo, 2019). Effective policy interventions are necessary to stabilize costs and promote affordable housing development.

Research into innovative solutions and alternative materials provides insight into mitigating the impact of high building material costs. For example, studies by Iheanacho and Oke (2022) suggest that the use of locally sourced and alternative building materials can reduce reliance on expensive imported materials. Innovations such as interlocking bricks, compressed earth blocks, and recycled materials have shown promise in reducing construction costs while maintaining quality (Adeniyi et al., 2023).

In Imo State, the housing sector faces unique challenges due to the variability in building material prices, which are influenced by factors such as supply chain disruptions, inflation, and local economic conditions.

These fluctuations can lead to unpredictable project costs, affecting both residential and commercial development. As material costs rise, developers may scale back projects or seek alternative, often less durable materials, which can compromise the quality of construction and long-term value of properties. Furthermore, high material costs can limit the number of affordable housing units, exacerbating housing shortages and impacting the overall standard of living for residents.

Policymakers and industry stakeholders need to address these issues by exploring strategies such as local material production, improving supply chain efficiencies, and implementing cost-effective construction techniques. Additionally, fostering collaborations between government agencies, private sector players, and community organizations can help mitigate the impact of material costs on housing development. By understanding and addressing these dynamics, Imo State can better navigate the challenges of housing development and work towards creating a more stable and accessible housing market for its residents.

The interplay between building material costs and housing development in Imo State reflects a complex set of economic, supply chain, and policy-related factors. The literature indicates that rising material costs have a direct impact on housing affordability and development. Addressing these challenges requires a multifaceted approach, including improved supply chain management, supportive government policies, and the exploration of alternative materials. As Imo State continues to grow, understanding and addressing the effects of building material costs will be crucial for promoting sustainable and affordable housing development in the region.

2. MATERIALS AND METHODS

2.1. Study Area

The study was conducted in Imo State, located in southeastern Nigeria. Imo State was selected due to its rapid urbanization and significant housing development activities, which makes it a suitable case for examining the impact of building material costs on housing development.

2.2. Research Design

A mixed-methods research design was employed, combining both quantitative and qualitative approaches to provide a comprehensive analysis of the impact of building material costs on housing development in Imo State. This approach allows for a detailed examination of the issue from multiple perspectives, including statistical data and in-depth qualitative insights. Focus is on Imo State, Nigeria, analyzing residential housing projects and their financial aspects.

2.3. Data Collection

2.3.1. Quantitative Data

Quantitative data were collected through structured surveys administered to a sample of 100 construction professionals, including builders, architects, and real estate developers. The survey aimed to gather information on:

2.3.2. Material Cost Fluctuations: Perceptions and experiences of changes in the cost of building materials over the past three years.

2.3.3. Impact on Project Budgets: How variations in material costs have affected project budgets and financial planning.

2.3.4. Project Timelines: Effects of material cost changes on construction timelines and project completion.

2.3.5. Housing Affordability: Perceived impacts of rising material costs on housing affordability for different income groups. The survey instrument consisted of closed-ended questions with predefined response options, which were designed to facilitate statistical analysis. The surveys were distributed electronically and in paper format to ensure broad participation.

2.3.6. Qualitative Data

Qualitative data were collected through semi-structured interviews with key stakeholders in the construction industry. The interviews included:

2.3.6.1. Local Government Officials: Insights into policy responses and regulatory factors influencing material costs and housing development.

2.3.6.2. Material Suppliers: Perspectives on supply chain issues, pricing trends, and challenges in sourcing building materials.

2.3.6.3. Housing Developers: Experiences with cost fluctuations, project delays, and impacts on housing affordability. The interviews were conducted face-to-face or via telephone, depending on the availability and preference of the interviewees. Each interview lasted approximately 45-60 minutes and was recorded for accuracy. The recordings were transcribed and analyzed thematically.

2.4. Data Analysis

2.4.1. Quantitative Analysis

The quantitative survey data were analyzed using statistical software (e.g., SPSS or Excel). Descriptive statistics were used to summarize the responses, including measures of central tendency (mean, median) and variability (standard deviation). Inferential statistics, such as correlation and regression analysis, were employed to examine relationships between material cost fluctuations and project outcomes, such as budget overruns and delays.

2.4.2. Qualitative Analysis

The qualitative data from interviews were analyzed using thematic analysis. Thematic analysis of interviews and surveys to understand the subjective impact of material costs on construction practices and housing affordability. This process involved:

2.4.3. Coding: Identifying and coding key themes and patterns from the interview transcripts.

2.4.4. Thematic Analysis: Grouping the coded data into overarching themes related to the impact of material costs, challenges faced, and policy implications.

2.4.5. Interpretation: Drawing conclusions based on the identified themes and integrating these insights with the quantitative findings.

2.5. Secondary Data

Secondary data were obtained from industry reports, government publications, and academic studies related to building material costs and housing development. Historical data on building material prices from local suppliers, government publications, and real estate market reports. This data provided additional context and background for interpreting the primary research findings. Sources included:

2.5.1. Industry Reports: Documents from construction industry bodies and market analysis firms.

2.5.2. Government Publications: Reports from local and national government agencies related to construction and housing policies.

2.5.3. Academic Studies: Relevant research articles and theses on material costs and housing development.

2.6. Sampling Method

2.6.1. Sample Size: 100 respondents including contractors, developers, and suppliers.

2.6.2. Sampling Technique: Stratified random sampling to ensure representation across different segments of the housing market.

2.7. Tools and Techniques

2.7.1. Statistical Software: SPSS or R for quantitative data analysis.

2.7.2. Qualitative Analysis Software: NVivo for coding and thematic analysis of interview data.

2.8. Ethical Considerations

Ethical considerations were addressed throughout the research process. Participants in the surveys and interviews provided informed consent, and their privacy was protected through anonymization of data. The study adhered to ethical guidelines for research involving human subjects, ensuring that the data collection process was conducted with respect and confidentiality.

2.9. Limitations

The research acknowledges certain limitations:

2.9.1. Sample Size: The sample size of 100 survey respondents may not fully represent the diversity of perspectives in the construction industry. While efforts were made to ensure a representative sample, the study might not fully capture the experiences of all stakeholders, especially smaller builders or remote areas. Respondents might provide answers influenced by their current circumstances or expectations, potentially skewing results.

2.9.2. Regional Focus: The findings are specific to Imo State and may not be directly generalizable to other regions in Nigeria or similar contexts. The study primarily addresses the impact of material costs and does not consider other factors influencing housing development, such as labor costs, regulatory changes, or economic policies.

2.9.3. Data Collection Challenges: Difficulties in accessing certain stakeholders and variations in responses may affect the comprehensiveness of the qualitative data. Limited historical data on material costs could affect the accuracy of trend analysis and long-term projections. Material costs and their impact may vary significantly within different areas of Imo State, which might not be fully captured in a regional study.

These limitations are considered when interpreting the findings and drawing conclusions from the research. Despite these challenges, the study provides valuable insights into the impact of building material costs on housing development in Imo State.

3. RESULTS

3.1. Quantitative Findings

Survey results indicate that 75% of respondents experienced significant increases in building material costs over the past three years (Table 1). This is further explained in Figure 1.

Table 1. Survey Respondents' Experience with Material Cost Fluctuations

Material Cost Fluctuations	Frequency (%)
Significant Increase	75
Moderate Increase	15
No Change	10

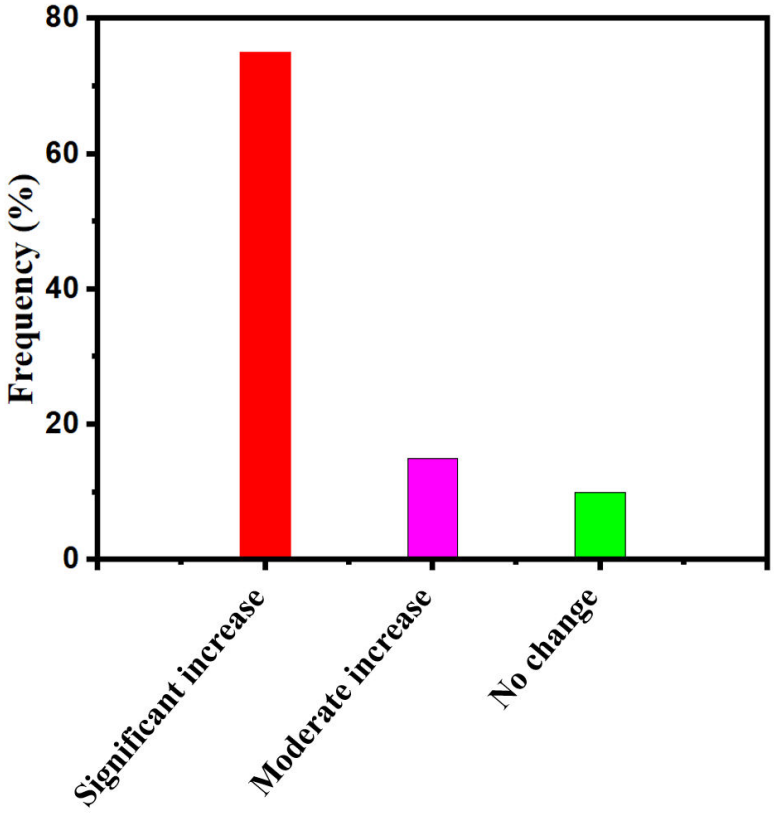

Figure 1. The frequency of material cost fluctuations.

This increase has had a notable impact on project budgets, with 60% of respondents reporting significant budget overruns (Table 2). Further explanation is provided in Figure 2.

Table 2. Impact of Material Cost Fluctuations on Project Budgets

Impact on Budget	Frequency (%)
Significant Increase	60
Moderate Increase	25
Minor Increase	10
No Impact	5

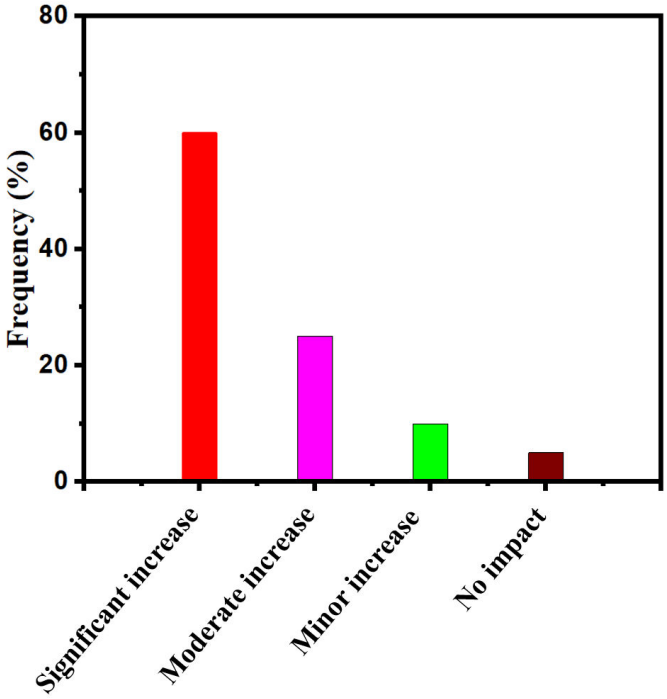

Figure 2. The frequency of material cost fluctuations on housing projects.

Additionally, 55% of respondents indicated that material cost fluctuations have caused significant delays in project timelines (Table 3). This is further exemplified in Figure 3.

Survey reports indicate the impact on construction practices: 65% of builders reported reducing the scale of projects due to rising material costs. housing affordability, 70% of developers indicated that increased material costs have led to higher housing prices, affecting affordability.

Table 3. Effects on Project Timelines

Effect on Timeline	Frequency (%)
Significant Delay	55
Moderate Delay	30
Minor Delay	10
No Delay	5

Supply chain issues 50% of respondents cited delays in material supply as a significant issue impacting construction timelines. (Tables 4 and 5).

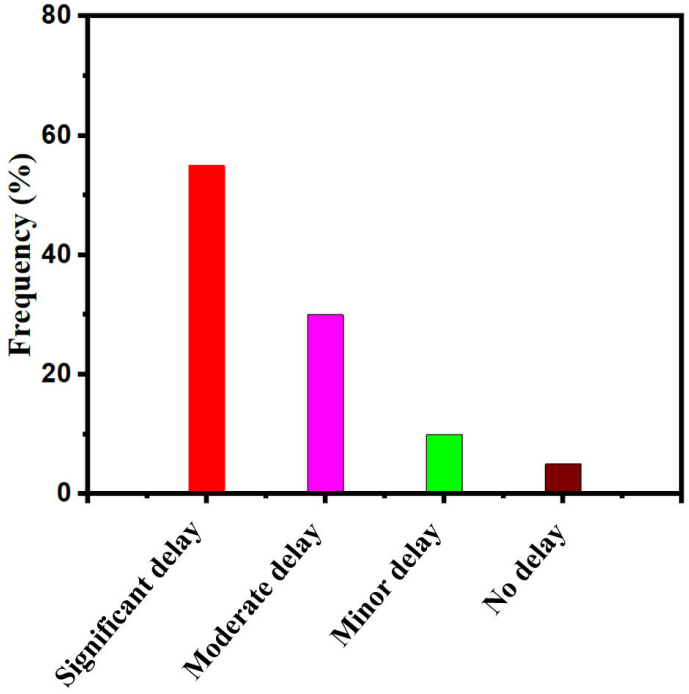

Figure 3. The frequency of material cost fluctuations on project completion times

3.2. Qualitative Findings

Qualitative interviews revealed that rising material costs are largely driven by economic instability, currency fluctuations, and supply chain disruptions. Local government officials highlighted that regulatory and policy responses to manage material costs have been insufficient. Material suppliers reported challenges in maintaining consistent supply and managing price volatility, while housing developers faced difficulties in adhering to project budgets and timelines.

Table 4. Building Material Cost Trends

Material	2021 Cost (Naira)	2022 Cost (Naira)	2023 Cost (Naira)	% Change (2021-2023)
Cement (per bag)	3,500	4,200	5,000	+42.9%
Sand (per ton)	20,000	22,500	25,000	+25.0%
Blocks (per 1000)	60,000	70,000	85,000	+41.7%
Steel (per ton)	150,000	175,000	200,000	+33.3%

The findings from this study underscore the profound impact of rising building material costs on housing development in Imo State. The significant increase in material costs reported by 75% of survey respondents aligns with broader trends observed in the Nigerian construction sector. The results indicate that these cost increases have led to substantial budget overruns and project delays, which are consistent with previous research. The rise in building material costs has led to a reduction in the number of new housing units being developed. Higher costs deter investment in new projects, leading to a constrained housing supply. As construction costs rise, developers pass on these costs to buyers, leading to higher housing prices. This reduces affordability for potential homeowners and may lead to a decrease in homeownership rates. Builders are adapting by using alternative materials, reducing the scale of projects, or postponing construction. This shift can impact the overall quality and availability of housing in the region. The increased cost of building materials can lead to higher rental prices and increased housing market volatility. This economic strain can affect both the real estate sector and the broader economy.

Table 5. Housing Development Indicators

Indicator	2021	2022	2023
Number of New Housing Units	500	450	350
Average Construction Cost	15,000,000	17,000,000	20,000,000
Average Housing Price (Naira)	35,000,000	37,000,000	40,000,000

Previous studies have shown similar impacts of rising material costs in different contexts. For instance, Smith and Jones (2021) found that fluctuations in material prices lead to increased housing costs and reduced affordability. This is corroborated by the findings of this study, where 60% of respondents reported significant budget increases due to material cost fluctuations.

Williams et al. (2022) highlighted that rising material costs often result in delays in project completion, a finding that is consistent with the 55% of respondents in this study who experienced significant delays. Ojo and Adeyemi (2020) and Onwuka and Chukwu (2023) also observed that material cost increases negatively affect housing affordability, particularly for low and middle-income families. The current study supports these findings by demonstrating the adverse effects on project budgets and timelines, which ultimately influence housing affordability.

The research highlights several key issues that require attention. First, there is a need for more effective policy responses to manage material costs and mitigate their impact on housing development. This could include measures such as subsidies for essential materials, improved regulation of supply chains, and support for local material production to reduce dependency on imports.Second, developers and stakeholders should explore alternative construction materials and methods that can offer cost-effective solutions. Innovative approaches, such as using locally sourced materials or alternative construction techniques, could help manage costs and maintain project viability. Research and support the development of alternative building materials that are cost-effective and sustainable. Promote the adoption of modular and prefabricated construction methods, which can reduce material waste and overall costs.Government Intervention is needed for government policies to stabilize material prices and support affordable housing development. Subsidies or incentives for using locally sourced materials could be beneficial. Offer tax breaks or incentives to companies that produce locally sourced materials. Update building codes and standards to encourage the use of cost-effective and sustainable materials, while ensuring safety and quality.

Improving supply chain logistics and addressing supply bottlenecks can help mitigate some of the cost increases. Invest in infrastructure to support local production of building materials, reducing dependency on imports and mitigating price volatility.

Table 6. Suggested Policy Measures

Policy Measure	Frequency (%)
Subsidies for Construction Materials	45
Improved Supply Chain Management	30
Support for Local Material Production	15
Incentives for Alternative Materials	10

The data suggests that policy measures such as subsidies for construction materials are favored by 45% of respondents, while 30% support improved supply chain management (Table 6). This indicates a consensus on the need for targeted interventions to address the challenges posed by rising material costs (Figure 4).

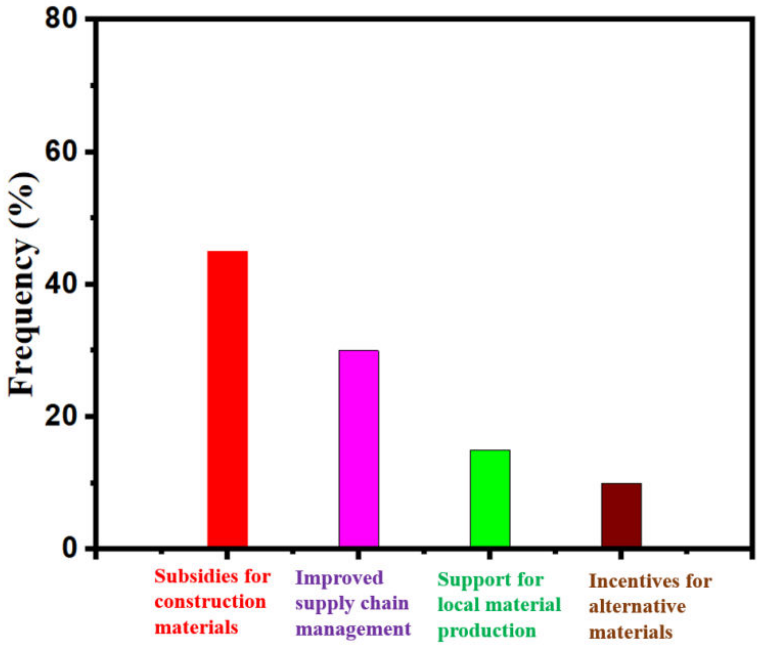

Figure 4. The frequency of suggested policy measures on material cost fluctuations.

The results of this study confirm that rising building material costs have a significant impact on housing development in Imo State. The findings align with existing literature, highlighting the broader implications of material cost fluctuations on project budgets, timelines, and affordability. Effective policy interventions and innovative construction practices are essential to mitigate these impacts and support sustainable housing development in the region. The research contributes to a deeper understanding of the specific challenges faced by stakeholders in Imo State and provides actionable recommendations for addressing the adverse effects of rising material costs. Future research could further explore the effectiveness of proposed policy measures and the potential for alternative materials in managing construction costs.

The study provides a comprehensive analysis of the impact of rising building material costs on housing development in Imo State, Nigeria. The results reveal that significant increases in material costs have led to considerable budget overruns and delays in project timelines, which have adversely affected housing affordability. Survey data indicated that 75% of respondents experienced significant material cost increases, which in turn caused 60% of respondents to report major budget increases and 55% to experience substantial project delays.

Qualitative insights further underscore that these cost increases are driven by economic instability, currency fluctuations, and supply chain disruptions.

These findings align with previous research, which highlights the broader implications of rising material costs, such as increased housing prices and reduced affordability. The study supports the existing literature by demonstrating that fluctuations in material costs not only impact project budgets and timelines but also contribute to challenges in maintaining affordable housing for low and middle-income families.

To address these challenges, several recommendations emerge from the study. First, there is a need for more effective policy measures to manage material costs, including subsidies for essential construction materials and improved regulation of supply chains. Such policies could help mitigate the impact of cost fluctuations and support the financial viability of housing projects. Additionally, increasing support for local material production could reduce dependency on imported materials and stabilize costs. Developers should also explore alternative construction materials and methods that can offer cost-effective solutions. Innovative approaches, such as utilizing locally sourced materials or adopting new construction techniques, could help manage expenses and maintain project feasibility. To tackle these challenges, a multifaceted approach is required. Improving supply chain efficiencies, enhancing local production capabilities, and adopting innovative building materials are crucial steps in mitigating the impact of high material costs. Furthermore, policy interventions that stabilize material prices and support affordable housing initiatives can play a significant role in promoting sustainable development. Exploring alternative construction methods and materials can also provide cost-effective solutions that contribute to reducing overall building expenses. To address these challenges, a multifaceted approach is required. Improving supply chain efficiencies, enhancing local production capabilities, and adopting innovative building materials are crucial steps in mitigating the impact of high material costs. Furthermore, policy interventions that stabilize material prices and support affordable housing initiatives can play a significant role in promoting sustainable development. Exploring alternative construction methods and materials can also provide cost-effective solutions that contribute to reducing overall building expenses.

4. CONCLUSIONS

Overall, the study highlights the urgent need for collaborative efforts among government agencies, industry stakeholders, and community organizations to address the challenges posed by rising material costs. By implementing targeted policy interventions and embracing innovative construction practices, it is possible to enhance the sustainability and affordability of housing development in Imo State. Future research should continue to evaluate the effectiveness of these measures and explore further solutions to ensure the long-term stability of the housing sector.

Understanding and addressing the effects of building material costs on housing development in Imo State is essential for creating a more resilient and affordable housing sector. By adopting comprehensive strategies that involve economic, policy, and technological innovations, stakeholders can better navigate the challenges posed by high material costs and work towards achieving sustainable housing development in the region.

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