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IMPACT OF CONSTRUCTION COSTS AND EVALUATION OF COST MANAGEMENT TECHNIQUES FOR HOUSING PROJECTS IN KATSINA METROPOLIS

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ABSTRACT

This study investigated the impact of construction costs and management techniques on housing projects in Katsina Metropolis, Nigeria, prompted by issues like cost overruns and project delays. Using a descriptive survey design, data collected from stakeholders were analyzed through statistical methods. Key findings indicated that high construction material costs, labor costs, inflation, and inadequate planning significantly contribute to rising expenses in housing projects. The study indicates that rising construction costs adversely impact housing projects by raising prices, causing delays, reducing scope, and leading to abandonment. A strong negative correlation between construction costs and project performance was found, with cost planning being the most significant factor influencing outcomes. The conclusion emphasizes the need for effective cost management to counteract these effects and enhance performance. Recommendations include improved cost planning, ongoing budget monitoring, value engineering, supportive government policies, and capacity building for construction professionals to ensure sustainable and affordable housing in Katsina Metropolis.

KEYWORDS: Construction, Management Techniques, Housing Projects.

1. INTRODUCTION

Housing is a basic human necessity and a critical component of sustainable urban development. Access to affordable housing not only provides shelter but also promotes social inclusion, economic stability, and improved quality of life (UN-Habitat, 2020). In developing countries such as Nigeria, rapid urbanization and population growth have intensified the demand for housing, creating significant pressure on the construction sector (Olotuah & Adesiji, 2021). Despite the growing demand, the rising cost of construction materials, labor, and land has made affordable housing increasingly inaccessible to low- and middle-income earners (Ihuah & Fortune, 2019). In recent years, Nigeria has witnessed unprecedented inflation in the cost of building materials such as cement, steel, timber, and finishing products, driven largely by currency depreciation, high import dependence, and inadequate local production (NBS, 2022). These rising costs directly impact the affordability of housing, pushing the prices of both public and private housing projects beyond the reach of most households (Oyetunji, 2021). The situation is particularly severe in urban centers such as Katsina Metropolis, where increasing demand collides with limited supply, creating a housing affordability crisis. Furthermore, the construction industry in Nigeria is characterized by inefficiencies in cost management practices. Poor project planning, reliance on imported materials, and limited adoption of modern cost-control strategies often lead to project cost overruns and delays (Idoro, 2012). Effective cost management techniques such as value engineering, life-cycle costing, bulk procurement, and the use of local and alternative materials are crucial in mitigating the impact of rising construction costs (Aje et al., 2016). However, these techniques are underutilized in many affordable housing projects, limiting their potential to address the housing deficit.

1.1 Impact of Construction Material Cost Fluctuations on Housing Development and Affordability

The fluctuations in building material costs present significant challenges for both residential and commercial development. Unpredictable price increases often lead to escalated project costs, forcing developers to either scale back housing initiatives or substitute with cheaper, less durable materials, which may compromise the quality and long-term sustainability of buildings. Rising costs also constrain the supply of affordable housing units, worsening housing shortages and reducing living standards for residents. This situation underscores the urgent need for policymakers and industry stakeholders to adopt strategies that address material cost instability. Possible interventions include encouraging local production of building materials, enhancing supply chain efficiency, and promoting cost-effective construction methods**.** The construction

industry plays a pivotal role in driving economic growth, particularly in developing countries such as Nigeria. In regions like Imo State, located in southeastern Nigeria, housing development has become essential to meeting the demands of a rapidly growing population and addressing the pressures of urbanization. Despite its importance, the sector faces significant challenges, one of the most critical being the fluctuating costs of building materials. These fluctuations affect multiple aspects of housing projects, ranging from feasibility and timelines to overall affordability (Usoh, Nwosu, Okonkwo, & Iroegbu, 2024). In recent years, the escalation of material costs has become increasingly evident, fueled by factors such as inflation, economic instability, and disruptions in supply chains. This challenge is particularly severe in Imo State, where urban growth and a rising demand for real estate have amplified the strain caused by rising construction costs. The implications of these cost variations are far-reaching, as they often lead to delays in housing projects, higher financial burdens for developers, and reduced access to affordable housing for low- and middle-income households (Usoh et al., 2024). Research has shown that fluctuations in material costs have a direct effect on housing markets. For example, Smith and Jones (2021) observed that rising construction material prices tend to push housing prices upward, limiting affordability for households. Similarly, Williams et al. (2022) emphasized that increases in material costs frequently result in project delays and reduced housing supply. While these studies highlight global and regional perspectives, there remains a need for more localized analyses, particularly within Imo State, where the dynamics of material costs and housing development present unique challenges. Given these challenges, this study seeks to analyze the impact of rising construction costs on access to affordable housing in Katsina Metropolis and to evaluate cost management strategies that could enhance the delivery of affordable housing projects. The findings are expected to contribute to policy reforms and practical solutions for improving housing affordability and promoting sustainable urban growth in Nigeria.

1.2 Building Material Costs and Their Impact on Housing Affordability and Construction Efficiency

The cost of building materials can account for as much as 60% of total construction costs (KPMG, 2020). This aligns with global findings from UN-Habitat (2017), which revealed that high material costs restrict housing supply and elevate prices in developing countries. Ogunmakin (2018) confirmed this trend in Nigeria, observing that fluctuations in building material costs are closely linked with affordability challenges across income groups. Macroeconomic instability further exacerbates the issue. According to the Central Bank of

Nigeria (2021), naira devaluation has sharply increased import costs, thereby inflating overall construction expenses. Adeyemi et al. (2019) similarly reported that inflation and economic instability remain major contributors to rising construction costs nationwide. Dependence on imports and inefficient supply chains compound the housing affordability problem. Akinmoladun and Ogunleye (2020) observed that disruptions in global and local supply chains significantly influence material prices and housing project delivery. In Imo State, limited local production capacity has been cited as a major factor contributing to higher costs for developers and consumers. Appropriate, accessible, and sustainable housing remains a fundamental human need, requiring continuous provision of affordable and durable units within the built environment (Ihuah, 2015). In South Africa, for instance, ensuring sustainable housing requires the construction industry to pay closer attention to the cost-effective management of building materials (Ganiyu, 2016). Building materials, which typically include steel, cement, copper, bitumen, lumber, masonry bricks/blocks, and sand, are critical inputs for housing projects. The construction industry itself is a vital sector that supports national economic development by contributing significantly to the Gross Domestic Product (GDP), especially in developing countries (Ofori, 2012; Chen et al., 2017). Importantly, the cost of building materials has been shown to account for up to 50% of total housing project expenses (Caldas et al., 2015). These costs are influenced by factors such as supply and demand dynamics, material quality and quantity, project timelines, location, as well as negotiations between buyers and sellers (San Ong, 2013). Additional macroeconomic factors including currency fluctuations, inflation, material specifications, and the availability of innovative materials further contribute to cost variability (Oladipo & Oni, 2012). Mismanagement of materials on construction sites not only inflates overall costs but also adversely affects project quality and timely completion (Ghoddousi & Hosseini, 2012).

1.3 Objectives of the Study

The aim of this study is to examine the impact of rising construction costs on access to affordable housing in Katsina Metropolis and to evaluate cost management techniques that can enhance the delivery of affordable housing projects.

Objectives of the Study

The study seeks to:

1. Assess the major factors contributing to rising construction costs in Katsina Metropolis.
2. Analyze the effects of increasing construction costs on the affordability and accessibility of housing for low- and middle-income households.

3. Evaluate the effectiveness of existing cost management practices used in affordable housing projects.

2. Literature Review

2.1 Impact of Building Material Costs on Housing Affordability and the Emergence of Sustainable Affordable Housing

The construction industry is highly sensitive to fluctuations in the cost of building materials, which directly influence housing affordability, quality, and project timelines. Usoh, Nwosu, Okonkwo, and Iroegbu (2024) found a strong correlation between rising material costs and delays in housing development, noting that cost escalations often translate into higher housing prices. In the Nigerian context, Ojo and Adeyemi (2020) highlighted that external factors such as exchange rate fluctuations, inflation, and supply chain disruptions significantly drive material price instability. Similarly, Onwuka and Chukwu (2023) emphasized that low- and middle-income families are disproportionately affected, as increasing costs push affordable housing further out of reach. Housing construction has evolved significantly over the years, with increasing emphasis on meeting the welfare of future generations through sustainable approaches (Shen et al., 2011). To address the global challenge of improving housing provision, scholars and policymakers have advocated for the integration of sustainability and affordability, giving rise to the concept of sustainable affordable housing (Golubchikov & Badyina, 2012). Sustainable affordable housing refers to housing that meets the present generation's needs without compromising the ability of future generations to fulfill theirs (DeLaTorre, 2013; Gan et al., 2017; Adabre & Chan, 2019). It is also described as housing that is well-planned, durable, safe, affordable, inexpensive to maintain, and embedded with strong economic, social, and environmental dimensions (UN-Habitat, 2011; Arman et al., 2009).

The construction industry plays a vital role in economic development by providing infrastructure and housing that support social welfare and productivity (Isa et al., 2013; Abdullahi & Bala, 2018). However, the sector is highly sensitive to fluctuations in the cost of building materials, which significantly affect project cost, quality, delivery time, and housing affordability. In developing economies such as Nigeria, persistent increases in material prices have contributed to project delays, cost overruns, and reduced access to affordable housing, particularly for low- and middle-income earners (Ojo & Adeyemi, 2020; Onwuka & Chukwu, 2023). Effective cost management has therefore become a strategic necessity for construction firms. Cost management involves the systematic planning, estimation, monitoring, and control of project costs to ensure optimal utilization of resources while achieving organizational and

project objectives (Okereke & Zakariyau, 2022). When cost savings are achieved across construction activities, the accumulated savings can be reinvested into other business portfolios, thereby improving profitability, competitiveness, and long-term sustainability (Rounaghi et al., 2021). Firms that implement robust cost management systems are better positioned to withstand economic volatility and remain competitive in the construction industry (Andre, 2021). In Nigeria, the affordability of housing remains a major challenge despite several government interventions. Housing is a fundamental human need, second only to food, and serves as a key indicator of social well-being and national development (Ugo, 2013). Historical initiatives such as the World Bank-assisted Nigerian Urban Development Programme and the National Housing Policy emphasized the use of locally sourced materials and cost-efficient designs to enhance affordability (Shyllon, 1999; Moneke & Echeme, 2016). However, rising inflation, exchange rate instability, high import dependency, and inadequate local production capacity continue to drive up the cost of building materials (Lilly & Wai, 2001; Ikechukwu, 2019).

2.2 The Role of Cost Management and Material Efficiency in Enhancing Competitiveness and Housing Affordability in Construction

Effective cost management is a crucial determinant of success and competitiveness in construction firms. When cost savings are realized in various activities, the saved resources can be aggregated and reinvested in other business portfolios, enhancing organizational growth and profitability (Rounaghi, Jarrar, & Dana, 2021). The implementation of robust cost management systems positively influences a firm's competitive advantage and long-term survival in the construction industry. Cost management serves as a strategic tool that ensures companies remain competitive by supporting corporate objectives and enhancing decision-making processes. It not only strengthens firms' positions locally but also encourages the adoption of innovative technologies, improves business processes, and fosters dynamic management practices (Rounaghi et al., 2021). Project managers and other organizational leaders must cultivate a competitive mindset, focusing all efforts on maintaining relevance and competitiveness in the industry. The success of a construction project is often measured by how well it meets cost, time, and quality targets. Cost management enables firms to deliver projects that meet client expectations while ensuring adherence to specifications, timelines, and budgets. Effective cost management also improves project profitability, organizational growth, and overall strategic performance. Ultimately, the main goal of cost management is to sustain organizational survival, enhance competitiveness, and achieve superior performance in the

construction sector (Andre, 2021) Housing is a fundamental human need, second only to food, and plays a vital role in social well-being, mental health, and general development (Ugo, 2013). Adequate shelter not only provides protection but also enhances productivity and contributes to economic growth. In Nigeria, affordability has consistently been a key challenge in the housing sector, largely influenced by the cost of construction materials (Nnametu & Emoh, 2020). The total cost of producing a building, which determines its market price, is significantly determined by the cost of constituent materials (Ikechukwu, 2021).

Historically, the Nigerian government recognized the critical need for affordable housing. In 1979, the Federal Government initiated the World Bank-assisted Nigeria Urban Development Programme (NSUDP), which aimed to establish a foundation for a National Low-Cost Housing Programme. This program targeted approximately 40,000 housing units for low- and medium-income earners (Shyllon, 1999). Similarly, state governments implemented initiatives to provide low- and medium-cost housing, emphasizing the use of locally sourced construction materials and innovative building designs (Moneke & Echeme, 2016). Despite these initiatives, the cost of building materials in Nigeria continues to rise due to market forces, high import content, and substantial import duties (Lilly & Wai, 2001; Ikechukwu, 2019). For instance, less than 30% of Nigeria's cement demand is produced locally, resulting in high dependency on imports and increasing project costs (Obara & Eyo, 2004). The rising cost of materials directly affects the overall cost of building construction, limiting affordability for many Nigerians. In this context, effective cost reduction measures for building materials are critical. These measures can significantly improve affordability, enhance project delivery, and ensure sustainable construction practices. Strategies such as local sourcing of materials, quality assurance, economic design and specification, and on-site production of materials have been widely recommended (Ikechukwu, 2021; Nyenke, 2005). Proper implementation of these strategies not only reduces costs but also improves the efficiency of building material management and ensures client satisfaction. The construction industry plays a vital role in the socio-economic development of Nigeria, contributing significantly to employment and the Gross Domestic Product (Isa, Jimoh, & Achuenu, 2013; Abdullahi & Bala, 2018). Effective cost management practices including budget estimation, cost control measures, and financial reporting are essential for aligning project delivery with organizational sustainability objectives (Okereke & Zakariyau, 2022).

Despite its importance, the construction industry in Edo State faces several challenges that hinder cost efficiency and sustainable project delivery. These include inadequate infrastructure,

environmental degradation, and inefficient cost management practices (Azis, Memon, Rahman, Nagapan, & Latif, 2012; Omopariola et al., 2024). Edo State, with a population of approximately 3.5 million (Bain, Porter, & Watts, 2015), is rich in natural resources, including oil, gas, and solid minerals (Egba, San, Animashaun, & Amuda-Kannike, 2023; Edo et al., 2024). Nevertheless, poor roads, bridges, and building facilities negatively affect operational efficiency and escalate project costs (Enoma & Idehen, 2018; Ola, 2020).

The lack of effective cost management can lead to budget overruns, delays, and abandoned projects (Okereke & Zakariyau, 2022). Given the limited research on cost management practices in Edo State, this study seeks to provide insights into the challenges, opportunities, and strategies for effective cost management in the region, particularly in the context of sustainable construction. Sustainable construction practices are essential for reducing costs, minimizing environmental impact, and promoting long-term development (Ogunmakinde, Egbelakin, & Sher, 2022; Willar, Waney, Pangemanan, & Mait, 2021).

3. Research Method

3.1 Study Area

The study were conducted in Katsina Metropolis, the capital of Katsina State, located in the North-Western region of Nigeria. Katsina Metropolis is one of the fastest-growing urban centers in the state, characterized by increasing population growth, urbanization, and rising demand for housing. The area consists of residential, commercial, and institutional zones, with a mix of high- and low-income settlements. Despite government and private sector efforts, housing affordability remains a major challenge in the metropolis due to escalating construction costs and limited access to effective cost management practices. The study also involve construction professionals, government agencies, and low- and middle-income households affected by rising housing costs, using a purposive and stratified sampling approach.

3.2 Statistical Analysis

The study analyzed data through descriptive and inferential statistical techniques to understand construction costs and cost management. Descriptive statistics summarized demographic characteristics and key variables using frequency distributions and graphical representations, highlighting data patterns. Inferential techniques, including correlation and regression analysis, assessed relationships between construction costs and housing project performance, and

evaluated the effects of cost management techniques on project outcomes in Katsina Metropolis.

4. RESULT AND DISCUSSION

4.1.1 Descriptive Analysis of Respondents

Table 4.1: Gender Distribution of Respondents

Gender	Frequency	Percentage (%)
Male	258	64.5
Female	142	35.5
Total	**400**	**100.0**

The data presented in Table 4.1 show that male respondents constitute the majority of the study sample, accounting for 64.5% of the total respondents, while females represent 35.5%. This distribution reflects the gender structure commonly observed within the construction and housing sector in Katsina Metropolis, where professional roles such as contracting, site supervision, and technical consultancy are predominantly occupied by men. The relatively lower female participation suggests that women remain underrepresented in construction-related activities, particularly in decision-making and technical positions. However, the presence of over one-third female respondents indicates a growing involvement of women in housing development, consultancy, public sector regulation, and related administrative roles within the industry. The implication of this gender distribution is that the findings of the study are largely shaped by male-dominated perspectives, which may reflect prevailing industry practices, priorities, and challenges associated with construction cost management. While this enhances the reliability of the data due to the dominance of experienced practitioners in the field, it also highlights the need for greater female inclusion in the construction sector to ensure more balanced and diverse viewpoints in housing project planning and cost control. Policymakers and industry stakeholders should therefore promote gender-inclusive policies, capacity building, and professional opportunities for women, as increased female participation could contribute to improved decision-making, innovation, and sustainable cost management practices in housing projects within Katsina Metropolis.

Table 4.2: Age Distribution of Respondents

Age Group (Years)	Frequency	Percentage (%)
20–29	68	17.0
30–39	154	38.5
40–49	121	30.3
50 and above	57	14.2
Total	**400**	**100.0**

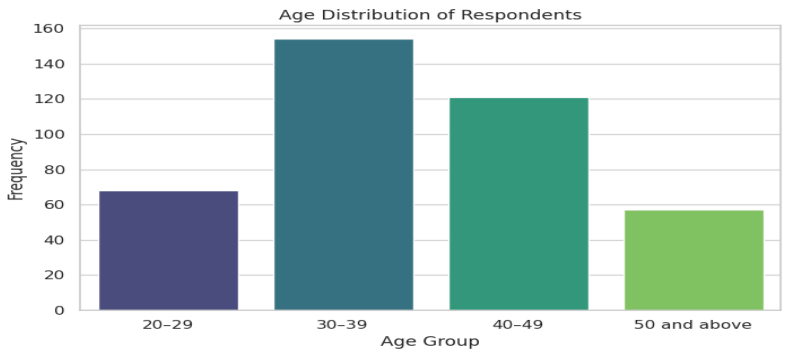

Figure 4.1: Age distribution of respondents involved in the study.

Table 4.2 presents the age distribution of respondents involved in the study. The results indicate that the majority of respondents fall within the economically active and professionally mature age brackets. Specifically, respondents aged 30–39 years constitute the largest proportion at 38.5%, followed by those aged 40–49 years at 30.3%. Together, these two age groups account for 68.8% of the total respondents, suggesting that most participants are in their prime working years with substantial professional exposure in the construction and housing sector. The relatively smaller proportion of respondents aged 20–29 years (17.0%) implies limited representation of younger professionals, while those aged 50 years and above (14.2%) represent seasoned practitioners who likely possess extensive industry experience. The implication of this age distribution is that the study findings are largely informed by respondents with considerable practical knowledge, decision-making responsibilities, and firsthand experience in managing construction costs and housing projects. This enhances the credibility and reliability of the data, as respondents within the 30–49 age range are typically involved in project planning, budgeting, and execution. However, the lower representation of younger professionals suggests that emerging perspectives and innovative approaches to cost management may be underrepresented. Similarly, the moderate inclusion of older respondents indicates that while experience is captured, there is a need for deliberate knowledge transfer and mentorship across age groups to ensure sustainable cost management practices and continuity in housing project delivery within Katsina Metropolis.

Table 4.3: Professional Role of Respondents

Role	**Frequency**	**Percentage (%)**
Contractor	134	33.5
Consultant	96	24.0
Developer	88	22.0
Government Official	82	20.5
Total	**400**	**100.0**

Table 4.3 reveals that contractors (33.5%) form the largest group among respondents in a study on housing project delivery in Katsina Metropolis, followed by consultants (24.0%), developers (22.0%), and government officials (20.5%). This diverse representation encompasses essential stakeholder perspectives, with contractors primarily involved in construction, and consultants and developers providing technical and strategic insights. Government officials contribute regulatory viewpoints. This balanced composition enhances the study's validity, ensuring that recommendations address cost management and are relevant to both private and public housing projects.

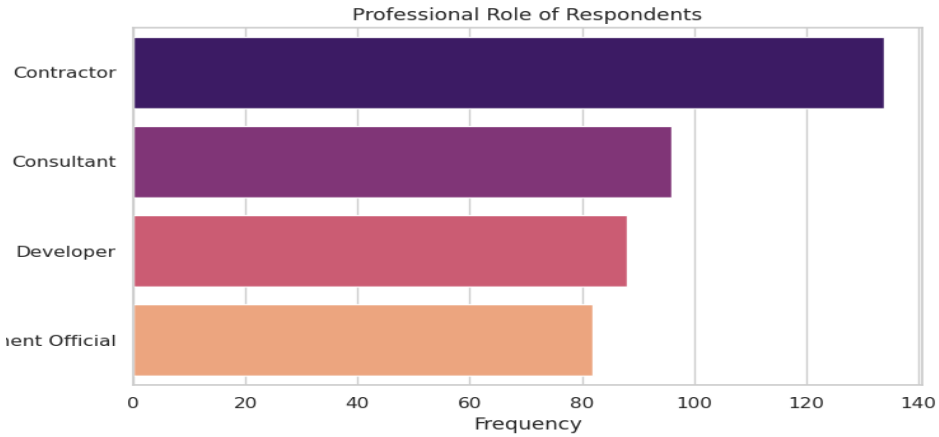

Figure 4.2 : Professional roles of respondents who participated in the study.

Table 4.3 presents the professional roles of study respondents, with contractors at 33.5%, consultants at 24.0%, developers at 22.0%, and government officials at 20.5%. This composition indicates a diverse range of key stakeholders in housing project delivery in Katsina Metropolis, emphasizing practical insights into construction cost challenges. The strong representation of various professionals enriches the analysis with technical, financial, regulatory, and policy perspectives, enhancing the relevance of the study's recommendations for effective cost management in both public and private housing projects.

Table 4.4: Years of Experience in Construction Industry

Years of Experience	Frequency	Percentage (%)
Below 5 years	61	15.3
5–10 years	148	37.0
11–20 years	123	30.7
Above 20 years	68	17.0
Total	**400**	**100.0**

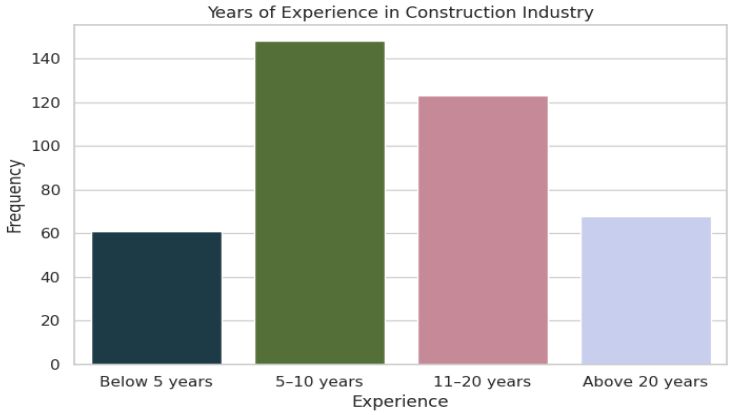

Figure 4.3: Distribution of respondents according to their years of experience.

The distribution of respondents in the construction industry, as shown in Table 4.4, indicates that the majority have significant experience, with 37.0% having 5–10 years and 30.7% having 11–20 years. Together, these groups total 67.7%, suggesting that most participants are well-acquainted with construction complexities. Those with less than 5 years make up 15.3%, while 17.0% have over 20 years of experience, ensuring a balanced mix of newcomers and seasoned professionals. This experienced respondent pool is expected to offer valuable insights into cost estimation, budgeting, and management, bolstered by the perspectives of long-term industry veterans.

This experience distribution implies that the study's conclusions are reliable and pertinent for guiding practice and policy in the execution of housing projects. While new viewpoints are present, the survey is mostly driven by seasoned professionals whose opinions reflect industry reality, as indicated by the comparatively smaller percentage of respondents with less than five years of experience. This strengthens the validity of results about the effects of building costs and cost-management techniques. In order to ensure continuity, innovation, and sustainable cost management methods in the housing sector of Katsina Metropolis, it also emphasizes the necessity of structured mentorship and capacity building to transmit knowledge from highly experienced experts to younger entrants.

4.3 Descriptive Analysis of Construction Costs and Cost Management

Table 4.5: Major Factors Contributing to Rising Construction Costs

Cost Factor	Frequency	Percentage (%)
High cost of materials	142	35.5
Labour cost	103	25.8
Inflation	87	21.7
Poor project planning	68	17.0
Total	**400**	**100.0**

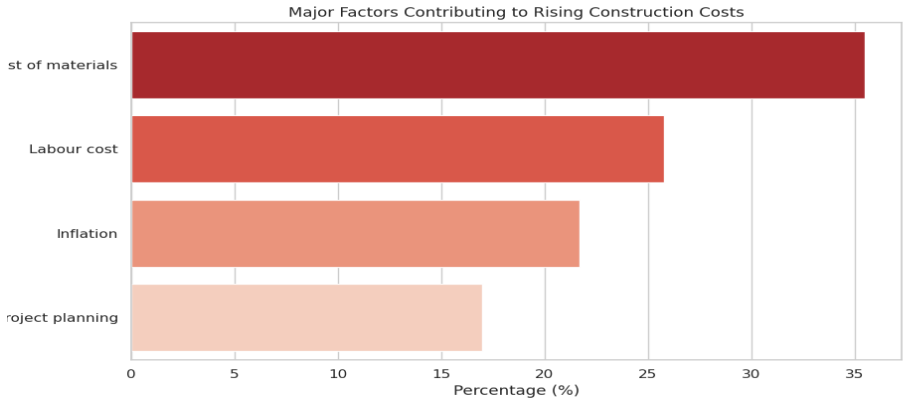

Figure 4.4: The major factors contributing to rising construction costs in housing projects.

Table 4.5 highlights key factors driving up construction costs in housing projects in Katsina Metropolis. The main contributor is the high cost of construction materials, noted by 35.5% of respondents, followed by labor costs at 25.8% and inflation at 21.7%. Poor project planning accounts for 17.0%. The reliance on both imported and locally sourced materials makes the industry vulnerable to price volatility influenced by market instability and other economic factors. Labor costs are rising due to skill shortages and increased wage demands, while inflation reduces purchasing power, exacerbating costs. Although poor planning is the least significant factor, it still leads to overruns and delays. Addressing these challenges requires stakeholders to implement strategic procurement, utilize local materials, enhance supply chain management, and improve planning processes. Policymakers should also focus on economic stabilization and capacity-building to support sustainable housing development.

Table 4.6: Effect of Rising Construction Costs on Housing Projects

Effect	**Frequency**	**Percentage (%)**
Increased housing prices	151	37.8
Project delays	109	27.3
Reduced project scope	83	20.7
Project abandonment	57	14.2
Total	**400**	**100.0**

Table 4.6 reveals that rising construction costs in Katsina Metropolis significantly impact housing projects. The main effect, reported by 37.8% of respondents, is increased housing prices, making homes less affordable for low- and middle-income earners. Project delays, noted by 27.3%, frequently disrupt schedules as developers seek additional funding. Additionally, 20.7% of respondents indicated that cost increases lead to reduced project scope, affecting

quality and specifications. Although project abandonment is the least reported effect at 14.2%, it poses severe challenges, contributing to financial losses and urban decay. The findings stress the need for improved cost management, supportive government policies, and better financial planning to address these issues and make housing more accessible in the area.

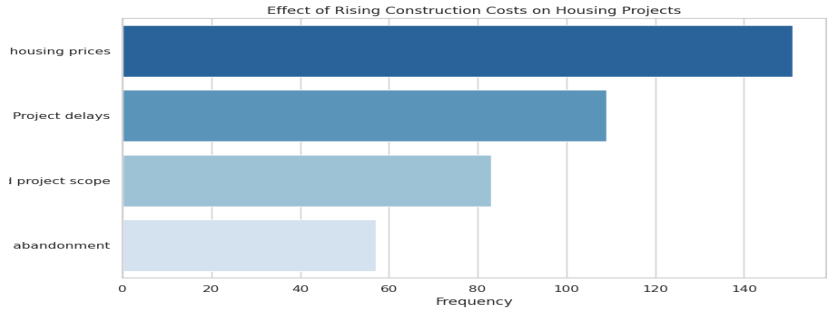

Figure 4.5: Chart showing the effect of rising construction cost on housing project.

4.4 Inferential Analysis

Correlation Analysis

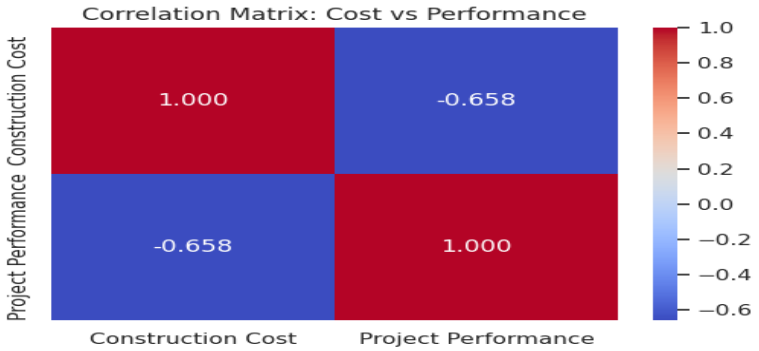

Figure 4.6: Relationship between construction cost level and project performance

Regression Analysis

Effect of cost management techniques on housing project outcomes

Table 4.7: Regression Model Summary

R	R^2	Adjusted R^2	Std. Error
0.739	0.546	0.542	0.46

Table 4.8: Regression Coefficients

Predictor	B	Std. Error	T	Sig.
Cost Planning	0.38	0.05	7.60	0.000
Budget Monitoring	0.33	0.06	5.50	0.000
Value Engineering	0.27	0.05	5.40	0.001

The correlation results presented in Table 4.8 indicate a strong negative relationship between construction cost and project performance, with a correlation coefficient of r = –0.658. This value suggests that increases in construction costs are associated with significant declines in the performance of housing projects in Katsina Metropolis. Project performance in this context relates to timely completion, adherence to budget, quality of delivery, and overall project success. The strength of the correlation shows that construction cost escalation is not a minor issue but a major factor influencing how well housing projects are executed.

This negative relationship implies that as construction costs rise, project efficiency tends to reduce. Higher costs place financial pressure on developers and contractors, often leading to delays, reduced quality, or deviations from original project plans. Projects facing excessive cost increases may struggle to secure additional funding, which can interrupt work progress and weaken overall project outcomes. The result aligns with practical realities in the construction industry, where cost overruns are frequently linked to poor project performance and client dissatisfaction. The implication of this finding is that controlling construction costs is essential for improving housing project performance in Katsina Metropolis. Stakeholders must prioritize effective cost estimation, monitoring, and control mechanisms throughout the project lifecycle. Without deliberate efforts to manage construction costs, housing projects are likely to continue experiencing delays, inefficiencies, and reduced success rates, thereby worsening the housing delivery challenge in the study area. The regression model summary in Table 4.11 shows a strong relationship between cost management techniques and housing project outcomes, with an R value of 0.739. This indicates a high degree of association between the independent variables (cost planning, budget monitoring, and value engineering) and project outcomes. The R^2 value of 0.546 reveals that approximately 54.6% of the variation in housing project performance can be explained by these cost management techniques. The adjusted R^2 value of 0.542 further confirms the stability and reliability of the model, indicating that the predictors meaningfully contribute to explaining project outcomes.

The regression analysis indicates that cost management techniques positively influence housing project outcomes. Cost planning (B = 0.38, $p < 0.001$) has the strongest impact, followed by budget monitoring (B = 0.33, $p < 0.001$) and value engineering (B = 0.27, p = 0.001). These findings suggest that effective application of these techniques is essential for successful housing projects in Katsina Metropolis, with implications for policymakers and construction professionals to adopt these strategies to ensure projects are completed on time, within budget, and to quality standards.

4.2 Discussion of the Findings

The findings of this study reveal that rising construction costs constitute a major challenge to the successful delivery of housing projects in Katsina Metropolis. The descriptive analysis shows that the high cost of construction materials is the most significant factor driving cost escalation, followed by labour cost and inflation. These factors reflect broader economic conditions such as market instability, inflationary pressures, and supply chain constraints, which directly affect the affordability and sustainability of housing projects. Poor project planning, although ranked lowest, still contributes notably to cost increases, indicating that managerial inefficiencies compound external economic challenges.

Furthermore, the study demonstrates that rising construction costs have serious negative effects on housing project outcomes. Increased housing prices emerged as the most prominent consequence, suggesting that developers often transfer additional costs to end users, thereby reducing housing affordability for low- and middle-income earners. Project delays and reduced project scope further highlight how cost escalation disrupts project schedules and compromises original design and quality expectations. Project abandonment, although less frequent, represents the most severe outcome, resulting in wasted resources, financial losses, and incomplete developments that negatively affect urban growth in Katsina Metropolis. The inferential analysis strengthens these findings by establishing a strong negative relationship between construction costs and project performance. The correlation analysis indicates that higher construction costs significantly reduce project efficiency, timely delivery, and overall success. This confirms that cost escalation is a critical determinant of poor project performance and aligns with existing literature that links cost overruns to delays, quality reduction, and stakeholder dissatisfaction in construction projects, particularly in developing economies.

Finally, the regression analysis highlights the importance of effective cost management techniques in mitigating the negative impact of rising construction costs. Cost planning emerged as the most influential factor, followed by budget monitoring and value engineering, all of which showed positive and statistically significant effects on housing project outcomes. This finding underscores the need for early and continuous financial control, efficient resource utilization, and strategic decision-making throughout the project lifecycle.

Overall, the study suggests that strengthening cost management practices, supported by appropriate policies and professional capacity development, is essential for improving housing project performance and promoting affordable housing delivery in Katsina Metropolis.

5. CONCLUSION

Rising construction costs present significant challenges for housing projects in Katsina Metropolis, leading to delays, increased prices, quality compromise, and higher abandonment risks. These issues adversely affect housing affordability and sustainable urban development. The study highlights that effective cost management techniques, such as cost planning, budget monitoring, and value engineering, can mitigate these impacts. Projects employing structured cost management are more likely to meet timelines, budgets, and quality standards. Thus, enhancing cost management practices is crucial for improving project success and promoting affordable housing in the area.

6. Recommendation

Based on the findings and conclusions of the study, the following recommendations are made:

- Developers and contractors should adopt detailed and realistic cost planning at the early stages of housing projects to minimize the risk of cost overruns.
- Continuous monitoring and control of project expenditures should be enforced throughout the project lifecycle to ensure financial discipline and timely corrective actions.
- Value engineering techniques should be integrated into housing project design and execution to achieve cost efficiency without compromising quality and functionality.
- Stakeholders should encourage the use of locally sourced construction materials where possible to reduce dependency on imported materials and minimize cost volatility.
- Government agencies should implement supportive policies, provide incentives, and strengthen regulatory frameworks to stabilize construction costs and promote affordable housing development.

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