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Impact of risk factors associated with construction in residential property development projects in Obio-Akpor Local Government, Port Harcourt, Rivers State

Abstract

This study investigates the impact of construction-related risk factors on residential property development in Obio-Akpor Local Government Area (LGA), Port Harcourt, Nigeria. The research primarily seeks to identify the major construction-related risks affecting residential development and examine their effects on the cost, time, and quality performance of residential construction projects. A descriptive survey design was employed to assess the risks, targeting professionals, including estate surveyors and real estate developers in the study area. A sample size of 193 respondents was drawn using stratified random sampling from a target population of 379 professionals. Primary data was collected through structured questionnaires, and secondary data from journals and reports. The validity and reliability of the instrument were ensured, with a Cronbach's Alpha coefficient of 0.82. The study identified inflation and price fluctuations as the most critical risk factor affecting residential property development, followed by delays in approval processes, inadequate project financing, labor shortages, poor site management, insecurity, delays in material delivery, and design errors. The findings indicate that these risks significantly affect project costs, timelines, and quality. Cost overruns, project delays, and compromised quality were identified as the most critical outcomes of these risks. The study recommends addressing these challenges through improved financial management, streamlined regulatory processes, enhanced workforce training, and better security measures. It suggests that policy reforms focusing on increasing access to financing, reducing bureaucratic delays, and mitigating risks such as labor shortages and insecurity are essential for the sustainable development of residential property in Obio-Akpor LGA.

Keywords: risk factors, construction, residential property development, projects

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Introduction

The construction industry is crucial for developing residential properties and the overall built environment. In emerging economies like Nigeria, residential property development is increasingly recognized as a significant driver of economic growth, urban transformation, and social stability.[1] However, property development, especially in urban and peri-urban areas such as Obio-Akpor Local Government Area in Rivers State, is often associated with various risks that threaten the success and sustainability of projects. These construction-related risks include financial, environmental, legal, technical, managerial, and socio-political factors, which can significantly affect the timely completion, quality, and cost-effectiveness of housing projects.[2,3]

Residential construction projects face numerous risks due to their complexity and the multitude of operations involved. Risk can be defined as the measure of the probability and consequences of failing to achieve a defined project goal.[4] This includes issues such as delays in project completion, cost overruns, quality deficiencies, safety hazards, and legal disputes.

In Nigeria, the residential property sector is under immense pressure due to rapid urbanization, population growth, and a persistent housing deficit, currently estimated at over 20 million units.[5] In response to this growing demand, numerous housing projects driven by both public and private sectors have been initiated. However, the successful realization of these projects has been hindered by construction-related risks, including cost overruns, delays in material supply, poor project planning, substandard workmanship, labor shortages, and inadequate risk management frameworks.[6,7] These challenges are particularly pronounced in rapidly urbanizing areas like Obio-Akpor, where urban sprawl and infrastructure deficits complicate development efforts.

Obio-Akpor Local Government Area is one of the fastest-growing urban centers in Rivers State and serves as a significant hub for residential and commercial property development. With its strategic proximity to Port Harcourt, it has attracted substantial investments in housing construction. The residential property development sector in Nigeria, particularly in rapidly urbanizing areas like Obio-Akpor, is characterized by strong demand driven by population growth and economic activity.[8] While this robust demand offers lucrative opportunities for developers, the successful execution of residential projects is often impeded by numerous inherent construction-related risks. These risks take various forms, including rising material costs, labor inefficiencies, adverse environmental conditions, regulatory inconsistencies, and financial uncertainties.[9,10]

Despite a general awareness of these risks, their specific and cumulative effects on the timely delivery, cost-effectiveness, and quality of residential properties in the Obio-Akpor LGA remain insufficiently understood. Anecdotal observations and industry reports consistently highlight stalled projects, significant cost overruns, substandard construction, and prolonged delays in residential developments throughout the region. These issues lead to severe consequences, including reduced investor confidence, an increasing housing deficit, diminished developer profitability, and ultimately, a negative impact on the accessibility and affordability of quality housing for the growing population.

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While the existing literature broadly addresses construction risks in developing countries, there is a clear gap in empirical research that specifically examines how these identified construction-related risks directly influence the outcomes of residential property development projects in the localized context of Obio-Akpor Local Government Area. Without a comprehensive understanding of the most prevalent and impactful risks and their specific effects, stakeholders including developers, policymakers, and prospective homeowners lack the necessary evidence-based insights to formulate effective mitigation strategies, improve project planning, and enhance overall sector performance. Therefore, this study aims to systematically investigate and quantify the impact of these identified construction-related risk factors on residential property development outcomes in the Obio-Akpor Local Government Area, Port Harcourt, in order to provide a basis for informed decision-making and sustainable development practices.

Objectives of the study

The main objective of this study is to investigate the impact of construction-related risk factors on residential property development in Obio-Akpor Local Government Area, Port Harcourt.

The specific objectives are to:

1) Identify the major construction-related risk factors affecting residential property development in the study area.
2) Examine the effects of these risk factors on the cost, time, and quality performance of residential construction projects.

Literature review

Common construction risk factors in Nigeria

Construction activities in Nigeria are often faced with a variety of risks that threaten the successful completion of projects. These risks arise from economic, political, environmental, and managerial factors, further exacerbated by weak institutional frameworks and systemic inefficiencies in the construction industry.[7] Understanding these risks is crucial for effective risk management and sustainable residential property development, especially in rapidly growing urban areas like Obio-Akpor Local Government Area in Port Harcourt.

Financial risks: One of the most significant risk factors in Nigeria's construction sector is financial instability. Financial risks in the construction industry may arise from cash flow problems, often due to fluctuating exchange rates or inflation.[11] Successfully managing these financial risks is essential from the project's inception to its final completion and operation. This includes concerns related to project financing, execution periods, and equity financing.[12] Contractors frequently face delays in receiving payments from clients, which can lead to cash flow issues and project delays.[13] Additionally, inflation and currency fluctuations contribute to increasing material and labor costs, complicating budget management and contract pricing.[14] Insufficient project financing or dependence on unstable funding sources presents further challenges to project execution.

Political and regulatory risks: The Nigerian construction industry is vulnerable to political instability, policy changes, and bureaucratic hurdles. Political and regulatory risks pertain to the potential impacts of political instability, government policies, and regulatory changes on project feasibility, timelines, and costs.[15] This risk category encompasses various factors, including leadership changes, political unrest, corruption, and shifts in governmental priorities. Frequent changes in policies, lack of consistency in project execution, and corruption in procurement and approval processes add to the uncertainty and delays.[16] Moreover, vague land ownership rights and lengthy titling and permitting procedures present significant regulatory obstacles.[17]

Project management and technical risks: Technical risks arise primarily from the design phase, where errors made at this stage can persist into the construction phase.[11] These risks stem from potential errors or uncertainties originating during the design process, which can have a lasting impact on the construction. Poor project planning, inadequate scheduling, and faulty design documentation are prevalent technical risks that hinder project execution in Nigeria.[18] These issues are often linked to insufficient capacity within project teams, lack of integration among stakeholders, and poor communication channels. Additionally, unexpected site conditions, substandard construction materials, and equipment failures can further increase project uncertainty and lead to cost overruns.

Labour and human resource risks: Labour-related risks stem from a shortage of skilled personnel, frequent labor strikes, and inadequate health and safety practices. The informal nature of labor recruitment on many Nigerian construction sites exacerbates these issues, resulting in reduced productivity and compromises in quality.[19] The employment of untrained artisans often leads to rework and defects, thereby extending project timelines and increasing costs.

Environmental and weather-related risks: Environmental risks encompass the potential impacts of environmental factors on various aspects of project implementation, sustainability, and overall success. These include natural disasters, climate change, pollution, biodiversity, and compliance with environmental regulations.[20] Weather uncertainties, such as heavy rainfall and flooding, are typical in southern Nigeria, posing significant challenges to construction scheduling and material storage.[21] Environmental risks also involve poor site conditions, contamination, and community resistance to development stemming from inadequate engagement or compensation. In the Niger Delta region, these risks are intensified by ecological degradation and insecurity due to oil-related conflicts.[22]

Security and socio-cultural risks: Insecurity due to theft, vandalism, and insurgent activities in certain areas of Nigeria presents a significant threat to construction workers, their equipment, and project infrastructure. Furthermore, socio-cultural issues such as land disputes, resistance from local communities, and traditional claims on project sites can result in project delays or legal conflicts.[23]

The construction industry in Nigeria operates in a highly risky environment characterized by financial, regulatory, technical, environmental, and socio-political uncertainties. Identifying and understanding these risks is crucial for implementing proactive mitigation strategies that can enhance project delivery outcomes. In regions like Obio-Akpor, risk-informed planning is especially important to meet the increasing demand for residential infrastructure amid ongoing construction challenges.

Impacts of construction risks on residential property development

Construction risks have a significant impact on the planning, execution, and successful completion of residential property development projects. When these risks are not effectively managed, they can hinder project delivery and negatively affect the real estate market, particularly in developing regions such as the Obio-Akpor Local Government Area in Port Harcourt. The effects can be grouped into economic, technical, social, and legal categories.

Project delays: One of the most immediate consequences of unmanaged construction risks is project delays. These delays often stem from poor planning, financial instability, labor shortages, and bureaucratic bottlenecks.[2] Such delays can extend the time needed to bring residential units to market, undermine developer credibility, and increase holding costs, thereby deterring further investment in housing.

Cost overruns: Construction-related risks are significant contributors to budget overruns in residential developments. Factors such as rising material costs, unforeseen ground conditions, and design changes commonly drive these overruns. As observed by Ameh, Soyingbe, and Odusami,[7] cost overruns are prevalent in Nigeria's construction industry and often lead to under-specification, project abandonment, or compromises in structural quality.

Poor Quality and Structural Defects: When developers cut corners due to time and cost pressures, or when unskilled labor is employed, the result is often substandard building quality and future maintenance liabilities. Poor materials, inadequate workmanship, and insufficient supervision can compromise structural integrity, increasing the risk of building collapse or the need for early renovations.[24]

Investment Risk and Market Uncertainty: The uncertainty created by construction risk factors makes residential property development a high-risk venture for investors. According to Laryea and Hughes,[25] potential investors may be discouraged by inconsistent delivery timelines, poor infrastructure, and unclear legal frameworks, which can stall sector growth and exacerbate housing shortages.

Stakeholder Conflicts and Litigation: Risk factors such as unclear contractual obligations, land disputes, and non-compliance with planning regulations often lead to conflicts among stakeholders. If these disputes remain unresolved, they can result in litigation, project suspension, or even full abandonment.[26] In Port Harcourt, where land tenure systems are often complex and contested, legal risks can derail even well-funded developments.

Environmental and Safety Impacts:Poor risk management can also lead to adverse environmental and health outcomes. For example, improper waste disposal, inadequate drainage planning, and unsafe work practices can cause flooding, pollution, and health hazards.[27] These issues not only affect construction workers but also future residents and surrounding communities.

Loss of Developer Reputation: A consistent failure to deliver residential projects on time and within budget diminishes the reputation of developers. In a competitive real estate market, reputation is crucial for attracting financing, buyers, and partnerships. A developer's inability to manage construction risks signals poor capacity, limiting future opportunities.[28]

Construction risks exert profound and multi-dimensional impacts on residential property development. These impacts are particularly pronounced in environments where regulatory enforcement is weak and technical capacity is limited. Understanding these implications is vital for formulating risk mitigation frameworks that can ensure timely delivery, quality assurance, and investor confidence in residential real estate projects in Obio-Akpor and similar urban areas.

Research methodology

The study was conducted in Obio-Akpor Local Government Area (LGA), one of the most urbanized and densely populated regions in Rivers State, Nigeria. This area is experiencing rapid residential development but also facing challenges such as poor infrastructure, land disputes, and risks associated with project execution. A descriptive survey research design was utilized to assess the impact of construction-related risks on residential development, focusing on professionals including estate surveyors and real estate developers. This approach allowed the researcher to effectively gather, analyze, and interpret data that reflects the existing conditions and relationships among variables in the study area.[28] The target population consisted of 379 professionals, with the Real Estate Developers Association of Nigeria (REDAN) accounting for 39 members (as per the REDAN official website) and the Nigerian Institution of Estate Surveyors and Valuers (NIESV) comprising 340 members (according to the NIESV Directory, 2020). A sample size of 193 was determined using Yamane's formula, based on a 95% confidence level and a 5% margin of error, as follows:

$$S = N/1+N\alpha^2$$

$$= 379/1+379(0.05)^2$$

$$= 193$$

A stratified random sampling technique was employed to ensure fair representation across different professional groups, resulting in 138 valid responses being collected. Primary data were gathered through structured questionnaires featuring a 5-point Likert scale, while secondary data were sourced from journals, reports, and previous research. Experts reviewed the questionnaire for validity, and it was tested for reliability, yielding a Cronbach's Alpha of 0.82. Data collection spanned four weeks, adhering to ethical standards. Descriptive statistics and the Relative Importance Index (RII) were used to analyze and rank the identified risk factors.

Presentation and analysis of findings

This section presents and analyzes the findings from the survey conducted on the construction-related risk factors affecting residential property development in Obio-Akpor Local Government Area (LGA), Port Harcourt. It provides a detailed exploration of the respondents' demographic characteristics, the key risk factors identified, and their impact on the cost, time, and quality performance of residential construction projects in the study area.

Respondents' background information

This theme presents the demographic characteristics of the respondents involved in the study on construction-related risk factors affecting residential property development in Obio-Akpor Local Government Area. The variables include the profession of the respondents and their years of experience in the real estate and construction industry.

Profession of respondents: Figure 1 indicates that Estate Surveyors and Valuers comprised the largest group of respondents, with 108 participants, representing 25.0% of the total sample. This prevalence is expected, as Estate Surveyors play a crucial role in property development, valuation, and risk assessment within real estate projects. In contrast, Real Estate Developers accounted for 18.8% of the respondents, highlighting their significant involvement in the practical aspects of construction and property development. This composition suggests that the study effectively captures insights from both professional service providers and key industry investors, ensuring a balanced perspective on construction-related risks in the study area.

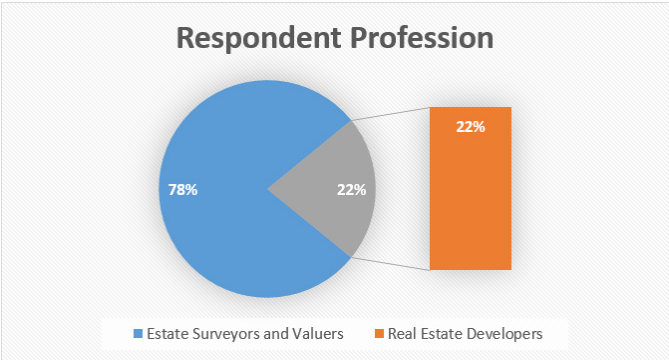

Figure 1 Profession of respondents.

Source: Field Survey, 2025

Years of experience: In terms of work experience, Figure 2 confirm that the largest group of respondents (40.6%) had between 6 and 10 years of industry experience. This was followed by those with 11 to 15 years of experience, who made up 25.0% of the respondents. Additionally, 18.8% of participants had 1 to 5 years of experience, while 15.6% had over 15 years. The prevalence of respondents with 6 to 15 years of experience indicates that most participants have a solid understanding of construction risks and project realities in the Obio-Akpor area. This distribution of experience ensures that the responses are both reliable and informed, based on practical industry knowledge.

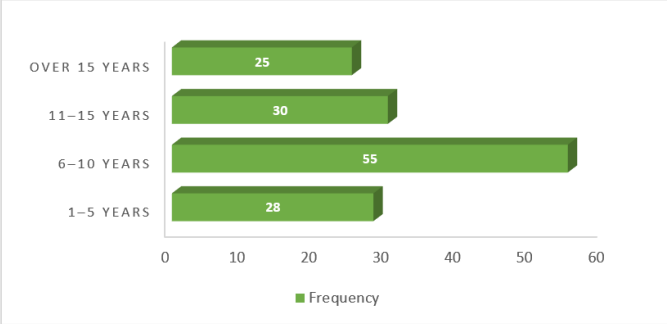

Figure 2 Years of experience.

Source: Field Survey, 2025

Major construction-related risk factors affecting residential property development

This section presents and analyzes the responses collected from stakeholders regarding the major construction-related risk factors impacting residential property development in the Obio-Akpor Local Government Area. The analysis is based on descriptive statistics including frequency distribution, mean scores, Relative Importance Index (RII), and rankings (Table 1).

Table 1 Descriptive analysis of construction-related risk factors

Risk factor	SA	A	N	D	SD	Mean	RII	Rank
Inflation/Price Fluctuations	85	40	5	4	4	4.435	0.89	1st
Delay in Approval Processes	75	46	8	5	4	4.326	0.87	2nd
Inadequate Project Financing	70	50	8	6	4	4.275	0.86	3rd
Labour Shortage or Skill Gaps	65	55	9	5	4	4.246	0.85	4th
Poor Site Management	60	58	10	5	5	4.181	0.84	5th
Insecurity and Community Disruption	62	48	18	5	5	4.138	0.83	6th
Delay in Material Delivery	57	53	20	4	4	4.123	0.82	7th
Design Errors or Incomplete Drawings	50	55	25	5	3	4.043	0.81	8th

Source: Field Survey, 2025

The data analysis reveals several critical construction-related risk factors impacting residential property development in Obio-Akpor LGA. The mean scores and Relative Importance Index (RII) were used to determine the degree of significance of each risk factor as perceived by respondents. Inflation/Price Fluctuations (Mean = 4.435, RII = 0.89) ranked 1st, indicating it is the most significant risk factor. This highlights the volatility of the Nigerian economy and the instability of material and labor costs, which adversely affect project budgets and financial forecasting. Delay in Approval Processes (Mean = 4.326, RII = 0.87) was ranked 2nd, emphasizing bureaucratic bottlenecks in obtaining permits and necessary authorizations. This aligns with existing literature that links slow regulatory processes to increased project timelines and costs. Inadequate Project Financing (Mean = 4.275, RII = 0.86) was ranked 3rd, pointing to the persistent issue of limited access to capital and credit facilities, which hinders timely project execution and completion. Labour Shortage or Skill Gaps (Mean = 4.246, RII = 0.85) placed 4th, suggesting a shortage of skilled professionals and artisans. This is a recurring issue in many developing countries where training and capacity building are often underfunded.[10] Poor Site Management (Mean = 4.181, RII = 0.84) ranked 5th, signifying inefficiencies in project supervision, logistics, and on-site coordination, which can lead to cost overruns and time delays. Insecurity and Community Disruption (Mean = 4.138, RII = 0.83) came 6th, highlighting the challenges posed by local conflicts, theft, vandalism, and communal disputes, which are prevalent in some parts of Rivers State. Delay in Material Delivery (Mean = 4.123, RII = 0.82) was ranked 7th, reflecting issues with logistics, transportation, and the supply chain, often worsened by poor infrastructure and unpredictable fuel prices. Design Errors or Incomplete Drawings (Mean = 4.043, RII = 0.81) was the 8th ranked factor. Although it received the lowest score among the listed items, it still represents a significant risk as errors in design can necessitate costly revisions and impact the structural integrity of buildings.

The findings indicate that financial risks and administrative delays are perceived as the most critical challenges facing residential property development in the study area. The predominance of economic and institutional risk factors suggests a need for policy reforms, particularly in improving transparency in project approvals and enhancing access to financing.

Impact of risk factors on cost, time, and quality performance of residential construction projects

This study evaluated the impact of three major risk factors Cost Overrun, Project Delays, and Compromised Quality on the

performance of residential construction projects. The data presents the perceptions of stakeholders regarding how each of these risk factors influences the cost, time, and quality aspects of residential construction (Table 2).

Table 2 Impact of risk factors on residential construction projects

Impact Area	SA	A	N	D	SD	Mean	RII
Cost Overrun	80	40	10	5	3	4.37	0.87
	58.0%	29.0%	7.2%	3.6%	2.2%		
Project Delays	65	45	13	8	7	4.11	0.82
	47.1%	32.6%	9.4%	5.8%	5.1%		
Compromised Quality	60	55	15	4	4	4.18	0.84
	43.5%	39.9%	10.9%	2.9%	2.9%		

Source: Field Survey, 2025

In terms of cost overruns, 58.0% (80 respondents) strongly agreed that they significantly impact the cost performance of residential construction projects. Additionally, 29.0% (40 respondents) agreed that cost overruns have a moderate impact, while 7.2% (10 respondents) were neutral regarding their effect. Conversely, 3.6% (5 respondents) disagreed, suggesting that cost overruns have minimal effects, and 2.2% (3 respondents) strongly disagreed, indicating no perceived impact. With a mean score of 4.37 and a Relative Importance Index (RII) of 0.87, cost overruns are viewed as the most significant risk factor affecting cost performance. This high score reflects a strong consensus among respondents that managing cost overruns is critical for the success of residential construction projects.

Regarding project delays, 47.1% (65 respondents) strongly agreed that they significantly affect project timelines, while 32.6% (45 respondents) agreed that delays have a moderate effect on the timely completion of projects. Furthermore, 9.4% (13 respondents) remained neutral about the impact of project delays, 5.8% (8 respondents) disagreed that delays are a major concern, and 5.1% (7 respondents) strongly disagreed with the notion that project delays affect time performance. The mean score of 4.11 and an RII of 0.82 suggest that project delays are also a significant risk factor, though they are perceived as somewhat less critical than cost overruns. Delays are a common challenge, but their impact on time performance is considered less severe in comparison.

Lastly, in relation to compromised quality, 43.5% (60 respondents) strongly agreed that it is a major issue affecting the quality of residential construction projects. Additionally, 39.9% (55 respondents) agreed that compromised quality has a moderate effect, while 10.9% (15 respondents) were neutral regarding the impact of quality compromise. On the other hand, 2.9% (4 respondents) disagreed that compromised quality is an important risk factor, and another 2.9% (4 respondents) strongly disagreed. A mean score of 4.18 and an RII of 0.84 indicate that compromised quality is a substantial concern, although it ranks slightly below cost overruns in terms of impact. Ensuring high-quality standards is therefore a key priority in residential construction projects.

Overall, the analysis indicates that cost overruns have the highest impact on residential construction projects, followed closely by project delays and compromised quality. All three factors significantly affect project performance, but cost overruns are identified as the most critical risk factor, supported by the highest mean score (4.37) and RII (0.87). These findings highlight the necessity of effectively managing these risks to ensure successful project completion on time, within budget, and with the desired quality.

Discussion and interpretation of findings

The study aimed to identify and analyze the major construction-related risk factors impacting residential property development in the Obio-Akpor Local Government Area (LGA) of Rivers State. Stakeholders involved in residential property development were surveyed to assess the significance of various risks. Descriptive statistics, including mean scores and the Relative Importance Index (RII), were utilized to interpret the data and rank these risk factors.

The highest-ranked risk factor identified in the study was inflation and price fluctuations, which received a Relative Importance Index (RII) of 0.89 and a mean score of 4.435. This factor was deemed critical by the majority of respondents, underscoring the significant impact that economic instability can have on construction projects. Fluctuations in the prices of building materials, labor, and fuel can lead to substantial budget overruns and delays. Inflation can increase the costs of raw materials, machinery, and labor, stretching project budgets beyond initial estimates.[30] Developers must address this unpredictability by incorporating buffer funds and flexible financial arrangements into their project budgets.

The second-ranked risk factor was delays in approval processes, with an RII of 0.87 and a mean score of 4.326. This reflects the widespread acknowledgment that administrative delays in obtaining necessary permits and approvals can significantly hinder construction activities. In many developing areas, including Obio-Akpor, inefficiencies within local government bodies often result in long wait times for building permits, zoning clearances, and other approvals. These delays can have a cascading effect on project timelines and financing, as the inability to start construction on time can lead to cost overruns and missed revenue opportunities. Research by Ogunsemi and Ojo[31] supports this finding, indicating that delays in government approvals are a common challenge faced in the Nigerian construction industry.

The third most significant risk factor was inadequate project financing, which was rated with an RII of 0.86 and a mean score of 4.275. Inadequate financing was identified as a major issue in the execution of construction projects, especially for residential developments that often require significant upfront capital investment. A lack of sufficient funding can result in stalled projects, incomplete constructions, or substandard work due to cost-cutting measures. This issue is well-documented in Nigeria, where limited access to affordable financing for construction projects remains a persistent problem.[32] Developers frequently rely on bank loans, which often come with high-interest rates, making financing a serious challenge for many residential development projects.

A labor shortage or skill gaps ranked fourth, with a Relative Importance Index (RII) of 0.85 and a mean score of 4.246. This factor highlights the challenges developers face in sourcing skilled workers for construction activities. A shortage of skilled labor can result in substandard construction quality, extended timelines, and increased costs. In Nigeria, the construction sector often experiences a gap in skilled workers due to inadequate vocational training and the migration of skilled workers abroad in search of better opportunities.[33] This issue can be alleviated through investment in training programs aimed at enhancing the local workforce's skills and capabilities.

Poor site management ranked fifth, with an RII of 0.84 and a mean score of 4.181. Effective site management is crucial for ensuring that construction activities are carried out efficiently, safely, and on schedule. Poor management can lead to disorganization, safety violations, and unnecessary delays. In Nigeria, challenges such as inadequate supervision, poor planning, and a lack of effective communication often result in poor site management.[30] Therefore, developers must prioritize strong project management practices and employ experienced site managers to mitigate these risks.

Insecurity and community disruption were ranked sixth, with an RII of 0.83 and a mean score of 4.138. Security concerns, including theft, vandalism, and social unrest, can delay projects by disrupting construction activities and posing risks to workers and materials. Additionally, conflicts with local communities may arise due to perceived disruptions from construction activities, leading to project delays. In Nigeria, particularly in regions like Obio-Akpor, security challenges can significantly impede construction progress.[34] Addressing these concerns requires proactive engagement with local communities and investment in security measures to protect construction sites.

Delays in material delivery ranked seventh, with an RII of 0.82 and a mean score of 4.123. These delays are a significant source of project disruption and are often caused by supply chain inefficiencies, transportation challenges, or poor vendor management. In Nigeria, infrastructural deficiencies, such as inadequate roads and inconsistent electricity supply, contribute to delays in timely material delivery. The lack of a reliable supply chain network exacerbates this issue.[31]

Finally, design errors or incomplete drawings were identified as the least significant risk factor, with an RII of 0.81 and a mean score of 4.043. Although this is the lowest-ranked risk, design errors can still have a substantial impact on construction projects, leading to costly rework and project delays. Errors in design or incomplete drawings often result from poor communication between architects, engineers, and contractors. Ensuring that detailed and accurate designs are produced before construction commences is crucial to avoiding these risks.[32]

The study also explored how these construction-related risk factors affect the cost, time, and quality performance of residential construction projects. The findings indicate that cost overruns, project delays, and compromised quality are the most significant factors affecting project outcomes. Cost Overrun: With a mean score of 4.37 and an RII of 0.87, cost overruns are viewed as the most critical risk factor concerning cost performance. A significant portion of respondents (58%) strongly agreed that cost overruns significantly impact project cost performance, highlighting the importance of effective financial management in construction. Project Delays: Project delays were deemed the second most impactful factor, with a mean score of 4.11 and an RII of 0.82. Respondents indicated that delays considerably affect project timelines, leading to longer construction durations and higher overall costs. Compromised Quality: Compromised quality was identified as a major issue, with a mean score of 4.18 and an RII of 0.84. Ensuring high-quality standards is critical for maintaining the integrity of construction projects. Respondents noted that quality issues could lead to costly rework, affecting both time and cost performance.[35]

Conclusion

The findings of this study emphasize several critical construction-related risk factors that significantly affect residential property development in the Obio-Akpor Local Government Area. Key risks identified include inflation and price fluctuations, delays in approval processes, and insufficient project financing. These economic and administrative factors notably influence the cost, timeline, and quality of construction projects. This highlights the need for improved financial management, better access to funding, and streamlined regulatory processes. While financial risks like inflation and financing issues have the greatest impact, other factors such as labor shortages, poor site management, and insecurity also significantly hinder project progress. Project delays and compromised quality have emerged as major concerns that affect the timely and efficient completion of residential construction projects. The analysis indicates that effectively managing these risks is crucial for ensuring that projects are completed within budget, on schedule, and to the required quality standards.

Overall, the study calls for urgent policy reforms and practical strategies that aim to improve the construction environment in Obio-Akpor. These strategies should focus on increasing access to financing, reducing bureaucratic delays, enhancing workforce training, and addressing security and logistical challenges. By addressing these risk factors, stakeholders can better manage project outcomes and contribute to the sustainable development of the residential property sector in the region.

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Conflicts of interest

Authors declare that there are no conflicts to interest.

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