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RISK MANAGEMENT AND BUILDING PROJECT DELIVERY IN ANAMBRA STATE, NIGERIA

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ABSTRACT

Frequent delays, cost overruns, and poor-quality outcomes continue to undermine building construction project delivery in Anambra State, Nigeria, necessitating the need to evaluate the underlying causes of these inefficiencies. This study examined the effects of internal and external risk factors on project performance and identified the most critical risks influencing delivery outcomes. A survey research design was adopted, and structured questionnaires were distributed to 172 built environment professionals, including Architects, Builders, Engineers, and Quantity Surveyors, out of which 132 responses were validated, representing a 76.7% response rate. Data were analyzed using descriptive statistics such as mean score and standard deviation, and results were ranked by significance. Findings revealed that among internal risks, inaccurate cost estimation (mean = 4.71), delays in approval/documentation (mean = 4.49), and poor scheduling (mean = 4.49) ranked highest, indicating that financial and managerial inefficiencies critically affect project performance. For external risks, legislation and government policy (mean = 4.71), financial failure (mean = 4.49), and political changes (mean = 4.33) were most influential, reflecting regulatory and economic instability. The dominant impacts of these risks were cost overrun and time overrun, these factors collectively led to (mean = 5.00), followed by project abandonment (mean = 3.92), underscoring the severe implications of poor planning and weak risk control. It therefore recommends enforcing strict cost and schedule controls, strengthening financial and risk management systems, ensuring policy stability, and enhancing project monitoring. Furthermore, capacity building, stakeholder collaboration, and digital project management adoption should be prioritized to enhance efficiency and sustainability.

KEYWORDS: *Anambra State, Building Construction, Project Delivery, Risk, Risk Management.*

INTRODUCTION

The construction industry is widely recognized as a complex and evolving sector involving multiple stakeholders, advanced technologies, and multifaceted processes. Building construction projects, in particular, are highly susceptible to risks that can significantly affect overall performance, often resulting in delays, cost overruns, and compromised quality. According to the Project Management Institute (PMI, 2020), risk refers to any uncertain event or condition that can influence project objectives either positively or negatively. Hence, effective risk

management remains fundamental to the successful delivery of construction projects.

Wang, Li and Liu (2022) emphasize that identifying, assessing, and addressing risks early in a project positively influences timelines and budget performance. Building projects face both external risks such as unpredictable weather, economic instability, and changes in government regulations and internal risks, including design flaws, construction errors, and labor shortages (Liu, Wang & Li, 2023). Proper management of these risks enhances project efficiency and delivery outcomes. The involvement of owners, contractors, subcontractors, designers, and suppliers further increases project complexity and the potential for conflict or miscommunication (Ali et al., 2023; Khan, Zhang & Ali, 2022).

Despite its recognized importance, the construction industry still faces challenges in implementing consistent risk management practices. Projects frequently exceed planned timelines and budgets due to unmanaged or poorly managed risks. As noted by Alaloul, Liew and Zawawi (2023), effective decision-making in construction depends largely on comprehensive risk analysis, particularly given the influence of financial, quality, and environmental factors. While professionals attempt to avoid, mitigate, or transfer risks (Choudhry & Iqbal, 2013), a deeper understanding of risk perception and response is vital for sustainable project success.

In developing countries like Nigeria, this challenge is more evident. Many construction professionals do not systematically apply risk management procedures, resulting in serious setbacks in project execution (Adeleke, Bamgbade & Salami, 2022). Similarly, Okeola, Bamgbade and Salami (2023) report that weak or absent risk strategies are major causes of project delays and cost overruns. In Anambra State according to Mgbeahuru & Olughu (2022) these issues persist, as construction projects are often plagued by time extensions, budget escalation, and substandard quality linked to inadequate risk management practices. Construction firms in Anambra State report significant cost-performance issues, with increased cost variation and reduced value realization in building projects (Mgbeahuru & Olughu, 2022). Safety and health planning was shown to significantly affect firm performance, underscoring systemic risk exposure in the region (Udeze, et al., 2021). Previous studies (Ogunsanmi, 2013; Okeola et al., 2017) have identified poor risk management as a major cause of project failure in Nigeria. Therefore, this study examined the effect of internal and external risk factors on successful project delivery in Anambra State, Nigeria. Specifically, it seeks to identify the key risks influencing project outcomes, evaluate their effects on delivery performance, and recommend practical strategies for mitigating risks in building construction projects.

REVIEW OF RELATED LITERATURE

Risk Management in Construction Projects

The construction industry is a vital component of economic growth, responsible for providing infrastructure, housing, and commercial facilities. However, it remains one of the most uncertain sectors due to its dynamic nature and exposure to multiple risks (Aneziris, Topali & Papazoglou, 2012; Outreville, 2018). Each construction project is unique and influenced by changing site conditions, material availability, financial limitations, and workforce variability. These factors often create uncertainties that lead to delays, cost overruns, and quality issues (Adeleke et al., 2021).

Risk in construction refers to the possibility of an event or condition that may adversely or positively affect project objectives such as

time, cost, quality, and safety (PMI, 2020). Risks can originate internally from the project team or externally from the environment. Internal risks include poor scheduling, inaccurate cost estimation, client change orders, and shortage of skilled labour, which reduce efficiency and affect productivity (Liu et al., 2023). External risks, on the other hand, involve government policies, political instability, financial failure, and inflation, which influence project financing and material costs (Berg 2010; Okeola et al., 2022; Oladokun, et al. 2016).

Effective risk management is therefore essential for successful project delivery. It involves the systematic process of identifying, analysing, and responding to potential risks to reduce negative impacts and maximise opportunities (Dzingai 2022; Wang et al., 2022). Recent research shows that early identification and mitigation of risks significantly enhance project outcomes by improving planning accuracy and resource allocation (Ali et al., 2022). The use of digital tools such as Building Information Modelling (BIM) and data analytics has further strengthened proactive risk monitoring and control (Liu et al., 2023).

Risk management in construction projects is a structured process that identifies, assesses, and responds to risks to enhance project outcomes (Douglas, 2009). It involves three key stages—identification, analysis, and response—using strategies such as avoidance, reduction, transfer, or retention. Risk identification and analysis clarify uncertainties and support effective decision-making (Alhassan, 2016). Structured risk management improves time and cost performance (Wang et al., 2022) and reduces disruptions through proactive approaches (Liu et al., 2023). Organisational frameworks define ownership, control, and contingency planning (Smith, Merna & Jobling, 2006; Aminu, 2013). Although some perceive it as costly, neglecting risk management causes greater losses (Ali et al., 2023; Okeola et al., 2022). Integrated risk management ensures efficiency, safety, and sustainable project success.

In the Nigerian context, inadequate financial forecasting, poor documentation, and unstable policies remain key drivers of construction risk (Adeleke et al., 2021; Oladapo, 2015). Addressing these challenges requires collaboration between clients, consultants, contractors, and government agencies. Ultimately, embedding risk management throughout the project life cycle promotes transparency, reduces uncertainty, and supports sustainable project performance (Ali, Zhang and Khan 2022).

Internal Risk Factors

Internal risks arise from within the project organization and directly influence cost, time, and quality performance. Inaccurate cost estimation often leads to cost overrun and poor financial planning (Adeleke et al., 2021). Tight schedules and poor program scheduling reduce efficiency and increase error rates (Wang et al., 2022). Delays in approvals, documentation, and client change orders create interruptions that affect workflow and completion timelines (Okeola et al., 2022). Incompetent subcontractors and shortages of skilled labour contribute to rework and low productivity (Liu et al., 2023). Poor coordination among participants weakens communication and decision-making, causing avoidable disputes (Oladokun et al., 2023). Consultant and contractor delays, together with legal actions, further escalate project uncertainty and cost (Khan & Ali, 2020). Theft of materials also raises operational expenses and affects trust among project stakeholders (Chen et al., 2023). Overall, these internal factors reflect weaknesses in planning, supervision, and managerial competence that undermine

project delivery efficiency (Alaloul et al., 2019).

External Risk Factors

External risks stem from socio-political and economic environments that contractors and clients cannot control. Legislative changes and unstable government policies influence contract compliance and delay project execution (Alaloul et al., 2020). Financial failure and delayed payments restrict cash flow and slow progress (Adeleke et al., 2021). Currency fluctuations and material price hikes increase procurement costs, leading to project suspension or downsizing (Chen et al., 2023). Political instability discourages investment and disrupts long-term construction planning (Wang et al., 2022). Objections from local communities, often related to land disputes, delay project approvals and access to sites (Oladokun et al., 2023). These external pressures collectively reduce profitability, affect stakeholder confidence, and heighten operational risk. Hence, the success of construction projects depends on effective anticipation of policy shifts, sound financial planning, and inclusive stakeholder engagement to minimize the negative impact of uncontrollable external influences (Liu et al., 2023).

Effect of Risk Management on Building Construction Projects

Risk is an inherent aspect of construction projects, with significant implications for time, cost, quality, and safety (Perminova, 2007; Perminova, 2020; Udeze et al., 2021). Unmanaged risks often lead to delays, cost overruns, and compromised project standards. These risks can originate from a variety of sources, including economic fluctuations, poor project planning, inadequate technical coordination, and human or organisational weaknesses (Mgbeahuru & Olughu, 2022).

Delays remain one of the most common consequences of poor risk management. Factors such as adverse weather, material shortages, or workforce challenges can halt progress, leading to schedule extensions (Adeleke, 2021; Okeola, 2022). Wang et al. (2022) found that delays directly increase costs and reduce quality, underscoring the need for robust risk analysis and proactive mitigation. Similarly, cost overruns frequently arise from inaccurate estimates, unforeseen ground conditions, or scope changes. Liu et al. (2023) observe that such overruns threaten project profitability and stakeholder confidence, and they recommend regular monitoring of financial and operational risks throughout the project cycle. Quality issues also emerge as a major consequence of unmanaged risks. According to Zhang et al. (2022) and Wang et al. (2023), poor workmanship, inadequate supervision, or deficient materials can result in rework, repair costs, and client dissatisfaction. The negative impacts extend beyond financial losses, often damaging the contractor's reputation and long-term competitiveness.

Another critical dimension of construction risk involves safety. Construction sites are inherently hazardous, with frequent exposure to risks such as equipment failure, electrical hazards, and falls from height. Chen et al. (2023) assert that effective safety management is integral to risk management, as it protects human lives while enhancing productivity. Incorporating safety protocols within the broader risk management framework not only reduces accidents but also promotes a culture of accountability and compliance.

METHODOLOGY

This study was designed to examine the effects of internal and external risk factors on building construction project delivery in Anambra State, Nigeria. A survey research design was adopted, utilizing structured

questionnaires to collect primary data from professionals in the built environment, including Architects (40), Builders (45), Civil/Structural Engineers (55), and Quantity Surveyors (30), totaling 172 respondents. The entire population was studied due to its manageable size. The questionnaire consisted of closed-ended items structured on a five-point Likert scale to measure respondents' perceptions of risk factors and their impacts. The content validity of the questionnaire was established through expert review by three academics in construction management and two senior professionals from the Anambra State Ministry of Works. Their feedback was used to refine ambiguous questions and ensure relevance and clarity. Construct validity was ensured by aligning each question with the study objectives and variables derived from existing reviews. Reliability was assessed through a pilot study conducted with 20 professionals (not part of the main sample) to determine internal consistency using Cronbach's Alpha. The reliability coefficient obtained was 0.86, which exceeds the acceptable threshold of 0.70. Data were analyzed using descriptive statistical techniques, specifically the mean score and standard deviation (SD), to determine the significance and level of agreement among respondents.

The analyzed results were systematically presented in tables and ranked to identify the most critical risk factors influencing construction project performance in the study area.

RESULTS AND DISCUSSION

Questionnaire Response Rate

This section presents the response rate of the administered questionnaires, showing the number distributed, returned, and found valid for analysis, thereby indicating the level of participation of respondents.

Table 1: Response rate of questionnaires administered to built environment professionals

Profession	No. Distributed	Returned	No. Valid	% Valid
Architects	40	32	31	18
Builders	45	37	34	19.8
Civil/Structural Engineers	55	48	44	25.5
Quantity Surveyors	30	23	23	13.4
Total	**172**	**140**	**132**	**76.7**

Table 1 shows that out of 172 questionnaires distributed, 132 were validly returned, representing a 76.7% response rate**.** The table shows that out of 172 questionnaires distributed, 132 were validly returned, representing a 76.7% response rate. This high rate indicates effective participation and reliable data representation from professionals in the built environment for the study's analysis and conclusions.

Respondents Background Information

The professional composition of the 132 valid respondents who participated in the study included Architects, Builders, Civil/Structural Engineers, and Quantity Surveyors representing the major disciplines within the Nigerian construction industry. Civil/Structural Engineers formed the largest group (33.3%), followed by Builders (25.8%), Architects (23.5%), and Quantity Surveyors (17.4%). The respondents possess varied academic and professional backgrounds, with all being registered members of recognized professional bodies such as NIOB, NIA, NSE, and NIQS. Their broad experience across public, private, and consultancy sectors ensures that the data

collected reflects diverse perspectives on construction practices, project management, and facility development. Overall, the composition enhances the credibility and representativeness of the study's findings within the built environment context.

Internation Risk Factors Affecting Building Construction Projects

This section examines the internal risk factors that influence building construction projects. It focuses on organization-related issues such as management inefficiency, resource allocation, technical incompetence, and poor communication, which originate within the project team and significantly affect project performance and delivery.

Table 2 Internal risk factors that typically affects building construction projects

Internal Risk Factors	SA	A	UD	D	SD	Mean	SD	Rank
Inaccurate cost estimate	95	37	0	0	0	4.71	0.48	1st
Delays in approval and other documents	65	67	0	0	0	4.49	0.51	2nd
Poor program scheduling	65	67	0	0	0	4.49	0.51	3nd
Consultant and contractor delay	50	79	0	0	3	4.33	0.58	4th
Legal action delay	26	88	0	10	8	4.0	0.63	5th
Tight schedule in projects	15	105	0	6	6	3.98	0.67	6th
Incompetency of sub-contractors	59	56	0	10	7	3.92	0.70	7th
Client change order	20	87	0	15	10	3.89	0.74	8th
Shortage of skilled labor	14	91	0	20	7	3.85	0.79	9th
Poor coordination among participants	26	71	0	15	20	3.78	0.82	10th

Note: SA - Strongly Agreed (5), A-Agreed (4), UD- Undecisive (3), D-Disagreed (2), and SD-Strongly Disagreed (1)

Table 2 presents internal risk factors that influence building construction projects. The findings reveal that inaccurate cost estimation, with a mean of 4.71 and SD of 0.48, ranked highest, indicating it is the most critical internal risk affecting project delivery. This aligns with Adeleke et al. (2021) and Liu et al. (2023), who found that inaccurate financial forecasting often leads to budget overruns and client dissatisfaction. Similarly, delays in approval and documentation, with a mean of 4.49 and SD of 0.51, and poor program scheduling, also with a mean of 4.49 and SD of 0.51, ranked second and third respectively, consistent with Okeola et al. (2022), who emphasized bureaucratic bottlenecks and weak planning as major contributors to project inefficiency. Consultant and contractor delay, with a mean of 4.33 and SD of 0.58, ranked fourth, reflecting issues of poor supervision and communication gaps noted by Khan and Ali (2020). Legal action delays and tight project schedules further highlight time-related risks that often escalate project costs and stress team coordination (Wang et al., 2022). Factors such as client change orders, shortage of skilled labor, and poor coordination among participants also emerged as significant internal risks, echoing findings by Alaloul et al. (2019) and Oladokun et al. (2023) that human and managerial inefficiencies undermine quality outcomes. Overall, the low standard deviations, ranging from 0.48 to 0.82, indicate general agreement among respondents, confirming that cost, time, and managerial factors remain dominant internal risks in Nigeria's building construction industry.

External Risk Factors Affecting Building Construction Projects

This section examines external risk factors influencing building construction projects.

These factors originate from the broader political, economic, and regulatory environments and are largely beyond the control of project stakeholders. Understanding their impact is essential for effective risk management and the successful delivery of construction projects.

Table 3 External risk factors that typically affects building construction projects

External Risk Factors	SA	A	UD	D	SD	Mean	SD	Rank
Legislations and government policy	95	37	0	0	0	4.71	0.48	1st
Financial failure	65	67	0	0	0	4.49	0.51	2nd
Political factors change	50	79	0	0	3	4.33	0.56	3rd
Delay in payment	26	88	0	10	8	4.0	0.63	4th
Currency fluctuation	59	56	0	10	7	3.92	0.68	5th
Price Hiking	59	56	0	10	7	3.92	0.68	5th
Local communities pose objection	14	91	0	20	7	3.85	0.74	6th

Note: SA - Strongly Agreed (5), A-Agreed (4), UD- Undecisive (3), D-Disagreed (2), and SD-Strongly Disagreed (1)

Table 3 shows the external risk factors influencing building construction projects. Legislation and government policy, with a mean of 4.71 and SD of 0.48, ranked first, indicating it is the most critical external factor. This agrees with Alaloul et al. (2020) and Okeola et al. (2022), who noted that frequent policy shifts and regulatory inconsistencies significantly disrupt project timelines and budgets. Similarly, financial failure, ranking second with a mean of 4.49 and SD of 0.51, underscores the impact of weak financial systems and poor access to credit, consistent with the findings of Adeleke et al. (2021) that financial instability often leads to halted projects.

Political factors change, ranked third, also plays a crucial role in influencing investor confidence and project continuity, aligning with Wang et al. (2022), who highlighted that political instability contributes to contract uncertainty and inflation. Delay in payment, with a mean of 4.00 and SD of 0.63, remains a recurring issue that affects cash flow and contractor performance (Liu et al., 2023). Meanwhile, currency fluctuation and price hiking, both with mean scores of 3.92, reflect Nigeria's unstable economic climate, which affects material procurement and cost predictability (Chen et al., 2023). Local community objections, though ranked lowest, still present notable risks, often linked to land disputes and poor stakeholder engagement (Oladokun et al., 2023). Overall, the relatively low standard deviations (0.48–0.74) suggest a high level of agreement among respondents on these key external risk factors.

Effect of Risks on Building Projects

This section discusses the effects of risk on building projects, highlighting how unmanaged risks can affect the delivery of building projects. Understanding these effects is crucial for developing strategies that enhance project performance, ensure resource efficiency, and promote successful project completion within defined objectives

Table 4 Effect of risks on building projects

Effects of risk	SA	A	UD	D	SD	Mean	SD	Rank
Cost overrun	132	0	0	0	0	5.0	0.00	1st
Time overrun	132	0	0	0	0	5.0	0.00	1st
Project abandonment	59	56	0	10	7	3.92	0.68	2nd
Accidents within the construction site	14	91	0	20	7	3.85	0.74	3rd
Breach of project contracts	14	91	0	20	7	3.85	0.74	3rd
Delay in material delivery on site	14	83	0	10	25	3.65	0.79	4th
Poor quality project delivery	25	71	0	24	12	3.63	0.81	5th
Inaccurate material requirement	5	15	0	67	45	2.62	0.84	6th
Dispute between project stakeholders and the client.	27	43	0	45	17	3.61	0.85	7th
Loss of workmanship	5	15	16	44	52	2.55	0.88	8th

Note: SA - Strongly Agreed (5), A-Agreed (4), UD- Undecisive (3), D-Disagreed (2), and SD-Strongly Disagreed (1)

Table 4 shows that cost overrun and time overrun, both with a mean of 5.00 and SD of 0.00, ranked highest, indicating unanimous agreement that these are the most critical impacts of risk on construction projects. This finding supports Liu et al. (2023); Mgbeahuru, and Olughu (2022); and Wang et al. (2022), who reported that poor planning, inflation, and delayed payments are primary causes of schedule and budget deviations. Project abandonment, ranked second with a mean of 3.92, highlights the severe effect of prolonged risks, aligning with Okeola et al. (2022), who linked abandonment to poor funding and weak contract enforcement. Breach of contract and site accidents, both ranking third, reflect challenges in compliance and safety, consistent with Chen et al. (2023), who found that inadequate supervision and safety negligence lead to contractual and operational failures.

Delays in material delivery and poor-quality project delivery also feature prominently, consistent with Adeleke et al. (2021), who observed that supply chain disruptions and poor craftsmanship significantly affect project outcomes. Loss of workmanship, ranked lowest with a mean of 2.55, suggests reduced productivity due to demotivation and high turnover (Oladokun et al., 2023). Overall, the results reveal that risks severely affect time, cost, quality, and safety performance, confirming the need for proactive management and accountability in Nigeria's construction industry.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study revealed that inaccurate cost estimation, poor scheduling, and delays in documentation are the most significant internal risks, while unstable government policies, financial failure, and political instability are the leading external risks influencing building construction projects in Anambra State, Nigeria. These risks collectively contribute to cost and time overruns, project abandonment, and reduced quality performance. The findings confirm that Anambra State's construction industry faces severe internal and external challenges that significantly affect project delivery outcomes. Consistent with past studies, these challenges stem from weak planning, regulatory inconsistencies, and inadequate supervision.

Recommendations

Based on the findings and conclusion, the following recommendations are proposed to mitigate both internal and external risks affecting building construction projects in Anambra State:

1. Enhance Cost and Schedule Management: Project stakeholders should adopt accurate cost estimation and realistic scheduling techniques supported by modern project management tools.
2. Strengthen Documentation and Monitoring: Proper documentation, record-keeping, and continuous monitoring should be enforced to ensure accountability and timely decision-making.
3. Promote Stable Policy and Governance: Government authorities should maintain consistent construction policies and create an enabling environment that minimizes political and regulatory disruptions.
4. Ensure Financial Sustainability: Contractors and clients should establish reliable funding mechanisms and contingency plans to prevent financial breakdowns during project execution.
5. Improve Risk Awareness and Capacity Building: Regular training and workshops should be organized to enhance stakeholders' knowledge of risk identification, assessment, and control in construction projects.

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