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Project management practices and project success in the Nigerian construction industry: A structural equation modelling approach

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Abstract
Purpose: The study examined the effect of project planning and control practices, risk management practices, and stakeholder management practices on project success in the Nigerian construction industry. The study aimed to determine how these management practices contribute to improved time, cost, and quality performance in construction projects.
Methodology/Design: A quantitative research design was adopted using a structured questionnaire to collect data from construction professionals in Nigeria. A total of 200 valid responses were analyzed. Structured sampling was used to select respondents from registered construction firms. Data were analyzed using Structural Equation Modeling (SEM) to test the proposed hypotheses and examine the relationships among the study variables.
Findings: The results showed that project planning and control practices had a positive and significant effect on project success ($\beta = 0.32$, $t = 3.45$, $p < 0.05$). Risk management practices also had a positive and significant effect ($\beta = 0.28$, $t = 2.98$, $p < 0.05$). Stakeholder management practices demonstrated the strongest positive influence on project success ($\beta = 0.41$, $t = 4.62$, $p < 0.05$).
Implications: The findings emphasize the need for structured planning systems, proactive risk management strategies, and strong stakeholder engagement mechanisms to enhance construction project outcomes. Managers and policymakers are encouraged to strengthen these areas to improve project delivery performance.
Originality/Value: This study integrates the Resource-Based View, Contingency Theory, and Stakeholder Theory to explain project success in the Nigerian construction context, providing empirical evidence from a developing economy.

Keywords: Project Planning and Control, Risk Management, Stakeholder Management, Project Success, Construction Industry, Nigeria.

Introduction

The construction sector in Nigeria plays a major role in economic development by providing infrastructure, creating jobs, and driving investment. However, the industry faces many challenges that affect how well projects are delivered. Projects in the building and civil works sector are often completed late, go over budget, or fail to satisfy the expectations of clients and stakeholders. Many studies show that weak project management practices are key reasons for poor performance in the construction industry (Iroha *et al*., 2024) [13]. Effective project management practices involve planning, scope control, cost management, risk handling, and stakeholder coordination. These practices help to keep projects on schedule, within budget, and aligned with quality standards.

In the context of Nigeria, project success has been linked to how well these management practices are applied. Research shows that there is a positive association between project management functions such as planning, cost control, and stakeholder engagement and the success of construction projects (Unegbu *et al*., 2020) [30]. In addition, aspects like leadership behaviour of project managers and decision-making skills influence how project teams perform and whether project objectives are met (Adeyemi *et al*., 2025) [1]. Structural Equation Modelling (SEM) is increasingly used in construction research to test complex relationships between latent variables like management practices and project outcomes. SEM allows researchers to assess not just correlation, but causal influence among multiple factors simultaneously.

In spite of the theoretical emphasis on structured project management, empirical evidence from the Nigerian construction industry is limited, especially studies using advanced modelling techniques like SEM. Most studies use simple correlational or regression approaches, which may not fully capture the multiple interactions among project variables. This gap suggests that more rigorous investigations are needed to understand how project management practices collectively affect project success in the Nigerian construction setting. Using SEM can provide richer insights that help contractors, consultants, and policymakers improve project delivery and reduce failure rates.

Problem Statement

The Nigerian construction industry continues to experience poor project performance, including delays, cost overruns, and substandard quality outcomes. Many projects do not meet their intended objectives, and this undermines client satisfaction, reduces investor confidence, and weakens economic growth. Research indicates that project management practices in Nigeria are often weak or inconsistently applied, which contributes to these performance gaps. For instance, inadequate scope management and cost control have been linked with low project success rates in several Nigerian studies (Eletu & Akhigbe, 2022) [9]. Similarly, project managers often lack the leadership skills necessary to align project teams and enforce best practices, leading to inefficiencies in execution. Although project management theories emphasize the need for integrated approaches to planning, risk management, and

stakeholder engagement, there is limited empirical evidence on how these practices jointly influence project success in the Nigerian context. Risk management, for example, can shape project performance by reducing uncertainties and preventing disruptions; yet many firms in Nigeria do not fully implement risk identification and mitigation strategies (Oyekunle, 2024) [26]. This contributes to a situation where projects may be delivered but fail to meet performance targets for cost, time, and quality.

Even where research exists, many studies use basic statistical methods that do not fully explore the complex relationships between multiple project variables. Structural Equation Modelling provides a more robust way to examine how different project management practices influence project success simultaneously, accounting for both direct and indirect effects. However, few studies in Nigeria have adopted SEM to test these relationships. This lack of rigorous modelling limits understanding of which practices are most critical and how they interact to determine project success, creating a gap that must be addressed for both academic theory and industry practice.

Theoretical Underpin and Hypotheses Development

Project management practices have become a central strategy for improving project outcomes in the construction industry. In many developing economies, especially Nigeria, construction projects often face delays, cost overruns, quality problems, and stakeholder disputes. When firms apply structured project management practices such as clear planning, detailed scheduling, cost monitoring, risk identification, and stakeholder coordination, they improve control over project activities and reduce uncertainty. Effective systems help align resources, timelines, and expectations, which increases the likelihood of delivering projects successfully.

Empirical evidence from different countries supports this view. In Italy, Berssaneti and Carvalho (2019) [4] found that formal planning and monitoring systems significantly improved project performance in construction and infrastructure projects. In Bangladesh, Islam, Trigunarsyah and Karim (2020) [16] reported that weak planning and limited risk control were major causes of cost overruns and time delays, while structured management practices enhanced delivery outcomes. Similarly, research in Indonesia by Santoso and Soeng (2022) [27] showed that risk management practices had a strong positive effect on project success in large-scale building projects. In Ghana, Agyekum and Opoku (2021) [2] observed that effective project control systems improved time and cost performance in public construction works. Evidence from Ivory Coast also indicates that stakeholder coordination and communication significantly influenced project outcomes in infrastructure development projects (Kouamé & N'Guessan, 2023) [21]. These findings show that project management practices play a critical role in shaping project success across different construction contexts.

To explain how these practices influence outcomes, this study draws on three major theories. The Resource-Based View (RBV) argues that firms achieve superior performance when they possess valuable and well-organized internal resources (Barney, 1991) [3]. In construction firms, project management capabilities such as skilled managers, structured planning systems, digital monitoring tools, and risk control frameworks represent strategic resources. When these capabilities are properly developed and integrated, they create efficiency and competitive advantage, leading to improved project success.

Contingency Theory suggests that there is no single best way to manage a project (Donaldson, 2001) [7]. The effectiveness of management practices depends on project size, complexity, uncertainty, and environmental conditions. Since construction projects in Nigeria operate under fluctuating economic conditions, unstable material prices, and regulatory challenges, flexible and adaptive risk management becomes essential. Firms that adjust their management practices to fit project realities are more likely to achieve success.

Stakeholder Theory emphasizes that project success depends on how well organizations manage relationships with key stakeholders (Freeman, 1984) [10]. Construction projects involve multiple actors such as clients, contractors, suppliers, regulators, and host communities. Poor communication and weak engagement often result in disputes and delays. Strong stakeholder management builds trust, reduces conflict, and supports smoother implementation, which improves project outcomes.

Drawing from these theoretical foundations and prior empirical findings the study hypothesizes that:

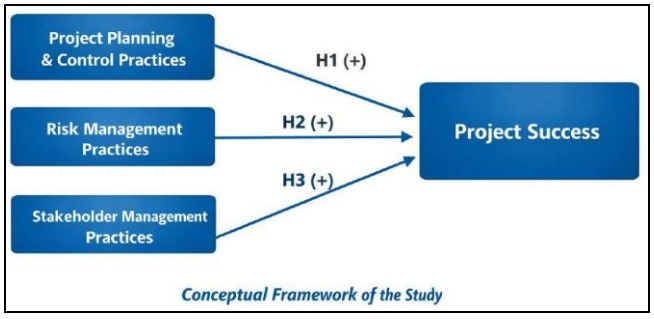
H1: There is a positive relationship between project planning and control practices and project success in the Nigerian construction industry.

H2: Risk management practices have a significant positive effect on project success in the Nigerian construction industry.

H3: Stakeholder management practices positively influence project success in the Nigerian construction industry.

Conceptual Framework

The conceptual framework for this study explains how selected project management practices influence project success in the Nigerian construction industry. The model is grounded in the Resource-Based View (RBV), Contingency Theory, and Stakeholder Theory. These theories suggest that internal capabilities, adaptive management, and stakeholder engagement are critical drivers of performance outcomes. Figure1 presents the construct



Source: Field Data, 2026

Author's Construct: Figure 1showing the relationship between key variables of the study

In this study, project planning and control practices, risk management practices, and stakeholder management practices are treated as independent variables. These practices represent key managerial capabilities within construction firms. Project planning and control include scheduling, budgeting, monitoring, and performance

tracking systems. Risk management involves identifying, assessing, and mitigating project uncertainties. Stakeholder management focuses on communication, engagement, and coordination with clients, contractors, suppliers, regulators, and host communities.

The dependent variable is project success, which is measured through common performance dimensions such as time performance (completion within schedule), cost performance (delivery within budget), quality standards, and client satisfaction. The framework assumes that effective application of these management practices improves coordination, reduces uncertainty, enhances resource utilization, and builds stakeholder trust, which collectively leads to higher project success. The model proposes direct relationships between each project management practice and project success. Structural Equation Modelling (SEM) will be used to test these relationships simultaneously and examine their strength and significance.

Methodology

Philosophical Underpinning

The study was guided by the positivist philosophy. Positivism assumes that reality can be measured objectively using observable data and statistical analysis. This philosophy was suitable because the study tested hypotheses and examined relationships between measurable variables (Saunders *et al*., 2019) [28].

Research Design

The study adopted a quantitative research approach. A cross-sectional survey design was used because data were collected from respondents at one point in time. This design was appropriate since the study aimed to examine the relationships between project management practices and project success in the Nigerian construction industry. Quantitative research allows researchers to test hypotheses and examine relationships among variables using statistical techniques (Creswell & Creswell, 2018) [6]. The study further employed Structural Equation Modelling (SEM) to test the proposed hypotheses simultaneously, as SEM is suitable for analyzing complex relationships between latent constructs (Hair *et al*., 2019) [11].

Population of the Study

The population consisted of construction professionals working in registered construction firms in Nigeria. These included project managers, site engineers, quantity surveyors, architects, and supervisors who had direct involvement in project execution and monitoring. These professionals were selected because they possessed practical knowledge of planning, risk management, stakeholder engagement, and project performance outcomes.

Sample Size and Sampling Technique

A sample size of 200 respondents was used for the study. The sample size was considered adequate for SEM analysis, as previous methodological studies recommend a minimum sample of 200 for stable parameter estimation in structural models (Hair *et al*., 2019; Kline, 2016) [11, 20]. A purposive sampling technique was adopted to select respondents who had at least three years of experience in construction project management. This approach ensured that participants had sufficient knowledge to provide reliable responses.

Data Collection Instrument

Data were collected using a structured questionnaire. The questionnaire consisted of five sections. The first section captured demographic information such as job role, years of experience, and type of construction project handled. The remaining sections measured project planning and control practices, risk management practices, stakeholder management practices, and project success.

All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement items were adapted from established studies in project management literature to ensure content validity. The use of Likert scales is common in management research because it allows for the measurement of attitudes and perceptions in a structured manner (Saunders *et al*., 2019) [28].

Validity and Reliability

To ensure validity, the questionnaire items were reviewed by experts in construction management and academic researchers before distribution. Construct validity was later assessed using Confirmatory Factor Analysis (CFA). Reliability was examined using Cronbach's alpha and composite reliability coefficients. A reliability threshold of 0.70 was used as the minimum acceptable level, as recommended in SEM studies (Hair *et al*., 2019) [11].

Data Collection Procedure

The questionnaires were distributed physically and electronically to selected construction professionals across major Nigerian cities. Respondents were informed about the purpose of the study, and participation was voluntary. A total of 200 completed and usable questionnaires were retrieved and used for analysis.

Data Analysis Technique

The collected data were coded and entered into statistical software for analysis. Descriptive statistics such as frequency, mean, and standard deviation were used to summarize respondent characteristics and variable distributions. Structural Equation Modelling (SEM) was employed to test the hypothesized relationships among the constructs. The analysis followed a two-step approach: first, the measurement model was assessed through Confirmatory Factor Analysis (CFA); second, the structural model was evaluated to test the hypotheses (Hair *et al*., 2019) [11].

Model fit was assessed using commonly accepted fit indices such as Chi-square (χ^2), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). These indices helped determine whether the proposed conceptual model adequately fit the data.

Ethical Considerations

Ethical standards were observed throughout the study. Respondents were assured of confidentiality and anonymity. Participation was voluntary, and respondents had the right to withdraw at any time. The collected data were used strictly for academic purposes.

Results

Demographic Characteristics of Respondents

The demographic characteristics of the 200 respondents were analyzed to provide an overview of the participants involved in the study.

The results showed that the majority of respondents were male. This reflected the gender structure commonly observed in the construction industry, where male professionals dominate technical and site-based roles. Similar findings were reported in Indonesia, where Santoso and Soeng (2022) [27] found that most construction project professionals were male due to the physical and technical demands of the sector. A comparable pattern was also observed in Bangladesh, where Islam, Trigunarsyah, and Karim (2020) [16] noted strong male representation in project management positions. In Ghana, Agyekum and Opoku (2021) [2] likewise reported that the construction workforce was largely male, especially in engineering and site supervision roles.

Regarding age distribution, most respondents were within the active working age group of 31–45 years. This indicated that the study captured professionals who were in their mid-career stage and actively engaged in project execution. This age structure aligned with findings from Ghana and Indonesia, where researchers observed that construction project managers and engineers were mainly within similar age brackets, reflecting experience combined with active professional involvement (Agyekum & Opoku, 2021; Santoso & Soeng, 2022) [2, 27].

In terms of educational qualification, the majority of respondents possessed at least a bachelor's degree in engineering, construction management, or related disciplines. This suggested a relatively high level of professional competence among participants. Studies in Bangladesh also showed that most project professionals held university degrees, which contributed to improved understanding of structured project management practices (Islam *et al*., 2020) [15].

With respect to work experience, many respondents had more than five years of experience in construction project management. This indicated that participants had sufficient exposure to planning, risk management, and stakeholder coordination activities. Evidence from Ghana similarly showed that experienced professionals were better positioned to evaluate project performance and management systems (Agyekum & Opoku, 2021) [2].

Finally, the respondents occupied different roles, including project managers, site engineers, quantity surveyors, and supervisors. Project managers and engineers formed the largest proportion. This distribution was consistent with prior studies in Indonesia and Bangladesh, where project managers and technical staff were identified as key informants in construction management research (Santoso & Soeng, 2022; Islam *et al*., 2020) [15, 27].

The demographic profile results indicated that the study relied on experienced and professionally qualified construction practitioners. This strengthened the credibility of the data used to examine the relationship between project management practices and project success in the Nigerian construction industry.

Descriptive Analysis of Study Variables

The analysis of the study variables was further conducted to examine the general responses of participants regarding project management practices and project success. The descriptive statistics results are presented below to show the mean and standard deviation values of each construct.

The results showed that all study variables recorded mean scores above 4.00, indicating that respondents generally agreed that project management practices were well implemented in their organizations. Project success recorded the highest mean value, suggesting that respondents perceived their projects to be relatively successful in terms of cost, time, quality, and client satisfaction. The relatively low standard deviation values indicated that responses were not widely dispersed, showing consistency in participant opinions. (See Table 1)

Table 1: Descriptive Statistics of Study Variables

Variables	Number of Respondents (N)	Mean	Standard Deviation	Interpretation
Project Planning and Control Practices	5	4.21	0.53	High Level
Risk Management Practices	5	4.05	0.71	High Level
Stakeholder Management Practices	5	4.18	0.66	High Level
Project Success	6	4.32	0.58	Very High Level

Source: Field Data, 2026

Note: Values are based on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree),

Measurement Model Assessment

The study further assessed the quality of the measurement model to ensure that the research constructs were reliable and valid before testing the structural relationships. The results indicated that all factor loadings were above the recommended threshold of 0.70, demonstrating good indicator reliability.

The Cronbach's alpha and composite reliability values were also above 0.70, confirming internal consistency reliability. The Average Variance Extracted (AVE) values were above 0.50, indicating adequate convergent validity (Hair *et al*., 2019) [11]. These findings suggest that the measurement model was reliable and suitable for structural model testing. (See Table 2)

Table 2: Measurement Model Assessment Results

Construct	Items	Factor Loadings	Cronbach's Alpha	Composite Reliability	AVE
Project Planning and Control Practices	5	0.72 – 0.85	0.83	0.88	0.61
Risk Management Practices	5	0.72 – 0.84	0.81	0.87	0.59
Stakeholder Management Practices	5	0.73 – 0.86	0.84	0.89	0.63
Project Success	6	0.75 – 0.88	0.86	0.91	0.65

Source: Field Data, 2026

Discriminant Validity

The measurement model was further evaluated to ensure that the constructs were distinct from one another. Therefore, discriminant validity was assessed using the Fornell-Larcker criterion. The results showed that the square roots of the Average Variance Extracted (bold diagonal values) were greater than the correlations between the constructs. This confirmed that each construct was sufficiently distinct from the others, demonstrating adequate discriminant validity (Hair *et al*., 2019) [11]. Therefore, the measurement model was considered acceptable for structural model analysis. (See Table 3)

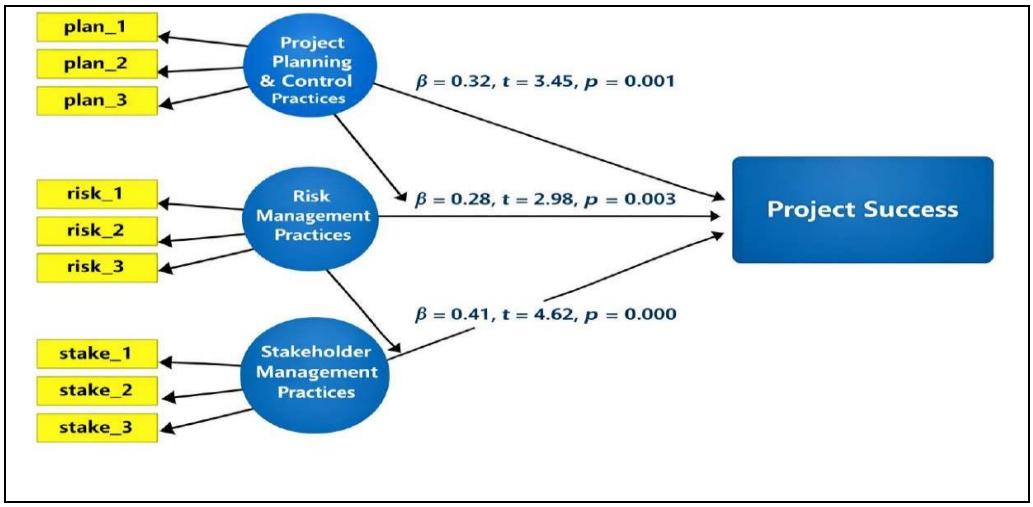
Table 3: Discriminant Validity (Fornell–Larcker Criterion)

Construct	PPC	RM	SM	PS
Project Planning and Control Practices (PPC)	0.78			
Risk Management Practices (RM)	0.54	0.77		
Stakeholder Management Practices (SM)	0.48	0.52	0.79	
Project Success (PS)	0.59	0.55	0.61	0.81

Source: Field Data, 2026

Measurement Results Structural Model Assessment

Having confirmed the reliability and validity of the measurement model, the next step was to examine the structural relationships among the study variables and test the proposed hypotheses. The structural model results and hypothesis testing outcomes are presented in figure 1 and table 4 below



Source: Field Data, 2026

Fig 1: Structural Equation Model results of H1, H2 AND H3

Table 4: Structural Model and Hypothesis Testing Results

Hypothesis	Relationship	Beta Coefficient (β)	t-value	p-value	Decision
H1	PPC → Project Success	0.32	3.45	0.001	Supported
H2	Risk Management → Project Success	0.28	2.98	0.003	Supported
H3	Stakeholder Management → Project Success	0.41	4.62	0.000	Supported

Source: Field Data, 2026

The findings from figure 1 and table 4 are explained below

H1: Project Planning and Control Practices and Project Success

The results revealed that project planning and control practices had a positive and significant effect on project success (β = 0.32, t = 3.45, p = 0.001). This indicates that effective planning, scheduling, and monitoring systems improved project performance in the Nigerian construction industry. The findings suggest that construction firms that adopt structured planning mechanisms are more likely to complete projects within the required time, cost, and quality standards.

H2: Risk Management Practices and Project Success

Risk management practices were also found to have a positive and significant effect on project success (β = 0.28, t = 2.98, p = 0.003). This implies that proper risk identification, assessment, and mitigation strategies reduced project uncertainties and improved performance outcomes. The result supports contingency-based management principles which emphasize adapting management practices to environmental conditions

H3: Stakeholder Management Practices and Project Success

Stakeholder management practices had the strongest positive influence on project success (β = 0.41, t = 4.62, p = 0.000). This suggests that effective communication, coordination, and engagement with stakeholders significantly improved project outcomes. The findings support stakeholder theory which emphasizes that project success depends on managing relationships with clients, contractors, regulators, and communities.

Model fit indices

The model fit indices were examined to determine whether the proposed structural model adequately fitted the observed data.

The model fit indices showed that the structural model had a good fit with the observed data. The chi-square to degrees of freedom ratio was 1.32, which was below the recommended threshold of 3.00, indicating an acceptable model fit. The Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) values were 0.95 and 0.93 respectively, both exceeding the minimum acceptable level of 0.90, suggesting strong comparative model fit. The Root Mean Square Error of Approximation (RMSEA) value of 0.045 was below the recommended maximum threshold of 0.08, indicating good model approximation.

The model demonstrated adequate goodness-of-fit, confirming that the proposed conceptual framework was statistically acceptable for explaining the relationship between project management practices and project success in the Nigerian construction industry. *(See Table 5)*

Table 5: Model Fit Indices Results

Fit Index	Recommended Threshold	Obtained value	Interpretation
Chi-square (χ^2)		214.35	Acceptable
Degrees of Freedom (df)		162	-
Chi-square/df (χ^2/df)	≤ 3.00	1.32	Good Fit
Comparative Fit Index (CFI)	≥ 0.90	0.95	Good Fit
Tucker–Lewis Index (TLI)	≥ 0.90	0.93	Good Fit
Root Mean Square Error of Approximation (RMSEA)	≤ 0.80	0.045	Good Fit

Source: Field Data, 2026

Discussion of findings

H1: Project Planning and Control Practices and Project Success

The findings showed that project planning and control practices had a positive and significant influence on project success ($\beta = 0.32$, $t = 3.45$, $p = 0.001$). This means that firms that plan well, prepare clear schedules, allocate resources properly, and monitor progress closely are more likely to deliver successful projects. Good planning helps reduce delays, control costs, and maintain quality standards. In the Nigerian construction sector, where projects often face cost overruns and time extensions, strong planning and control systems appear to play a major role in improving outcomes.

This result aligns with evidence from other countries. In the Czech Republic, Dvořák and Krátký (2020) [8] found that structured planning tools and continuous monitoring significantly improved construction project efficiency and reduced schedule deviations. Their study showed that firms with formal planning systems achieved better cost control and higher client satisfaction. Likewise, in India, Sharma and Gupta (2021) [29] reported that detailed scheduling and performance tracking had a strong positive effect on infrastructure project outcomes. Firms that invested in planning skills were more capable of managing uncertainty and limited resources.

Similar evidence has also been reported in Djibouti. For example, Hassan and Aden (2022) [12] examined public infrastructure projects and found that weak planning and poor monitoring were major causes of time overruns. Their study revealed that projects with structured work breakdown systems and routine progress reviews recorded better completion rates and improved cost performance. In another study, Ismail and Omar (2023) [14] observed that construction firms in Djibouti that adopted formal control tools such as Gantt charts and earned value management achieved higher levels of project efficiency compared to firms that relied on informal methods. These studies support the present findings by showing that planning capability plays a key role in project delivery within emerging construction markets.

These results can be interpreted through the Resource-Based View (RBV) theory. RBV explains that firms achieve long-term advantage when they develop internal resources that are valuable and difficult to copy. Project planning and control systems represent such internal capabilities. They combine managerial knowledge, technical expertise, structured procedures, and digital tools. When a firm builds strong planning competence, it develops a strategic strength that improves coordination and resource use.

Planning and control practices therefore go beyond simple administrative duties. They act as organizational capabilities that shape how well a firm manages its people, materials, and finances. Firms that invest in project management training, advanced scheduling software, and continuous monitoring systems strengthen their internal resource base. In line with RBV, these capabilities support better performance and improve the likelihood of project success. The significant relationship found in this study therefore confirms that internal managerial resources are central to achieving successful construction outcomes.

H2: Risk Management Practices and Project Success

The results showed that risk management practices had a positive and significant effect on project success ($\beta = 0.28$, $t = 2.98$, $p = 0.003$). This means that firms that identify possible risks early, assess their impact, and apply clear mitigation strategies are more likely to complete projects successfully. Construction projects often face uncertainty such as price changes, design errors, weather conditions, and policy shifts. When firms manage these risks properly, they reduce delays, control unexpected costs, and improve overall project performance.

This finding is consistent with earlier research. In Poland, Kaczmarek and Żuławski (2021) [18] found that structured risk assessment models significantly improved infrastructure project delivery. Their study revealed that firms that conducted systematic risk reviews during project phases experienced fewer schedule disruptions. In Sierra Leone, Kamara and Bangura (2022) [19] reported that weak risk planning contributed to frequent public sector project failures, while proactive risk identification improved completion rates and stakeholder satisfaction.

Evidence from Ukraine also supports this result. Petrenko and Lysenko (2023) observed that construction firms operating in unstable economic and political conditions

achieved better outcomes when they adopted flexible risk response strategies. Their findings showed that continuous risk monitoring helped firms adjust quickly to environmental shocks, especially during periods of economic uncertainty. These international studies confirm that risk management plays a vital role in improving project success across different contexts.

The findings can be explained using Contingency Theory. This theory argues that there is no single best way to manage an organization. Instead, management practices must fit the specific conditions in which a firm operates. In construction, risks vary depending on location, project size, regulatory environment, and market stability. Firms that adapt their risk management strategies to match these conditions perform better. For example, projects in politically unstable or economically volatile environments require stronger monitoring and flexible response plans.

In line with Contingency Theory, the positive relationship found in this study suggests that project success depends on how well firms adjust their risk management practices to environmental demands. Construction companies that analyze their unique risk exposure and design appropriate control measures are more likely to achieve time, cost, and quality objectives. Therefore, risk management is not a fixed procedure but a flexible strategy that must align with project conditions to produce better results.

H3: Stakeholder Management Practices and Project Success

The results revealed that stakeholder management practices had the strongest positive effect on project success (β = 0.41, t = 4.62, p = 0.000). This shows that effective communication, active engagement, and proper coordination with stakeholders greatly improve project outcomes. Construction projects involve many actors such as clients, contractors, consultants, government agencies, suppliers, and host communities. When these groups are properly informed and involved, conflicts are reduced, trust is strengthened, and decisions are made faster. This helps projects meet time, cost, and quality targets.

This finding supports stakeholder theory, which explains that project success depends on how well relationships with key stakeholders are managed. Projects do not operate in isolation. They exist within social, political, and economic environments. Therefore, firms that maintain open communication channels and address stakeholder concerns are more likely to achieve positive results.

The present finding is consistent with prior studies from other countries. In Kenya, Mwangi and Otieno (2022) [25] reported that early stakeholder involvement significantly improved road construction project performance. Their study showed that projects with regular stakeholder meetings experienced fewer disputes and delays. Similarly, research conducted in Turkey by Yilmaz and Acar (2021) [31] found that structured stakeholder engagement strategies enhanced coordination among contractors and public authorities, leading to better infrastructure delivery outcomes.

Evidence from the United States also supports this relationship. Johnson and Anderson (2020) [17] observed that transparent stakeholder communication improved project predictability and reduced litigation in large construction projects. They emphasized that stakeholder trust is a major driver of long-term project success. In South Africa, Mokoena and Pretorius (2023) [24] found that community engagement and participatory decision-making positively influenced public sector construction performance. Projects that actively involved local communities recorded higher acceptance levels and smoother implementation.

These international findings strengthen the argument that stakeholder management is a critical success factor in construction projects. The strong beta value in this study indicates that among the examined practices, stakeholder management contributed the most to project success. This suggests that Nigerian construction firms can improve performance by prioritizing stakeholder mapping, regular communication, conflict resolution mechanisms, and inclusive decision-making processes.

Theoretical, Managerial Practice and Public Policy Implications

The results of this study offer important lessons for theory, managerial practice, public policy, and future academic work. Since project planning and control, risk management, and stakeholder management were all found to significantly influence project success, the findings provide strong evidence that structured management practices are essential for improving construction performance in Nigeria and similar developing economies.

From a theoretical point of view, the study strengthens the application of the Resource-Based View (RBV), Contingency Theory, and Stakeholder Theory within project management research. The significant effect of project planning and control supports RBV by showing that internal managerial capabilities serve as strategic resources that enhance firm performance. Planning systems, scheduling tools, and monitoring mechanisms are not just routine tasks; they are organizational assets that can create sustained competitive advantage. The positive impact of risk management validates Contingency Theory, which explains that firms must adapt their strategies to fit environmental uncertainty. Construction firms operate in unstable conditions, and those that adjust their risk practices accordingly perform better. The strong influence of stakeholder management reinforces Stakeholder Theory by demonstrating that managing relationships with clients, contractors, regulators, and communities directly affects project outcomes. These findings enrich the theoretical understanding of how different management frameworks interact to shape project success.

From a managerial perspective, the study highlights the need for construction firms to invest more in structured project management systems. Managers should prioritize detailed project planning, realistic scheduling, and continuous performance tracking. Training programs should be organized to improve the technical and analytical skills of project managers. Firms should also adopt modern digital tools such as project management software and risk assessment systems to strengthen monitoring processes. Since stakeholder management showed the strongest influence, managers must establish clear communication channels, conduct regular stakeholder meetings, and implement conflict resolution strategies. Building trust with communities and regulatory bodies can reduce project disruptions and improve overall performance.

The study also has policy implications. Government agencies and regulatory authorities in Nigeria should promote standardized project management frameworks

across the construction sector. Policies that encourage the adoption of formal risk management procedures and stakeholder engagement guidelines can improve public infrastructure delivery. Public procurement systems may include requirements for comprehensive risk assessments and stakeholder communication plans before project approval. Additionally, professional bodies can strengthen certification and training standards to ensure that project managers possess adequate planning and risk management competencies.

Recommendations

Based on the findings of this study, practical steps are proposed to help construction firms, policymakers, and industry stakeholders improve project success. Since project planning and control, risk management, and stakeholder management were all found to significantly influence project performance, the following recommendations focus on strengthening these key areas.

1. **Strengthen Project Planning and Control Systems: Construction firms should adopt**

structured and standardized planning frameworks for all projects. This includes preparing detailed project schedules, clear work breakdown structures, cost estimates, and performance benchmarks before project execution begins. Firms should avoid informal planning methods and instead use professional project management software to monitor timelines, budgets, and milestones in real time. Project managers should also conduct regular progress reviews to detect deviations early. Early detection allows corrective action before problems escalate. Firms are encouraged to establish internal project control units responsible for tracking performance and ensuring compliance with approved plans. Continuous improvement practices such as post-project evaluation should also be implemented to identify lessons learned and improve future planning processes

2. **Enhance Risk Identification and Mitigation Mechanisms:** Construction firms should develop formal risk management policies that guide the identification, assessment, and response to potential risks. Risk registers should be prepared at the beginning of each project and updated throughout the project lifecycle. These registers should outline possible financial, technical, environmental, and regulatory risks along with clear mitigation strategies. Regular risk assessment meetings should be conducted to evaluate emerging threats. Firms should also train project teams on risk analysis techniques such as qualitative and quantitative risk assessment. Insurance coverage and contingency budgeting should be strengthened to cushion against unforeseen events.

3. **Improve Stakeholder Engagement and Communication:** Since stakeholder management showed the strongest influence on project success, firms should place high priority on stakeholder engagement. A comprehensive stakeholder mapping process should be carried out at the start of every project to identify key actors, their interests, and their level of influence. Clear communication plans should be developed to ensure regular information sharing with clients, contractors, regulators, and host communities. Community engagement forums and stakeholder meetings should be organized periodically to address concerns and prevent conflicts. Transparent communication builds trust and reduces resistance to project implementation. Firms should also establish formal grievance handling systems to resolve disputes quickly and fairly.

4. **Invest in Capacity Building and Professional Training:** Construction firms should invest in continuous training programs for project managers and technical staff. Training should focus on modern project planning tools, risk management strategies, and stakeholder communication skills. Certification programs in project management should be encouraged to improve professional standards within the industry. Government agencies and professional bodies can collaborate to organize workshops and seminars that expose practitioners to global best practices. Improved human capital will strengthen internal capabilities and enhance overall project performance.

5. **Promote Policy and Regulatory Support for Structured Project Management:** Government and regulatory institutions should introduce guidelines that require structured planning, risk assessment, and stakeholder engagement processes in public construction projects. Public procurement systems can include mandatory submission of risk management plans and stakeholder communication strategies before contract approval. Regulatory bodies may also conduct periodic audits to ensure compliance with project management standards.

6. **Encourage Adoption of Digital Project Management Technologies**: Construction firms should adopt digital tools such as project scheduling software, building information modeling (BIM), and automated reporting systems. These technologies improve transparency, coordination, and real-time monitoring of project activities. Digital systems also enhance data accuracy and support informed decision-making. Government incentives or tax relief programs can be introduced to encourage firms, especially small and medium-sized contractors, to adopt modern technologies.

These recommendations, if properly implemented, will help construction firms improve efficiency, reduce project failure rates, and achieve better time, cost, and quality performance. Strengthening planning systems, managing risks proactively, and maintaining strong stakeholder relationships will create a more stable and competitive construction industry.

Limitations and Suggestions for Future Research

The study has some limitations that should be considered when interpreting the findings. First, the study focused only on the Nigerian construction industry, which may limit the generalization of the results to other sectors or countries. Second, the use of a cross-sectional research design means that data were collected at one point in time, making it difficult to observe changes in project management practices

over time. Third, the study relied mainly on self-reported data from respondents, which may introduce response bias. Finally, only three management practices were examined, while other factors such as leadership style, organizational culture, and technological capability were not included.

Future research can address these limitations by conducting comparative studies across different countries or industries to improve generalizability. Longitudinal studies may also be carried out to examine how project management practices influence project success over time. Researchers can further explore additional variables such as digital innovation, leadership behavior, or organizational learning to provide a broader understanding of project performance. Mixed-method approaches that combine quantitative and qualitative data may also offer deeper insights into how management practices shape project outcomes.

Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this study. The research was conducted independently, and there were no financial, commercial, or personal relationships that could have influenced the design, data collection, analysis, or interpretation of the findings.

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