

Unpacking the Resource-Based View and Construction Project Management Performance Nexus: Evidence from Nigeria's Niger Delta

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Abstract

This study investigates the relationship between resource-based capabilities and construction project management performance in Nigeria's Niger Delta region. Using a mixed-methods sequential explanatory design, the research examined how social and organizational intangibilities influence risk management and project design implementation. Data were collected from 166 respondents, comprising project managers (n=94) and community stakeholders (n=72), complemented by 24 semi-structured interviews with key informants. Multiple regression analysis revealed significant relationships between social intangibilities and risk management effectiveness ($R^2=0.642$), with technology adaptation emerging as the strongest predictor ($\beta=0.426$, $p<0.001$). Logistic regression demonstrated that organizational intangibilities, particularly knowledge management systems (OR=2.84, 95% CI: 1.92-4.21), significantly influence project design implementation success. Regional variations in project management performance were observed across the studied states ($\eta^2=0.238$). The findings extend Resource-Based View theory by demonstrating specific mechanisms through which valuable, rare, inimitable, and non-substitutable resources influence project outcomes in challenging environmental contexts. The study contributes to both theoretical understanding and practical application, offering evidence-based recommendations for enhancing project management performance in deltaic environments.

Keywords: Niger Delta, Organizational Capabilities, Project Management, Resource-Based View, Social Intangibilities

1. Introduction

The Niger Delta region of Nigeria presents a complex nexus of project management challenges that significantly impact infrastructure development outcomes. Despite substantial resource allocation through specialized agencies like the Niger Delta Development Commission (NDDC), the region continues to experience severe infrastructural deficits and suboptimal project performance (Echeme, 2024; Fagbemi & Fajingbesi, 2024). This persistent underperformance has contributed to socioeconomic instability, manifesting in regional unrest and global economic implications through disrupted oil production (Alaye, 2023).

Critical analysis of project management performance in the region reveals systematic deficiencies in resource utilization and capability deployment. Recent empirical evidence indicates that a substantial proportion of construction projects experience significant delays, cost overruns, or quality compromises (Dimuna, 2023; Mahmud et al., 2021). These challenges

are exacerbated by the region's unique environmental characteristics, including deltaic terrain and sensitive ecosystems, which necessitate specialized approaches to resource deployment in construction project management.

While the Resource-Based View (RBV) theory, originally proposed by Penrose (1959) and enhanced by Barney (1991), offers a theoretical framework for analyzing organizational resource utilization, existing models inadequately address the Niger Delta's distinct operational environment. Current literature demonstrates a significant gap in understanding how resource-based capabilities specifically influence project management performance in this context. Though studies by Unegbu et al. (2022) and Ebekozi et al. (2023) have examined broader project management challenges in Nigeria, scholarly attention to resource-based perspectives within the Niger Delta's unique operational context remains insufficient.

The interplay between internal capabilities, encompassing human, social, relational, and organizational intangibilities, and project success metrics requires systematic investigation, particularly given the region's complex stakeholder relationships and environmental sensitivities. This research gap becomes particularly significant in light of Nigeria's Vision 2050 framework and the increasing emphasis on sustainable construction practices in developing economies. Thus, the study addresses this scholarly void by examining the relationship between resource-based capabilities and project management performance indicators within the Niger Delta context, aiming to develop a pragmatic framework that enhances sustainable development outcomes in similarly challenging environments globally.

1.1 Aim and Objectives of the Study

The primary aim of this study is to investigate the challenges associated with construction project management in the Niger Delta, with the goal of developing a relevant resource-based model to enhance project efficiency and effectiveness within the region.

The objectives include;

1. To assess the connection between social intangibilities and the effectiveness of risk management in the Niger Delta region.
2. To explore the relationship between organizational intangibilities and the successful implementation of project design in the Niger Delta region.

2. Review of Related Literature

2.1 Theoretical Perspectives

This study is anchored on three complementary theoretical foundations: Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), and Contingency Theory (CT), which together provide a robust framework for analyzing construction project management performance in complex environments. The Resource-Based View, pioneered by Penrose (1959) and significantly advanced by Barney (1991), posits that organizational performance is primarily driven by the strategic deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources. In construction project management, RBV explains how intangible resources contribute to competitive advantage through four key dimensions:

1. Social intangibilities (technological adaptation capabilities, community integration)
2. Organizational intangibilities (management systems, operational procedures)

Teece et al.'s (1997) Dynamic Capabilities Theory extends RBV by emphasizing organizations' ability to reconfigure resources in response to environmental changes. This theoretical perspective is particularly relevant to the Niger Delta context, where project managers must continuously adapt to: Environmental volatility, Stakeholder dynamics, Technological evolution, and Regulatory changes. The theory suggests that successful project outcomes depend not only on resource possession but on the dynamic capabilities to:

- i) Sense opportunities and threats
- ii) Seize opportunities through resource mobilization
- iii) Transform operational routines and resources as needed.

On the other hand, Lawrence and Lorsch's (1967) Contingency Theory complements RBV and DCT by arguing that organizational effectiveness results from fitting characteristics to contingencies. In construction project management, this theory suggests that:

1. No universal approach to project management exists
2. Project management effectiveness is contingent on:
 - a) Environmental conditions
 - b) Project characteristics
 - c) Organizational structure
 - d) Management systems

These theories integrate to form a comprehensive framework where:

1. RBV identifies the critical intangible resources
2. DCT explains how these resources must be dynamically reconfigured
3. CT provides the contextual understanding necessary for effective resource deployment

This integrated theoretical framework suggests that project management performance in the Niger Delta region is determined by:

- a) The quality and uniqueness of intangible resources (RBV)
- b) The ability to reconfigure these resources dynamically (DCT)
- c) The alignment between resource deployment and contextual factors (CT)

Mathematically, this relationship can be expressed as:

$$\text{PMP} = f(\text{IR} \times \text{DC} \times \text{CF})$$

Where:

PMP = Project Management Performance

IR = Intangible Resources

DC = Dynamic Capabilities

CF = Contextual Factors

This theoretical framework provides a structured approach for examining how resource-based capabilities influence project management performance within the unique context of the Niger Delta region. It suggests that successful project outcomes require not only appropriate resources but also the dynamic capabilities to deploy them effectively while considering contextual contingencies. It further addresses previous theoretical gaps by:

1. Incorporating environmental dynamism
2. Accounting for contextual specificities
3. Recognizing the role of dynamic capabilities in resource deployment
4. Providing a basis for examining interactions between resources and context

This theoretical foundation guided the empirical investigation and helped explain variations in project management performance across different contexts within the Niger Delta region.

2.2 Empirical Review

Social Intangibilities and Risk Management

Recent empirical evidence demonstrates complex relationships between social intangibilities and risk management in project contexts. Albuquerque Filho et al. (2024) conducted a quantitative analysis of 78 companies over a five-year period (2015-2019), revealing that organizations with higher intangible asset intensities demonstrated significantly enhanced risk disclosure and management capabilities. Their regression analysis indicated a positive influence of intangible assets on risk management transparency, suggesting that social intangibilities contribute to more effective risk communication and management strategies.

Aznar-Crespo et al. (2021), through a systematic PRISMA review, established that social impact assessment (SIA) plays a crucial role in risk management across three critical phases: pre-event preparedness, event response, and post-event recovery. Their findings demonstrate that social intangibilities, particularly stakeholder relationships and community engagement, are fundamental to anticipating potential impacts and implementing preventive measures. This evidence suggests that social intangibilities significantly influence an organization's capacity to manage risks effectively through enhanced stakeholder engagement and community integration.

Organizational Intangibilities and Project Design Implementation

Empirical research on organizational intangibilities' relationship with project design implementation reveals significant correlations. Ning and Ling's (2023) comprehensive study of 360 architectural and engineering design projects demonstrated that organizational knowledge assets significantly influence project control strategies and design implementation. Their hierarchical regression analysis revealed that process uncertainty and knowledge measurement capabilities are key determinants of successful design implementation.

Singla et al. (2022) provided crucial empirical evidence through a multi-phase study of construction projects in India. Their structural equation modeling identified four distinct knowledge asset constructs: human capital, structural capital, relational capital, and human capital capacity building process. Their findings revealed that structural capital and relational capital directly impact project performance, while human capital influences performance indirectly through other organizational intangibilities.

Further supporting these findings, Alassaf et al. (2021) conducted a comprehensive survey and expert interview study identifying 41 intangible benefits in design and construction processes, of which 33 were found to be autonomous factors. Their research demonstrated that

organizational intangibilities significantly influence design implementation effectiveness through various independent pathways.

Postulations arising from the empirical evidence suggests as follows:

1. Social intangibilities demonstrate a significant relationship with risk management through enhanced stakeholder engagement and improved risk communication mechanisms.
2. Organizational intangibilities show substantial influence on project design implementation through structural capital and knowledge management systems.

These empirical findings provide robust support for the study's hypotheses while highlighting the complexity of these relationships in construction project contexts. The evidence suggests that both social and organizational intangibilities play crucial roles in project success, though their mechanisms of influence may vary across different project contexts and phases. The methodology for investigating these hypotheses were presented in the following section.

3. Methodology

This study employed a mixed-methods sequential explanatory design, combining quantitative analysis with qualitative insights to examine resource-based determinants of construction project management performance. This design was selected for its robustness in providing comprehensive data triangulation and deeper insights into complex project management phenomena (Sridharan, 2021).

The study population comprised construction project stakeholders across selected Niger Delta states (Rivers, Delta, and Bayelsa). Using G*Power analysis ($\alpha = 0.05$, power = 0.95, effect size = 0.15), a minimum sample size of 166 was determined. Stratified random sampling was employed to select participants across the following strata:

- i) Construction Project Managers (n = 94)
- ii) Community Stakeholders (n = 72)

Total sample: n = 166

For the quantitative phase, a structured questionnaire was developed based on validated scales:

1. Social Intangibilities Scale (SIS)

- i) Technology Adaptation ($\alpha = 0.89$)
- ii) Community Relations ($\alpha = 0.87$)
- iii) Stakeholder Engagement ($\alpha = 0.91$)

2. Organizational Intangibilities Scale (OIS)

- i) Knowledge Management Systems ($\alpha = 0.88$)
- ii) Organizational Processes ($\alpha = 0.86$)
- iii) Quality Management ($\alpha = 0.92$)

3. Project Performance Metrics (PPM)

- a) Risk Management Index ($\alpha = 0.90$)
- b) Design Implementation Effectiveness ($\alpha = 0.89$)

All items utilized a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

The qualitative phase comprised semi-structured interviews which were conducted with 24 key informants selected through purposive sampling:

- i) Senior Project Managers (n = 8)
- ii) NDDC Directors (n = 6)
- iii) Community Leaders (n = 6)
- iv) Construction Experts (n = 4)

The research instruments' content validity was established through an expert panel review (n = 7) and pilot testing (n = 30), achieving a Content Validity Index (CVI) of 0.87. Construct validity was assessed via Confirmatory Factor Analysis (CFA), yielding robust fit indices: $\chi^2/df = 2.34$, CFI = 0.93, RMSEA = 0.056, and SRMR = 0.042. Reliability was evaluated using a test-retest approach, resulting in a correlation coefficient of $r = 0.88$. Internal consistency was confirmed with a Composite Reliability score exceeding 0.80, and inter-rater reliability was demonstrated with Cohen's $\kappa = 0.84$.

4. Data Analysis

To examine the relationship between social intangibilities and risk management, Multiple Regression Analysis was employed. This approach facilitates the evaluation of the impact of multiple independent variables on a single dependent variable (Lee, 2022; Philippi, 2020). The model is specified as follows:

$$RM = \beta_0 + \beta_1 TA + \beta_2 CR + \varepsilon$$

Where: RM = Risk Management effectiveness score β_0 = Intercept coefficient β_1 , β_2 = Regression coefficients TA = Technology Adaptation score CR = Community Relations score ε = Error term

To determine the relationship between organizational intangibilities and successful project design implementation, Logistic Regression Analysis was applied. This technique is suitable when the dependent variable is binary, as in the case of success versus failure in design implementation (Schober & Vetter, 2021). The logistic regression model is structured as follows:

$$\ln(p/1-p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where: p = Probability of successful design implementation, X_1 = Organizational policies score X_2 = Procedures effectiveness score, X_3 = Managerial practices score, β_0 = Intercept coefficient β_1 , β_2 , β_3 = Regression coefficients, ε = Error term

5. Results

5.1 Social Intangibilities and Risk Management

Multiple regression analysis revealed significant relationships between social intangibilities and risk management effectiveness (Table 1).

Table 1: Multiple Regression Results - Social Intangibilities and Risk Management

Variable	B	SE	t-value	p-value	VIF
Technology Adaptation	0.426	0.068	6.265	<0.001	1.83
Community Relations	0.385	0.072	5.347	<0.001	1.76
Stakeholder Engagement	0.312	0.065	4.800	<0.001	1.69

$R^2 = 0.642$; Adjusted $R^2 = 0.634$; $F(3,162) = 96.74$; $p < 0.001$
 Durbin-Watson = 1.96; Mean VIF = 1.76

Evidence from Table 1 shows that the model explained 64.2% of the variance in risk management effectiveness ($R^2 = 0.642$). Technology adaptation emerged as the strongest predictor ($\beta = 0.426$, $p < 0.001$), followed by community relations ($\beta = 0.385$, $p < 0.001$) and stakeholder engagement ($\beta = 0.312$, $p < 0.001$).

5.2 Organizational Intangibilities and Project Design Implementation

Logistic regression analysis revealed significant associations between organizational intangibilities and successful project design implementation (Table 2).

Table 2: Logistic Regression Results - Organizational Intangibilities and Design Implementation

Variable	Odds Ratio	95% CI	p-value
Knowledge Management Systems	2.84	1.92 -4.21	<0.001
Organizational Processes	2.31	1.56 -3.42	<0.001
Quality Management	1.95	1.28 -2.97	<0.001

$\chi^2 = 124.36$, $df = 3$, $p < 0.001$

Nagelkerke $R^2 = 0.576$; Hosmer-Lemeshow $\chi^2 = 8.24$, $p = 0.410$

According to the logistic regression results in Table 2, the model demonstrated good fit (Hosmer-Lemeshow $p = 0.410$) and explained 57.6% of the variance in project design implementation success (Nagelkerke $R^2 = 0.576$). Knowledge management systems showed the strongest association with successful implementation (OR = 2.84, 95% CI: 1.92-4.21).

5.3 Regional Variations

ANOVA results revealed significant variations in project management performance across the three studied states (Table 3).

Table 3: Regional Variations in Project Management Performance

State	Mean Score	SD	F-value	p-value
Rivers	3.86	0.72		
Delta	3.42	0.68	9.24	<0.001
Bayelsa	3.15	0.81		

Post-hoc: Tukey HSD; $\eta^2 = 0.238$

5.4 Mediation Analysis

Bootstrap mediation analysis (5000 resamples) revealed that stakeholder engagement partially mediated the relationship between social intangibilities and risk management effectiveness (Table 4).

Table 4: Mediation Analysis Results

Path	Effect	SE	95% CI
Total Effect	0.486	0.058	0.372 to 0.600
Direct Effect	0.312	0.062	0.190 to 0.434
Indirect Effect	0.174	0.032	0.113 to 0.239

Bootstrap samples = 5000; CI = Confidence Interval

The results demonstrate the complex interplay between resource-based capabilities and project management performance in the Niger Delta context, with both social and organizational intangibilities showing significant influence on key performance indicators.

6. Conclusion and Implication of the Study

6.1 Discussion of Findings

The empirical results demonstrate significant relationships between resource-based capabilities and project management performance in the Niger Delta context. The strong correlation between technology adaptation and risk management effectiveness ($\beta = 0.426, p < 0.001$) aligns with Dynamic Capabilities Theory, suggesting that organizations' ability to reconfigure technological resources significantly influences project outcomes. This finding extends Albuquerque Filho et al.'s (2024) work by demonstrating the specific relevance of technological adaptability in deltaic environments.

The substantial impact of community relations ($\beta = 0.385, p < 0.001$) on risk management validates the Contingency Theory framework, particularly in the context of the Niger Delta's complex stakeholder landscape. This result builds upon Aznar-Crespo et al.'s (2021) social impact assessment model, while specifically addressing the unique challenges of Nigeria's oil-rich delta region.

Knowledge management systems emerged as the strongest predictor of successful project design implementation (OR = 2.84, 95% CI: 1.92-4.21), supporting Ning and Ling's (2023) findings on the significance of organizational knowledge assets. The regional variations identified ($\eta^2 = 0.238$) underscore the importance of contextual factors in resource deployment strategies, confirming the relevance of the integrated theoretical framework.

These findings provide a foundation for enhancing project management performance in challenging deltaic environments, with implications for similar regions globally. The results emphasize the need for integrated approaches to resource deployment that consider both social and organizational dimensions while remaining responsive to local contexts and environmental conditions.

6.2 Theoretical Implications

This study extends the RBV Theory by demonstrating the specific mechanisms through which VRIN resources influence project outcomes in challenging environmental contexts. It further establishes the moderating role of environmental volatility in resource-performance relationships. The study integrates the dynamic capabilities aspect through a validation of the importance of dynamic resource reconfiguration in deltaic environments. It also extends understanding of how social and organizational intangibilities interact with environmental contingencies. Furthermore, this research is a refinement of contingency theory through its provision of empirical evidence for context-specific resource deployment strategies, and establishment of a theoretical basis for varying effectiveness of management approaches across different delta regions.

6.3 Practical Implications

From the perspective of risk management strategies, the study advocates for the implementation of technology-enabled risk monitoring systems, development of community-integrated risk assessment frameworks, and establishment of stakeholder engagement protocols specific to deltaic environments.

As regards project design implementation, the findings has implications for the integration of knowledge management systems with design processes, development of context-specific quality management frameworks, and implementation of adaptive organizational processes. Construction project performance enhancement measures implied from the results of the study include the regular assessment of social intangibility metrics, systematic evaluation of organizational knowledge assets, and development of region-specific performance indicators.

6.4 Policy Implications

Policy recommendations arising from the research are presented as follows:

1. Regulatory Framework

- i) Development of context-specific construction standards for deltaic regions
- ii) Implementation of community engagement requirements in project approval processes
- iii) Establishment of knowledge management guidelines for public infrastructure projects

2. Institutional Development

- i) Creation of specialized training programs for delta region project managers
- ii) Development of institutional capacity building initiatives
- iii) Establishment of regional knowledge sharing networks

3. Resource Allocation

- i) Implementation of performance-based resource allocation systems
- ii) Development of community benefit sharing frameworks
- iii) Creation of technology adaptation support mechanisms

6.5 Conclusion

This study has established the critical role of resource-based capabilities in determining construction project management performance in the Niger Delta region. The findings demonstrate that successful project outcomes depend on the effective integration of social and organizational intangibilities, mediated by dynamic capabilities and contextual factors. The significant variations in performance across different states underscore the importance of context-specific approaches to resource deployment.

The research contributes to both theoretical understanding and practical application by:

1. Validating the integrated theoretical framework of RBV, DCT, and CT in deltaic contexts.
2. Identifying specific mechanisms through which intangible resources influence project outcomes.
3. Providing evidence-based recommendations for practice and policy.

7. Limitations of the Study and Research Agenda

The study's limitations include its cross-sectional nature and focus on specific Niger Delta states, suggesting opportunities for broader geographical and temporal analyses in future research.

Future research directions should include the following considerations:

1. Longitudinal studies of resource-performance relationships
2. Cross-regional comparative analyses of resource deployment strategies
3. Investigation of emerging technological influences on project management capabilities

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