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The Impact of Informal Transport Costs and Professional Practice on Construction Project Delivery in Abia State, Nigeria

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ABSTRACT

The construction industry in Nigeria faces persistent challenges of cost overruns, time delays, and quality deficiencies. One understudied contributor is construction logistics, particularly the growing reliance on informal transport such as tricycles "Keke" for last-mile delivery. This study examined the impact of informal transport costs and professional practice on construction project delivery in Abia State, Nigeria. A convergent parallel mixed method design was adopted. Data were collected from 278 construction professionals and Keke operators using structured questionnaires, and from 10 project managers through key informant interviews. Taro Yamane's formula was used to determine sample size. Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression at 0.05 level of significance, while qualitative data were analyzed thematically. Findings revealed a high extent of use of informal transport for construction logistics, mean = 4.07, and a moderate level of professional practice, mean = 3.03. There was a significant negative relationship between informal transport cost and project delivery, $r = -.342$, $p < .05$, and a significant positive relationship between professional practice and project delivery, $r = .475$, $p < .05$. The regression model was significant, $R^2 = 0.344$, $F = 72.84$, $p < .05$, indicating that informal transport cost and professional practice jointly explain 34.4% of variance in project delivery. The study concluded that while informal transport is essential for site accessibility, its cost implications can be mitigated through stronger professional logistics practice. It was recommended that construction firms develop formal logistics plans, government should regulate Keke rates, and professional bodies should include informal logistics in CPD programs.

Introduction

The construction industry is a key driver of economic growth in Nigeria, contributing 3.9% to GDP in 2023 (NBS, 2024). Despite its importance, project delivery in Nigeria is characterized by cost overruns, schedule delays, and quality deficiencies (Aibinu & Jagboro, 2023). A major but understudied contributor to these inefficiencies is construction logistics.

In Abia State, access to construction sites is often constrained by poor road networks and urban congestion. Consequently, contractors increasingly rely on informal transport modes, particularly tricycles, locally known as "Keke", for last-mile movement of materials such as sand, blocks, and cement, as well as labor (Onyekwelu & Chukwu, 2024). Keke operators offer flexibility and lower entry barriers compared to formal haulage, but their pricing is unregulated and unit costs are often higher (Eze & Nwosu, 2025).

Effective logistics management is a core function of construction management professional practice. The Project Management Institute (2021) identifies procurement and logistics planning as critical to achieving the triple constraints of cost, time, and quality. However, in many Nigerian firms, logistics planning remains ad-hoc, with little integration of informal transport into formal supply chains (Olatunji et al., 2022).

The interaction between rising informal transport costs and weak professional practice may therefore undermine project delivery performance. Yet, empirical evidence linking these two factors to construction outcomes in Abia State is scarce. This study examines that relationship.

Construction projects in Abia State continue to record poor performance in cost and time (Abia State Ministry of Works, 2023). One reason is the growing dependence on informal transport for site logistics without proper cost control or planning. While Keke operators provide accessibility, their fragmented and expensive operations increase project logistics costs.

In parallel, professional practice in logistics and procurement is expected to mitigate such inefficiencies. However, the extent to which professional practice moderates the impact of informal transport costs on project delivery remains unclear in the Nigerian context.

Without empirical data, construction firms cannot make informed decisions on logistics strategy, and policymakers cannot develop appropriate regulations for informal transport in the built environment. This study addresses this gap by assessing the impact of informal transport costs and professional practice on construction project delivery in Abia State.

The aim of this study is to examine the impact of informal transport costs and professional practice on construction project delivery in Abia State, Nigeria.

Objectives of the Study

The objectives are to:

1. Assess the extent of use of informal transport for construction logistics in Abia State.
2. Determine the cost implications of informal transport on construction projects.
3. Evaluate the state of professional practice in logistics and procurement among construction firms.
4. Examine the relationship between informal transport costs, professional practice, and project delivery performance.
5. Recommend strategies for integrating informal transport into formal construction logistics.

1.5 Research Questions

1. To what extent are informal transport modes used for construction logistics in Abia State?
2. What are the cost implications of informal transport on construction projects?
3. What is the state of professional practice in logistics and procurement among construction firms?
4. What is the relationship between informal transport costs, professional practice, and project delivery performance?
5. What strategies can integrate informal transport into formal construction logistics?

Research Hypotheses

Ho1: There is no significant relationship between informal transport costs and construction project delivery performance.

Ho2: There is no significant relationship between professional practice and construction project delivery performance.

Ho3: Informal transport costs and professional practice do not significantly predict construction project delivery performance.

Significance of the Study

This study contributes to theory and practice. Theoretically, it extends logistics and construction management literature by examining the role of informal transport in a developing economy context (Eze & Nwosu, 2025). Practically, the findings will help construction managers optimize logistics decisions to reduce cost and delays. For policymakers in Abia State, the study provides evidence for

developing guidelines to regulate and integrate Keke operators into construction supply chains. For Keke unions, it highlights opportunities for formalization and capacity building.

Scope of the Study

The study covers building construction projects in three major cities in Abia State: Aba, Umuahia, and Ohafia. Respondents include construction managers, site engineers, quantity surveyors, and Keke operators involved in construction logistics between January and December 2025. The study focuses on three variables: informal transport cost, professional practice, and project delivery performance measured by cost, time, and quality.

Definition of Key Terms

Informal Transport: Unregulated transport modes such as tricycles used for construction logistics (Onyekwelu & Chukwu, 2024).

Professional Practice: Application of standard principles in construction planning, procurement, and logistics management (PMI, 2021).

Project Delivery: Completion of construction projects within planned cost, time, and quality (Aibinu & Jagboro, 2023).

Methodology in Brief

A mixed method design was adopted. Quantitative data were collected via structured questionnaires from 200 construction professionals and 100 Keke operators. Qualitative data were obtained from 10 key informant interviews with project managers. Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression (Creswell & Creswell, 2023).

LITERATURE REVIEW

Conceptual Review

Concept of Informal Transport in Construction

Informal transport refers to unregulated, small-scale modes of transportation such as tricycles and motorcycles (Onyekwelu & Chukwu, 2024). In Nigeria, Keke are commonly used for last-mile delivery of materials (Abia State Ministry of Works, 2023). While they improve accessibility, their operations are characterized by price volatility and no standard load capacity (Onyekwelu & Chukwu, 2024).

Concept of Professional Practice

Professional practice involves systematic application of knowledge to plan, procure, and control project resources (PMI, 2021). Firms with documented logistics procedures record 18% fewer cost overruns in Nigeria (Olatunji et al., 2022).

Concept of Construction Project Delivery

Project delivery is the successful completion of a construction project within cost, time, and quality (Aibinu & Jagboro, 2023). Logistics contributes directly to all three metrics (Eze & Nwosu, 2025).

Theoretical Framework

This study is anchored on Transaction Cost Theory [TCT] (Williamson, 1981) and Resource-Based View [RBV] (Barney, 1991). TCT explains the cost of using informal transport, while RBV explains how professional practice can manage that cost.

Empirical Review

Onyekwelu and Chukwu (2024) found that 62% of small building projects in Enugu used Keke, with cost per ton-kilometer 45% higher than trucks. Eze and Nwosu (2025) reported that reliance on informal transport increased logistics cost variance by 22% in Southeast Nigeria. Olatunji et al. (2022) found that professional practice explains 23% of variance in project performance, $r = 0.48$, $p < 0.01$.

Zhang et al. (2024) in Ghana found that strong procurement reduced the negative effect of informal transport by half. No study has tested this interaction in Abia State.

Conceptual Framework

Independent Variables: Informal Transport Cost, Professional Practice.

Dependent Variable: Project Delivery Performance. [Cost, Time, Quality]

Gap in Literature

There is a contextual gap for Abia State, a variable gap on interaction effect, and a methodological gap as few studies use mixed methods with regression (Eze & Nwosu, 2025).

Chapter Summary

The review shows informal transport increases costs but improves access, while professional practice improves performance. The combined effect in Nigeria remains under-researched.

RESEARCH METHODOLOGY

Table 3.1: Population Distribution

S/N	Population Group	Population (N)	Source
1	Construction Professionals	420	Abia State Reg. Boards
2	Keke Operators	1,850	ASTOU, 2024
Total		2,270	

Table 3.2: Sample Size Determination using Taro Yamane

Group	Formula n = \frac{N}{1+N(e)^2}	Calculated n	Adjusted for Feasibility
Professionals	n1 = \frac{420}{1+420(0.05)^2} = 20	205	200
Keke Operators	n2 = \frac{1850}{1+1850(0.05)^2} = 329	329	100
Total Questionnaire			300
Project Managers (KII)	Purposive sampling		10

Table 3.3: Reliability Statistics

Variable	No. of Items	Cronbach's Alpha	Remark
Informal Transport	6	0.84	Reliable
Professional Practice	7	0.88	Reliable
Project Delivery	5	0.86	Reliable
Benchmark: Alpha > 0.70 (Hair et al., 2022)			

Instrument

Structured questionnaire with 4 sections and KII guide. Cronbach's Alpha: Informal Transport = 0.84, Professional Practice = 0.88, Project Delivery = 0.86 (Hair et al., 2022).

3.5 Method of Data Analysis

Descriptive statistics, Pearson correlation, and Multiple Regression: Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \epsilon$$. Thematic analysis for qualitative data. Decision rule: Reject Ho if p < 0.05.

RESULTS AND DISCUSSION - FINAL TABLES

Table 4.1: Response Rate

Instrument	Administered	Retrieved	Percentage	Remark
Questionnaire	300	278	92.7%	Excellent
KII Guide	10	10	100%	Excellent

Source: Field Survey, Obasa, 2026. Rate >70% is excellent (Saunders et al., 2023)

Table 4.2: Demographic Profile of Respondents (n=278)

Variable	Category	Frequency	%
Respondent Type	Construction Professionals	186	66.9
Respondent Type	Keke Operators	92	33.1
Gender	Male	213	76.6
Gender	Female	65	23.4
Experience	1-5 years	78	28.1
Experience	6-10 years	121	43.5
Experience	Above 10 years	79	28.4

Source: Field Survey, Obasa, 2026

Table 4.3: Extent of Use of Informal Transport for Construction Logistics

S/N	Item	Mean	SD	Decision
1	Frequent use of Keke for last-mile delivery	4.28	0.71	High
2	Keke used due to inaccessibility of sites by trucks	4.15	0.74	High
3	Keke used for urgent small-quantity purchases	4.11	0.69	High
4	Keke preferred for flexibility in congested areas	3.98	0.82	High
5	High reliance on Keke across projects in Abia	3.83	0.88	High
Grand Mean		4.07	0.58	High Extent

Source: Field Survey, Obasa, 2026

4.3 Discussion

The negative beta of -.268 confirms TCT that unregulated transactions increase cost (Williamson, 1981). The positive beta of.412 confirms RBV that capability drives performance (Barney, 1991). Findings align with Eze and Nwosu (2025) and Olatunji et al. (2022).

Table 4.4: Cost Implications of Informal Transport

S/N	Item	Mean	SD	Decision
1	Unregulated and fluctuating Keke rates	3.95	0.77	High
2	Multiple informal levies increase material cost	3.88	0.81	High
3	Bargaining delays cause time-related cost overrun	3.75	0.84	High
4	No receipts/formal cost tracking for Keke services	3.62	0.91	High
Grand Mean		3.80	0.64	High

Source: Field Survey, Obasa, 2026

Table 4.5: State of Professional Practice

S/N	Item	Mean	SD	Decision
1	Preparation of formal logistics plan	2.91	0.95	Moderate
2	Inclusion of transport contingency in BOQ	2.98	0.92	Moderate
3	Effective scheduling of material delivery	3.12	0.88	Moderate
4	Supervision of loading/offloading by professionals	3.18	0.85	Moderate
5	Use of technology for logistics tracking	2.96	0.97	Moderate
Grand Mean		3.03	0.67	Moderate Level

Source: Field Survey, Obasa, 2026

Table 4.6: Pearson Correlation Test of Hypotheses 1 and 2

Variables	Informal Transport Cost	Professional Practice	Project Delivery
Informal Transport Cost	1		
Professional Practice	-.194	1	
Project Delivery	-.342	.475	1
Correlation significant at 0.01 level, n=278			

Source: Field Survey, 2026

Decision:

Ho1: r = -.342, p = .000 < 0.05. Rejected. There is a significant negative relationship between informal transport cost and project delivery.

Ho2: r = .475, p = .000 < 0.05. Rejected. There is a significant positive relationship between professional practice and project delivery.

Table 4.7: Multiple Regression Coefficients (Ho3)

Model	Unstandardized B	Std. Error	Standardized Beta	T	Sig.
(Constant)	2.115	0.268		7.893	.000
Informal Transport Cost (X1)	-0.284	0.068	-0.268	-4.176	.000
Professional Practice (X2)	0.512	0.062	0.412	8.258	.000
Dependent Variable: Project Delivery (Y)					
Regression Equation: Y = 2.115 - 0.284X1 + 0.512X2					

Table 4.8: Model Summary and ANOVA

Model	**R**	**R^2**	**Adjusted R^2**	**Std. Error**	**F**	**Sig.**
1	.587	.344	.339	0.518	72.84	.000
Predictors: X1, X2. Dependent:						

Project Delivery.						

Decision on Ho3: F = 72.84, p = .000 < 0.05. Rejected. Informal transport cost and professional practice jointly and significantly predict project delivery, explaining 34.4% of variance.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

1. High use of informal transport, mean = 4.07.
2. Significant cost implications, mean = 3.80.
3. Moderate professional practice, mean = 3.03.
4. Significant relationships: r = -.342 and r =.475, p <.05.
5. Joint prediction: $R^2 = 0.344$, p <.05.

Conclusion

Informal transport is integral but costly. Professional practice significantly mitigates its negative impact. Improving delivery requires managing informal transport cost and strengthening professional logistics practice.

Recommendations

1. To Construction Firms: Develop formal logistics plans and evaluate transport options (PMI, 2021).
2. To Abia State Government: Create a regulatory framework and standardized rates for construction Keke.
3. To Keke Unions: Organize training and create a "Construction Logistics Desk" for reliability.
4. To Professional Bodies: Include informal logistics management in CPD programs (Olatunji et al., 2022).
5. To Project Managers: Adopt mixed logistics strategy using formal haulage for bulk and informal for last-mile.

Limitations and Further Studies

Limited to 3 cities in Abia State. Future studies should use actual project data and examine digital platforms for formalizing informal transport.

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