International Journal of Civil Engineering, Construction and Estate Management,14(3),32-50,2026
Print ISSN: 2055-6578(Print)
Online ISSN: 2055-6586(online)
Website: https://www.eajournals.org/
Publication of the European Centre for Research Training and Development -UK

Impact of Construction Industry's Readiness to Adopt Value Management in Project Delivery in Kaduna, Nigeria

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doi: https://doi.org/10.37745/ijcecem.14/vol14n33250 Published September 28, 2026

Citation: Adamu M.D., Mohammed M.,Kunya S.U. (2026) Impact of Construction Industry's Readiness to Adopt Value Management in Project Delivery in Kaduna, Nigeria, *International Journal of Civil Engineering, Construction and Estate Management*, 14(3),32-50,2026

Abstract: *Despite the global recognition of Value Management (VM) as a strategic framework for optimizing whole-life costs, project quality, and stakeholder satisfaction, its adoption within the Sub-Saharan African construction sector remains fragmented and rudimentary. This study examines the readiness of the construction industry in Kaduna Metropolis, Nigeria, to adopt VM and assesses its empirical impact on project delivery performance. Utilizing a quantitative survey research design, structured questionnaires were administered to 230 construction professionals (Architects, Builders, Civil Engineers, and Quantity Surveyors), yielding 134 valid responses used for analysis (*58.3% *net response rate). Descriptive statistics, mean ranking, and simple linear regression analysis were conducted using SPSS v21. The empirical findings reveal that stakeholder awareness of VM remains predominantly low (*46.0%*) to moderate (*28.0%*). Current application is disproportionately concentrated in early project stages notably feasibility studies (*$Mean = 4.62$*) and conceptual planning (*$Mean = 4.49$*) while post-planning, construction execution, and operational phases demonstrate significant decline (*$Mean < 3.30$*). Major drivers for VM adoption include enhanced value for money (*$Mean = 3.44$*) and cost control (*$Mean = 3.38$*), whereas implementation is heavily constrained by awareness deficits (*$Mean = 3.17$*), professional skill shortages (*$Mean = 3.16$*), and entrenched resistance to conventional practices (*$Mean = 3.14$*). Statistical testing demonstrates that organizational and professional readiness possesses a statistically significant positive effect on project delivery performance (*$R = 0.294$, $R^2 = 0.086$, $F = 12.468$, $p = 0.001$*). The study concludes that institutionalizing VM requires bridging the gap between professional capacity and institutional policy frameworks to ensure systemic adoption across the total project lifecycle*.

Keywords: value management, construction industry, project delivery performance, industry readiness; Kaduna; Nigeria.

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INTRODUCTION

The construction industry is a major contributor to economic development, infrastructure provision and capital formation, particularly in developing economies such as Nigeria. Through the delivery of buildings, transportation infrastructure, housing, institutional facilities and other physical assets, the industry supports economic activity and social development. Despite this strategic role, construction project delivery in Nigeria continues to be characterised by persistent performance challenges, including cost overruns, time delays, quality deficiencies, rework, inefficient resource utilisation, project abandonment and client dissatisfaction (Aibinu & Jagboro, 2002; Ameh & Osegbo, 2011). Previous Nigerian studies have shown that time and cost overruns remain major impediments to achieving satisfactory project outcomes, suggesting the need for more systematic approaches to decision-making and resource optimisation throughout the project life cycle.

Project delivery performance is therefore an important outcome for assessing the effectiveness of construction management practices. It encompasses the extent to which a project achieves its predetermined objectives within acceptable cost, time, quality and functional requirements, while also satisfying client expectations and using project resources efficiently. Contemporary approaches to construction management increasingly recognise that project success cannot be assessed solely through initial cost or completion time; rather, performance involves the integrated achievement of cost, schedule, quality, functionality, stakeholder and value objectives. In this context, mechanisms that enable project participants to make informed decisions about functions, resources, alternatives and life-cycle costs are particularly important.

One methodology capable of supporting such decision-making is Value Management (VM). VM is a systematic, multidisciplinary and function-oriented approach that seeks to maximise the value obtained from project resources by systematically examining required functions in relation to cost, performance, quality and client requirements (Kelly et al., 2002; SAVE International, 2015). Unlike conventional cost-cutting approaches, VM does not simply seek to reduce expenditure; rather, it seeks to achieve the required project functions and performance at the optimum cost over the relevant project life cycle. Consequently, effective VM can contribute to better design decisions, improved resource allocation, elimination of unnecessary expenditure, enhanced stakeholder communication and improved value for money.

The potential relevance of VM to Nigerian construction projects is particularly important given the industry's continuing project-delivery problems. However, the existence of VM as a recognised methodology does not automatically result in its effective application. The ability of construction organisations to obtain benefits from VM depends partly on their **readiness to** adopt and institutionalise the approach. Readiness is therefore conceptually different from simple awareness of VM. An organisation or industry may be aware of VM but lack the professional expertise, management commitment, resources, information, processes or institutional support required to implement it effectively.

In the Nigerian context, Hayatu (2015) provides particularly important evidence on this issue. The study directly assessed the Nigerian construction industry's readiness to adopt VM for effective project delivery and covered Abuja, Kaduna and Kano. Readiness was examined through four broad requirements: environment, people, process, and issues/information. The study reported an overall moderate level of readiness and identified issues relating to qualified VM practitioners, organisational commitment, time constraints and stakeholder involvement. It concluded that adoption could be facilitated through adjustments to existing construction practices and stronger institutional support.

The significance of Hayatu's findings is that they demonstrate that VM adoption is not merely a question of whether construction professionals have heard about the technique. Rather, adoption requires an enabling environment, competent people, appropriate processes and adequate information. However, the study was undertaken as a readiness assessment and did not establish, through an empirical IV–DV model, whether the overall readiness of the construction industry to adopt VM has a statistically significant effect on project delivery performance. Furthermore, although Kaduna was included in the geographical coverage, the study did not provide a Kaduna-specific examination of the relationship between industry readiness and project outcomes. This creates an opportunity for a more focused investigation of Kaduna's construction environment.

Subsequent Nigerian studies have strengthened the evidence that VM adoption is influenced by multiple dimensions of industry readiness. Oke and Aghimien (2018) found that VM adoption in Nigeria is influenced by factors including adequate understanding of VM benefits, client commitment, professional experience, training and collaboration among construction stakeholders. Their findings also indicated that awareness and potential for VM adoption do not necessarily translate into widespread implementation. Similarly, Ojo and Ogunsemi (2019) investigated the critical drivers of VM adoption and identified factors such as understanding of VM benefits, knowledge of VM techniques, professional experience, training, stakeholder sensitisation and collaboration among professional bodies as important drivers. These findings suggest that readiness is a multidimensional phenomenon involving both individual professional capability and broader organisational and institutional conditions.

Further evidence from Ojo, Ogunsemi and Ogunsina (2021) indicates that the application of VM within Nigerian construction projects remains limited because of constraints including inadequate VM expertise and insufficient knowledge of VM techniques. Their conceptual framework consequently positioned VM adoption as dependent upon interacting individual, organisational and institutional factors rather than a single awareness-related variable. This is important because it suggests that construction-industry readiness should incorporate the conditions that enable professionals and organisations to move from knowledge of VM to actual implementation.

More recent evidence has continued to identify implementation difficulties within Nigeria. Jiya et al. (2023), in their assessment of VM in the Nigerian construction industry, reported challenges including inadequate standardisation, insufficient expertise, limited training and education, limited

adoption of international standards and practices, and inadequate use of technology and data analytics. The study also highlighted prospects associated with strengthening training, standards, best practices and technological support. Similarly, research focusing on northern Nigeria has examined constraints to VM adoption among construction professionals in Abuja, Kano and Kaduna, further demonstrating the relevance of the issue to the regional construction environment. Based on this body of evidence, Construction Industry Readiness to Adopt Value Management should be treated as a multidimensional independent variable rather than a single measure of awareness. For the present study, readiness can appropriately encompass VM awareness and knowledge; professional competence and training; management commitment; organisational capability; availability of financial, human and technical resources; stakeholder participation and collaboration; integration of VM into project processes; availability and quality of project information; technological capability; client commitment; regulatory and institutional support; and organisational willingness to change. These dimensions collectively capture whether the construction industry possesses the conditions necessary to adopt VM beyond occasional or informal application.

The expected consequence of such readiness is reflected in the dependent variable, project delivery performance. Where construction stakeholders possess adequate VM knowledge and competence, management provides sufficient support and resources, relevant stakeholders participate in value-analysis activities, project information is available, and VM is integrated into project decision-making processes, the industry should be better positioned to evaluate alternative solutions, eliminate unnecessary costs, improve functional performance and make more effective resource-allocation decisions. These mechanisms can potentially influence project cost performance, schedule performance, quality performance, resource efficiency, client satisfaction and achievement of project objectives. Evidence from the wider VM literature also supports the proposition that VM implementation can influence construction-project success, although the strength and nature of such effects depend on the implementation context.

Nevertheless, an important empirical gap remains. Existing Nigerian research has predominantly examined VM awareness, drivers, barriers, adoption requirements, implementation challenges and conceptual frameworks. Hayatu (2015) specifically examined readiness, while subsequent studies have expanded understanding of adoption drivers and barriers. However, there remains limited empirical evidence that integrates these readiness dimensions into a single industry-readiness construct and tests its statistical effect on project delivery performance within a specific Nigerian construction location. This gap is particularly relevant to Kaduna because evidence derived from national samples may mask local differences in professional capacity, organisational practices, client expectations, institutional support, access to technical resources and project-management conditions.

Kaduna therefore provides an appropriate context for examining this relationship. Although the state was included in Hayatu's earlier national readiness investigation, a contemporary Kaduna-focused study can provide more specific evidence on whether construction stakeholders possess

the capabilities and enabling conditions required for VM adoption and, importantly, whether such readiness is associated with measurable differences in project delivery performance. The study consequently moves beyond the question of **"**Are construction professionals aware of VM?" to the more analytically important question of "Does the industry's readiness to adopt VM influence how construction projects are delivered,

Accordingly, this study investigates the impact of construction industry's readiness to adopt Value Management on project delivery performance in Kaduna, Nigeria. The independent variable is construction-industry readiness to adopt VM, represented by awareness and knowledge, professional competence and training, management commitment, organisational capability, resource availability, stakeholder collaboration, process readiness, information availability, technological capability, client commitment, institutional/regulatory support and change readiness. The dependent variable is project delivery performance, represented by cost, time, quality, resource efficiency, client satisfaction and achievement of project objectives. By empirically examining the relationship between these two constructs, the study seeks to determine whether the conditions necessary for VM adoption are associated with improved construction project outcomes in Kaduna.

LITERATURE REVIEW

The Concept and Lifecycle Dynamics of Value Management

Value Management (VM) is a systematic, function-oriented and multidisciplinary approach to improving project value by balancing function, performance, quality and cost throughout the project lifecycle. The origins of VM can be traced to Value Analysis, which was developed by Lawrence Miles at General Electric during the Second World War in response to material shortages. The approach sought alternative materials and methods that could maintain required functions and performance while reducing resource requirements (Cheah & Ting, 2015). Its application subsequently expanded from the analysis of individual components to Value Engineering and, more broadly, to Value Management as a strategic approach for managing value throughout complex projects (Kelly et al., 2016).

In construction, VM differs from conventional cost reduction because its primary objective is not simply to minimise expenditure but to maximise the value obtained from project resources. Value is commonly conceptualised as the relationship between the required function and the resources or cost necessary to achieve that function: Accordingly, a project can achieve higher value either by improving the required function without a proportionate increase in cost or by achieving the required function with fewer resources, provided that performance and quality requirements are maintained. This distinction is particularly important in construction projects, where indiscriminate cost reduction may compromise durability, functionality, safety or client requirements.

VM is generally implemented through a structured and multidisciplinary process involving project stakeholders with different technical and managerial expertise. The process typically includes pre-study preparation, information collection, functional analysis, creative generation of alternatives, evaluation, development of selected proposals, presentation and implementation, followed by post-study review and feedback (SAVE International, 2015; Male et al., 2018). Functional analysis, including the use of the Function Analysis System Technique (FAST), enables project teams to examine what a facility or component is required to do rather than focusing only on how it is traditionally designed or constructed. This encourages the consideration of alternative solutions capable of delivering the required function at an appropriate level of cost and performance.

The lifecycle dimension of VM is particularly relevant to construction because value decisions made during planning and design can influence subsequent procurement, construction, operation, maintenance and eventual replacement or disposal. Early-stage VM can therefore provide opportunities to challenge unnecessary requirements, compare alternative design and construction solutions, improve resource allocation and reduce whole-life costs. However, the benefits of VM depend on the extent to which its principles are incorporated into project decision-making rather than being treated as an isolated cost-reduction exercise. Consequently, effective VM requires an organisational and institutional environment capable of supporting its systematic application throughout the project lifecycle.

Requirements and Readiness for Value Management Adoption

The adoption of VM requires more than awareness of its potential benefits. It requires the construction industry to possess the organisational capabilities, professional competencies, processes, information and institutional conditions necessary to apply VM effectively. In this respect, readiness for VM adoption refers to the extent to which construction organisations and project stakeholders possess the capabilities and enabling conditions required to initiate, integrate and sustain VM practices within project delivery.

Nigerian research indicates that VM readiness is multidimensional. Hayatu (2015), in an assessment of the Nigerian construction industry's readiness to adopt VM, examined readiness in relation to four broad areas: people, process, information/issues and environment. The study, which included construction professionals in Abuja, Kaduna and Kano, demonstrated that readiness cannot be reduced to knowledge or awareness alone. Rather, successful adoption requires competent personnel, supportive organisational processes, adequate project information and a favourable institutional environment.

The people dimension concerns the availability of appropriately trained professionals, VM facilitators, multidisciplinary teams and management personnel capable of participating effectively in VM studies. Professional knowledge and previous experience are particularly important because VM involves functional analysis, collaborative problem-solving, alternative generation and systematic evaluation. Ojo and Ogunsemi (2019) identified adequate understanding

of VM benefits, knowledge of VM techniques, previous professional experience and VM training among the critical drivers of VM adoption in Nigeria. These findings suggest that an industry may demonstrate general awareness of VM while remaining insufficiently prepared to implement it effectively.

The process dimension concerns the extent to which VM can be incorporated into existing project planning, design, procurement and construction processes. Effective adoption requires appropriate procedures, defined responsibilities, multidisciplinary participation and sufficient opportunity for structured VM studies at appropriate project stages. Procurement and contractual arrangements are also relevant because rigid procedures may constrain the consideration and development of alternative solutions. Consequently, organisational readiness includes the capacity to modify established processes where necessary to accommodate VM without undermining project governance or accountability.

The information dimension relates to the availability, accuracy and accessibility of information required for informed value decisions. VM depends on a clear understanding of client requirements, project functions, cost information, performance criteria, design constraints and available technological alternatives. Inadequate or unreliable information can limit the ability of project teams to compare alternatives and determine whether proposed changes genuinely improve value. Information readiness is therefore an important component of an industry's capacity to undertake evidence-based VM.

The environmental or institutional dimension encompasses management commitment, client support, regulatory conditions, professional institutions, industry culture and the broader organisational environment within which VM is implemented. Ojo and Ogunsemi (2019) reported the importance of stakeholder sensitisation, collaboration among professional bodies and government support in encouraging VM adoption. Similarly, Ojo, Ogunsemi and Ogunsina (2021) argued that the limited application of VM in Nigeria is associated with inadequate expertise and insufficient knowledge of VM techniques, indicating that adoption requires interacting individual, organisational and institutional conditions rather than a single enabling factor.

More recent Nigerian evidence continues to identify barriers associated with inadequate expertise, limited training, weak standardisation, restricted exposure to international best practices and insufficient technological and data-analytic capabilities (Jiya et al., 2023). These constraints are important because they can prevent awareness from translating into actual implementation. Thus, readiness should be understood as a capacity-to-act construct, encompassing the knowledge, competencies, organisational support, resources, information, processes and institutional conditions necessary for VM adoption.

For the present study, construction industry readiness to adopt VM is therefore conceptualised as a multidimensional independent variable comprising VM awareness and knowledge, professional competence and training, management commitment, organisational capability, resource

availability, stakeholder collaboration, process readiness, information availability, technological capability, client commitment and institutional support. This conceptualisation provides a broader basis for assessing readiness than approaches that measure awareness or perceived benefits alone. The importance of these readiness conditions is reinforced by evidence that VM adoption in Nigeria remains limited despite its recognised potential for improving construction project value. Oke and Aghimien (2018) identified management commitment, client involvement, professional experience, training, collaboration and government support as important conditions for VM adoption. Similarly, Ojo et al. (2021) developed a Nigerian VM adoption framework that emphasises the interaction of individual, organisational and institutional factors. These findings collectively indicate that the transition from VM awareness to implementation depends on whether the construction industry is sufficiently prepared to institutionalise the approach within normal project delivery processes.

Therefore, the literature suggests that readiness for VM adoption is not an outcome in itself but an enabling condition through which VM can contribute to improved project delivery. Where professionals possess the necessary competencies, management provides adequate support, relevant information and resources are available, stakeholders collaborate effectively, and VM can be integrated into project processes, project teams are better positioned to evaluate alternatives and optimise the relationship between cost, function, quality and performance. This provides the conceptual basis for examining the relationship between construction industry readiness to adopt VM and project delivery performance in Kaduna, Nigeria.

RESEARCH METHODOLOGY

Research Design and Sampling

This study adopted a quantitative, cross-sectional survey research design, ideal for evaluating industry practices, perceptions, and structural readiness parameters (Creswell, 2014; Boudah, 2019). The target population comprised registered construction professionals operating in public institutions (e.g., Kaduna State Ministry of Works and Infrastructure) and private consulting and contracting firms within Kaduna Metropolis.

The sampling frame comprised 230 qualified professionals, broken down by specialty: Architects ($n = 60$), Quantity Surveyors ($n = 60$), Civil Engineers ($n = 50$), and Builders ($n = 60$). A purposive sampling strategy was employed to target practitioners with direct involvement in capital project planning, design execution, and procurement control.

Data Collection

Data was gathered using a structured, self-administered questionnaire divided into demographic attributes, awareness metrics, lifecycle application stages (23 items), prospects and challenges (11 items), and organizational readiness indicators (18 items). Questionnaire constructs utilized 4-point and 5-point Likert scales (ranging from $1 =$ Strongly Disagree / None to $5 =$ Strongly Agree / High). To ensure construct and content validity, the instrument underwent pilot

testing and expert review by senior academics and seasoned practitioners. Internal consistency was evaluated using Cronbach's Alpha (α). All primary research constructs exceeded the standard reliability threshold of 0.70 (Pallant, 2011), as shown in Table 1:

Table 1: Reliability and Validity

Construct	Number of Items	Cronbach's Alpha (α)	Reliability Status
Stakeholder Awareness Level	25	0.871	High Reliability
Lifecycle VM Application Extent	11	0.938	Excellent Reliability
Prospects and Adoption Challenges	11	0.875	High Reliability
Organizational and Industry Readiness	11	0.905	Excellent Reliability

Data Analysis Techniques

Data was cleaned, coded, and analyzed using SPSS Version 21. Descriptive statistics (frequencies, percentages, mean scores, and standard deviations) were calculated to rank items across research objectives. Simple linear regression was conducted to test the relationship between overall industry readiness (independent variable, X) and project delivery performance (dependent variable, Y). Normality checks were executed, yielding acceptable skewness and kurtosis parameters within standard thresholds.

RESULTS AND DISCUSSION

Respondent Profiles and Response Rate

Out of 230 questionnaires distributed, 154 were returned, and 134 were verified as complete and suitable for analytical processing, representing a net usable response rate of 58.3%. Table 2 outlines the demographic characteristics of the analytical sample.

Table 2: Demographic Profile of Respondents

Profile Attribute	Classification	Frequency (n)	Percentage (%)
Age Group	Under 30 years	5	3.7
	30 to 60 years	116	86.6
	Above 60 years	13	9.7
Educational Qualification	Higher National Diploma / Diploma	5	3.7
	Bachelor's Degree (B.Sc/ B.Tech)	77	57.5
	Master's Degree (M.Sc/ M.Tech) and above	52	38.8
Professional Discipline	Civil Engineer	39	29.1
	Builder	35	26.1
	Quantity Surveyor	33	24.6
	Architect	27	20.1
Organization Type	Contractor	57	42.5
	Client (Public/Private)	49	34.1
	Consultant	28	22.4

The demographic data indicates a highly experienced and educated respondent base: 86.6% of respondents were between 30 and 60 years old, and 96.3% held a university degree or postgraduate qualification. All four primary building disciplines were well-represented across contracting, client, and consulting sectors.

Stakeholder Awareness Level of Value Management

Evaluation of awareness levels revealed an overall low-to-moderate familiarity with formal Value Management principles among construction stakeholders in Kaduna Metropolis.

Table 3: Level of Awareness of Value Management

Scale Category	Frequency (n)	Percentage (%)	Mean Score
None	5	10.0	0.40
Low	23	46.0	3.68
Medium	14	28.0	3.36
High	8	16.0	2.56

As summarized in Table 3, 46.0% of respondents reported low awareness, while 10.0% reported no prior knowledge. Only 16.0% possessed a high understanding of formal VM methodologies. This finding aligns with Ogbu and Oke (2022) and Kolo and Ibrahim (2015), confirming that while practitioners are conceptually aware of basic cost-reduction techniques, formal VM framework literacy remains limited in regional Nigerian markets.

Extent of Value Management Lifecycle Application

To determine how VM is integrated into actual project execution, respondents rated 23 application items across the project delivery lifecycle.

Table 4: Mean Ranking of Lifecycle Application Extent

S/N	Item Description	Mean	Std. Deviation	Rank
1	VM is considered during project feasibility studies	4.619	0.734	1
2	VM is incorporated during project conceptual planning	4.485	0.792	2
3	Client requirements are systematically analyzed using VM techniques	4.313	0.687	3
4	Stakeholders participate in VM activities during project inception	4.239	0.717	4
5	Project objectives are clearly defined through VM processes	4.224	0.837	5
6	VM workshops are conducted during the design stage	4.090	0.761	6
7	Alternative design solutions are evaluated using VM principles	4.008	1.217	7
8	Functional analysis is carried out to optimize design performance	3.903	0.755	8
9	Cost and value considerations are integrated into design decision-making	3.866	0.713	9
10	Value-based procurement decisions are prioritized	3.687	0.871	11
11	Life-cycle costing is applied during procurement material selection	3.679	0.855	12
12	VM techniques are used to improve site construction methods	3.396	0.746	15
13	Resource optimization through VM during active construction	3.246	1.007	17

S/N	Item Description	Mean	Std. Deviation	Rank
14	VM is used to minimize waste and enhance site productivity	3.187	0.903	19
15	Facility performance requirements assessed post-completion	3.067	0.748	21
16	Feedback from end-users incorporated into value improvement decisions	3.000	0.823	22
17	Stakeholders regularly review post-project outcomes for value for money	2.925	0.939	23

The empirical trends in Table 4 indicate that VM application is front-loaded in the project lifecycle. Feasibility studies (Mean = 4.619, Rank 1), conceptual planning (Mean = 4.485, Rank 2), and systematic client requirement analysis (Mean = 4.313, Rank 3) recorded the highest adoption levels. However, as projects transition from pre-construction to active site execution and facility operation, VM application drops noticeably. Active site waste minimization (Mean = 3.187, Rank 19) and post-occupancy value reviews (Mean = 2.925, Rank 23) received low ratings.
These results confirm the findings of Kelly et al. (2016) and Jaapar et al. (2019), who noted that while clients recognize the benefit of front-end value planning, construction organizations rarely sustain formal VM processes during construction and post-occupancy stages.

Prospects and Challenges of Value Management Adoption
Evaluating perceived prospects and adoption challenges reveals key strategic drivers and operational barriers within the regional construction market.

Table 5: Perceived Prospects and Implementation Challenges

Item Description	Category	Mean	Std. Deviation	Rank
VM improves value for money in construction projects	Prospect	3.440	0.827	1
VM enhances project cost efficiency and cost control	Prospect	3.381	0.812	2

Item Description	Category	Mean	Std. Deviation	Rank
VM improves quality and functionality of built assets	Prospect	3.343	0.859	3
VM facilitates superior decision-making in planning/design	Prospect	3.284	0.800	4
Lack of awareness and understanding of VM principles	Barrier	3.172	0.741	7
Shortage of trained VM professionals and facilitators	Barrier	3.164	0.860	8
Resistance to change from traditional construction practices	Barrier	3.142	0.737	9
Lack of organizational and client support for VM	Barrier	3.134	0.956	10
Absence of clear policies, guidelines, and statutory mandates	Barrier	2.821	0.681	11

Table 5 shows that construction professionals strongly acknowledge the strategic prospects of VM, particularly regarding value-for-money optimization (Mean = 3.440), cost control enhancement (Mean = 3.381), and functional quality improvement (Mean = 3.343). Conversely, adoption remains impeded by educational and operational barriers, headed by low stakeholder awareness (Mean = 3.172), a deficit of certified VM facilitators (Mean = 3.164), and entrenched resistance to changing traditional practices (Mean = 3.142). This supports Oke and Aigbavboa (2017), confirming that institutional inertia and technical capability shortages remain major barriers across African construction sectors.

Industry Readiness to Institutionalize Value Management

Assessing industry readiness parameters provided insights into institutional capabilities and professional willingness to adopt VM.

Table 6: Industry Readiness Indicators for Institutionalization

Readiness Parameter	Mean	Std. Deviation	Rank
Construction professionals possess adequate core technical knowledge	3.910	0.836	1
Organizations demonstrate willingness to adopt VM in future projects	3.694	0.816	2
Executive management supports VM integration into delivery systems	3.597	0.833	3
Firms are willing to invest in VM training and professional development	3.597	0.833	4
Sufficient awareness of VM economic benefits among leadership	3.493	0.802	5
Professional bodies are prepared to regulate VM practice	2.493	1.002	10
Educational/training institutions capable of incorporating VM into curricula	2.418	1.043	11

The results in Table 6 show that internal organizational readiness such as professional technical awareness (Mean = 3.910), corporate willingness to adopt VM (Mean = 3.694), and management commitment to capacity building (Mean = 3.597) is moderately high. However, external institutional support remains weak. Preparedness of professional regulatory bodies (Mean = 2.493) and educational curriculum integration (Mean = 2.418) ranked lowest. This structural imbalance indicates that while individual professionals and firms are open to VM adoption, the institutional ecosystem (universities, professional bodies, and public policy) has not provided the necessary regulatory and educational support.

Industry Readiness and Project Delivery Performance

To evaluate whether construction industry readiness significantly influences project delivery performance, a simple linear regression analysis was conducted. The Independent Variable and

Industry Readiness to Adopt Value Management Dependent Variable Project Delivery Performance.

Table 7: Linear Regression Model

Model Metric	Statistic Value	Statistical Interpretation
Correlation Coefficient (R)	0.294	Positive Linear Relationship
Coefficient of Determination (R^2)	0.086	8.6% Variance Explained
Adjusted R^2	0.079	Model Goodness-of-Fit
Standard Error of the Estimate	0.456	Residual Variance
Analysis of Variance (F-Statistic)	12.468	Regression Model Significance
Significance Level (p-value)	0.001	Statistically Significant ($p < 0.05$)

The regression model summary in Table 7 reveals a statistically significant positive relationship ($R = 0.294$, $p = 0.001$). The coefficient of determination ($R^2 = 0.086$) indicates that 8.6% of the total variance in project delivery performance across Kaduna Metropolis is directly attributable to the industry's readiness to adopt and institutionalize Value Management. The ANOVA test confirmed overall model significance ($F(1,132) = 12.468$, $p = 0.001$), leading to the rejection of the null hypothesis. While an R^2 value of 8.6% indicates a modest effect size, this result is statistically meaningful given that project delivery performance is governed by a broad array of variables, including macroeconomic stability, project financing, contractor cash flows, political influences, and site supply chains (Oke & Ogunsemi, 2011). These empirical findings confirm that enhancing industry readiness through capacity building, standardized policies, and leadership support yields direct, measurable improvements in project delivery outcomes.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study provided an empirical evaluation of the impact of the construction industry's readiness to adopt Value Management on project delivery performance within Kaduna Metropolis, Nigeria. Based on the empirical findings, the study concludes that:

1. Awareness of formal Value Management methodologies among regional construction stakeholders remains low to moderate, despite strong practical recognition of its core benefits.
2. The application of VM is heavily skewed toward pre-construction planning and conceptual design phases, with limited adoption during site execution, operational maintenance, and post-occupancy evaluations.
3. Adoption prospects (such as whole-life cost optimization and improved functional quality) are well understood, but implementation remains constrained by skill shortages, lack of certified facilitators, and organizational resistance to non-conventional practices.
4. Organizational readiness among firms and professionals is moderately high, but it is constrained by weak institutional support from regulatory bodies and educational institutions.
5. Industry readiness exerts a statistically significant positive effect on overall project delivery performance ($R^2 = 0.086, p = 0.001$), confirming that systematic VM institutionalization improves project performance outcomes.

Recommendations

To systematically transition the regional construction industry from informal practices to institutionalized Value Management, the following policy measures are recommended:

- Public sector procurement regulatory bodies, including the Bureau of Public Procurement (BPP), should formulate explicit statutory guidelines mandating formal VM benchmarks for public capital projects exceeding specified threshold costs.
- Professional institutions such as the Nigerian Institute of Quantity Surveyors (NIQS), Nigerian Institute of Building (NIOB), Nigerian Society of Engineers (NSE), and Nigerian Institute of Architects (NIA) should establish certified VM training frameworks and continuous professional development (CPD) modules.
- Academic institutions offering built environment programs should integrate dedicated Value Engineering and Management courses into undergraduate and postgraduate curricula to build foundational technical competencies.
- Contracting and consulting firms should extend VM protocols beyond early design stages, integrating continuous functional reviews into active site construction, material selection, and post-occupancy facilities management.

Limitations and Further Research

This study was geographically focused on Kaduna Metropolis, Northern Nigeria, relying on quantitative survey instruments. Future research could expand this scope by conducting comparative studies across multiple geopolitical zones, employing qualitative case study approaches, or utilizing Structural Equation Modeling (SEM) to evaluate complex structural interactions between VM readiness, BIM adoption, Lean Construction practices, and project success metrics.

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