

PROCUREMENT PRACTICES ON PROJECT DELIVERY IN PUBLIC CONSTRUCTION PROJECTS IN OSUN AND OYO STATES, NIGERIA**H. I. Babalola¹ and I. J. Olatoye^{2*}**^{1,2}Department of Civil and Environmental Engineering, The Federal University of Technology Akure, Nigeria*Corresponding email: olatoyejj@futa.edu.ng**Received:** 1 May 2026**Accepted:** Date 30 May 2026**Published:** 16 June 2026

ABSTRACT. A construction project's success hinges on timely completion, budget adherence, quality standards, and customer satisfaction. Selecting the optimal procurement strategy is therefore crucial, as it significantly impacts project outcomes. This study examined procurement methods in Osun and Oyo States, Nigeria, with the aim of identifying prevalent methods, determining key influencing factors, and developing a predictive model for procurement effectiveness. These states were selected due to their active construction sectors and representation of a defined geographic region. A mixed-methods approach was adopted, combining qualitative and quantitative techniques. A survey of 200 construction professionals yielded 145 responses, representing a 73% response rate. Construction professionals were selected based on their direct involvement in procurement decisions and processes. The findings revealed that Traditional (Design–Bid–Build), Design and Build, and Package Deal are the most commonly used procurement methods in the study area. Stepwise multiple linear regression analysis indicated significant relationships between procurement effectiveness and key factors, specifically, nature of the project (X_1), project complexity (X_2), project completion time (X_3), estimated cost (X_4), quality level (X_5), client engagement (X_6), and price competition (X_7) were found to have significant relationships. The enhancing factors explained 51% of the variance in procurement method effectiveness. The analysis yielded the predictive model: $Y = 4.752 + 0.282X_1 + 0.389X_2 + 0.255X_3 + 0.343X_4 + 0.137X_5 + 0.250X_6 + 0.116X_7 + \varepsilon$. Notably, project complexity ($\beta = 0.389$) and project completion at estimated cost ($\beta = 0.343$) emerged as the most influential factors. The study highlights the importance of context-driven procurement selection in enhancing project performance, cost efficiency, and client satisfaction.

Keywords: Procurement Methods, Construction Projects, Project Management, Construction Professionals, Project Parameters.

1. Introduction

In construction management, the success of a building project lies in timely completion, within budget limits, and according to quality requirements along with high levels of customer satisfaction (Naoum and Egbu 2016). The choice of procurement method plays a critical role in achieving these outcomes, as it influences risk allocation, responsibilities, project duration, and cost. Inappropriate procurement selection has been linked to poor project performance, including delays, cost overruns, conflicts, and, in extreme cases, project abandonment (Udoette et al. 2022). Consequently, clients seek procurement approaches that ensure value for money, high-quality delivery, and timely completion, as quality control, cost, and completion time are the typical performance metrics used in the construction sector. (Oyelami and Dosumu 2021).

The procurement system encompasses all elements required to create a structured process for procurement, including tendering and procurement methods (Chen et al. 2021). A procurement system as stated by (Naoum and Egbu 2015) is an organisational structure that establishes the connections between the many components involved in executing a project and gives individuals and organisations certain responsibilities and authority. Similarly, according to (Phoya 2018), construction procurement is the process of producing, managing, and executing contracts for construction, leasing, and selling properties as well as authorising projects. The practice of inviting and assessing bids from contractors or suppliers to deliver the necessary works, commodities, or services is known as tendering, whereas the procurement method refers to the entire strategies and procedures used to purchase goods, services, or works from external sources. A variety of tendering methods are used, such as open tender, which is open to all qualified bidders, selective tender, which is restricted to bidders who have already been shortlisted, and negotiated tender, which involves direct talks with one or more contractors. Hybrid, fast tracking, and serial tendering are less popular forms of tendering (Shalehin et al. 2024).

The construction industry is complex due to the multitude of project partners involved, including clients, consultants, contractors, stakeholders, shareholders, and regulators, all of whom must work together to successfully complete a project (Babalola and Ojo 2016). Because of its complexity, fragmentation, and mainly casual labour force, the industry is vulnerable to substandard contract performance (Babalola et al. 2015). According to (Akannobe et al. 2026), risk management, competitive intelligence, continuous improvement, technical innovations, and operational responsibilities are all included in procurement operations. It evaluates how well a business's procurement process achieves predetermined goals and objectives while taking product quality, efficiency, efficacy, and transparency into account. The construction industry mostly functions through a system of subcontracting and purpose-built alliances to implement and oversee programmes. It is important to note that, depending on when the contractor is hired throughout the procurement process, the procurement method selected for a particular project will affect the level of integration that takes place among project team members (Anoruo et al. 2026).

There are numerous methods that can be used for procuring projects in the public or private sectors. (Babatunde *et al.* 2012) among others, divided the many categories of construction procurement methods into two: traditional and non-conventional. Similarly, (Senarath and Francis 2024) claimed that different classifications are assigned by different authors depending on the available procurement methods and that the recognised procurement methods fall into four categories: integrated approaches, management-oriented methods, collaborative/relationship-based methods, and traditional methods. Furthermore, (Malsam 2024) stated, design and build approaches demand the contractor to design and build in accordance with clients specifications, whereas traditional contracts split the tasks of design and building. Collaborative/partnership contracts, contract management, and management contracting are some of the prevalent forms of procurement accessible in the construction sector. Each approach has its own advantages and disadvantages based on the project delivery method (Malsam 2024; Senarath and Francis 2024). While previous studies have explored procurement practices in Nigeria, limited attention has been given to secondary cities like Osun and Oyo States.

Despite existing studies on procurement practices in Nigeria, limited attention has been given to secondary cities such as Osun and Oyo States, and there is a lack of predictive models for assessing procurement effectiveness in these contexts. This study therefore investigates procurement methods in Osun and Oyo States with the aim of enhancing project performance. The objectives are to identify factors influencing procurement selection and to develop a statistical model for predicting procurement method effectiveness.

2. Literature Review

2.1 Traditional/Conventional Procurement Method

Under the traditional method, the three sequential stages of design, bid, and build are identified as distinct jobs in the traditional process of project procurement, as the name suggests. Traditionally, it's been known as the contract with a competitive bid (Babatunde et al. 2012). (Al-Bayati et al. 2023) argued that the three-phase approach of design, bid, and build (DBB) has become the standard for project delivery in the modern era. The client employs a designer or engineers to develop the project under the DBB agreement. Afterwards, a contractor will be chosen through a negotiated contract or a competitive bid to build and complete the project. DBB is renowned for its antagonistic and fractured relationships because it views the designer and contractor as two distinct entities with disparate objectives, values, and interests. (Babatunde et al. 2012) stated that this approach enables all competent contractors to submit bids for projects in a free-flowing, competitive market setting. In certain countries, the most frequent and/or oldest method is the traditional design-bid-build process. Although the approach has faced criticism over the years, it still appears peculiar that it is still used so frequently in Nigeria when it comes to public and private sector procurement (Dada 2013). Furthermore, (Udoette et al. 2022) recognised three distinct types of contracts under the traditional mode of procurement, which includes:

- i. Lump sum contracts: under this type of contract, the project's overall cost is determined even before it starts, and a summary agreement is made stating the amount.
- ii. Measurement contracts: with this system, once all work is finished and measured, the whole project cost is known for sure.
- iii. Cost reimbursement: under this type of contract, the project's total cost is determined by adding up the costs of labour, materials, and plants/equipment. Following the computation of all of this, a charge is applied to cover the contractor's profit and overhead.

2.2 Design and Build Procurement Method

(Ogunsanya et al. 2022) noted the design and build approach as one of the methods of procurement where the contractor is in charge of doing the project's design and construction. Many project clients are now selecting the design and build technique for their procurement process due to discontent with traditional procurement because it can lower project costs, expedite project completion, and eliminate single responsibility roles. Traditional procurement methods are no longer adequate in the face of severe environmental problems brought on by the construction industry (Ababio and Lu 2026). The design and build variations that are prevalent in most literature works as explained by (Babatunde et al. 2012) include:

1. Develop and Construct: This refers to a situation in which the contractor undertakes "finishing off the design and construction" after the client provides the design up to the concept or scheme design stage.
2. Package Deal: An off-the-shelf building is provided by the contractor. Buildings of this type are frequently modular in order to allow for size adjustments.

2.3 Public Private Partnership (PPP)

PPP is a cooperative agreement between public sector organisations and private sector businesses for the administration of infrastructure facilities owned by the public sector (Bako 2016). PPP approach might offer a way to get around some of the difficulties associated with owning public facilities, such as inefficiency, corruption, and bureaucracy. There are numerous PPP procurement contract methods wherein the project is financed, operated, and maintained for a predetermined period of time by the promoter in order to generate a return on investment. Among the types (Bako 2016) posited are: BOT [Build, Operate, Transfer], BLT [Build, Lease, Transfer], BOOST [Build, Own, Operate, Subsidize, Transfer], FBOOT [Finance, Build, Own, Operate, Transfer] and DBOT

[Design, Build, Operate, Transfer]. PPP performance is influenced by three factors: relational governance schemes, risk allocation schemes, and contractual form completeness (Bar et al. 2026).

2.4 Management Oriented Procurement Methods

Under this kind of contract, the client selects a professional construction management company to supervise the entire planning, designing, and construction process of a project and commissioning. Because the consultant and designers are cooperating, the situation is less hostile (Bako 2016). The client contracts with contractors directly, and the construction manager oversees the project on a purely consultative basis. In a management contracting method, the contractor oversees the design phase but does not perform the actual job. Following completion of the designs, he bundles the drawings into individual pieces. Till the end of the contract, the management contractor oversees the job.

2.5 Factors Influencing the Selection of Procurement Method

Selecting the appropriate procurement method is just another crucial choice clients have to make when executing a new building project (Al-Bayati et al. 2023). A procurement method's adoption is significantly impacted by a number of elements, including the project's characteristics, the client's requirements, and external environmental conditions. The procurement method used can establish whether the client's requirements are met and whether the project is successful because it offers the general framework along with authority and responsibility arrangements (Senarath and Francis 2024). There are many factors influencing the selection of a procurement method. According to (Adenuga and Dosumu 2012), Time certainty, Price certainty, Quality level, Responsibility, Speed, Risk allocation, Price competition, Flexibility and Complexity are some of the major factors which is also similar to a study by (Bhutto et al. 2019) and (Udoette et al. 2022).

3. Methodology

This study employed a mixed-methods research approach, incorporating both qualitative and quantitative methods. The quantitative procedure was conducted using a well-structured questionnaire on professionals in Osun and Oyo States construction industry who make up the research population for this study. The study focused on Osun and Oyo states due to their significant construction industry presence and representation of a specific geographic region in Nigeria. The questionnaire was generated based on the method of procurement identified from reviewed literatures used in practice amongst clients, contractors in the study area. On a five-point Likert scale, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree," responses were analyzed to assess participants' perceptions. The qualitative method involved the use of interviews with the professionals.

A non-random purposive sampling technique was adopted to select participants, prioritizing professionals with relevant expertise in procurement methods. This approach enhanced the reliability of the data by focusing on individuals actively involved in construction projects. Purposive sampling technique is a non-probability sampling technique where respondents are deliberately made a part of the sample due to their position, knowledge or any other criteria (Ijaola and Omolayo 2024). The study focused on construction professionals actively involved in procurement decision-making in Osun and Oyo States, including architects, civil engineers, builders, and quantity surveyors. Although precise data on the total population of professionals in the region was unavailable, prior studies and professional records suggest the population exceeds 400. This estimate was used as a basis for sample size determination.

The Taro Yamene's formula, which was applied in a study by (Esangbedo and Ealefoh 2021), was utilised to determine the sample size. The formula is as stated in equation (1):

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Where: n is the required sample size, N is the population size (400) and e is the margin of error (5% = 0.05). Substituting into the equation, we have

$$n = \frac{400}{1 + 400(0.05)^2} = \frac{400}{1 + 10} = \frac{400}{11}$$

$$n = \frac{400}{11}$$

$$n = 36.36$$

$$n = 36$$

200 copies of the questionnaire were distributed and 145 responses were received which represents a 73% response rate. The 73% response rate achieved in this study is considered reliable and adequate for construction research. (Jin and Loosveldt 2021) highlight that response rates above 50% are often acceptable for statistical inference, provided the sampling is well-targeted and the respondents are qualified professionals. In construction-related research, (Kira et al. 2020) assert that response rates between 60% and 75% are typical for survey studies involving industry professionals, especially when using purposive sampling.

Relative Importance Index (RII) method in equation (2) was employed to ascertain the respondents' perspectives concerning the various rankings in the questionnaire survey.

$$RII = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5n} \quad (2)$$

The Statistical Package for the Social Sciences (SPSS) version 25 was applied for conducting the analysis. The reasons behind the choice of SPSS were its convenient user interface, advanced statistical features, and extensive use in construction social studies. Among other analytical software applications like MATLAB and R, SPSS possesses such an advantage as convenience in handling survey data. Multilinear regression according to equation (3) was used to model the Level of Effectiveness of the Procurement Methods as a dependent variable.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \beta_n X_n + \varepsilon \quad (3)$$

where Y is level of effectiveness of the procurement methods, β_0 is the constant, $X_1 \dots X_n$ are the factors influencing the selection of procurement methods, $\beta_1 \dots \beta_n$ is the estimates of the independent variables. i.e. the coefficients of the independent variables and ε is the error term.

4. Results and Discussion

This presents the background information of the survey participants and the results, data analysis and discussions on the prevalent procurement methods and the factors influencing the selection of the procurement methods as well as the effectiveness of these methods.

4.1 Respondents' Background Information

The profile of 145 construction professionals was surveyed in Osun and Oyo States. This distribution reflects Oyo State's industrial prominence, supported by its larger population, urban centers, and commercial infrastructure. Oyo's population is approximately 1.5 times larger than Osun's, according to (National Bureau of Statistics (NBS) 2022). Moreover, Oyo is also witnessing considerable development in the construction industry, and Ibadan is a regional center for infrastructure development. The representation from Osun State helps to illustrate the procurement practices in less industrialized areas, which helps balance the study's findings and provides a diverse perspective. In particular, the occupations of the respondents included architects

(9.7%), builders (20.7%), civil engineers (38.6%), project managers (15.2%), quantity surveyors (11.0%) and others (4.8%). In addition, analysis of their academic qualifications found that these qualifications varied widely, ranging from Higher National Diploma (15.2%) to Doctorate (9.0%) with the most common academic qualifications being Bachelor's (52.4%) and Master's (23.4%). As far as organisation, respondents were employed in consulting firms (24.8%), contracting firms (40.7%), conglomerates (9.7%) and government parastatals (24.8%). Likewise, years of experience were also widely distributed with 15.2% having less than 5 years' experience, 20.7% having 6-10 years experience, 23.4% having 11-15 years experience, 11.0% having 16-20 years experience, and a large proportion (29.7%) having more than 20 years experience. Additionally, professional affiliations included NIA (14.5%), NIOB (23.4%), NSE (40.0%), NIQS (14.5%), and non-qualified (7.6%). Furthermore, the range of projects showed was wide, with projects in the office/educational building category (21.4%), residential building category (40.0%), industrial building category (20.7%) and civil engineering (17.9%). Geographically, respondents were mainly in Oyo (61.4%) and Osun (38.6%) States. To ensure a diversified sample of respondents, a number of contacts were made through various means, such as direct visits to the State Ministry of Works, distribution of questionnaires at the State Ministry of Works, regional construction seminars and workshops and social media (via LinkedIn and What'sApp groups for construction professionals in the region), where invitations were sent. The demographic analysis shows the respondents have experience and knowledge in the construction industry procurement, thus providing credibility to the data gathered.

4.2 Analysis of the Procurement Methods

The most common procurement practices in both Osun and Oyo States are illustrated in Figure 1, this illustrates the trends of the industry and their practice. The disparity was minimized when interpreting the results by using proportional representation. It is common in procurement studies to bring together data from different levels of industrialization. For example, (Molenaar et al. 2020) found that these comparisons can offer a different perspective on how procurement methods are adapted in mixed urban-rural settings. The traditional design-bid-build method is still the most popular procurement method used in projects, representing 26.2% of all procurement methods. This method is linear, with the client commissioning a design, requesting bids and then hiring a contractor to implement it. Design and build is next and is 18.6% of procurement methods. This strategy blends the design and construction aspects and provides the client with a single point of responsibility. Produce package deal and management contracting methods are 14.5% and 7.6% respectively. The package deal method is a single contractor supplying a full package, and management contracting is a contractor who is responsible for managing the project for the client. Construction management is one of the procurement methods, which is taken care by a construction manager on behalf of the client and it accounts for 6.2% of the procurement methods. Public-Private Partnerships (PPPs) encompass various models, including design-build-finance-transfer (4.8%), build-operate-transfer (4.8%), build-operate-own (7.6%), build-own-operate-transfer (7.6%), and renovate-operate-transfer (2.1%).

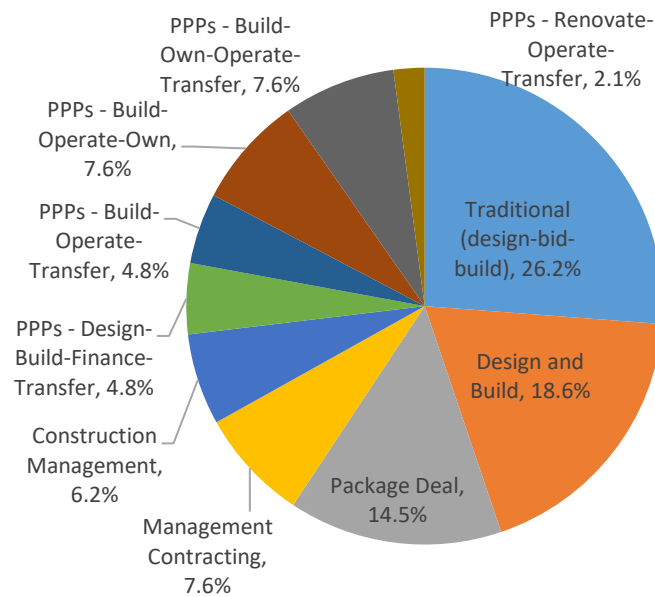


Figure 1: Prevalent Procurement Methods Used In both Osun and Oyo States

Assessment of the effectiveness of procurement methods shows a distinct trend. An overwhelming majority, 62.1%, find the procurement methods Very Effective. It implies that the methods used in Osun and Oyo State, Nigeria, are considered very effective in producing the results intended. Additionally, 29.7% find the procurement methods Effective, implying that there is high customer satisfaction from their effectiveness. The overall figure of 91.8% (Very Effective and Effective) shows a positive assessment of procurement methods' effectiveness. On the other hand, only a small number, 5.5%, find the procurement methods Less Effective. Also, 2.8% find them Moderately Effective. Importantly, none of the respondents finds the procurement methods Not Effective.

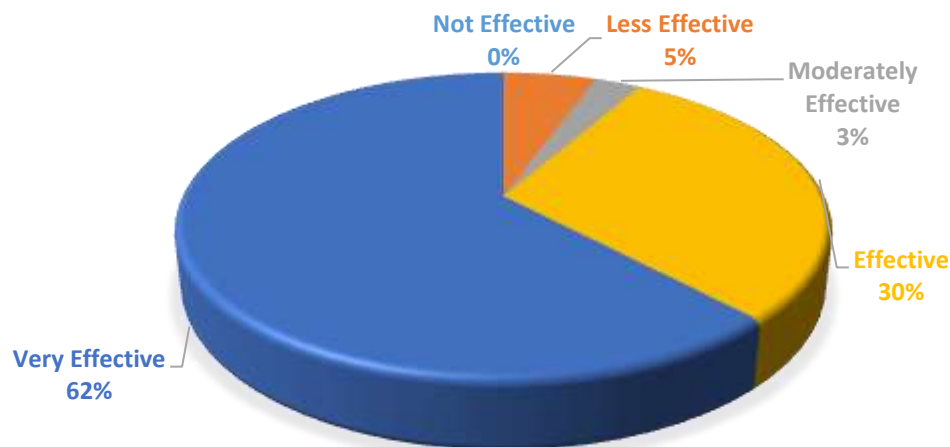


Figure 2: Effectiveness of the Procurement Methods

It is clear from the above assessment that the procurement processes being undertaken are very effective since most of the respondents are very satisfied with the performance. It can be said that all things considered, the perception of the effectiveness of the Nigerian Procurement system in the two states is quite high, but there is still room for improvement.

4.3 Analysis of the Factors That Influence the Selection of the Procurement Method

The stepwise multilinear regression analysis model was utilized to analyze the factors affecting the effectiveness of the procurement process. According to the predictive model provided in Table 1 below, the model has good fit ($R = 0.714$, $R^2 = 0.510$), where 51% of the variance of Perceived Effectiveness is accounted for.

Table 1: The Model Summary for Respondents

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	Durbin-Watson
1	.714 ^a	.510	.485	.574	.000	1.039

a. Predictors: (Constant), Price Competition, Nature of the Project, Project Completion at Estimated Time, Client Engagement, Quality Level, Project Completion at Estimated Cost, Project Complexity
b. Dependent Variable: Perceived Effectiveness

However, as seen from the ANOVA test in Table 2, the model is statistically significant with a high coefficient of determination, as indicated by the following results: $F = 20.384$ and $p\text{-value} < 0.05$.

Table 2: The Analysis of Variance (ANOVA) of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.042	7	6.720	20.384	.000 ^b
	Residual	45.165	137	.330		
	Total	92.207	144			

a. Dependent Variable: Perceived Effectiveness
b. Predictors: (Constant), Price Competition, Nature of the Project, Project Completion at Estimated Time, Client Engagement, Quality Level, Project Completion at Estimated Cost, Project Complexity

Table 3: The Regression Coefficient of Factors influencing the Selection of the Procurement Methods

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	4.752	.458		10.381	.000		
Nature of the Project	.282	.043	.406	6.595	.000	.943	1.060
Project Complexity	.389	.068	.431	5.686	.000	.622	1.608
Project Completion at Estimated Time	.255	.062	.257	4.128	.000	.925	1.081
Project Completion at Estimated Cost	.343	.072	.338	4.775	.000	.713	1.403
Quality Level	.137	.059	.165	2.306	.023	.698	1.433
Client Engagement	.250	.073	.224	3.418	.001	.830	1.204
Price Competition	.116	.049	.180	2.375	.019	.619	1.614

a. Dependent Variable: Perceived Effectiveness

The model is run as shown in equation (4) using Table 3,

$$Y = 4.752 + 0.282X_1 + 0.389X_2 + 0.255X_3 + 0.343X_4 + 0.137X_5 + 0.250X_6 + 0.116X_7 + \varepsilon \quad (4)$$

where Y is Level of Effectiveness of the Procurement Methods, X₁ is Nature of the Project, X₂ is Project Complexity, X₃ is Project Completion at Estimated Time, X₄ is Project Completion at Estimated Cost, X₅ is Quality Level, X₆ is Client Engagement, and X₇ is Price Competition.

The study results revealed a complex network of relationships between different factors and the Perceived Effectiveness of procurement methods, providing stakeholders with valuable insights for improving their strategies. Notably, procurement effectiveness was found to have significant positive relationships with the nature of project ($\beta = 0.282$) and project complexity ($\beta = 0.389$), which means that the more complex the project is, the more effective the procurement method is. The results are consistent with (Opawole and Jagboro 2021) who indicated that projects with high complexity in Nigeria have to adopt integrated procurement processes such as Design and Build because of its flexibility and risk mitigation. Besides, there were strong positive relationships between project completion on estimated time and cost ($\beta = 0.255$ and 0.343 , respectively), which emphasizes the importance of time and cost effective project completion. Likewise, (Adenuga et al. 2020) pointed out that certainty of cost is important in developing economies where the clients and contractors are concerned about financial certainty. In developing areas, the competition on the economy makes budgeting the project a paramount challenge to prevent cost overrun, commonly faced in the construction industry in Nigeria (Akinwale et al. 2021).

Also, quality level ($\beta = 0.137$), client engagement ($\beta = 0.250$), and price competition ($\beta = 0.116$) were positively correlated (but not significantly) as well. These findings recommend the stakeholders to use the best practices in procurement for complex projects ($\beta = 0.389$), timely project completion ($\beta = 0.255$) and cost-effective project completion ($\beta = 0.343$) and to maintain high quality of the project ($\beta = 0.137$). The lower quality standards ($\beta = 0.137$, $p = 0.023$) implies that stakeholders in Osun and Oyo States might be more concerned with cost and time as opposed to the rigorous quality standards. This aligns with the findings of (Obura et al. 2022) in sub-Saharan Africa, which indicates a preference for budgets in sub-Saharan Africa over quality. Understanding these connections can help construction industry participants develop specific strategies to enhance project results, resulting in better project management, cost savings, and project quality for all involved.

5. Conclusion and Recommendations

5.1 Conclusion

This study looked into the methods of procurement in Osun and Oyo States, Nigeria with emphasis on the extent to which they occur, factors that influence their use and effectiveness. The results show that Traditional (Design-Bid-Build) method is the most widely used method, followed by Design and Build method and Package Deal. Traditional procurement approaches are generally used because they are simple and regulated, but because of their drawbacks (such as fragmentation and adversarial relationships) other approaches are being explored. The stepwise regression analysis has selected project complexity, cost certainty, client engagement, time certainty and quality standards as important variables affecting the procurement effectiveness. All of these together account for 51% of the variance of the effectiveness of the procurement method, highlighting the importance of developing context specific approaches. The study highlights the significance of innovation in procurement approaches, including PPPs and Design and Build, that lead to improved integration and collaboration. It also shows regional difference in procurement

practices between Osun and Oyo States, hence the need for capacity building in Osun to boost the construction industry.

5.2 Recommendations

The study suggests that the contractors and clients should have flexible procurement methods, deadlines, budget management etc. and should take care of the quality of the products in the entire lifecycle of the project. It's important for clients to be involved and engaged. Making the investment in project management training and tools is also a must. Indicator assessments should be made regularly to assess and optimise procurement processes. A project management process needs to be put in place for the successful delivery of the project. By adopting these strategies, contractors and clients can ensure durability, value for money, and mutual satisfaction in complex projects.

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