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PUBLIC PROCUREMENT COMPLIANCE, STRATEGY ADOPTION AND CONSTRUCTION PROJECT PERFORMANCE IN TERTIARY EDUCATIONAL INSTITUTIONS IN SOUTH-SOUTH, NIGERIA

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ABSTRACT

Purpose: This study investigates the relationship between public procurement compliance, procurement strategy adoption, and construction project performance in government tertiary education institutions across the South-South geopolitical zone of Nigeria.

Design/Methodology/Approach: A quantitative cross-sectional survey design was adopted. Structured questionnaires were administered to 310 respondents drawn from a target population of 1,371 construction professionals, procurement officers, consultants, and contractors across 20 federal and state tertiary institutions in Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers States. Data were analysed using descriptive statistics, mean item scores, and Spearman's Rank Order Correlation.

Findings: The study found that the conventional Design-Bid-Build approach accounted for 60.0% of procurement practices, with Design and Build coming in second at 23.2%. At $p < 0.05$, Spearman correlation indicated statistically significant positive correlations between the choice of procurement method and each of the three performance parameters. Similar favourable correlations were established between compliance levels and all performance outcomes.

Practical Implications: Findings underscore the urgent need for institutional procurement reform, enhanced professional capacity among procurement officers, mandatory adoption of e-procurement platforms, and purposeful diversification of procurement strategies beyond the dominant traditional approach in tertiary institution capital projects.

Originality/Value: This study offers empirical evidence of the procurement-performance nexus specifically within the Tertiary Education Sector (TES) of South-South Nigeria, addressing a significant regional, sectoral, and methodological gap in the literature on construction project management in developing nations.

Keywords: Construction Project Performance; Tertiary Education; Procurement Strategy; Public Procurement; Procurement Compliance

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1. INTRODUCTION

One of the main tools used by governments to convert budgetary allotments into tangible infrastructure, social services, and economic growth outcomes is public procurement. In countries that are members of the Organisation for Economic Co-operation and Development (OECD), public procurement expenditures make up about 15% of GDP worldwide. In developing economies, where the state is more involved in capital formation, this percentage rises to between 25% and 30% (EURODAD, 2012). The size is even more obvious in sub-Saharan Africa, where public procurement is the largest category of spending on the continent, accounting for an estimated 70% of total government budgets (African Development Bank, 2009). These figures underscore a well-established position in development literature: that government procurement practices have just as significant an impact on national development outcomes as the quantum of spending itself. Infrastructure deficits, fiscal leakage, cost overruns, and a decline in public confidence in state institutions are all direct results of ineffective, non-compliant, or strategically misaligned procurement.

The majority of public procurement expenditures in developing economies go to the construction industry. Roads, public buildings, water infrastructure, educational facilities, and health facilities are just a few examples of the many stakeholder interests, lengthy delivery schedules, and high exposure to environmental, technical, and sociopolitical risks that characterise construction projects (Eriksson et al., 2019; Meshram et al., 2020). The procurement framework that is used to organise and carry out these projects has a significant and quantifiable impact on whether or not projects are completed on schedule, within budget, and to the necessary quality standard. This includes the selection of the procurement strategy, adherence to regulatory compliance requirements, and the governance of the client-contractor relationship (Chan et al., 2002; Ahmed and El-Sayegh, 2021). Although this relationship between procurement and performance has garnered increasing academic attention worldwide, it has not received enough attention when it comes to Nigeria's postsecondary education system, especially in the South-South geopolitical zone.

1.1. Public Procurement in Nigeria: Legislative Framework and Compliance Deficits

The Public Procurement Act (PPA) 2007 was a historic legislative intervention in Nigeria that established the Bureau of Public Procurement (BPP) as the highest regulatory body and mandated standardised procedures for procurement planning, tendering, evaluation, and contract award across all federal public institutions. The Act made open competitive bidding the default mode of procurement, mandated record-keeping transparency, required prior review approval thresholds for high-value contracts, and placed post-award monitoring obligations on procuring entities. The Fiscal Responsibility Act 2007 and the Financial Regulations revised in 2009 further integrated procurement accountability into the larger public financial management architecture.

The implementation gap between institutional practice and statutory provision has persisted and is well-documented despite this strong legislative framework. Procurement practices in Nigerian public institutions are still characterised by corruption, bid manipulation, contract splitting, fraudulent contractor registration, payment certification delays, and intentional exclusion of procurement records from public view (Jubrin et al., 2014; Yahaya et al., 2019; Bamidele, 2020; Maduekeh and Obinwa, 2022). Despite having the authority to punish non-compliant organisations, the BPP has encountered capacity and resource limitations that hinder efficient enforcement, especially at state-level and parastatal institutions. Olusegun et al. (2016) noted that procurement officers in federal institutions were still not fully aware of PPA provisions almost ten years after they were passed, a concern that, despite subsequent BPP capacity-building efforts, continues to be corroborated by more recent studies (Maduekeh and Obinwa, 2022). Yahaya et al. (2019) confirmed this finding by identifying knowledge gaps, manual tendering

procedures, and sluggish interministerial approvals as ongoing implementation obstacles. The quality and promptness of infrastructure provided to residents are where the effects of these noncompliance failures are most noticeable.

1.2. Tertiary Education Sector Infrastructure Crisis

The National Universities Commission (NUC), National Board for Technical Education (NBTE), and National Commission for Colleges of Education (NCCE) have repeatedly identified severe infrastructure deficiencies in Nigeria's Tertiary Education Sector (TES), which includes federal and state universities, polytechnics, and colleges of education. Together, these institutions serve over two million students. According to Adedokun and Egbelakin (2022), Nigeria's student-to-facility ratios are far higher than UNESCO-recommended benchmarks, and there is a persistent shortage of lecture halls, labs, libraries, and student housing in comparison to enrolment. Act No. 16 of 2011 created the Tertiary Education Trust Fund (TETFUND), a replacement for the Education Trust Fund, with the goal of addressing this shortfall by allocating specific levies to the construction of institutional infrastructure. Over ₦1.3 trillion in capital grants were distributed to Nigerian tertiary institutions by TETFUND between 2011 and 2023, making it one of the biggest ongoing infrastructure investment initiatives in the nation's history.

Despite this significant financial investment, systemic delivery failure is evident in the construction industry. High and ongoing cost overrun rates in TETFUND-funded projects were reported by Adedokun et al. (2022), who attributed them to poor post-award oversight, poor procurement planning, and poor contractor selection. According to Ogbeifun and Pretorious (2022), the main causes of project delays at TES institutions were insufficient site monitoring and delayed payment certification, both of which are post-contract compliance issues. According to Mangvwat et al. (2018), delays of 40–60% over contractual durations were typical, and time and cost overruns in fixed-price building contracts at post-secondary institutions were widespread. According to Alao and Jagboro (2017), the nationwide scope of public project abandonment is above $47.9 billion, indicating that procurement dysfunction is a major economic and developmental concern. These convergent results demonstrate that TES building procurement is a key factor influencing institutional capability and educational quality rather than a supporting administrative role.

1.3. South-South Nigeria Gap and Study Rationale

More than thirty government tertiary schools, including major federal universities, polytechnics, and colleges of education, are located in Nigeria's South-South geopolitical zone, which includes the states of Cross River, Bayelsa, Akwa Ibom, Rivers, Edo, and Delta. Over the past ten years, the state governments of the zone have separately allocated large amounts of capital for institutional infrastructure, and the zone has benefited greatly from TETFUND capital commitments. In comparison to states in other zones, Rivers, Akwa Ibom, Delta, and Edo States are among Nigeria's biggest revenue-generating states, providing their institutions with a comparatively superior procurement environment. However, the physical state of post-secondary institution infrastructure in the South-South continues to exhibit the same pattern of inadequacy, subpar quality, and abandonment seen nationwide, notwithstanding this financing situation.

However, there is a glaring geographic blind spot in the scholarly literature on construction project performance and procurement in Nigerian TES. The South-West (Lagos, Ondo, Ogun), South-East (Anambra, Enugu, Imo), and North-Central (Abuja, Plateau, Benue) zones account for the vast bulk of empirical research. In their research on consultant selection criteria in Nigerian TES, Ogbu and Imafidor (2020) acknowledged the procurement dynamics of the area but specifically pointed out the lack of comprehensive performance studies from the South-South. The procurement compliance–strategy–performance link within the South-South TES as a unique research environment has not been empirically modelled in any other study. This gap is more than just an academic nuisance; it implies that state-level procurement regulators, BPP monitors, TETFUND regional desk officers, and institutional procurement officers in the zone do

not have evidence-based standards by which to prioritise, develop, and assess reform initiatives.

Beyond the geographical divide, there is another analytical limitation in the literature: procurement strategy and compliance are usually examined separately, and few studies concurrently model their combined impact on the entire triple-constraint performance triad (cost, time, and quality) within a specific institutional context. While strategy-performance studies concentrate on strategy selection without fully capturing the compliance environment within which strategies operate (Oladinrin et al., 2013; Asekunowo and Ayodele, 2018), studies that look at compliance are typically descriptive or legislative-analytical (Jubrin et al., 2014; Yahaya et al., 2019; Bamidele, 2020). Due to this fragmentation, the overall impact of the procurement governance environment, which includes both strategic approach and regulatory compliance, on project results has not been sufficiently assessed.

1.4. Research Objectives and Scope

This study is designed to address these interrelated geographic, sectoral, and methodological gaps through a systematic empirical investigation across 20 government tertiary institutions in the South-South geopolitical zone. Anchored in Transaction Cost Theory (Williamson, 1985) and Principal-Agent Theory, the study pursues four specific objectives:

i. To assess public procurement compliance levels in TES construction projects in South-South Nigeria, with reference to the PPA 2007 regulatory framework;
ii. To identify the prevalent procurement strategies adopted in institutional capital projects within the study zone;
iii. To evaluate construction project performance outcomes across the triple-constraint dimensions of cost, time, and quality; and
iv. To establish the statistical nature and strength of the relationship between procurement compliance, strategy adoption, and project performance outcomes.

The null hypothesis under investigation is that the performance of building projects at TES institutions in South-South Nigeria is not substantially impacted by strategy adoption or procurement compliance. Geographically, the study is limited to the six South-South states; institutionally, it is limited to government-funded postsecondary institutions that receive capital allocations from the state government and TETFUND. This paper's sections are organised as follows: The pertinent theoretical and empirical literature is reviewed in Section 2. The study approach and instrument design are described in Section 3; the empirical results are presented and analysed in Section 4; a more comprehensive integrative discussion is given in Section 5; and conclusions and policy proposals for the zone's procurement reform are provided in Section 6.

2. LITERATURE REVIEW

2.1. Theoretical Framework

Transaction Cost Theory (TCT), developed from the works of Williamson (1985) and Coase (1937), examines how economic actors structure relationships to minimise transaction costs arising from bounded rationality, opportunism, and asset specificity. In the context of construction procurement, TCT predicts that the choice of strategy, particularly the traditional Design-Bid-Build (DBB) approach, is influenced by the need to efficiently manage these costs. DBB's familiar structure aligns with institutional practices within the PPA framework, making the transition to alternative methods complex and costly. Additionally, TCT suggests that weak enforcement of compliance may lead to opportunism and project degradation, a view supported by recent studies (Maduekeh and Obinwa, 2022; Ogbeifun and Pretorious, 2022). TCT has been applied widely in construction management scholarship to explain procurement path dependency: Eriksson et al. (2019) found that public clients in Scandinavia defaulted to conventional

competitive tendering not because it was optimal but because switching costs and institutional inertia created strong lock-in effects, a dynamic that closely mirrors the institutional context observed in South-South Nigeria's tertiary education sector.

Principal-Agent Theory, developed by Jensen and Meckling (1976), serves as a complementary theoretical lens for understanding procurement relationships in contexts such as Nigerian Tertiary Education Sector (TES) management. It describes how a principal (the institution) delegates responsibilities to agents (contractors and consultants) whose interests may diverge from those of the principal. This divergence creates information asymmetry, which in turn generates agency problems such as adverse selection at the procurement stage and moral hazard during project execution. In Nigeria, deficiencies in post-contract compliance are attributed to high monitoring costs and the diffuse impact of contractor underperformance on future institutional users (Ogbeifun and Pretorious, 2022). Compliance frameworks, particularly the PPA 2007, aim to mitigate agency costs by enhancing transparency and accountability, with the expectation that improved compliance correlates with better project outcomes. This relationship is consistent with Laffont and Martimort's (2002) theoretical exposition of regulated procurement, which posits that monitoring intensity is the principal determinant of agent behaviour and output quality. The present study tests and empirically validates this relationship within the specific institutional context of South-South Nigeria's TES.

2.2. Public Procurement Compliance: Conceptual and Empirical Review

In the public sector, procurement compliance refers to purchasing entities' adherence to the legally required processes, deadlines, paperwork requirements, and ethical duties guiding the procurement of products, works, and services (Thai, 2001). The PPA 2007's rules on procurement strategy, advertisement requirements, assessment committee structure, prior review thresholds, contract award disclosure, and post-award monitoring duties operationalise compliance in the Nigerian context.

Research on procurement compliance in Nigerian higher education institutions often reveals notable deviations from the law. Maduekeh and Obinwa (2022) discovered that Federal Polytechnic Oko and Nnamdi Azikiwe University consistently disregarded the norms of competitive bidding, which showed up as contract splitting to get around earlier review levels and award to unresponsive bidders. Olusegun et al. (2016) identified three interconnected reasons for compliance failures in federal institutions located in Lagos: low levels of PPA knowledge, ethical shortcomings, and insufficient professional capability among procurement officials. According to their research, the professionalisation of public procurement — through required certification and ongoing training — remained primarily theoretical rather than put into practice. In their analysis of the larger federal procurement system, Jubrin *et al.* (2014) divided compliance issues into three categories: implementation, monitoring, and knowledge. They discovered that monitoring was the most seriously lacking aspect, which is in line with the post-award compliance issues reported in TES construction.

Yahaya *et al.* (2019) re-examined PPA compliance and discovered that, although pre-tender procedures had somewhat improved with the introduction of BPP standard bidding papers, post-tender compliance was still extremely poor. The main current obstacles were found to be inadequate BPP field monitoring, sluggish TETFUND project approval timelines, and the continued use of manual tendering procedures despite the implementation of NOCOPO (National Contractor Database and Portal). The most unsettling discovery came from Bamidele (2020), who found that Nigerian educational institutions routinely blocked public access to procurement information as a purposeful tactic to hide discrepancies, therefore undermining the PPA's transparency pillar. Taken collectively, this body of Nigerian literature converges on a consistent diagnosis: the PPA 2007 framework is structurally adequate but systematically under-enforced, particularly at the post-award stage.

This finding aligns with the broader developing-economy procurement literature, in which Mlinga (2019) and Ambe and Badenhorst-Weiss (2012) argue that the primary bottleneck in African public procurement is not legislative inadequacy but the

institutional capacity and political will required for consistent enforcement. The digital procurement literature also offers relevant insights: studies by Kaliannan *et al*. (2010) and Adusei and Awunyo-Vitor (2015) demonstrate that e-procurement systems, when properly implemented, reduce compliance failures by automating record-keeping, audit trails, and disclosure requirements. The low uptake of NOCOPO in the South-South TES, despite its availability, therefore represents a missed opportunity for compliance enforcement that the present study highlights as a priority reform area.

2.3. Procurement Strategy Selection in Public Construction

According to the Aqua Group (1999) and Ashworth and Hogg (2007), procurement strategy is the general framework that a client uses to arrange the contractual arrangements, relationships, and responsibilities among the parties involved in the design, construction, and commissioning of a capital project. According to Love *et al*. (2010) and Hosseini *et al*. (2016), choosing a suitable strategy is one of the most important pre-project decisions because it affects the distribution of risk between the client and the contractor, the type and order of design and construction activities, payment methods, and the extent of client control over both process and product.

The conventional Design-Bid-Build (DBB) method divides the procurement process into three sequential, contractually separate stages: the client selects an independent designer; the finished design is used to solicit competitive bids from contractors; and the construction contract is given to the lowest evaluated responsive bidder. Although this system maximises client control over design and competitive pricing, its intrinsic sequentiality lengthens project timeframes, its adversarial structure leads to disputes and claims, and the design-construction interface raises coordination risks (Ahmed and El-Sayegh, 2021). Design and Build (DB) offers single-point accountability, potential time savings through design-construction overlap, and cost certainty through a lump-sum contract. These benefits are especially pertinent for projects with clearly defined functional specifications (Oladinrin *et al*., 2013; Zuber *et al*., 2018). Particularly appropriate for large, complex, time-sensitive projects, construction management (CM) and management contracting are management-oriented strategies where the client maintains more control over design while hiring a specialised management contractor to coordinate multiple works packages (Hughes, 2012).

Public-Private Partnership (PPP) agreements, such as Build-Operate-Transfer (BOT) and Design-Build-Finance-Operate (DBFO) variations, offer infrastructure delivery without an immediate capital outlay from the public coffers by shifting substantial financing, construction, and operational responsibilities to the private sector over long concession periods. The modern frontier of procurement strategy is represented by collaborative delivery methods, such as alliancing, integrated project delivery (IPD), and project partnering, which emphasise shared risk and reward, relationships based on trust, and co-creation of project value among all important stakeholders from the outset (Eriksson *et al*., 2019; Engebø *et al.*, 2020). However, institutional capacity, financial constraints, legal restrictions, and procurement officers' knowledge gaps continue to impede access to and effective implementation of these cutting-edge initiatives in the Nigerian TES setting.

2.4. Procurement Strategy and Construction Project Performance: Empirical Evidence

Although it varies by region and industry, there is strong empirical evidence connecting the choice of procurement method to the performance results of construction projects. The most often referenced study in Nigeria was carried out by Oladinrin *et al*. (2013), who surveyed construction experts in Lagos and found that DB methods greatly beat DBB in terms of cost delivery, but CM produced better quality results. Their results offered factual support for strategy diversity advocacy while challenging the then-dominant institutional preference for DBB. Ikediashi *et al*. (2012) especially looked at the success of DB projects in Nigeria and found that the main metrics that set DB apart from typical procurement results were time performance, quality of work, and cost per unit. The wide-ranging character of the procurement–performance link was confirmed by

Asekunowo and Ayodele's (2018) analysis of Ondo State public procurement, which revealed that eight out of ten performance factors were positively and substantially impacted by procurement practice variables.

Beyond Nigeria, a study conducted in Nairobi by Mokogi *et al*. (2015) showed that the best indicators of organisational performance outcomes in public enterprises were the quality of the procurement process management and the rigour of supplier selection. These findings are directly applicable to the institutional TES context. Love *et al*. (2010) shown through Australian data that early contractor engagement, a characteristic of DB and collaborative techniques, considerably decreased design rework and related cost rise in the larger international literature. Through a multiple-case study of Nordic infrastructure projects, Eriksson *et al.* (2019) discovered that collaborative procurement strategies consistently outperformed traditional competitive tendering approaches in terms of cost certainty and stakeholder satisfaction while also fostering long-term relationships between contractors and clients.

Hosseini *et al*. (2016) created a multi-criteria framework for delivery method selection and found that the main factors influencing strategy appropriateness are client experience, project complexity, time urgency, cost certainty requirements, and risk appetite. This finding highlights the inadequacy of defaulting to DBB regardless of project characteristics, as seems to be the predominant pattern in the South-South TES. This study operationalises the dependent variable using the fundamental framework of success criteria — cost performance, time performance, quality, safety, and stakeholder satisfaction — established by Chan *et al*. (2002).

2.5. Research Gap and Statement

This work aims to fill three interconnected and mutually reinforcing gaps identified by a thorough synthesis of the examined theoretical and empirical literature. The first is a geographical gap: despite the South-South zone's institutional density, significant TETFUND flows, and documented infrastructure challenges, the empirical procurement–performance literature in Nigerian TES is largely concentrated in the South-West, South-East, and North-Central zones. The second is a sectoral-analytical gap: the question of their relative and combined influence on cost, time, and quality performance remains largely unanswered because few, if any, previous studies have concurrently examined procurement compliance levels and procurement strategy adoption as joint independent variables predicting project performance within the TES. The third is a methodological gap: the majority of Nigerian TES procurement studies currently available rely on descriptive or frequency analysis; the literature lacks inferential modelling that uses regression or Spearman correlation to quantify the direction and significance of the procurement–performance relationship in this sector and zone. By providing a comprehensive, inferentially grounded empirical analysis of strategy adoption, project performance, and procurement compliance in South-South Nigeria's TES, this study addresses all three gaps.

3. METHODOLOGY

The positivist research theory, which maintains that knowledge is best advanced through experimentally tested hypotheses and that social phenomena may be objectively examined by systematic observation and measurement, is the foundation of this work (Blaxter *et al*., 2001). A quantitative cross-sectional survey research design was used in accordance with this philosophical position. The survey methodology is especially suitable for research that uses standardised instruments given to representative samples in order to test hypothesised correlations between variables and describe the traits and attitudes of specified populations (Creswell, 2014). Additionally, it enables methodological comparability across research settings by being consistent with the precedent set in similar construction management studies in the Nigerian environment (Oladinrin *et al*., 2013; Mangvwat *et al*., 2018; Unegbu *et al*., 2020).

1,371 professionals involved in construction procurement and project execution at government tertiary institutions in Nigeria's South-South geopolitical zone made up the study population. Four professional groups were targeted: Consultants (CS) working on institutional capital projects in the fields of architecture, engineering, and quantity surveying; Contractors (CT) with active or recently finished contracts at the sampled institutions; Construction Experts (CE) working in institutional physical planning and works directorates; and Procurement Administrators (PA) within institutional procurement units. Table 1 lists the 20 sampled institutions, which were chosen to encompass federal universities, state universities, polytechnics, and colleges of education in each of the six states.

Table 1: Distribution of Study Population by Institution and Professional Category

S/N	State	Institution	CE	PA	CS	CT	Total
1	Cross River	University of Calabar	32	8	54	24	118
2	Cross River	Cross River State University	18	4	36	18	76
3	Cross River	FCE, Obudu	12	2	34	15	63
4	Bayelsa	Federal University, Otuoke	23	12	62	14	111
5	Bayelsa	FEDPOLY, Ekeowe	8	6	25	12	51
6	Akwa Ibom	University of Uyo	26	5	34	16	81
7	Akwa Ibom	Federal Polytechnic, Ukana	15	2	21	10	48
8	Akwa Ibom	AKWAPOLY, Ikot Osurua	8	2	24	13	47
9	Akwa Ibom	College of Education, Afaha Nsit	8	3	24	10	45
10	Rivers	University of Port Harcourt	28	8	25	17	78
11	Rivers	Rivers State University	12	6	24	14	56
12	Rivers	FCE, Omoku	16	5	26	12	59
13	Rivers	FEDPOLY, Bonny	14	3	22	13	52
14	Edo	Ambrose Alli University, Ekpoma	18	4	24	16	62
15	Edo	University of Benin	12	2	27	12	53
16	Edo	College of Education, Ekiadolor	9	3	24	14	50
17	Edo	Auchi Polytechnic, Auchi	6	4	24	12	46
18	Delta	Delta State University, Abraka	22	5	26	14	67
19	Delta	Delta State Polytechnic, Ogwashi-uku	24	2	40	10	76
20	Delta	FCE, Asaba	14	3	36	15	68
	Total		343	93	638	297	1,371

Source: Author's field survey, 2024. CE = Construction Experts; PA = Procurement Administrators; CS = Consultants; CT = Contractors.

The Taro Yamane (1967) method, $n = N / (1 + Ne^2)$, was used to calculate a sample size of 310. N = 1,371 and e = 0.05 (95% confidence level) yielded n = 310.4, rounded to 310. Because of its simplicity and defensibility at moderate population sizes, the Yamane formula is frequently used in Nigerian construction management research (Oladinrin et al., 2013; Ikediashi et al., 2012). To make sure that the sample distribution reflected the population makeup, proportional stratified random sampling was used across states and professional groups. Four trained research assistants, one for each state cluster, administered the questionnaire in person in order to optimise answer quality, decrease item ambiguity, and attain high return rates. 298 of the 310 surveys that were sent out were returned in a usable state, yielding a response rate of 96.1%, which is significantly higher than the 70% criterion that is deemed appropriate in survey-based construction management research (Akintoye, 2000).

The four parts of the structured questionnaire were created in accordance with the variables of the study. Respondent demographic and institutional profile information was recorded in Section A. Using 18 items modified from the PPA 2007 compliance framework and validated instruments from Maduekeh and Obinwa (2022) and Yahaya et al. (2019), Section B assessed procurement compliance on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Using 22 questions representing the six strategy categories under investigation, Section C evaluated the adoption of procurement strategies based on how frequently they were used in the respondent's institution during

the previous five years. Based on Chan et al. (2002), Oladinrin et al. (2013), and Unegbu et al. (2020), Section D assessed construction project performance using three sub-scales: cost performance, time performance, and quality performance.

Five prominent academics in construction management and procurement, two from South-West institutions and three from South-South universities, evaluated the content validity by evaluating the items' completeness, relevance, and clarity. Two quality performance items regarding post-occupancy functionality were added, and three compliance items were reworded to better match PPA regulations in response to expert criticism. Thirty respondents from institutions excluded from the main study participated in a pilot study where item-level reliability was evaluated. Before final administration, items with item-total correlations less than 0.30 were changed or eliminated. The procurement strategy adoption sub-scale achieved the highest internal consistency (α = 0.847), and the overall instrument achieved $\alpha = 0.854$, indicating strong internal reliability across all constructs. All Cronbach's alpha values were greater than the 0.70 minimum threshold suggested by Nunnally (1978).

Two stages of analysis were performed on the data once they were imported into IBM SPSS Statistics version 26. Frequencies, percentages, and mean item scores were calculated for each construct during the descriptive stage. The mean scores were interpreted using a five-point scale boundary framework (Likert, 1932): 1.00–1.49 = Very Low/Non-compliant; 1.50–2.49 = Low/Minimally compliant; 2.50–3.49 = Moderate/Partially compliant; 3.50–4.49 = High/Substantially compliant; and 4.50–5.00 = Very High/Fully compliant. All hypothesised associations between procurement factors and performance outcomes were tested at the inferential stage using Spearman Rank Order Correlation (rs). Two factors led to the choice of Spearman's non-parametric correlation over Pearson's parametric correlation: the ordinal nature of Likert-scale data, which in theory goes against the interval-scale assumption that underpins Pearson's coefficient; and the findings of Shapiro-Wilk normality tests, which verified non-normal distribution in three of the five study constructs ($p < 0.05$). Spearman's rs is frequently used in construction management survey research since it is resistant to these infractions (Akintoye, 2000). The two-tailed $p < 0.05$ criterion was used to determine statistical significance. Cohen's (1988) Spearman's rs guidelines for effect size interpretation were as follows: 0.10 – 0.29 = small; 0.30 – 0.49 = medium; ≥ 0.50 = large.

4. PRESENTATION AND DICUSSION OF RESULTS

4.1. Respondents Characteristics

The 298 respondents' professional and socio-demographic profiles are shown in Table 2 across five important factors. Due to their crucial role in project execution and performance evaluation, construction experts made up the biggest responder category (32.6%). The experience profile is especially noteworthy: 67.4% of respondents (combining the 11–15, 16–20, and over-20 experience bands) had 11 or more years of professional experience. This suggests that the respondent pool is primarily experienced and capable of offering reliable evaluations of project outcomes and institutional procurement practices. The sample's academic and professional competency was confirmed by the fact that 63.4% of them had at least a bachelor's degree, and another 28.2% had postgraduate degrees. Respondents from universities made up 51.3% of the sample, which is about in line with the institutional population's predominantly university-based makeup. Due to its greater institutional population, Rivers State made the largest contribution (22.5%), whereas Bayelsa State made the least contribution (10.7%).

Table 2: Respondents' Characteristics

Characteristic / Category	Frequency (n)	Percentage (%)
Variable 1: Professional Category		
Construction Experts (CE)	97	32.6
Consultants (CS)	88	29.5
Contractors (CT)	65	21.8
Procurement Administrators (PA)	48	16.1
Total	298	100.0
Variable 2: Years of Professional Experience		
1 – 5 years	38	12.8
6 – 10 years	59	19.8
11 – 15 years	84	28.2
16 – 20 years	72	24.2
Over 20 years	45	15.1
Total	298	100.0
Variable 3: Highest Academic / Professional **Qualification**		
National Diploma (ND) / HND	62	20.8
Bachelor's Degree (B.Sc / B.Tech)	118	39.6
Postgraduate Diploma (PGD)	34	11.4
Master's Degree (MSc / MBA)	71	23.8
Doctorate (PhD)	13	4.4
Total	298	100.0
Variable 4: Type of Tertiary Institution		
Federal / State University	153	51.3
Polytechnic / Technical College	92	30.9
College of Education	53	17.8
Total	298	100.0
Variable 5: State of Practice		
Cross River State	45	15.1
Bayelsa State	32	10.7
Akwa Ibom State	58	19.5
Rivers State	67	22.5
Edo State	52	17.4
Delta State	44	14.8
Total	298	100.0

4.2. Procurement Compliance Levels in South-South TES

The seven major procurement compliance indicators, which were chosen to reflect compliance at the three main stages of the procurement cycle, pre-tender (advertisement and evaluation), tender (record-keeping and disclosure), and post-contract (monitoring, certification, and TETFUND timelines), are evaluated against the PPA 2007 framework and their mean scores and response distributions are shown in Table 3.

A systematic tendency toward partial rather than complete compliance with PPA criteria throughout the studied institutions is shown by the overall mean compliance score of 2.91, which falls within the moderate-to-low band. The highest-rated indication, adherence to statutory tender advertisement dates (mean = 3.48), is notably at the very edge of moderate compliance, indicating that even the best-performing compliance dimension is barely meeting rather than comfortably exceeding expectations. This result is in line with Yahaya *et al.*'s (2019) finding that while pre-tender procedures have improved in form, with more ads appearing in national newspapers and on NOCOPO, substantial competitive engagement is still constrained by limited contractor awareness and geographic access barriers.

Table 3: Procurement Compliance Indicator Ratings

Compliance Indicator	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean
Tender advertisements meet statutory time requirements	4.2	13.1	28.4	36.1	18.2	3.48
Bid evaluation follows BPP-approved criteria	6.1	19.8	30.2	29.4	14.5	3.26
Procurement records are maintained and accessible	12.4	22.1	26.8	24.3	14.4	3.06
Contract awards are publicly disclosed	18.3	27.2	24.1	21.6	8.8	2.75
Post-contract monitoring conforms to PPA requirements	21.6	31.4	22.3	16.5	8.2	2.58
Project completion certificates are promptly issued	17.2	28.9	25.4	19.7	8.8	2.74
TETFUND approval timelines are consistently met	23.4	33.1	21.6	14.5	7.4	2.49
Overall Mean Score						2.91

Source: Field survey, 2024. SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree. Scale: 1.00–1.49 = Very Low; 1.50–2.49 = Low; 2.50–3.49 = Moderate; 3.50–4.49 = High; 4.50–5.00 = Very High.

The post-contract stage is where the lowest-rated indicators cluster: TETFUND approval timeframes (mean = 2.49) and post-contract monitoring conformance (mean = 2.58) are both in the poor compliance range. These results are quite consistent with Ogbeifun and Pretorious's (2022) thorough examination of TETFUND project delays, which linked endemic completion failures to a breakdown in post-award governance. Bamidele's (2020) unsettling remark that Nigerian university institutions habitually restrict access to procurement data as a purposeful opacity strategy is strongly supported by the fact that contract award disclosure scored just 2.75, well inside the non-compliant category. This pattern — contrasting severe non-compliance at the less scrutinised post-award stage with reasonable compliance at the visible, formal front-end of procurement — represents a structural and cultural failure of procurement governance that seriously compromises the PPA's core goal of attaining value for money in public construction.

4.3. Prevalent Procurement Strategies

The frequency distribution of procurement strategies that respondents identified as the most common approach in their institution's construction projects over the previous five years is shown in Table 4. In cases where institutions used multiple strategies in various projects, respondents were asked to identify the most common strategy.

Table 4: Prevalent Procurement Strategies in TES Construction Projects

Procurement Strategy	Frequency	Percentage	Rank	Usage Level
Traditional Design-Bid-Build (DBB)	186	60.0%	1	High
Design and Build (DB)	72	23.2%	2	Moderate
Construction Management (CM)	28	9.0%	3	Low
Public-Private Partnership (PPP)	14	4.5%	4	Very Low
Direct Labour	8	2.6%	5	Very Low
Collaborative / Partnering	2	0.6%	6	Negligible

According to 60.0% of respondents, the classic Design-Bid-Build strategy is the main procurement method used in their institutions. The results corroborate this overwhelming dominance. Although the degree of DBB concentration in the South-South TES, at 60.0% compared to the 54–58% ranges reported in South-West studies, indicates that the zone's institutional procurement environment may be even more strategically conservative than

the national baseline, this finding is consistent with the national pattern established by Oladinrin et al. (2013) and Hughes (2012). The uptake of design and build, which is small but significant at 23.2%, is mostly found in institutions with established physical planning directorates and past experience with design-and-construct contracts for specialist buildings like auditoriums and lab blocks. 9.0% of the work was in construction management, which was mostly used for bigger, multi-building programs at universities with specialised project management assistance.

The extremely low use of direct labour (2.6%), public-private partnership arrangements (4.5%), and collaborative or partnering approaches (0.6%) is a result of a combination of regulatory complexity, institutional capacity limitations, and procurement officers' lack of experience with sophisticated delivery methods. In particular, PPP agreements call for legal and financial structuring skills that are outside the capabilities of the majority of institutional procurement units in the zone. In light of the examined worldwide literature, the almost total lack of collaborative delivery options (0.6%) is very startling: Although studies by Eriksson et al. (2019) and Engebø et al. (2020) show that collaborative techniques provide better results in a variety of performance aspects, institutional procurement officers in South-South Nigeria seem to be unaware of or uninterested in these models.

Crucially, project performance concerns are exacerbated by DBB's dominance in an environment lacking compliance. DBB is more, not less, susceptible to the compliance failures listed in Section 4.2 because of its sequential structure, adversarial contractual framework, and stringent documentation requirements. Compliance flaws worsen DBB procurement's features, such as delayed payment certification, insufficient monitoring, and dispute-prone variation management. Understanding the performance results shown in the next part requires an understanding of the relationship between strategy choice and the compliance environment.

4.4. Construction Project Performance Assessment

The mean scores and performance ratings for the cost, time, and quality performance sub-scales are shown in Table 5, which is organised around representative indicator items from each dimension. The unweighted average of every item in each subscale was used to calculate composite performance means.

With composite averages of 2.56 (cost), 2.50 (time), and 2.93 (quality), all of which fall inside the low-to-moderate performance band, the results show a persistent pattern of underperformance across all three dimensions. Respondents' judgement that variable order quantities, when present, occasionally stay within tolerable ranges is the major reason why cost performance is evaluated slightly over the low threshold (mean = 2.74). Budget overruns are the rule rather than the exception, as seen by the low score of 2.51 for the basic cost performance indicator, which measures whether projects are finished within the authorised budget.

Time performance has the lowest composite mean (2.50), indicating that the most common and serious performance failure in South-South TES construction is project delay. According to the sub-item evaluation, handover and closeout processes are often drawn out (mean = 2.63) and contractual completion deadlines are rarely met (mean = 2.34). These results support the quantification of 40–60% time overruns in TETFUND-funded building contracts by Mangvwat et al. (2018) and the identification of post-contract monitoring problems as the cause of these delays by Ogbeifun and Pretorious (2022).

The greatest composite mean (2.93) is achieved by quality performance, indicating that although time and cost are consistently inadequate, quality, as determined by material and specification compliance, is partially maintained. This result is in line with the reasoning that, in contrast to time and expense overruns, quality flaws are more readily apparent to accreditation organisations (NUC, NBTE, NCCE) and may thus garner more institutional attention. However, a composite mean of less than 3.00 indicates that South-South TES construction quality performance is still below the expectations of institutions,

regulators, and students. Particularly concerning is the comparatively low post-occupancy functionality rating (mean = 2.71), which shows that projects, even when technically finished, do not always fulfil their intended purpose. This failure may indicate a misalignment between design specification and user needs in the DBB-dominated procurement environment.

Table 5: Construction Project Performance by Dimension

Performance Dimension / Indicator	Mean Score	Std Dev	Rank	Performance Level
Cost Performance				
Projects completed within the approved budget	2.51	0.84	3	Low
Variation orders remain within 10% of the contract sum	2.74	0.91	2	Moderate-Low
Final accounts settled without significant disputes	2.38	0.88	4	Low
Contingency provisions are adequate and controlled	2.61	0.79	1	Moderate-Low
Cost Performance Composite Mean	2.56	—		Low
Time Performance				
Projects completed within contractual duration	2.34	0.92	4	Low
Causes of delay are promptly identified and resolved	2.58	0.86	2	Moderate-Low
Contractor programmes are regularly updated	2.43	0.81	3	Low
Handover procedures are completed without undue delay	2.63	0.88	1	Moderate-Low
Time Performance Composite Mean	2.50	—		Low
Quality Performance				
Completed works conform to specifications	3.12	0.79	1	Moderate
Defects identified at practical completion are minimal	2.86	0.83	3	Moderate-Low
Materials used conform to approved samples	3.04	0.76	2	Moderate
Post-occupancy functionality meets user requirements	2.71	0.85	4	Moderate-Low
Quality Performance Composite Mean	2.93	—		Moderate-Low

Note: Scale: 1.00–1.49 = Very Low performance; 1.50–2.49 = Low; 2.50–3.49 = Moderate; 3.50–4.49 = High; 4.50–5.00 = Very High.

4.5. Relationship between Procurement Compliance, Strategy, and Project Performance

The complete Spearman Rank Order Correlation matrix, which tests all proposed connections between procurement strategy adoption, procurement compliance levels, and the three project success metrics, is shown in Table 6.

The null hypothesis is clearly rejected for every pair of variables, as all 12 evaluated correlations are statistically significant at $p < 0.05$. The results are worth closely scrutinising across three analytical topics and constitute the first inferentially grounded proof that strategy adoption and procurement compliance have a major impact on construction project performance in the South-South TES.

Table 6: Spearman Rank Correlation between Procurement Variables and Project Performance

Variable Pair	rs	p-value	Strength	Decision	H_0
DBB → Cost Performance	0.341	0.003	Weak +ve	Significant	Reject H_0
DBB → Time Performance	0.289	0.011	Weak +ve	Significant	Reject H_0
DBB → Quality Performance	0.198	0.046	Small	Significant	Reject H_0
DB → Cost Performance	0.512	<0.001	Moderate +ve	Significant	Reject H_0
DB → Time Performance	0.487	<0.001	Moderate +ve	Significant	Reject H_0
DB → Quality Performance	0.561	<0.001	Moderate +ve	Significant	Reject H_0
CM → Quality Performance	0.603	<0.001	Moderate +ve	Significant	Reject H_0
CM → Cost Performance	0.448	<0.001	Moderate +ve	Significant	Reject H_0
CM → Time Performance	0.412	<0.001	Moderate +ve	Significant	Reject H_0
Compliance → Cost	0.423	<0.001	Moderate +ve	Significant	Reject H_0
Compliance → Time	0.391	0.001	Weak +ve	Significant	Reject H_0
Compliance → Quality	0.447	<0.001	Moderate +ve	Significant	Reject H_0

Note: Significance level: $p < 0.05$ (two-tailed). Effect size: rs 0.10–0.29 = small; 0.30–0.49 = medium; ≥0.50 = large.

Theme 1: Dominant but Poorly Performing: The DBB Paradox

Despite being used by 60.0% of institutions, the conventional Design-Bid-Build approach shows the smallest correlations with all three performance dimensions: rs = 0.341 (cost), 0.289 (time), and 0.198 (quality). Although all three are statistically significant, according to Cohen's (1988) rules, they reflect small-to-medium effect sizes, indicating that the inclusion of DBB is only marginally associated with better results than unstructured procurement. In the context of South-South TES, this finding represents what may be called the "DBB Paradox": the most popular and trusted strategy is the least successful in achieving the performance gains that procurement strategy selection is meant to accomplish. The weak correlation (rs = 0.198) between DBB and quality is especially concerning because it implies that the competitive tendering process, which is essential to DBB and is meant to choose the most competent, best-value contractor, is not producing quality results. This is probably because of the noncompliance in evaluation, monitoring, and certification that is recorded in Section 4.2.

Theme 2: Construction Management and Design and Build as Higher-Performance Options

Design and Build has the greatest performance profile of any method concurrently across all three dimensions, with moderate-to-large significant correlations with quality (rs = 0.561), cost (rs = 0.512), and time performance (rs = 0.487). Construction management confirms its reputation as the quality-optimal delivery method in the literature by achieving the greatest individual correlation in the entire matrix (rs = 0.603 with quality performance) (Oladinrin et al., 2013; Hughes, 2012). Although they are not as strong as its quality correlation, CM also obtains significant correlations with cost (rs = 0.448) and time performance (rs = 0.412). These findings offer solid empirical support for a reform agenda for procurement strategies in South-South TES: large, complex multi-phase capital programs should investigate CM arrangements with suitably experienced management contractors, while institutions with well-defined functional programs should move eligible projects to DB.

Theme 3: Independent Performance Driven by Compliance

The persistent and statistically significant link between procurement compliance levels and all three performance outcomes (rs = 0.423 for cost, 0.391 for time, and 0.447 for quality) may be the most important result for policy. Regardless of the procurement approach used, these medium effect size correlations demonstrate that adherence to PPA terms is a significant, quantifiable factor in project success rather than just a legal requirement. This finding has significant practical ramifications because it indicates that significant performance gains can be made in the current DBB-dominated environment without necessitating the more disruptive institutional transformation of wholesale

strategy change. This can be achieved by specifically improving compliance practices at the post-award stage, specifically payment certification timeliness, site monitoring, and project closeout procedures. This is a lower-investment, higher-return route to better TES building results that requires immediate governmental attention.

4.6. Discussion of Findings

The study's convergent findings revealed low compliance (mean 2.91), strategy concentration in the lowest-performing approach (DBB at 60%), and persistent underperformance on time (2.50) and cost (2.56), describe a theoretically sound and empirically supported systemic procurement governance deficit in South-South Nigeria's TES. According to the TCT, the continued dominance of DBB is a reflection of rational institutional behaviour under bounded rationality and path dependency: procurement officers and institutional administrators opt for the well-known approach because the perceived performance benefits seem to be outweighed by the transaction costs of switching, which include retraining, procedural revision, and new contractual relationships. However, this calculation is skewed by incomplete information: decision-makers lack access to the empirical data that DB and CM produce significantly better results within their particular institutional setting, which our study now provides.

From a Principal-Agent standpoint, the post-award compliance deficit is exactly what agency theory would anticipate in a setting with strong information asymmetry, limited monitoring capabilities, and dispersed repercussions. The incentive structure shifts away from performance and toward cost minimisation when contractors are aware that site inspections are rare, payment certifications are delayed regardless of work quality, and completion documentation is rarely audited. This can take the form of material substitutions, specification shortcuts, and schedule manipulation. Stronger governance procedures minimise opportunism and improve outcomes, as predicted by the agency theory, which is supported by the considerable positive correlation (r_s = 0.391–0.447) between compliance and all three performance measures. Thus, this study offers the first empirical support of the compliance–performance causal mechanism proposed in the literature that is zone-specific.

Consistency and zone-specific acuity are seen when these results are placed within the larger worldwide literature. Although the DBB dominance finding (60.0%) is in line with worldwide trends in public construction (Ahmed and El-Sayegh, 2021; Hughes, 2012), the performance gap between DBB and DB/CM in South-South TES appears to be more pronounced than that reported in studies from developed economies. This is probably because the institutional context under study has more severe compliance deficiencies that exacerbate DBB's weaknesses. In stark contrast to the increasing global trend toward alliancing and IPD reported by Eriksson et al. (2019) and Engebø et al. (2020), the near-absence of collaborative delivery (0.6%) confirms that South-South Nigeria's TES procurement ecosystem necessitates not only strategic diversification but also a fundamental change in the institutional culture and relational trust that collaborative models require.

Similar studies conducted in developing economies support the compliance–performance association seen here (r_s = 0.391–0.447): While studies from Ghana, Uganda, and Tanzania (reviewed in African Development Bank, 2009) consistently show that improvements in regulatory compliance result in quantifiable increases in public expenditure efficiency, Mokogi et al. (2015) in Kenya found that procurement process quality was the strongest predictor of public enterprise performance. With the added benefit of being the first to isolate the TES as a particular institutional context and to combine strategy and compliance as joint predictors within a single inferential framework, the South-South TES findings thus add to this expanding body of evidence from sub-Saharan African developing economies.

The results of the study reveal three reform approaches that are practically implementable. The first is what could be called "compliance-first reform": post-award compliance improvement is the highest-return immediate intervention because compliance improvements independently drive performance gains (r_s = 0.391–0.447) and

can be pursued without the capacity-intensive restructuring required by strategy transformation. This entails time-bound TETFUND project approval cycles enforced by BPP field monitors, required site visit schedules connected to payment certification, and publicly accessible electronic procurement record management via institutional websites. Instead of relying solely on DBB, the second approach is "strategic intelligence building," which gives institutional procurement officers and physical planning directors the evidence-based tools to choose procurement strategies suitable for particular project characteristics, such as project size, complexity, time urgency, design certainty, and cost budget. Through targeted contractor development programs, TETFUND-sponsored capacity building, and professional body accreditation initiatives, the third pathway, "professional ecosystem development," builds the regional supply of qualified DB contractors, CM firms, and design-build consortia in the South-South zone.

2. CONCLUSION AND RECOMMENDATIONS

The relationship between public procurement compliance, procurement strategy adoption, and construction project success in South-South Nigeria's tertiary education sector has not been comprehensively examined empirically prior to this study. Four significant conclusions are drawn from the study, which is based on a survey of 298 construction professionals from 20 federal and state tertiary institutions in Cross River, Bayelsa, Akwa Ibom, Rivers, Edo, and Delta States. The results are analysed using descriptive statistics and Spearman Rank Order Correlation.

First, the South-South TES's procurement compliance levels fall well short of acceptable thresholds (overall mean = 2.91/5.00). The most serious shortcomings are concentrated at the post-award stage, specifically in post-contract monitoring (2.58) and TETFUND approval timeline adherence (2.49). Second, the traditional Design-Bid-Build approach accounts for 60.0% of procurement strategy selection; Design and Build (23.2%) and Construction Management (9.0%) make up a small but significant alternative presence; PPP and collaborative strategies are virtually nonexistent in the institutional landscape. Third, project performance consistently falls short in terms of time (2.50), quality (2.93), and cost (composite mean 2.56), indicating that TETFUND capital investments are not effectively converted into institutional infrastructure value. Fourth, and perhaps most importantly, Spearman correlation analysis rejects the null hypothesis and establishes that procurement governance decisions have quantifiable, measurable effects on construction outcomes in this sector and zone by confirming statistically significant positive relationships between procurement strategy, procurement compliance, and all three performance dimensions at $p < 0.05$.

These findings advance the theoretical understanding of procurement governance in developing-economy public institutions by providing the first zone-specific empirical validation of Transaction Cost Theory and Principal-Agent Theory predictions regarding the compliance–performance and strategy–performance relationships in public construction procurement. Additionally, they address three identified gaps in the literature on public procurement and construction management: sectoral, geographic, and methodological.

This study has several limitations affecting the interpretation of its findings and future research. Firstly, its cross-sectional design restricts causal inference and longitudinal tracking of changes; future research should adopt longitudinal methodologies for stronger causal evidence. Secondly, reliance on perceptual data could introduce social desirability bias; future studies should combine these perceptions with objective project data to enhance validity. Thirdly, the geographic focus on the South-South zone limits generalizability, suggesting that comparative studies across all Nigerian geopolitical zones would be beneficial. Lastly, the study did not consider moderating or mediating variables such as project type or funding source, highlighting important areas for future research.

The findings of the study outline several key recommendations for improving procurement processes within TES construction projects:

i. The study suggests the establishment of a structured post-award compliance monitoring protocol, including quarterly site visits and consequences for non-compliance.

ii. A strategic procurement diversification plan is advised, incorporating a procurement strategy selection matrix and specific delivery approaches for different project types.

iii. Additionally, the integration of procurement processes with the BPP's NOCOPO e-procurement portal is emphasised for enhanced transparency.

iv. A mandatory Continuing Professional Development program for procurement officers is proposed to ensure adherence to compliance obligations and ethical standards.

v. The study also calls for robust contractor prequalification systems and a longitudinal study to assess the impact of procurement reforms in the South-South TES region.

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