



## RESEARCH ARTICLE

### ASSESSING THE EFFECTIVENESS OF E-PROCUREMENT SERVICES IMPLEMENTED BY THE BUREAU OF PUBLIC PROCUREMENT IN SELECTED NIGERIAN MDAs

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#### ABSTRACT

This study assesses the effectiveness of e-procurement services implemented by the Bureau of Public Procurement (BPP) in Nigeria, focusing on their contribution to transparency, accountability, adoption levels and enforcement outcomes in selected federal Ministries, Departments and Agencies (MDAs) between 2017 and 2024. Using a descriptive survey design, primary data were collected from 400 staff across BPP and selected MDAs, of which 370 valid responses were analyzed using descriptive statistics, Pearson correlation and multiple regression (Creswell, 2014). Key findings indicate that 77.6% of respondents agree that e-procurement has enhanced transparency and accountability in procurement processes and 59.5% rate BPP's enforcement role as effective or very effective (BPP, 2020). However, only 34.6% report a high level of e-procurement adoption in their MDAs, while 29.2% identify poor ICT infrastructure as the most significant implementation challenge. Correlation analysis shows a strong positive relationship between e-procurement adoption and transparency ( $r = 0.637$ ,  $p < 0.05$ ), and regression results confirm that adoption significantly predicts cost efficiency and procurement performance ( $R^2 = 0.339$ ,  $F = 59.763$ ,  $p < 0.05$ ). The study concludes that BPP's e-procurement services have generated measurable governance and performance gains but remain constrained by infrastructural deficits, uneven institutional capacity and inconsistent compliance across MDAs. It recommends targeted investment in ICT infrastructure, continuous capacity building and strengthened enforcement and monitoring mechanisms to deepen and sustain the benefits of e-procurement reforms.

**Keywords:** E-procurement, public procurement, transparency, accountability, Bureau of Public Procurement, MDAs

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## 1.0. INTRODUCTION

Public procurement is a core instrument for translating budgetary resources into infrastructure, services and goods that meet societal needs, and frequently accounts for between 15% and 30% of gross domestic product in developing economies (World Bank, 2020; OECD, 2016). In Nigeria, pre-reform assessments by the World Bank revealed severe leakages in the procurement system, estimating that nearly 60 kobo of every one naira spent on public contracts was lost to fraud, inflated pricing and opaque practices, with annual losses exceeding 10 billion United States dollars (World Bank, 1999; Akaba, Okafor, & Aremu, 2020). These findings catalyzed far-reaching legal and institutional reforms, culminating in the Public Procurement Act (PPA) 2007 and the establishment of the Bureau of Public Procurement (BPP) as the apex federal regulator (Federal Republic of Nigeria, 2007).

E-procurement—the application of internet-based and other digital tools to manage procurement activities from planning through contract management—was introduced as a central pillar of these reforms (Neupane, Soar, Vaidya, & Yong, 2012; Croom & Johnston, 2003). The BPP has since promoted platforms such as the Nigeria Open Contracting Portal (NOCOPO) and the integration of procurement stages with the Government Integrated Financial Management Information System (GIFMIS) and the Treasury Single Account (TSA) to automate workflows, standardize documentation and provide real-time transparency on contract awards and implementation (BPP, 2021; Open Contracting Partnership, 2016).

Global experience from systems such as South Korea's KONEPS, ChileCompra in Chile and UMUCYO in Rwanda suggests that well-designed e-procurement platforms can reduce transaction costs, shorten cycle times, expand vendor participation and constrain corruption by limiting discretionary manipulation and creating robust digital audit trails (OECD, 2016; World Bank, 2019; Tadelis, 2005). Nigeria's trajectory, however, has been more uneven. While advocates highlight gains in transparency and process standardization, empirical and practitioner accounts point to persisting challenges including poor ICT infrastructure, unreliable connectivity, low digital literacy among procurement staff, resistance to change and weak enforcement of BPP directives in some MDAs (Adebayo & Ojo, 2016; Obasi & Uzochina, 2019; Onwualu & Dike, 2021).

More than a decade after the PPA and several years into the roll-out of NOCOPO and related tools, key questions remain unresolved. To what extent have BPP's e-procurement services improved transparency and accountability in procurement processes? How deeply have MDAs adopted and routinely used e-procurement systems across the procurement cycle, as opposed to applying them only at selected stages? Which institutional, technical and operational constraints most seriously hinder implementation and performance? And how effective has BPP's enforcement role been in driving compliance and sustained usage between 2017 and 2024?

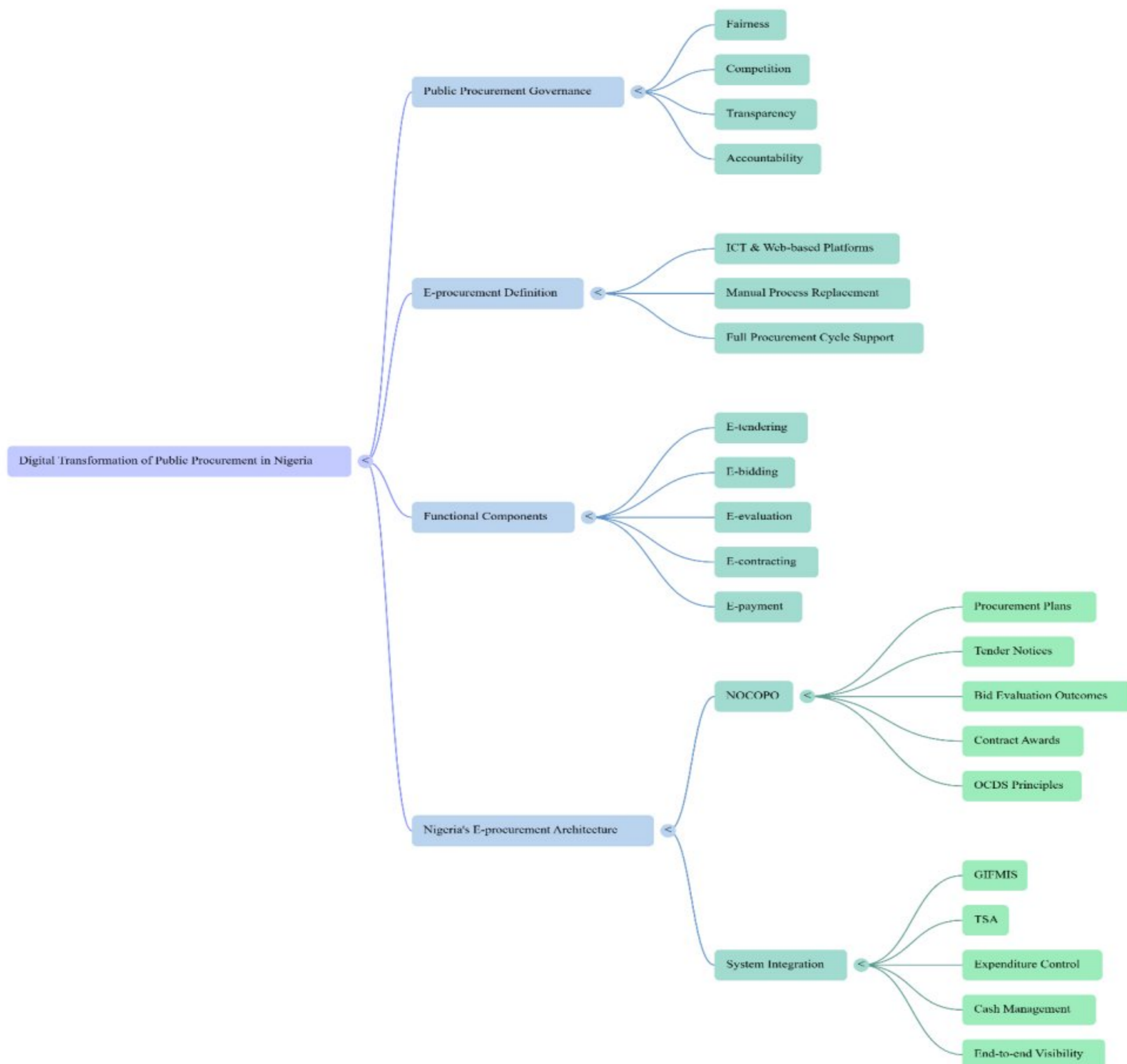
This article addresses these questions by conducting a structured, data-driven assessment of e-procurement effectiveness in selected Nigerian MDAs, derived from a completed M.Sc. thesis in Procurement Management at the Federal University of Technology Owerri. It contributes to the growing but still limited body of empirical research on digital transformation in African public

procurement by linking adoption patterns and implementation challenges to measurable governance and performance outcomes (Basheka, 2010; Yahaya, Abdulraheem, & Adeyemi, 2020).

## 2.0. LITERATURE REVIEW

### 2.1. Conceptual background

Procurement in the public sector is governed by legal and regulatory frameworks designed to ensure fairness, competition, transparency and accountability in the acquisition of goods, works and services (Arrowsmith, 2005; Thai, 2001). E-procurement is broadly defined as the use of information and communication technologies (ICTs), especially web-based platforms, to support or replace manual procurement processes across the full procurement cycle (Neupane et al., 2012; Kauffman & Wang, 2001).



**Figure 1:** Digital Transformation of Nigeria's Public Procurement Architecture

Key functional components include e-tendering, e-bidding, e-evaluation, e-contracting and e-payment, often bundled into integrated e-government procurement (e-GP) systems (Croom & Johnston, 2003; OECD, 2016).

In Nigeria, the BPP's e-procurement architecture centres on NOCOPO, which publishes procurement plans, tender notices, bid evaluation outcomes, contract awards and implementation updates in line with Open Contracting Data Standard (OCDS) principles (Open Contracting Partnership, 2016; BPP, 2021). Integration with GIFMIS and the TSA aims to tighten expenditure control, improve cash management and provide end-to-end visibility of commitments and payments (World Bank, 2019; BPP, 2020).

## 2.2. Theoretical Framework

The study is anchored on a combined Technology Acceptance Model (TAM) and Diffusion of Innovations (DOI) framework (Davis, 1989; Rogers, 2003). TAM explains user-level acceptance of e-procurement systems through perceived usefulness and perceived ease of use, which shape attitudes and behavioral intentions among procurement officers and related staff (Davis, 1989; Venkatesh & Davis, 2000). DOI complements this by describing how innovations such as NOCOPO diffuse across organizations and sectors based on perceived relative advantage, compatibility with existing processes, complexity, trialability and observability (Rogers, 2003).

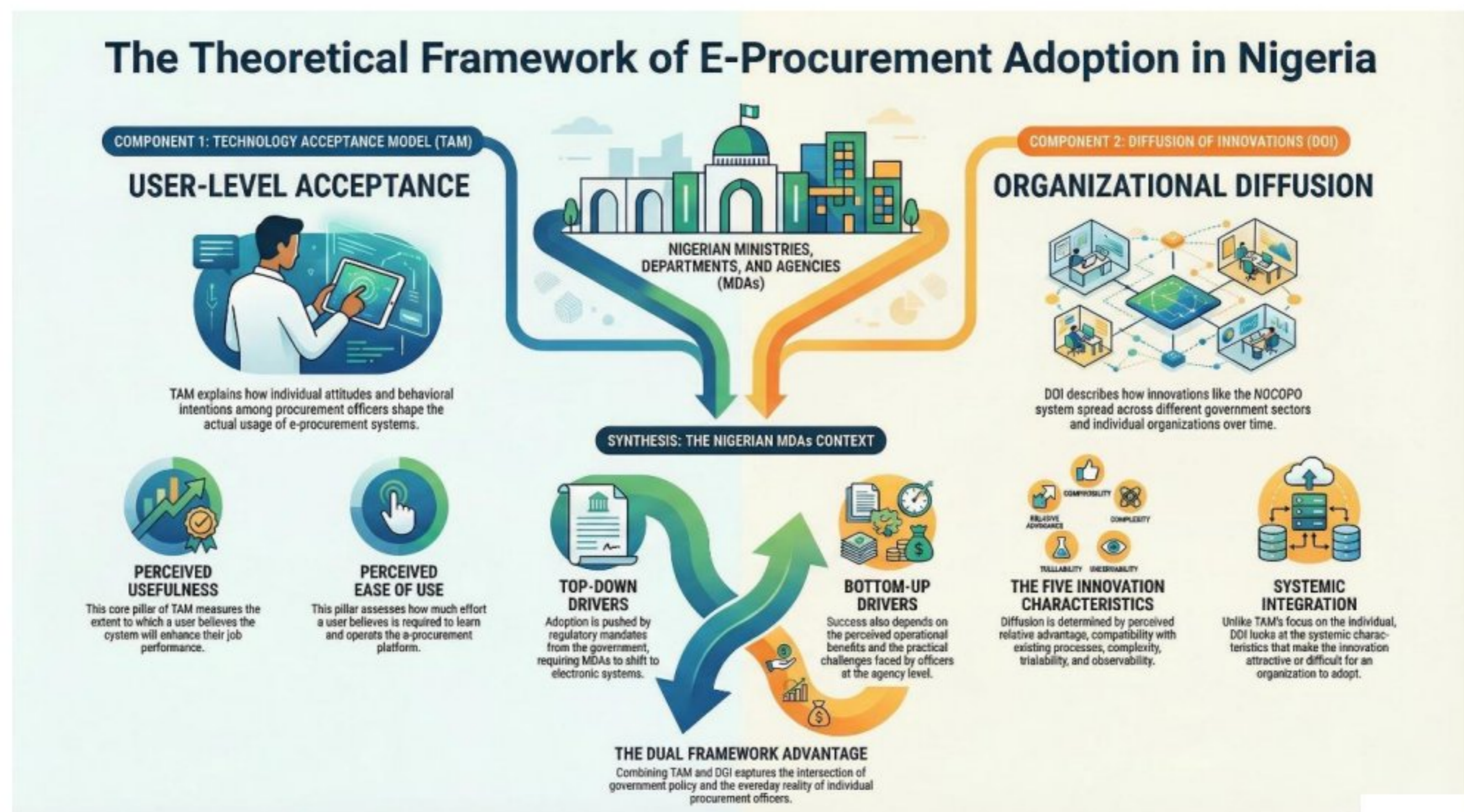


Figure 2: Nigeria E-Procurement Adoption Framework



This dual framework is particularly suited to Nigeria's context, where adoption is simultaneously driven by regulatory mandates (top-down) and by perceived operational benefits and challenges at the level of individual MDAs and officers (bottom-up) (Mofolo & Tshishonga, 2019; Obasi & Uzoechina, 2019).

### **2.3. Empirical evidence**

Recent Nigerian and comparative African studies consistently report that e-procurement can improve record-keeping, reduce cycle times and increase transparency, but that actual outcomes depend heavily on ICT infrastructure, staff capacity, leadership support and effective enforcement (Neupane et al., 2012; Olojede, 2019; Musa et al., 2023). Evidence from construction, health and central government sectors shows that adoption often starts with pre-award and payment modules, while evaluation and contract management functions are digitized more slowly due to higher technical and organizational demands (World Bank, 2019; Adebayo & Ojo, 2016).

Persistent capacity constraints, fragmented systems and uneven political commitment mean that formal adoption does not always translate into deep, routine use across the full procurement lifecycle (Fagbadebo & Mbada, 2021; Okolie, Eme, & Nwosu, 2022). These patterns underscore the need for context-specific, empirical assessments such as the present study.

## **3.0. METHODOLOGY**

### **3.1. Research design**

The study adopted a descriptive survey design to capture perceptions and experiences of key stakeholders involved in e-procurement implementation and oversight (Creswell, 2014). This design is appropriate for examining relationships between e-procurement adoption, governance outcomes and perceived challenges across a relatively large, geographically dispersed respondent pool.

### **3.2. Population, sampling and data collection**

The target population comprised staff of the Bureau of Public Procurement and selected federal MDAs that are subject to BPP regulations and have engaged with e-procurement platforms between 2017 and 2024 (BPP, 2021). A multi-stage sampling strategy was used to select MDAs and respondents, ensuring representation across procurement units, ICT units and management cadres.

Structured questionnaires were administered to 400 respondents, of which 370 were returned and found valid for analysis. The instrument captured demographic characteristics, perceptions of e-procurement's influence on transparency and accountability, adoption and usage levels, implementation challenges and views on BPP's enforcement role.

### **2.2. Measures and variables**

Key variables included:



**Transparency and accountability:** perceptions of whether e-procurement has improved openness of procurement processes, availability of information, traceability of decisions and oversight (Neupane et al., 2012; World Bank, 2019).

**Adoption and usage:** extent to which MDAs use e-procurement tools for core procurement stages (planning, tendering, evaluation, contract award and implementation) (BPP, 2021).

**Implementation challenges:** institutional, technical and operational constraints such as inadequate ICT infrastructure, weak connectivity, low digital literacy, and resistance to change and insufficient training (Onwualu & Dike, 2021; Obasi & Uzoechina, 2019).

**BPP enforcement effectiveness:** perceptions of BPP's monitoring, oversight and sanctioning role in ensuring compliance with e-procurement directives and broader procurement regulations (Fagbadebo & Mbada, 2021; BPP, 2020).

**Procurement performance:** indicators such as perceived cost efficiency, timeliness of procurement processes and service-delivery improvements (World Bank, 2015; OECD, 2016). Likert-scale items were used for most constructs, and composite indices were derived through aggregation for use in inferential analyses (Creswell, 2014).

### 3.3. Data Analysis

Descriptive statistics (frequencies and percentages) were used to summarize respondents' demographic characteristics and core perceptions. Chi-square tests examined the association between categorical responses and hypothesized relationships, while Pearson correlation was employed to assess the strength and direction of linear relationships between adoption, transparency and performance variables (Neupane et al., 2012).

Multiple regression models tested the effect of e-procurement adoption on procurement performance, and of implementation challenges and enforcement variables on key outcomes, at a 5% significance level ( $p \leq 0.05$ ) (Creswell, 2014). Reliability analysis yielded a Cronbach's alpha of approximately 0.83, indicating high internal consistency of the measurement instrument (Mmadu, 2025).

## 4.0. PRESENTATION OF RESULTS AND DISCUSSION

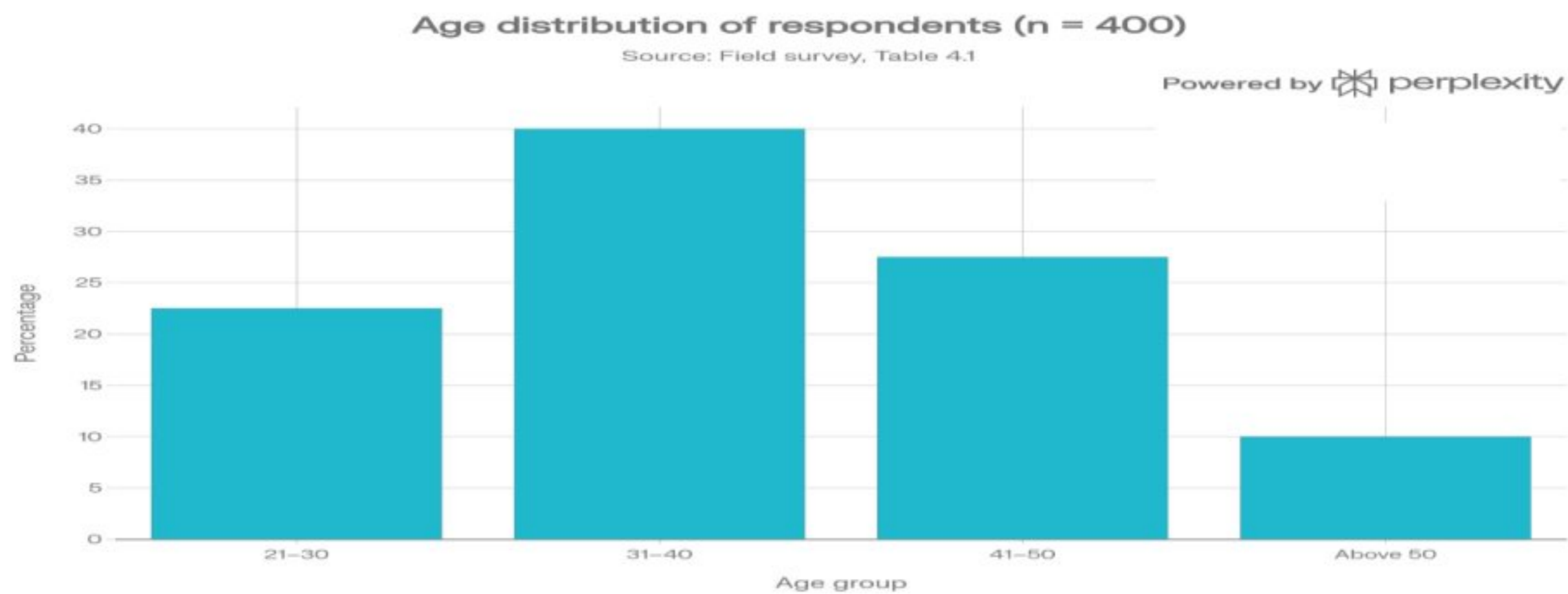
### 4.1. Presentation of Results

#### Respondent profile and key descriptive statistics

The final sample of 370 respondents was reasonably balanced across gender, age, educational attainment and years of work experience, reflecting the structure of Nigeria's procurement and administrative workforce. A slight majority (about 57.5%) were male and 42.5% female; most fell within the 31–40 and 41–50-year age brackets and held at least a bachelor's degree, with a substantial share possessing master's degrees and professional qualifications.

**Table 1: Descriptive Statistics of Respondents and Key Perceptions**

Measure	Category / group	n	Percentage
Age (years) (n = 400)	21–30	–	22.5
	31–40	–	40.0
	41–50	–	27.5
	Above 50	–	10.0
Perception that e-procurement has improved transparency and accountability (n = 370)	Agree / Strongly agree	–	77.6
	Other responses (neutral / disagree)	–	22.4
Level of e-procurement adoption in MDAs (n = 370)	High adoption (high or very high)	–	34.6
	Other adoption levels (moderate to very low)	–	65.4
Major implementation challenge (n = 370)	Poor ICT infrastructure (most cited challenge)	–	29.2
	Other challenges combined	–	70.8
Perceived effectiveness of BPP’s enforcement and support role (n = 370)	Effective / Very effective	–	59.5
	Other ratings (neutral to very ineffective)	–	40.5

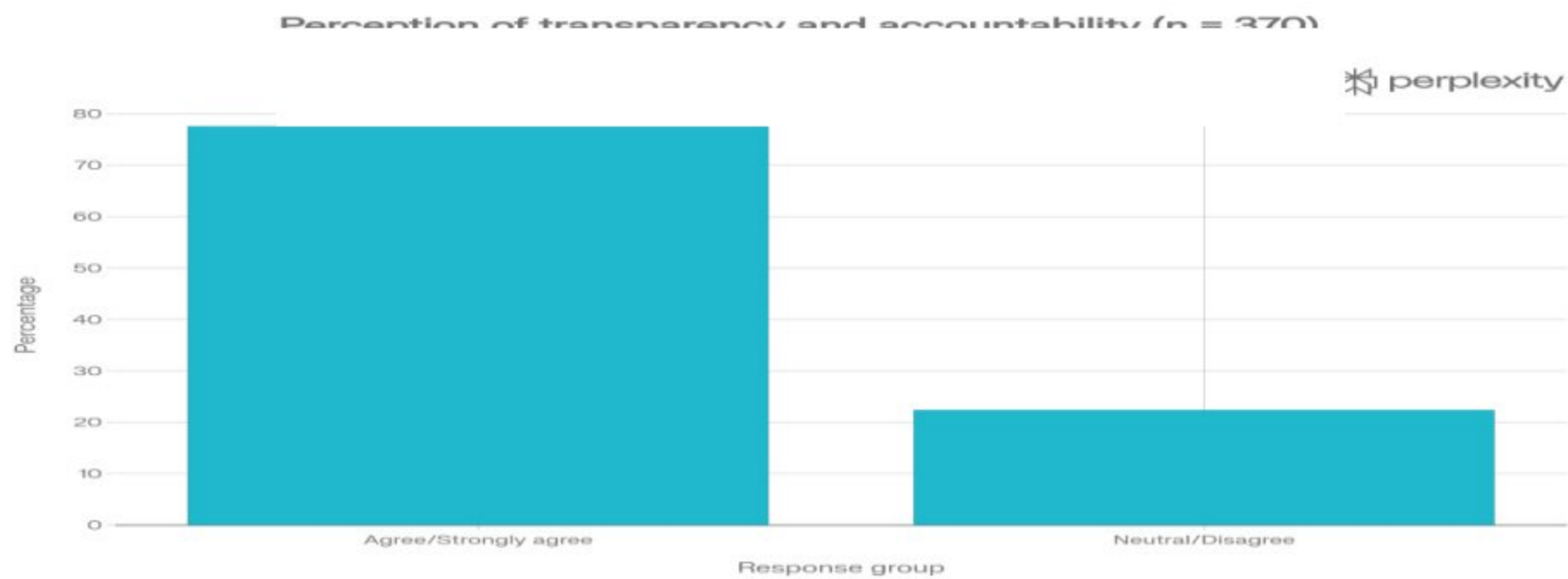


**Figure 3: Age Distribution of Respondents**

### Transparency and Accountability

Descriptive results show that 41.9% of respondents strongly agree and 35.7% agree that BPP’s e-procurement platforms have improved transparency and accountability in procurement processes, yielding a combined agreement level of 77.6%. Only 11.1% express disagreement (disagree or strongly disagree), while 11.4% are undecided, suggesting broad recognition of transparency gains among frontline users.

Chi-square tests confirm a statistically significant association between use of e-procurement tools and perceived improvements in transparency and accountability, supporting rejection of the null hypothesis that e-procurement has no effect on transparency and accountability between 2017 and 2024.

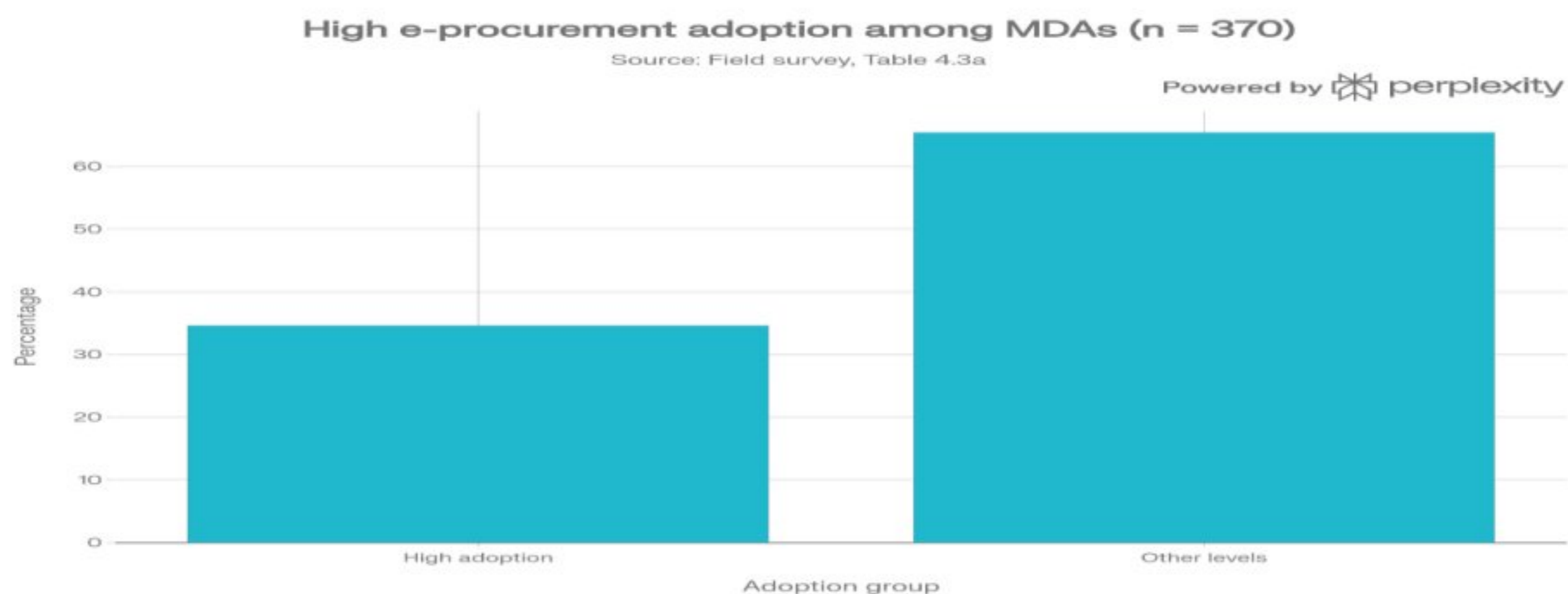


**Figure 4:** Perception that e-procurement has improved transparency and accountability (n = 370)

### Adoption and Usage Levels

Despite positive perceptions of governance benefits, adoption and depth of usage remain uneven. Only 34.6% of MDAs are reported to have a high level of e-procurement adoption across key stages, while a substantial proportion operate at moderate or low adoption levels and still rely heavily on manual or hybrid processes.

Correlation analysis indicates a strong positive relationship between e-procurement adoption and transparency outcomes ( $r = 0.637$ ,  $p < 0.05$ ), implying that MDAs with deeper integration of e-procurement tools tend to report greater transparency and accountability gains.

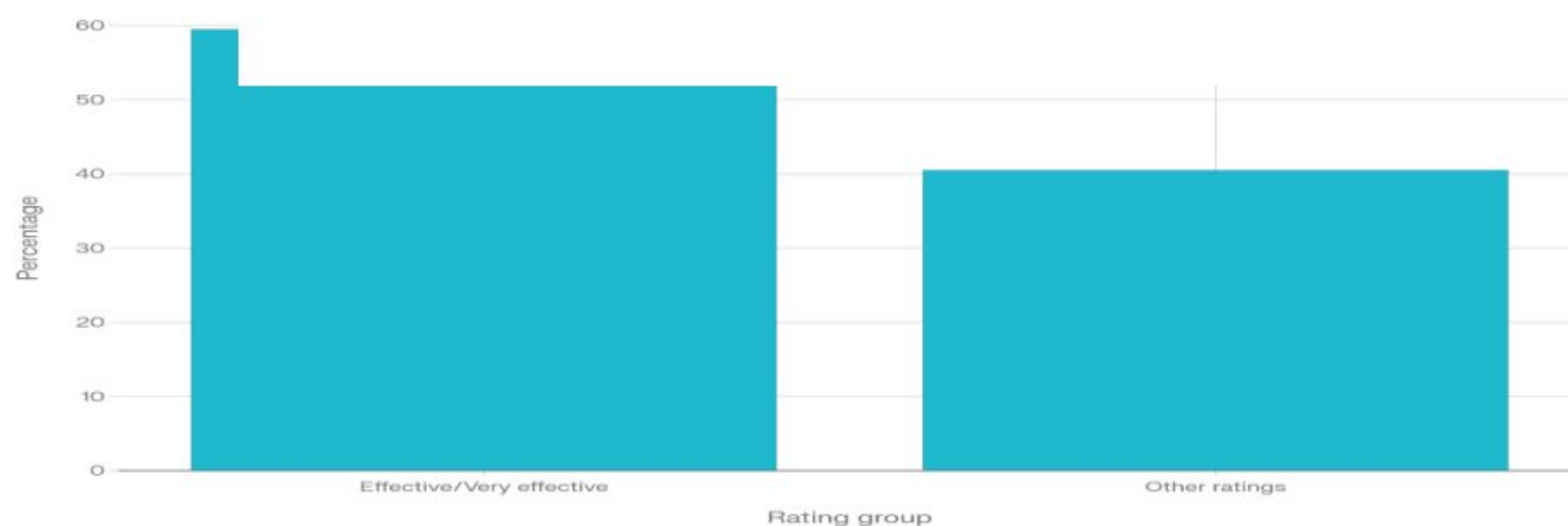


**Figure 5:** MDAs reporting high levels of e-procurement adoption (n = 370)

### BPP Enforcement Effectiveness

Regarding BPP's oversight role, 59.5% of the respondents rate enforcement of procurement rules and e-procurement directives as effective or very effective, while the remainder perceive it as moderate or weak. Respondents acknowledge the importance of BPP's monitoring, procurement audits and approval thresholds but note that political interference, limited resources and inconsistent sanctions still undermine uniform compliance across MDAs (Fagbadebo & Mbada, 2021; Okolie et al., 2022).

Regression analysis indicates that stronger perceived enforcement and monitoring are positively associated with higher levels of e-procurement adoption and compliance, providing support for rejection of the null hypothesis that BPP enforcement measures do not significantly influence compliance and adoption of e-procurement processes across MDAs.



**Figure 6:** Perceived effectiveness of BPP's enforcement and support role (n = 370)

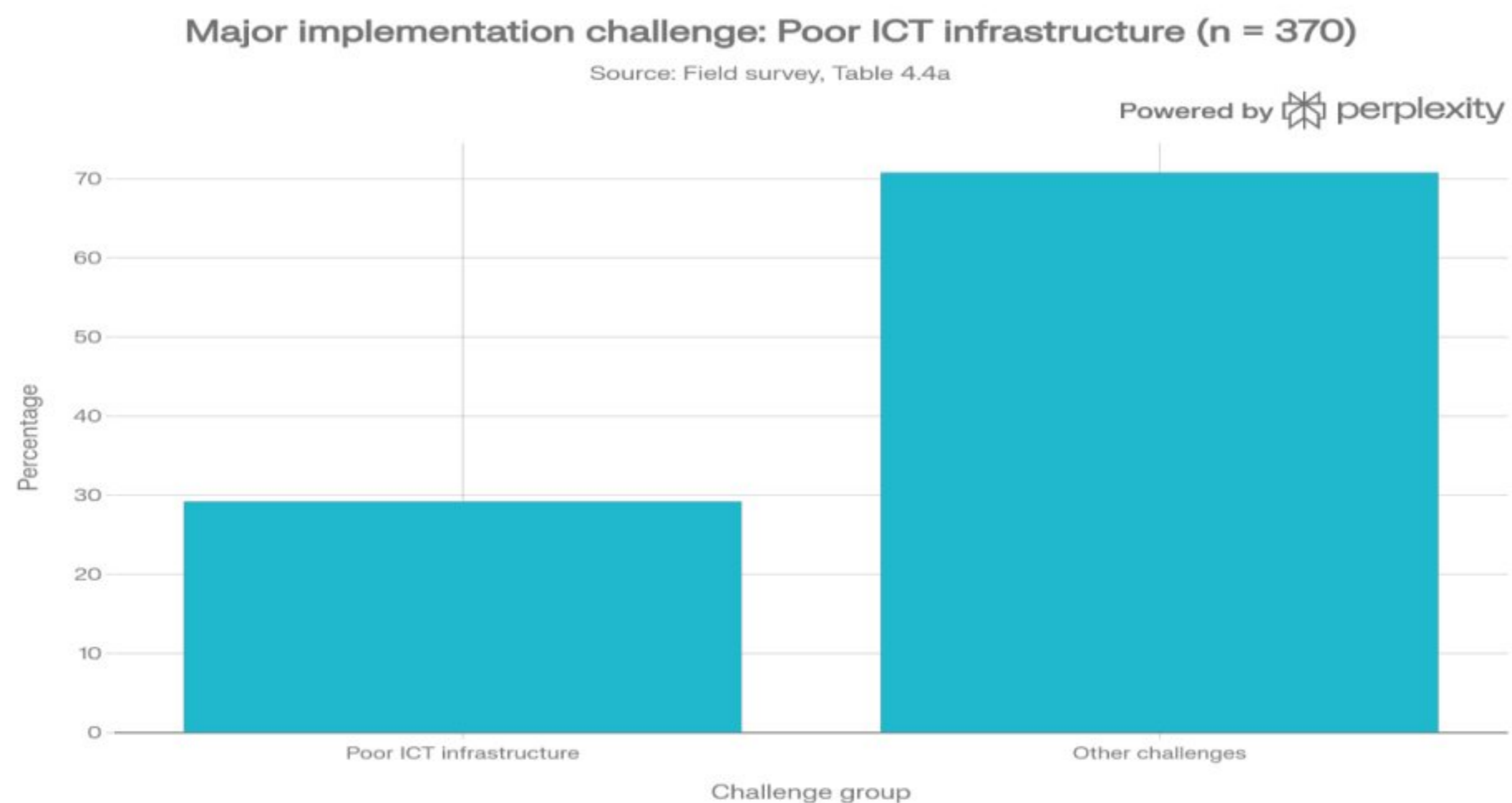
### E-procurement and Procurement Performance

The regression model linking e-procurement adoption to procurement performance yields an  $R^2$  of 0.339 and a statistically significant F-statistic of 59.763 ( $p < 0.05$ ), indicating that adoption explains about 33.9% of the variance in performance measures such as cost efficiency, timeliness and service delivery. This supports rejection of the null hypothesis that there is no significant relationship between the level of adoption of e-procurement systems and procurement performance in selected MDAs in Nigeria.

### Implementation Challenges

Respondents identify a range of institutional, technical and operational constraints that limit the effectiveness of e-procurement reforms (Onwualu & Dike, 2021; Obasi & Uzoechina, 2019). Poor ICT infrastructure, including unreliable internet connectivity and inadequate hardware—is the single most frequently cited issue, with 29.2% of respondents ranking it as the dominant challenge. Other major obstacles include low digital literacy and limited training among procurement staff, resistance to change and entrenched manual practices, intermittent power supply and insufficient technical support in some MDAs (Adebayo & Ojo, 2016; Olojede, 2019).

Regression results show that higher perceived levels of institutional and technical challenges are significantly associated with weaker adoption and poorer performance outcomes, leading to rejection of the null hypothesis that institutional, technical and operational challenges do not significantly affect implementation and performance of e-procurement systems.



**Figure 7:** Poor ICT infrastructure as the most frequently cited implementation challenge (n = 370).

Table 2 provides a consolidated summary of the hypothesis tests examining how e-procurement adoption, implementation challenges and BPP enforcement affect transparency, procurement performance and compliance in Nigerian MDAs. The results show that higher levels of e-procurement adoption and stronger BPP enforcement are significantly associated with improved transparency, accountability and procurement performance, while institutional, technical and operational challenges significantly weaken implementation and outcomes.



Table 2: Summary of hypothesis tests on effectiveness of BPP e-procurement services in the inferential part of the Results

Hypothesis & focus	Variables / relationship examined	Statistical test	Key statistics (summary)	Decision ( $\alpha = 0.05$ )
H1: Effect of e-procurement on transparency & accountability	E-procurement adoption index vs transparency/accountability index	Pearson correlation & regression	$r = 0.637$ ; positive and strong association; $p < 0.05$ . $R^2 \approx 0.34$ ; adoption significantly predicts higher transparency/accountability.	$H0_1$ rejected: e-procurement has a significant positive effect on transparency and accountability
H2: Relationship between adoption and procurement performance	E-procurement adoption index vs procurement performance (cost efficiency, timeliness, service delivery)	Regression	$R^2 = 0.339$ ; $F = 59.763$ ; $p < 0.05$ . Adoption explains about 33.9% of variance in performance indicators and has a positive, significant coefficient.	$H0_2$ rejected: higher adoption significantly improves procurement performance.
H3: Effect of institutional, technical and operational challenges	Composite index vs challenges implementation/performance of e-procurement	Correlation & regression	Higher perceived challenge levels are significantly associated with lower adoption and weaker performance; model coefficients significant at $p < 0.05$ .	$H0_3$ rejected: challenges significantly reduce implementation effectiveness and performance.
H4: Effect of BPP enforcement on compliance and adoption	BPP effectiveness index vs compliance/adoption of e-procurement	Correlation & regression	Stronger perceived BPP enforcement is positively and significantly associated with higher adoption and compliance; effects significant at $p < 0.05$ .	$H0_4$ rejected: BPP enforcement significantly enhances compliance and adoption.

4.2. Discussion

The findings demonstrate that BPP’s e-procurement services have measurably strengthened transparency and accountability in Nigeria’s federal procurement system, aligning with international evidence that digitalization can reduce opportunities for discretion and corruption when properly implemented (Neupane et al., 2012; OECD, 2016). High levels of perceived transparency gains and the strong correlation between adoption and governance outcomes suggest that platforms like NOCOPO are functioning as intended where they are consistently used (BPP, 2021; World Bank, 2019).



At the same time, the modest proportion of MDAs reporting high adoption levels and the prominence of infrastructural and capacity-related challenges highlight the limits of purely regulatory or technical approaches to reform (Fagbadebo & Mbada, 2021; Obasi & Uzoechina, 2019). Without reliable connectivity, adequate hardware, sustained user training and local technical support, MDAs struggle to embed e-procurement into day-to-day workflows, leading to continued reliance on manual processes and partial use of digital tools (Onwualu & Dike, 2021).

The mixed perceptions of BPP's enforcement effectiveness further underline the importance of coupling technological solutions with credible, well-resourced oversight (Okolie et al., 2022; Musa et al., 2023). Where BPP monitoring, audits and sanctions are viewed as consistent and impartial, adoption and compliance are stronger; where political interference or resource constraints weaken oversight, reforms lose traction (Fagbadebo & Mbada, 2021).

Collectively, these results reinforce a multi-dimensional view of e-procurement reform as a socio-technical change process that requires attention to infrastructure, human capacity, organizational culture and institutional incentives, not merely software deployment (Basheka, 2010; Olojede, 2019).

## **5.0. CONCLUSION AND RECOMMENDATIONS**

### **5.1. CONCLUSION**

This study provides empirical evidence that e-procurement services implemented by Nigeria's Bureau of Public Procurement have enhanced transparency, accountability and procurement performance in selected federal MDAs, particularly where adoption is deep and enforcement credible. However, significant implementation gaps remain, driven mainly by inadequate ICT infrastructure, uneven digital skills, entrenched manual practices and variable enforcement strength across institutions (Onwualu & Dike, 2021; Obasi & Uzoechina, 2019).

### **5.2. Recommendations**

To consolidate and extend the gains of e-procurement reforms, the following policy and practice recommendations are proposed (OECD, 2016; World Bank, 2019).

1. **Strengthen ICT infrastructure:** Prioritize investment in reliable broadband connectivity, secure servers, user devices and backup power solutions in MDAs, especially outside major urban centres, leveraging public-private partnerships where appropriate (Onwualu & Dike, 2021; Musa et al., 2023).
2. **Institutionalize continuous capacity building:** Design and implement structured training programmes for procurement, finance and ICT staff on the full range of e-procurement functionalities, coupled with change-management initiatives that address resistance and clarify benefits (Adebayo & Ojo, 2016; Basheka, 2010).
3. **Deepen integration and process coverage:** Move beyond basic e-informing and e-tendering to ensure that evaluation, contract management and payment processes are also digitized and integrated



with GIFMIS and TSA, reducing opportunities for off-system transactions (World Bank, 2019; BPP, 2021).

4. Enhance enforcement and monitoring: Strengthen BPP's monitoring, audit and sanctioning capabilities through adequate resourcing, clearer escalation protocols and protection from political interference, while encouraging third-party oversight by civil society and the media (Fagbadebo & Mbada, 2021; Okolie et al., 2022).

5. Standardize and simplify user experience: Continuously refine NOCOPO and related interfaces to improve usability, provide multilingual support where necessary and embed user feedback loops that allow rapid identification and resolution of operational bottlenecks (Open Contracting Partnership, 2016; Olojede, 2019).

Collectively, these measures can help translate formal adoption of e-procurement platforms into deep, sustained use across the procurement cycle, thereby maximizing governance and performance benefits in Nigeria's public procurement system (World Bank, 2019).

### 5.3. Limitations and Directions for Future Research

The study relies on cross-sectional survey data and self-reported perceptions of e-procurement outcomes, which may not fully capture dynamic changes over time or objectively measured performance impacts (Creswell, 2014). Future research could combine longitudinal administrative data from e-procurement and public financial management systems with qualitative fieldwork to better trace how reforms evolve and where they stall (World Bank, 2019)

Comparative studies across federal, state and local government levels, as well as sector-specific analyses in areas such as health, education and infrastructure, would further illuminate how contextual factors shape the effectiveness of e-procurement reforms (Basheka, 2010; Musa et al., 2023).

### Conflict of Interest

The authors declare that no conflict of interest exist in this manuscript

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