International Journal of
Project Management
(IJPM)

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sige et a.(2026)

International Journal of Project Management
ISSN 2790-5578 (online)
Vol.8, Issue 1, pp 74 - 87, 2026
www.ajpojournals.org

Procurement Processes Management and Infrastructure Project Implementation in Ntoroko District Local Government

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Article history
Submitted 18.03.2026 Revised Version Received 15.04.2026 Accepted 17.05.2026

Abstract

Purpose: Rapid population growth and urbanization, and the need for improved standards of living of citizens, have pushed governments across the globe to invest heavily in infrastructure projects. Evidence show that real transformation of rural communities and probability for boosting regional competitiveness hinges on the successful implementation of government infrastructure projects. WHY: Infrastructure expenditure impact significantly on job growth and other multiple related economic benefits. This study examined the role of procurement processes management on infrastructure project implementation in Ntoroko District Local Government.

Methodology: The study adopted a cross-sectional survey design using quantitative approaches. A sample of 67 respondents was determined from the target population of 80 using the (Krejcie & Morgan, 1970). Data was collected using survey method to collect quantitative data and employed a structured self-administered questionnaire with closed-ended questions anchored on a five-point Linkert scale. Descriptive and inferential techniques were used for data analysis.

Findings: Findings reveal a statistically positive and significant association between procurement process management and infrastructure project implementation (β =0.468, t=5.390, p-value = 0.000).

Recommendations: Since the relationship between procurement process management and infrastructure project implementation was confirmed, the study recommends that procurement managers put more efforts on improving procurement process management particularly in project planning, supplier selection, and contract management. Agency theory displayed the power to explain the principal-agent relationships which expresses the imperative for procurement managers to constantly mitigate principal-agent problems through transparent bidding and contractor oversight. The study reminds policymakers to prioritize capacity building, digital procurement systems, and anti-corruption measures to optimize procurement efficiency and infrastructure outcomes in Uganda's decentralized governance context.

Keywords: *Public Procurement, Infrastructure, Project Implementation, Procurement Process*

JEL codes: H57, H54, H72, D73, R5

INTRODUCTION

Infrastructure is vital for national functionality, encompassing essential systems like transportation, water, health, education, digital infrastructure and telecommunications. Altogether they help stimulate development and improve quality of life of citizens (Malizia et al., 2020). Some infrastructure projects also focus on the development and maintenance of services, facilities and systems while others are on mega-projects targeting railway system development in Africa (Han & Wu, 2026). These projects often require substantial capital investments, necessitating robust government policies, institutional strength and a corruption-free business environment (Hallegatte, 2019; Malizia et al., 2020). By and large, not all infrastructure projects are funded by governments; some projects funding come in form of collaboration between the government and private companies commonly known as public-private partnership. Even when the balancing of interests of public and private sectors remain challenging especially for some high profile-projects elsewhere, the model is seen as viable. Indeed, as reported by Malizia et al., (2020) private investments have a big contribution in influencing the economic development status of a city, state, or entire country (Malizia et al., 2020). However, considering the fact that most infrastructure projects are largely capital intensive in nature and require full government support to realize them, the government needs to formulate strong macro-socio-economic policies, build strong institutions and create an enabling, fair and competitive procurement business environment free of the prevalent government red tape and corruption (Xu, 2024). As a result, the successful execution of these projects hinges on efficient procurement processes (Thai, 2017; Said et al., 2015).

The study has interest in public procurement because it accounts for approximately 13% of GDP and 29% of government expenditure (European Commission, 2016; OECD, 2015). It plays a pivotal role in shaping infrastructure and service delivery which partly justifies the need to have efficient and effective procurement processes to safeguard tax payers' interests. There are many development assistance inflows coming to support infrastructure projects in developing countries (World Bank, 2010) which also re-echoes the role of public procurement. Relatedly and on a positive note developing nations, particularly Sub-Saharan Africa, have been awakened to the significance of effective and efficient management of the procurement processes linked to infrastructure at all levels in government ministries, departments and agencies and its subsequent role in ensuring smooth execution of public sector entity' operations and projects. Uganda, for instance, also prioritizes infrastructure development under its National Development Plans (NDP II, III & IV) to enhance connectivity and economic growth (MoFPED, 2020). In the same vein, Uganda has notably instituted several procurement reforms since 1964, culminating from the Central Tender Board (1997) to the Public Procurement and Disposal of Public Assets (PPDA) Act (2003) aiming at enhancement of transparency. Additionally, both central and local governments have prioritized ambitious infrastructural projects to enhance connectivity, energy access and public service provision. All these efforts emerge from the realization that infrastructure constraints disadvantage Uganda's private sector growth which is a key pillar in achieving 10-fold growth by 2040. Thus all these policy innovations in that direction (infrastructure development) are seen as a fundamental drivers of socio-economic development for Uganda.

However, literature shows that policymakers and managers have been over time concerned with issues of monitoring and control of procurement costs for large projects questioning the qualities of staff managing public procurement (Khi & Thai, 2004). This reflection stresses the imperative for systematic interrogation of the public procurement decision-making skills in key areas of the procurement process including initial stages management and contract management (Said et al.,

2015; Makabira, 2014). Developing nations, are reportedly generally grappling with systemic inefficiencies, including corruption, bureaucratic delays and weak enforcement mechanisms, leading to widespread project failures (World Bank, 2013). In Uganda, for instance, public procurement absorbs over 55% of the national budget, yet persistent challenges such as bid rigging, corruption (estimated at $300 million annually), political interference, poor contract supervision, non-compliance with procurement laws and contractor incompetence undermine infrastructure delivery (PPDA Report, 2021). Procurement inefficiencies further exacerbate these challenges such as cost overruns, delayed completions, shoddy work, and outright project failures, undermining the intended socio-economic benefits (PPDA, 2017; Bukenya & Muhumuza, 2017). Tendering processes are often marred by patronage, leading to the selection of unqualified contractors (Meidute & Paliulis, 2011). Contract mismanagement and adversarial relationships in procurement further diminish project success (Eriksson & Laan, 2007). Inadequate stakeholder consultation and misaligned priorities further result in wasted resources and diminished public trust (UDN, 2013). The context of Ntoroko District, operational since 2010, exemplifies these challenges. Reports cite forged bidding documents, political interference in contractor selection, and non-compliance with PPDA guidelines (IGG Report, 2017), which stall critical infrastructure like roads and water systems. Such failures perpetuate poverty and limit access to basic services (Lothe, 2006). To examine these dynamics, this study adopts Agency Theory (Jensen & Meckling, 2019), which highlights the principal-agent relationships in procurement. Here, the principal (Ntoroko District Local Government) delegates project implementation to agents (contractors), but divergent interests and information asymmetry often lead to shoddy work or delays (Eisenhardt, 1989). The theory underscores the need for robust monitoring to align contractor actions with project goals (Van Den Hurk & Verhoest, 2016). This discussion benefits global south mega-projects especially in an era of discovery of many mineral resources that has sparked foreign investments in transport support systems (largely railway infrastructure) *(*Han & Wu, 2026). The study reminds implementers of such projects on effective procurement system that must put into consideration the three stages management: planning (budgeting, market assessment), supplier selection (competitive bidding), and contract management (performance monitoring) (PPDA Act, 2003). This assumption however can be put to test considering the fact that other issues continue to impede project execution like financial constraints, bribery, bureaucratic delays, material shortages, and unskilled labour (Ahmed et al., 2021). The present study therefore investigates how procurement processes particularly planning, supplier selection, and contract management impact infrastructure project implementation in Ntoroko, offering insights for policymakers and practitioners grappling with similar challenges in decentralized governance systems.

Problem statement

The transformation of rural the community hinges on the successful implementation of government infrastructure projects, which largely, are governed by institutional frameworks like Uganda's Public Procurement and Disposal of Public Assets Act (2003). This is to appreciate that legislation and regulation structures are one of the foundational features for enabling the building of a strong procurement system in a country. Despite these safeguards, persistent procurement inefficiencies corruption in tendering, delayed contract awards, and non-compliance with PPDA guidelines have led to widespread project failures in hard-to-reach districts like Ntoroko. These failures manifest as shoddy work, abandoned projects, missed deadlines and project completion delays ranging between 14–34 months (Auditor General, 2021), which directly undermines

national development goals like Vision 2040 and the National Development Plans (Ministry of Public Service, 2016; PPDA Report, 2020/21).

While the PPDA provides a regulatory framework, critical gaps persist in empirical research examining how procurement processes affect project implementation in local government context. The PPDA 3rd Integrity Survey (2019) highlights escalating risks, including inflated costs and contractor collusion, yet no studies have systematically analysed these dynamics in Ntoroko District. This study addresses that gap by investigating the causal relationship between procurement processes management (planning, supplier selection, contract oversight) and infrastructure project outcomes, offering evidence-based solutions to align procurement practices with Uganda's rural transformation agenda.

Purpose of the Study

The purpose of the study is to examine the contribution procurement processes management has on infrastructure project implementation in Uganda: A study of Ntoroko District Local Government.

LITERATURE REVIEW

Theoretical framework

Agency Theory

Agency Theory, as advanced by Jensen and Meckling (1976), examines the complex relationships between principals (such as government entities) and agents (such as contractors or procurement officers) in delegated tasks. The theory highlights inherent challenges including goal conflicts, information asymmetry, and risk preference disparities (Tenhiälä et al., 2017), which manifest as moral hazard, adverse selection, and risk-sharing problems (Xingxing, 2012). These concerns are largely eminent in public procurement systems, where delegation of infrastructure projects creates opportunities for inefficiencies. In Uganda's Ntoroko district, such dynamics lead to operational challenges like contract mismanagement, project completion delays, cost overruns, and financial losses (Flyvbjerg, 2020), exacerbated mostly when agents prioritize personal interests over public value through unethical practices like bid rigging (Aputo, 2017). Despite the PPDA Act's transparency mechanisms, weak local oversight continues to undermine procurement efficiency (PPDA, 2022).

The application of agency theory reveals systemic weaknesses in Ntoroko District's procurement processes, where information asymmetry and self-interest among agents result in poor contractor monitoring and corrupt award practices (Ntungamo & Muhwezi, 2023). These issues, compounded by inadequate enforcement of oversight mechanisms, directly contribute to infrastructure project delivery failures (World Bank, 2022). Effective solutions require a multifaceted approach including performance-based contracts (Bertelli & Smith, 2021), enhanced audits (Keng'ara, 2013), e-procurement systems (PPDA, 2023), and merit-based contractor selection (Gyesaw, 2020). Any effort towards enhancing these mechanisms could greatly yield positive procurement outcomes by addressing core agency problems (Mugambwa et al., 2024), demonstrating that while regulations exist, their effectiveness hinges on overcoming principal-agent conflicts through better accountability, technological innovation and capacity building.

Conceptual Framework

This study conceptually examines two relationships i.e infrastructure project implementation and procurement process management. Procurement process management is operationalized as:

procurement planning, supplier selection, and contract management. Project implementation is measured by cost, time schedule, and quality with a focus on value for money. The study is premised on the assumption that effective procurement planning, supplier selection and contract management enhances timely infrastructure project implementation. On the basis of previous studies, we developed a framework as shown below which explores how each procurement process management dimension influences project execution outcomes.

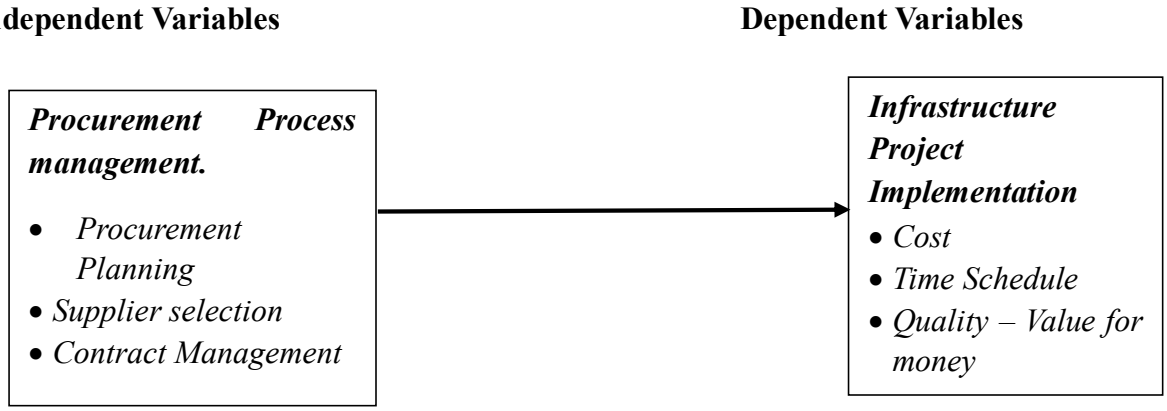

Figure 1: Conceptual Framework

Source: PPDA Act (2003), David (2019), Duica et al., (2018) and modification by the researchers (2026)

Empirical Review

Public procurement of course reflects a bigger view on government operations' quality, from central ministries to local agencies (Mihály et al., 2017). It also depicts one of the principal means through which governments can cause changes in not only national growth rates but also quality of public services, by investing in highways or government IT infrastructure (Mihály et al., 2017). As researchers we note that procurement planning, supplier selection, and contract management which are the measures of procurement process management in this study are vital processes in achieving timely quality infrastructure projects completion. As elucidated in the agency theory its probable that involved parties in the project development have varying interests in approaching the tendering and valuation processes. Specifically, for this study the principal is Ntoroko local government, and the agent is the contractor(s) that win bids and implement projects on behalf of the local government. Literature has evidently reported information asymmetry, divergent interests and decisions between agents (contractors) and the principal (districts) (Jensen and Meckling, 2019; Luc and Elisabeth, 2007). The contradictory interests reach a cumbersome peak that costs the principal especially in scenarios where it becomes hard or tricky to verify exactly what the agent is doing in terms of compliance to agreed terms, specifications, conditions, parameters and standards (Eisenhardt, 1989). The procurement planning as reflected on by Hao and Qi, (2019) if well managed answering key questions like what, how, which, how and when in terms of acquisitions could neutralize these interests.

The efficiency of procurement process management is globally recognized as a critical determinant in the successful implementation of infrastructure projects. Empirical studies across different regions demonstrate that procurement-related challenges such as poor planning, inadequate contract management, and weak supplier vetting mechanisms significantly affect project timelines, costs, and quality outcomes. Globally, the World Bank (2020) reports that 15–30% of project

resources for countries in the South are lost due to inefficiencies and corruption in procurement processes. In a comparative study of public procurement systems in Latin America, González and Zúñiga, (2019) found that countries with transparent and digitized procurement platforms, such as Chile, had significantly fewer project delays and cost overruns than those with manual or politicized systems. In Asia, Rahman et al., (2016) observed in Malaysia that ineffective procurement planning and lack of stakeholder consultation led to an average project delay of 12–18 months in public infrastructure development.

At the continental level, procurement inefficiencies continue to hinder infrastructure development across Sub-Saharan Africa. A study by Watermeyer (2011) across South Africa revealed that weak procurement capacity and poor adherence to regulatory frameworks delayed up to 40% of municipal infrastructure projects. Similarly, a regional study by the African Development Bank (AfDB, 2019) identified procurement delays as a key bottleneck to project implementation across East Africa, where administrative bureaucracy, inadequate competition, and political interference were cited as persistent challenges. The report emphasized that while most countries have procurement regulations aligned with international best practices, local government level enforcement and institutional capacity remain weak. Similarly, a study by Karanja and Muturi, (2015) in Kenya revealed that procurement planning, supplier selection, and contract monitoring significantly influenced project performance in specific counties. Specifically, inadequate supplier pre-qualification processes reportedly contributed to the hiring of incompetent contractors, ultimately leading to poor-quality outcomes. Equally, Mburu, (2020) examined road construction projects in Tanzania and reported that delays in contract award processes were associated with a 27% increase in total project costs.

Specific evidence on Uganda, as reported by Ameyaw et al., (2012) show that procurement process mismanagement particularly poor planning and budget estimation remains a leading cause of project underperformance in public sector infrastructure development. Ntambi, (2020) found that in districts such as Kisoro and Arua, political interference in supplier selection and contract award processes resulted in delays and poor-quality project outputs. Kakwezi and Nyeko, (2019), using data from five Ugandan districts, observed that procurement planning, if inadequately conducted, often resulted in mismatched budgets, scope creep, and abandoned works. Specifically, within Uganda's decentralized local governments, the implementation of the Public Procurement and Disposal of Public Assets (PPDA) Act aims to enhance efficiency, transparency, and accountability in procurement management. However, Okello and Mugisha, (2021) observed that despite this framework, challenges such as limited technical capacity, poor record keeping, and weak supervision persisted in districts like Bundibugyo and Kabarole. Tumwebaze, (2018) also emphasized that most local governments lack the digital procurement systems needed to ensure efficiency and transparency, relying instead on manual systems prone to delays and manipulation. In the case of Ntoroko District, limited empirical evidence exists that specifically investigates the association between project implementation and procurement process management. However, literature depicts that the district experiences similar challenges, such as underqualified contractors, delayed procurement cycles, and weak contract monitoring—often exacerbated by limited administrative capacity and logistical constraints due to its geographical remoteness. Elsewhere research done on procurement practices have revealed challenges related to procurement planning, supplier selection, staff competency, transparency and dominance of unsound procurement plans (Shimelis, 2020). Beyond these empirical and context evidences, other studies including Nyotah and Wambui, (2025) confirmed the positive association between procurement planning and NG-CDF project performance. Other previous works like Abegaz,

(2024) has also confirmed that procurement planning, supplier selection process, procurement contract management, and procurement staff competency significantly influence performance of projects. However, this study took a quantitative research approach and explanatory research design, census sampling technique and conducted in Ethiopia which could yield different results if other approaches and designs were used in another country context. This study, fills a critical empirical need by assessing the localized effects of procurement process management specifically procurement planning, supplier selection, and contract management on infrastructure project implementation in Ntoroko District.

Research Methodology

This study employed a cross-sectional research design, which allowed the collection of quantitative data at a single point in time to examine the contribution of procurement processes management on infrastructure project implementation in Ntoroko District (Bryman & Bell, 2007; Kesmodel, 2018). The study population comprised 100 professionals associated with project execution under the Ntoroko District Local Government, including engineers, procurement officers, committee members, administrators, and departmental heads (Human Resource Department, 2022). Using the Krejcie and Morgan (1970) table, a sample size of 80 was determined. Purposive sampling was used to identify and chose top-level staff with domain-specific knowledge, while convenience sampling was applied to committee members to ensure broad participation (Mugenda, 1999; Amin, 2005). Data were collected using a structured, self-administered questionnaire composed of closed-ended items measured on a five-point Likert scale (Sileyew, 2019), and a documentary checklist used to review official documents such as procurement reports and project evaluation records. After obtaining clearance from Mountains of the Moon University and permission from district authorities, the researchers used research assistants to administer the instruments. Other efforts were made to making the research purpose clear to respondents, seeking their consent, and ensuring confidentiality, privacy and anonymity. Variables and constructs were operationalized using Likert scale scores ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), and responses were interpreted based on established interval ranges (Sack, 2020). Instrument reliability was tested using Cronbach's alpha, with all constructs exceeding the 0.70 threshold and an overall alpha of 0.860, indicating high internal consistency. Content validity was ensured through expert review and pretesting to refine ambiguous or irrelevant items. Tests on parametric assumptions were conducted and from the Skewness (.435) and Kurtosis (.094) statistics, data was normally distributed, because Skewness distribution fell between -0.5 and 0.5 and Kurtosis fell between 0 and 0.1. Data management involved editing, coding, and classification of responses for analysis. Descriptive statistics (means and standard deviations) and inferential statistics, including multiple regression and Spearman correlation, were conducted using SPSS version 26 to explore associations between procurement practices and project implementation.

Research Findings

The study targeted to get information from 80 various respondents, and a total of 80 questionnaires were distributed, but 67 responses were received back, thus accounting for a 84% response rate.

Demographics

This section presents the demographic profile of respondents from Ntoroko District Local Government, focusing on gender distribution, age groups, education levels, work experience, employment status, and professional positions. The data provides important context for

understanding the study's participants and their representation across various demographic categories.

Table 1: Demographic Characteristics of Respondents (N=67)

Category	Sub-Category	Frequency	Percentage (%)
Gender	Male	40	59.7
	Female	27	40.3
	Total	***67***	***100***
Age Group	18-24 years	1	1.5
	25-34 years	26	38.8
	35-44 years	29	43.3
	45-54 years	11	16.4
	Total	***67***	***100***
Education Level	Master's Degree	12	17.9
	Bachelor's Degree	32	47.8
	Diploma	20	29.9
	Others	3	4.5
	Total	***67***	***100***
Work Experience	Less than 5 years	29	43.3
	6-10 years	28	41.8
	11-15 years	8	11.9
	Above 15 years	2	3.0
	Total	***67***	***100***
Employment Status	Permanent	54	80.6
	Contract	13	19.4
	Total	***67***	***100***
Office Position	Senior Management	9	13.4
	Head of Section	15	22.4
	Other Positions	43	64.2
	Total	***67***	***100***
Department	Administration	36	53.7
	Procurement	7	10.4
	Accounting & Finance	4	6.0
	Works & Technical Services	13	19.4
	Audit	2	3.0
	Education	5	7.5
	Total	***67***	***100***

Source: Field Data (2024)

The study's respondent demographics reveal a workforce predominantly composed of mid-career professionals (43.3% aged 35-44 years; 38.8% aged 25-34 years) with moderate-to-high education levels (47.8% bachelor's degrees; 29.9% diplomas; 17.9% master's degrees), though limited in long-term experience (43.3% with <5 years; 41.8% with 6-10 years), reflecting Ntoroko District's recent establishment. Gender disparities are evident, with males comprising 59.7% of respondents and disproportionately occupying permanent positions (64.8% male) and senior management roles

(only 3.7% female representation), while females are more prevalent in contract positions (61.5%). Departmental distribution shows a strong administrative focus (53.7% in administration) compared to technical and procurement functions (19.4% works/technical services; 10.4% procurement), suggesting potential capacity gaps in specialized areas critical for infrastructure project implementation. These demographic characteristics provide important context for understanding the operational environment and potential challenges in procurement processes within the district local government.

Descriptive Results

Descriptive statistics were employed to summarize the responses for each of the study variables, including procurement planning (PRJT_PLAN), supplier selection (SPLR_SELC), contract management (CNTR_MGT), implementation cost (IMPL_COST), time schedule (TME_SCHD), and quality value for money (VALQ_MNY). These statistics help in understanding the distribution, central tendency, and dispersion of data collected from 67 valid respondents. The median, mode, mean, standard deviation, were computed for every construct. Table 2 presents the summary of descriptive statistics.

Table 2: Summary of Descriptive Statistics

Variable	N (Valid)	Mean	Median	Mode	Std. Dev.
PRJT_PLAN	67	4.0933	4.1250	4.13	0.49969
SPLR_SELC	67	4.0955	4.3000	4.50	0.66022
CNTR_MGT	67	4.0746	4.2222	4.22	0.41816
IMPL_COST	67	3.8209	4.0000	4.50	0.94429
TME_SCHD	67	3.7201	4.0000	4.00a	0.89350
VALQ_MNY	67	3.9582	4.0000	4.00	0.45996

Source: Field data, SPSS Output (2024).

The descriptive statistics presented in Table 2 provide a comprehensive overview of six critical variables related to procurement processes and infrastructure project implementation. The performed analysis depicts that all constructs (project planning, supplier selection, contract management, implementation cost, time schedule, and value for money) demonstrate generally favorable central tendency measures, with mean values falling between 3.72 to 4.10 on what appears to be a Likert-type scale. Notably, project planning (PRJT_PLAN) shows the highest mean score (4.09) and exhibits characteristics of a normal distribution, as evidenced by the close alignment of its mean (4.09), median (4.13), and mode (4.13), along with a moderate standard deviation (0.50). The variability in responses, as measured by standard deviation, ranges considerably from 0.42 (contract management) to 0.94 (implementation cost), suggesting differing levels of consensus among respondents across these dimensions. Such data distribution behaviour unveils significant insights into the consistency of perceptions across different aspects of procurement and project implementation processes within the study context.

Regression Analysis

Table 3: Mixed Effect Model of Procurement Processes Management and Infrastructure Project Implementation

ANOVA	Source	SS	df	MS	Number of obs	=	67
	Model	14.182	1	14.182	F(1, 66)	=	29.050
	Residual	32.216	66	0.488	Prob > F	=	0.000
	Total	46.398	67	0.693	R-squared	=	0.306
Model	BP chi2(1)	= 0.000	JB chi2(2)	= 2.72	Adj R-squared	=	0.295
diagnostics	Prob > chi2	= 0.956	Prob > chi2	= 0.256	Root MSE	=	0.699
	D W values	1.879	LL =1.583	UL= .641			
FP (Y)		**Coef.**	**Std. Err.**	**T**	**P>t**	**[95% Conf. Interval]**	
Procurement processes management X_2		0.468	0.0875.390		0.000	0.295	0.642
_cons		0.066	0.0860.760		0.449	-0.107	0.238

The regression estimates of the regression model show that Bidder Selection has a significant effect on infrastructure project implementation. The table shows a significant regression coefficient estimate of procurement process management (β =0.468, t=5.390, p-value = 0.000). The P-value of the coefficient estimate is less than 0.05 implying significance at 95% level of confidence. This significant estimate shows that a unit increase in the levels of procurement process management in the Ntoroko district set- up would increase the levels of the infrastructure project implementation.

Discussion of Results

Results of this study findings depict existence of a statistically significant effect between procurement process management and infrastructure project implementation in Ntoroko District, Uganda. The findings offer both convergence and divergence with existing literature on procurement processes and infrastructure project implementation. The observed positive association between contract management (CNTR_MGT) and implementation cost (IMPL_COST) ($r = 0.747$, $p = 0.002$) aligns with prior studies (Meehan & Bryde, 2015; Osei-Kyei et al., 2019), which found that rigorous contract oversight significantly reduces cost overruns in public infrastructure projects. However, the magnitude of this relationship in this study is over and above that reported in similar research in other Sub-Saharan African contexts (e.g., $\beta = 0.468$ vs. $\beta = 0.32$ in Owusu et al., 2020), suggesting that Uganda's decentralized procurement framework may enhance accountability more effectively than centralized systems in neighbouring countries.

Conversely, our findings challenge some established perspectives. For instance, while Ameyaw et al. (2017) found negligible effects of bidder selection (SPLR_SELC) on project outcomes in Kenya, our regression analysis revealed a robust influence ($\beta = 0.616$, $p < 0.001$). This discrepancy could be a consequence of the differences in regulatory enforcement, as Uganda's Public Procurement and Disposal of Public Assets Authority (PPDA) has recently strengthened compliance mechanisms. Additionally, the weaker-than-expected correlation between project planning (PRJT_PLAN) and time performance (TME_SCHD) ($r = 0.741$ vs. $r = 0.81$ in global benchmarks (Flyvbjerg, 2014)) implies that planning alone may be insufficient to mitigate delays

in resource-constrained settings like Ntoroko, where external factors (e.g., weather disruptions, material shortages) play a larger role than in developed economies.

These results extend agency theory by demonstrating that its core principles—particularly the mitigation of information asymmetry through transparent procurement—hold true in Uganda's local government context. However, the theory's assumption of uniform principal-agent dynamics appears incomplete, as our findings in this study portray significant differences in procurement effectiveness across different project phases. This aligns with recent critiques (e.g., Bahuguna & Saini, 2022) calling for context-specific adaptations of agency theory in developing economies. Future studies should examine how hybrid governance models, blending traditional agency controls with community oversight (as proposed by World Bank, 2021), could further optimize procurement outcomes in similar settings.

Theoretical Implications

Even when this study primarily examined procurement processes through the lens of agency theory, the findings offer meaningful theoretical contributions despite its singular focus. The strong correlations between supplier selection (SPLR_SELC) and project outcomes (TME_SCHD, VALQ_MNY) support agency theory's central premise that proper alignment of incentives between principals (government) and agents (contractors) reduces opportunistic behaviour and improves project performance (Eisenhardt, 1989). The significant regression coefficients for procurement management (β=0.468) and bidder selection (β=0.616) further validate agency theory's assertion that structured monitoring mechanisms and transparent selection processes mitigate moral hazard in public contracts. However, the study's exclusive reliance on agency theory represents a limitation, as other existing frameworks like institutional theory or transaction cost economics could have an alternative better explanatory power for observed procurement behaviours.

Conclusion

This study confirms that effective procurement process management particularly in project planning, supplier selection, and contract management significantly enhances infrastructure project implementation in Ntoroko District, Uganda, by improving cost efficiency, timely delivery, and value for money. The findings, grounded in agency theory, confirm that structured procurement practices mitigate principal-agent problems through transparent bidding and contractor oversight. However, the study's narrow theoretical scope and localized focus suggest the imperative for future studies to incorporate additional frameworks (e.g., transaction cost economics) and comparative analyses across regions to strengthen generalizability. Policymakers should prioritize capacity building, digital procurement systems, and anti-corruption measures to optimize procurement efficiency and infrastructure outcomes in Uganda's decentralized governance context.

Limitations and Recommendations

Just like any other research, this study is not free from limitations which deserve acknowledgement. Firstly, the research focused exclusively on Ntoroko District, limiting the findings' generalizability to other geographical areas in Uganda with different socio-economic and institutional contexts. Secondly, the reliance on agency theory alone constrained the analytical framework, neglecting other potentially relevant perspectives such as transaction cost economics or institutional theory that could offer additional insights. Thirdly, the study design (cross-sectional) limit possibility for causal inferences, suggesting a need for longitudinal study for better

understanding of the temporal dynamics of procurement processes. Fourthly, since the study used self-reported data there could be possibility for response biases, but equally also having to mention that absence of qualitative insights limited deeper contextual understanding. In connection to these limitations, we suggest that future researchers expand not only the geographical scope, but also incorporate mixed-methods approaches, and use comparative frameworks across different procurement governance structures to strengthen the validity and applicability of findings. Last but not least, exploring the role of emerging technologies in procurement, such as e-procurement systems, would improve public infrastructure delivery.

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