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Supply Chain Practices and Procurement Performance in Tanzania's Public Procuring Entities: A Case of Tanzania Electric Supply Company Limited

Andrew Emmanuel Mwansile[1], Deus N. Shatta[2]

[1]*Student, Procurement, Logistics and Supply Chain Management Programme, National Institute of Transport, Dar es Salaam, Tanzania*

[2]*Senior Lecturer and Head, Department of Management Sciences, National Institute of Transport Dar es Salaam, Tanzania*

[1]andresandrew1133@gmail.com

[2]deusshatta@gmail.com

[2] http://orcid.org/0000-0003-1852-6070

Abstract *—This study assessed the influence of supply chain practices on procurement performance in Tanzania's public procuring entities, using Tanzania Electric Supply Company Limited (TANESCO) as a case. Guided by the Resource Based View, it examined the effects of risk mitigation, supplier relationship enhancement, and digitalization practices on procurement performance. A descriptive and explanatory cross-sectional design with a quantitative approach was adopted. Structured questionnaires were administered to 70 staff selected through stratified random sampling from procurement and related functions at three TANESCO regional areas in Dar es Salaam, and 64 usable responses were obtained (91.4%). Reliability, descriptive, correlation, and multiple regression analyses were performed. The regression model was significant, F (3, 60) = 36.198, p < .001, and explained 64.2% of the variance in procurement performance. Digitalization had the strongest effect (B = 0.417, p < .001), followed by supplier relationship enhancement (B = 0.298, p = .002) and risk mitigation (B = 0.241, p = .008). The study concludes that the three practices operate as complementary capabilities. It recommends stronger contingency planning, structured supplier management including timely payment, and continued investment in digital procurement systems and staff digital skills.*

Keywords — *supply chain practices, procurement performance, risk mitigation, supplier relationship enhancement, digitalization*

I. INTRODUCTION

A. Background

Public procurement determines how promptly and economically public institutions obtain the goods, works, and services needed to deliver public programmes. In the public sector, supply chain practices, which integrate procurement, logistics, supplier coordination, risk management, and digital systems, are increasingly associated with transparency, accountability, and value for money [1]. Procurement performance reflects the extent to which procurement activities achieve their intended objectives in terms of cost efficiency, timely delivery, quality, regulatory compliance, and transparency.

Tanzania has pursued reforms to improve the efficiency, transparency, and accountability of public procurement, which is overseen by the Public Procurement Regulatory Authority (PPRA). A major reform is the National e-Procurement System of Tanzania (NeST), which became operational on 1 July 2023 to support the digitalization of public procurement [2]. The availability of an electronic platform, however, does not by itself establish how digitalization contributes to procurement performance in individual procuring entities.

Three practices are particularly relevant. First, risk mitigation enables organizations to identify, assess, monitor, and respond to risks that may disrupt procurement, and procurement risk management strategies have been associated with the performance of Tanzanian public procuring entities [3]. Second, procurement performance depends on how well buyers coordinate with suppliers; for example, supplier monitoring was positively and significantly related to procurement performance among 179 Tanzanian public procuring organizations [4]. Third, digitalization supports electronic transactions, information exchange, and monitoring, and has been linked to supply chain capabilities and firm performance [5], [6].

Tanzania Electric Supply Company Limited (TANESCO) is a government-owned utility operating across electricity generation, transmission, and distribution. Its operations depend on the timely acquisition of equipment, materials, works, and services, so procurement weaknesses can affect project implementation, maintenance, and the continuity of electricity services. TANESCO is therefore a relevant setting for examining how supply chain practices relate to procurement performance.

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B. Problem Statement and Objectives

Existing studies address these practices separately and in different settings: procurement risk management in higher learning institutions [3], supplier monitoring and selection across public organizations [4], [7], and technology usage in public procurement [8]. They provide useful evidence on individual dimensions but leave a gap regarding the combined relationship of risk mitigation, supplier relationship enhancement, and digitalization with procurement performance in a large public utility such as TANESCO.

The general objective was to assess the influence of supply chain practices on procurement performance at TANESCO. The specific objectives were to determine the influence of risk mitigation practices, to examine the influence of supplier relationship enhancement practices, and to assess the influence of digitalization practices on procurement performance. The study offers organization-specific evidence from the electricity sector of a developing economy that is relevant to procurement managers, regulators such as PPRA, and researchers.

C. Theoretical Foundation

The study is guided by the Resource Based View (RBV), which holds that organizational resources that are valuable, rare, difficult to imitate, and non-substitutable can sustain a competitive advantage [9]. The RBV has been widely applied in operations and supply chain research [10], and its extension to the resource- and knowledge-based view stresses how resources and knowledge are developed and combined to create value [11]. Possessing resources does not by itself improve performance; organizations must deploy them through capabilities. In this study the three practices are treated as capabilities: risk mitigation as an organizational capability for managing procurement uncertainty, supplier relationship enhancement as a relational capability for coordinating with suppliers, and digitalization as a technological and information capability for managing procurement processes.

D. Literature Review and Hypotheses

1) ***Risk Mitigation Practices:*** Risk mitigation comprises the measures an organization adopts to reduce the likelihood or consequences of identified risks, such as supplier financial assessment, risk identification, contingency planning, and contract monitoring. Reviews of supply chain risk management highlight structured risk assessment, supplier risk evaluation, contingency planning, and diversification of supply sources as central mitigation strategies [12], and approaches that structure the management of disruption risk have been linked to resilience and continuity of supply [13]. In Tanzania, procurement risk management strategies were found to be related to the performance of public procuring entities, although that study focused on higher learning institutions in Dar es Salaam [3]. Hence, **H_1:** risk mitigation practices significantly influence procurement performance.

2) ***Supplier Relationship Enhancement Practices:*** These practices cover communication, collaboration, information sharing, performance evaluation, and the development of trust and partnership between buyer and supplier. Integration with suppliers has been examined as a driver of operational and business performance [14]. In Tanzania, supplier monitoring had a positive and significant relationship with procurement performance, particularly cost reduction, lead times, and buyer satisfaction [4], and supplier selection and monitoring were associated with procurement efficiency from a cost-reduction perspective [7]. Both studies, however, concentrate on supplier monitoring and selection rather than the wider set of relationship practices examined here. Hence, **H_2:** supplier relationship enhancement practices significantly influence procurement performance.

3) ***Digitalization Practices:*** Digitalization is the adoption and integration of digital technologies to automate, monitor, and optimize procurement processes, including electronic procurement systems, electronic payment integration, digital records, and timely access to procurement information. Digitalization has been shown to support supply chain capabilities and viability [5] and to be positively related to firm performance [6]. In Tanzanian public procurement, technology usage was significantly related to procurement performance, with regulatory pressure moderating the relationship [8]. Hence, **H_3:** digitalization practices significantly influence procurement performance.

E. Conceptual Framework

Fig. 1 presents the conceptual framework. It posits a direct positive relationship between each supply chain practice and procurement performance, which is measured through procurement cost efficiency, cycle time, transparency and compliance, and quality and value for money.

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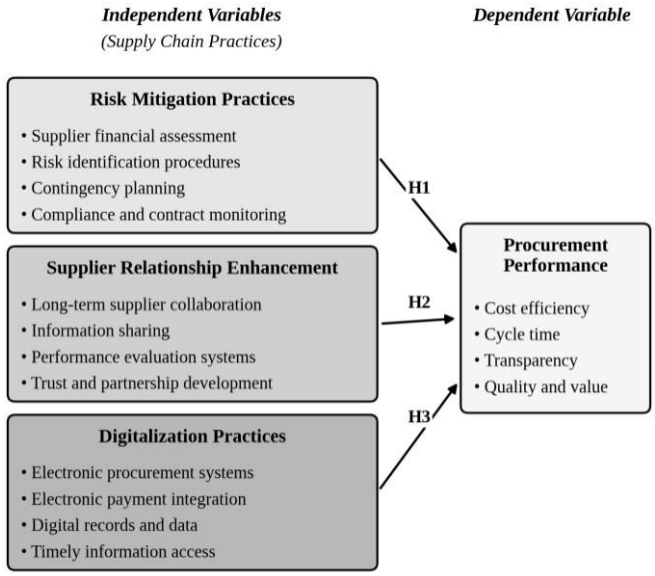

Fig. 1 Conceptual Framework of the Study

II. METHOD

A. Research Design

The study adopted a positivist philosophy and a deductive, quantitative approach [15]. A descriptive and explanatory cross-sectional survey design was used: the descriptive component characterized the current state of the three practices and of procurement performance at TANESCO, and the explanatory component tested the effect of the practices on procurement performance.

B. Study Area, Population, and Sample

The study was conducted at TANESCO in Dar es Salaam, with data collected from three regional areas: Kinondoni North and South, Temeke, and Ubungo. The target population comprised 85 employees directly engaged in procurement and supply chain activities across six functional groups (Table I). The sample size was determined with Yamane's formula, $n = N / [1 + N(e)^2]$, where $N = 85$ and $e = 0.05$, which gives $n = 85 / 1.2125 = 70.1 \approx 70$. The sample was allocated proportionately to the six strata (rounded to total 70), and simple random sampling was used within each stratum so that every member had an equal chance of selection.

TABLE I
TARGET POPULATION AND SAMPLE BY STRATUM

Stratum	Population	Sample
Procurement officers	17	14
Supply chain officers	16	13
Logistics and warehouse officers	15	12
Finance department	12	10
IT department	15	12
Internal audit department	10	9
Total	**85**	**70**

Source: Field data (2026).

C. Data Collection and Instrument

Primary data were collected with a structured questionnaire using five-point Likert items (1 = strongly disagree, 5 = strongly agree). Each construct was measured with four items: risk mitigation (risk identification, supplier evaluation, alternative sourcing, contract monitoring), supplier relationship enhancement (communication, performance evaluation, collaboration, payment timeliness), digitalization (NeST and transparency, processing time, data accessibility, digital skills), and procurement performance (timely completion, cost control, supplier delivery, quality). Secondary data from TANESCO and PPRA documents and the literature complemented the survey data.

D. Validity and Reliability

Content validity was ensured by aligning the items with the objectives and the literature and through review by academics and procurement practitioners, including the research supervisor. Construct validity was examined through factor analysis [16], in which the items loaded on their intended constructs. Internal consistency was assessed with Cronbach's alpha, using 0.70 as the acceptance threshold.

E. Data Analysis

Data were coded and analyzed with IBM SPSS Statistics version 27. Frequencies, percentages, means, and standard deviations summarized respondent characteristics and the study constructs. Mean scores were interpreted as follows: 1.00–1.80 strongly disagree, 1.81–2.60 disagree, 2.61–3.40 neutral, 3.41–4.20 agree, and 4.21–5.00 strongly agree. Pearson correlation examined the direction and strength of bivariate relationships, and multiple linear regression tested the hypotheses using the model in (1), where PP is procurement performance, RM risk mitigation, SR supplier relationship enhancement, and DG digitalization. All tests used a 5% significance level.

$$PP = B_0 + B_1RM + B_2SR + B_3DG + \varepsilon \quad (1)$$

F. Ethical Considerations

Participation was voluntary and based on informed consent, and respondents could withdraw at any time. The questionnaires collected no names or other personal identifiers, and the data were used solely for academic purposes. Permission was obtained from TANESCO management and the academic institution before data collection.

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III. Result and Discussion

A. Response Rate and Respondent Profile

Of the 70 questionnaires distributed, 64 were completed and returned, a response rate of 91.4%, which is adequate for statistical analysis. Table II summarizes the respondent profile. Most respondents were male (70.3%) and aged 26–45 years (71.9%); 87.5% held a bachelor's or master's degree, and 75.0% had six or more years of work experience. Procurement (23.4%), supply chain (20.3%), ICT (17.2%), finance (15.6%), logistics and warehouse (14.1%), and internal audit (9.4%) staff were represented, so respondents were well placed to give informed views on procurement practices.

Table II
Respondent Profile (N = 64)

Characteristic	*n*	percentage
Gender		
Male	45	70.3
Female	19	29.7
Age (years)		
Below 25	5	7.8
26–35	22	34.4
36–45	24	37.5
46–55	10	15.6
Above 55	3	4.7
Education		
Diploma	8	12.5
Bachelor's degree	39	60.9
Master's degree	17	26.6
Work experience (years)		
Below 5	16	25.0
6–10	27	42.2
Above 10	21	32.8

Source: Field data (2026).

B. Reliability and Descriptive Statistics

Cronbach's alpha exceeded 0.70 for every construct (Table III), ranging from 0.861 to 0.912, which indicates good internal consistency. Respondents agreed that TANESCO applies risk mitigation (M = 3.58), supplier relationship enhancement (M = 3.63), and digitalization practices (M = 3.71), and they rated procurement performance positively (M = 3.69).

Table III
Reliability and Descriptive Statistics of Study Variables

Variable	Items	α	*M*	*SD*
Risk mitigation	4	.861	3.58	0.92
Supplier relationship enhancement	4	.884	3.63	0.89
Digitalization	4	.912	3.71	0.85
Procurement performance	4	.895	3.69	0.90

Note: M = mean on a five-point scale; SD = standard deviation; α = Cronbach's alpha. Source: Field data (2026).

At item level, supplier evaluation before contract award scored highest within risk mitigation (M = 3.74), whereas alternative sourcing plans scored lowest (M = 3.41), which points to weaker contingency planning. Within supplier relationships, collaboration scored highest (M = 3.82), while the item on delayed payments affecting supplier delivery recorded the lowest mean (M = 3.25) and the widest dispersion (SD = 1.06), indicating divergent views on payment discipline. In digitalization, the item stating that NeST improved transparency scored highest (M = 3.91) and the item on limited digital skills lowest (M = 3.40). Within procurement performance, quality standards (M = 3.84) and cost control (M = 3.73) outscored timely completion (M = 3.58).

C. Correlation Analysis

Table IV shows that all three practices were positively and significantly correlated with procurement performance. Digitalization had the strongest association (r = .734), followed by supplier relationship enhancement (r = .641) and risk mitigation (r = .587). The practices were also positively intercorrelated (r = .612 to .694), which is consistent with their complementary roles.

Table IV
Pearson Correlation Matrix

Variable	1	2	3	4
1. Risk mitigation	1			
2. Supplier relationship enhancement	.612	1		
3. Digitalization	.655	.694	1	
4. Procurement performance	.587	.641	.734	1

Note: All correlations are significant at the 0.01 level (two-tailed). Source: Field data (2026).

D. Regression Analysis and Hypothesis Testing

The regression model was statistically significant, $F(3, 60) = 36.198$, $p < .001$. The multiple correlation was $R = .801$, and the three practices jointly explained 64.2% of the variance in procurement performance (R^2 = .642; adjusted R^2 = .624; standard error of the estimate = 0.512), leaving 35.8% attributable to factors outside the model. Table V presents the coefficients. All three practices had positive and significant effects, so H_1, H_2, and H_3 were supported. Because all constructs were measured on the same five-point scale, the

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unstandardized coefficients are broadly comparable: digitalization had the largest effect, followed by supplier relationship enhancement and risk mitigation.

TABLE V
MULTIPLE REGRESSION COEFFICIENTS

Predictor	*B*	*SE*	*t*	*p*
(Constant)	0.821	0.344	2.387	.020
Risk mitigation	0.241	0.088	2.739	.008
Supplier relationship enhancement	0.298	0.094	3.170	.002
Digitalization	0.417	0.091	4.582	<.001

Note: Dependent variable = procurement performance; *B* = unstandardized coefficient; *SE* = standard error. Source: Field data (2026).

E. Risk Mitigation and Procurement Performance

Risk mitigation had a positive and significant effect on procurement performance ($B = 0.241$, $p = .008$), so stronger procurement risk management is associated with better procurement outcomes. This agrees with evidence that procurement risk management strategies relate to the performance of Tanzanian public procuring entities [3] and that structured management of disruption risk supports continuity of supply [13]. The weaker assessment of contingency planning and alternative sourcing is a practical gap: supplier evaluation can reduce the chance of selecting an unsuitable supplier, but it cannot remove disruptions that arise after award. From an RBV perspective, the value of risk mitigation lies not in the existence of procedures but in the knowledge, routines, and monitoring through which they are applied.

F. Supplier Relationship Enhancement and Procurement Performance

Supplier relationship enhancement also had a positive and significant effect ($B = 0.298$, $p = .002$). This is consistent with studies showing that supplier monitoring and selection improve procurement outcomes in Tanzanian public organizations [4], [7] and with the performance relevance of supplier integration [14]. Collaboration, regular communication, and performance evaluation support coordination and delivery reliability. The divergent views on delayed payments suggest that payment discipline needs attention, because frequent communication may not sustain supplier trust if financial obligations are not met on time. In RBV terms, supplier relationships are relational capabilities that give TANESCO access to supplier expertise and responsiveness.

G. Digitalization and Procurement Performance

Digitalization was the strongest predictor ($B = 0.417$, $p < .001$) and had the strongest correlation with procurement performance ($r = .734$), in line with evidence on technology usage in Tanzanian public procurement [8] and on digitalization and performance [5], [6]. Respondents credited NeST with improving transparency ($M = 3.91$) and digital systems with reducing processing time ($M = 3.84$). The benefits are not automatic, however: the item on limited digital skills reducing efficiency scored 3.40, which indicates that training, reliable ICT infrastructure, and system integration must accompany the platform. Technology itself is replicable; the stronger capability lies in how effectively it is integrated into procurement processes and how the resulting information is used.

H. Integrated Discussion

Taken together, the three practices explained 64.2% of the variance in procurement performance, so performance at TANESCO is shaped by technological, relational, and risk management capabilities acting jointly. Digitalization improves information flow, traceability, and speed; supplier relationship enhancement improves coordination and supplier responsiveness; and risk mitigation strengthens preparedness and continuity. A weakness in one area can reduce the value created by the others, which supports an integrated rather than isolated approach. These results support the RBV proposition that performance depends on how valuable resources are developed and deployed as capabilities, and in the public procurement context that value appears in transparency, compliance, delivery reliability, and value for money as well as cost efficiency.

IV. CONCLUSIONS

A. Conclusions

The study concludes that risk mitigation, supplier relationship enhancement, and digitalization practices each positively and significantly influence procurement performance at TANESCO, and that together they explain 64.2% of its variance. Digitalization is the most influential practice. Procurement performance is strengthened when the three operate as complementary capabilities, which supports the RBV logic adopted. The benefits are conditional, since contingency planning, payment discipline, and staff digital skills emerged as areas where capability is not yet fully developed.

B. Recommendations

*1) **Risk Management and Contingency Planning:*** TANESCO should embed risk assessment in procurement planning and contract management, maintain risk registers for strategic and high-value procurements, and strengthen contingency planning and alternative sourcing, continuing risk assessment through contract execution.

*2) **Supplier Relationship Management:*** TANESCO should link supplier communication, performance evaluation, feedback, and contract review, and assess strategic suppliers

against indicators such as delivery reliability, quality, responsiveness, and compliance. Coordination among procurement, contract management, finance, and user departments should reduce avoidable payment delays.

*3) **Digitalization and Capacity Development:*** TANESCO should deepen the use of NeST and other digital tools beyond transaction processing, including timely information access, digital records, electronic approvals, and management reporting, and integrate procurement data with financial, stores, and contract systems where feasible. Continuous, practical training in risk management, supplier management, data use, and digital competencies should accompany these investments.

*4) **Policy and Regulation:*** Regulators such as PPRA should continue promoting systems that combine compliance with measurable performance improvement, and encourage procuring entities to integrate risk, supplier performance, and digital procurement data into management decisions.

C. Contributions and Limitations

The study provides evidence from a Tanzanian public utility on the relative influence of three supply chain practices within a single model and supports the application of the RBV to public procurement. Its limitations are the single-case design, which limits generalization to other public procuring entities; reliance on self-reported perceptions; the cross-sectional design; and the exclusion of factors such as regulatory constraints, political influence, and macroeconomic conditions.

D. Directions for Future Research

Future studies should cover several public procuring entities and sectors, use longitudinal or mixed-method designs, and include organizational culture, leadership capability, regulatory pressure, and staff competence. They could also examine whether digital capability mediates or strengthens the effect of other supply chain practices on procurement performance.

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