Effects of supplier selection and supplier monitoring on public procurement efficiency in Tanzania: a cost-reduction perspective

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Abstract

Purpose – This study aims to examine the role of supplier selection and supplier monitoring in public procurement efficiency in terms of cost reduction in Tanzania.

Design/methodology/approach — A structured questionnaire was used to collect cross-sectional survey data from 179 public procuring entities in Tanzania. Structural equation modelling (SEM) was used to analyse the collected data.

Findings – The findings revealed that supplier selection and supplier monitoring are positive and significant predictors of public procurement efficiency in terms of cost reduction.

Research limitations/implications – This study was conducted in Tanzanian public procurement contexts, so generalisations should be made with caution. Also, this study collected cross-sectional data; other studies may consider longitudinal data.

Practical implications – This study provides procurement practitioners with insights into selecting the proper suppliers and embracing supplier monitoring to achieve procurement efficiency in terms of cost reduction.

Originality/value – This study examines the effects of supplier selection and supplier monitoring on procurement cost reduction as a measure of public procurement efficiency in the Tanzanian context. Consequently, it provides empirical evidence of supplier management practices in the public procurement context.

Keywords Supplier selection, Supplier monitoring, Procurement efficiency, Public procurement, Cost reduction, Tanzania

Paper type Research paper

Introduction

Public procurement is the function that the government conducts through its public organisations by acquiring items necessary to enhance public organisations' operations

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Vilakshan – XIMB Journal of Management Emerald Publishing Limited 0973-1954 DOI 10.1108/XJM-04-2022-0077 (Changalima et al., 2022). Therefore, the acquired goods, works and services facilitate the government's primary objectives and provide development for their responsible citizens. According to the Organisation for Economic Co-operation and Development (OECD) (2019), public procurement accounts for approximately 29.1% of general government expenditures in most OECD countries. Also, most governments worldwide spend about US\$9.5 tn on public procurement activities (The World Bank, 2018) and more than 70% of total government expenditures in Tanzania (Changalima et al., 2021b). Furthermore, the function enhances private enterprises, which are regarded as suppliers, service providers and contractors, by accessing potential markets, as most of them participate in public procurement opportunities.

In this aspect, it is necessary to analyse procurement efficiency to ensure that these expenditures are well managed. Moreover, efficient public procurement speeds up the delivery of public goods and services and hence enables governments to fulfil their public commitments (Stritch et al., 2020). Studies on public procurement efficiency are prevalent in both developed and developing countries. For instance, Milosavljević et al. (2016) showed that efficiency differs among European member states regardless of the overall expenditure of about one-fifth of their gross domestic product. Also, a lack of competition, unethical behaviour, bureaucracy and excessive reliance on the lowest price criterion for selecting winning bids all contribute to inefficiencies in the Slovak public procurement process (Grega et al., 2019). Similarly, inefficiencies in the procurement process in Tanzania have been observed (Changalima and Ismail, 2019). This resulted in deliberate efforts through public procurement reforms, resulting in the establishment and changing of a legal framework and institutional arrangement governing public procurement activities.

Literature shows that public procurement impacts suppliers' operations in the form of private enterprises (Dal Molin and Previtali, 2019). On the other hand, suppliers are also important in supplying the requested goods and delivering services to buyers (Changalima et al., 2022). In this case, the interaction between supplier companies and public procurement is important (Dal Molin and Previtali, 2019). Therefore, efforts should be made for effective supplier management in buying organisations. Supplier selection is the first notable activity for managing suppliers and remains to be one of the most significant decision-making problems (Nikou and Moschuris, 2016; Prior et al., 2022; Taherdoost and Brard, 2019). It is considered to be one of the most important decisions that public buyers make is selecting potential suppliers with whom they will do business. Supplier monitoring is also considered a necessary activity for buying organisations (Maestrini et al., 2018; Shafiq et al., 2022), as monitoring can be used to mitigate the risk of delayed delivery (Dixit, 2022). Thus, the current study examines the role of supplier selection and monitoring in Tanzanian public procurement efficiency. To accomplish this objective, we address the following questions:

- RQ1. Does supplier selection influence the public procurement efficiency in Tanzania?
- RQ2. Does supplier monitoring influence the public procurement efficiency in Tanzania?

Although the first research question has been addressed in previous studies, the current study's context differs from previous studies. For example, research has focused on supplier selection and business performance (van der Westhuizen and Ntshingila, 2020) and restaurant performance (Cho *et al.*, 2021), whereas our study focuses on public procuring organisations. Furthermore, in Nigeria, results from Essien *et al.* (2019) show that supplier selection decisions made by public sector organisations would not have a significant impact

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on their performance in terms of meeting the goals established for such decisions, which calls for further empirical investigation. The second research question has also been addressed in manufacturing firms and other industries, with contradictory results (Akamp and Müller, 2013; Maestrini *et al.*, 2018; Shafiq *et al.*, 2022; Yang and Zhang, 2017). There is little evidence on the role of supplier monitoring in improving procurement efficiency in the public sector. Our research is based on data collected from a public procurement context, so the findings will likely provide more insight into the effects of supplier selection and supplier monitoring on public procurement efficiency in terms of cost reduction in Tanzania.

The rest of this paper is divided into five sections. The following section is a review of the literature. The methodology is then presented in the following section, and the results and discussion are presented in the fourth section. The fifth section contains the conclusions, and the final section discusses the study's contributions and limitations.

Literature review and hypotheses development

Rational choice theory

The rational choice theory relies on the idea that people usually choose the course of action that they believe will result in the best overall outcome when confronted with a difficult situation or choosing between possible courses of action (Elster, 1989). It is believed that the behavioural revolution in American political science, which took place in the 1950s and 1960s and objectively investigated human behaviour, was responsible for the development of rational choice (Ogu, 2013). The rational choice perspective relates to human behaviour (Bouffard and Wolf, 2007), and an individual's behaviour is believed to relate to psychological actions. It is frequently interpreted in psychology as instructing agents to maximise their overall preferences (Satz and Ferejohn, 1994). For that reason, the rational theory centres on the preferences that individuals choose given the alternatives when making decisions. It should be noted that the environmental constraints placed on the agents, rather than their personalities, are responsible for their behaviour (Satz and Ferejohn, 1994). It is relevant and very popular in modelling organisational buying decisions (Essien et al., 2019).

Individuals involved in organisational functions are making decisions in relation to the day-to-day activities in their respective organisations. Supplier selection is one of the most important and risky decisions that buying organisations make during the purchasing process. Accordingly, supplier selection decisions are characterised by rationality (Igarashi et al., 2017; Kaufmann et al., 2012). Considering the fact that rational action is concerned with outcomes (Elster, 1989), our study suggests that the perceived benefits that the selected suppliers will provide buyers with the required goods and services depend on the good choices made by procurement professionals to choose the best suppliers and effective monitoring. When public buyers decide to select and monitor potential suppliers, they are constrained by the legal and regulatory framework governing procurement procedures. The rational choice theory is expected to offer a theoretical understanding of why and how procurement practitioners choose suppliers when acquiring goods, services and works. Thus, procurement functions can become more efficient by making decisions about which suppliers to choose.

Supplier selection

Supplier selection is a vital activity in procurement and supply chain management. This is because successful supplier selection can have a great effect on organisation performance (Taherdoost and Brard, 2019). There is a strand of literature that links cost reduction as a measure of performance (Changalima and Ismail, 2019; Chomchaiya and Esichaikul, 2016;

Wachiuri, 2018). The study's premise is on the fact that supplier selection may be necessary for procurement cost reduction. Efficiency has been associated with the outcome of cost reduction and can be used as a procurement performance measure (Kakwezi and Nyeko, 2019; Kumar and Ganguly, 2021). Supplier selection criteria are most commonly used when buying organisations decide to engage potential suppliers (Krop and Iravo, 2016; Meena *et al.*, 2022), and these suppliers play a significant role in enhancing procurement performance (Changalima *et al.*, 2022). Thus, studying the role of supplier selection in the public procurement context is necessary. Although there is no universally accepted criterion for supplier selection, it should be used in accordance with the situation (Taherdoost and Brard, 2019). Also, literature provides a methodological guideline for managers to select appropriate suppliers. For the most decision-making problems that must be handled in procurement and supply chain management (Aouadni *et al.*, 2019; Taherdoost and Brard, 2019), and the role of supplier selection in procurement activities, we propose the following:

H1. Supplier selection significantly affects public procurement cost reduction.

Supplier monitoring

Supplier monitoring allows companies to keep track of their current suppliers' performance while also encouraging continuous improvement (Chin et al., 2006; Subramaniam et al., 2020). Supplier monitoring is associated with the function of keeping track of the available suppliers to ensure that they are potentially meeting the needs of buying organisations (Maestrini et al., 2018). Available literature has linked the role of supplier monitoring with performance in different streams of literature. Some have found that supplier monitoring has no effect on performance (Subramaniam et al., 2020; Yang and Zhang, 2017), whereas monitoring has been found to positively affect performance in other ways (Maestrini et al., 2018). Therefore, supplier monitoring is an important function in organisations and is linked to performance. There are studies that have used cost reduction when measuring procurement performance (Chomchaiya and Esichaikul, 2016; Wachiuri, 2018). Similarly, procurement operational efficiency is an organisation's ability to ensure the most cost-effective way of delivering goods and services (Kakwezi and Nyeko, 2019). Our current study centres on public procurement efficiency through cost reduction. Then, we propose the following:

H2. Supplier monitoring significantly affects public procurement cost reduction.

Methodology

Study area, research approach and design

This study was conducted in Tanzania in five regions: Arusha, Dar es Salaam, Dodoma, Mbeya and Tanga. The study regions were chosen based on the volume of procurement and the number of entities with poor and good procurement outcomes, as reported in audit reports (Public Procurement Regulatory Authority (PPRA), 2020, 2021). The involved regions have a total of 336 public procuring entities, which are governed by the Public Procurement Act (PPA) and its regulations (Mwagike and Changalima, 2022). In Tanzania, the PPA provides a guiding framework for procurement activities in public entities that receive government funds. It specifies the procedures for selecting and monitoring suppliers in public procurement endeavours. This study adopted a quantitative research approach, as the focus of the study was to test the cause-and-effect relationships. A cross-sectional

research design was used in which data was only collected once. This design was appropriate, as the objective of the study is not to trace changes over certain periods. Instead, the design enables the researcher to capture a snapshot of the variables under study.

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Sample and data collection procedures

A questionnaire survey tool was used to collect data from heads of procurement departments or their representatives from surveyed public procuring entities in Tanzania. The full-scale data collection was conducted between October 2021 and February 2022 for 183 entities located in five surveyed regions. Therefore, self-report questionnaires were distributed to 183 public procuring entities, and only 179 were returned and included in the analysis. This equates to a 97.81% response rate.

Measurements, reliability and validity

Variables under this study include supplier selection, supplier monitoring and procurement cost reduction. The design of the questionnaire depended on the measurement items from previous studies whereby the variable supplier selection was measured through items adapted from Akamp and Müller (2013) and Nyaberi (2019). Supplier monitoring was measured through measurement items adapted from Maestrini *et al.* (2018). In this study, the public procurement efficiency was measured in terms of cost reduction from adapted measurement items as used by Patrucco *et al.* (2021) and Wachiuri (2018).

Results in Table 1 show that all values of Cronbach alpha (α) are greater than 0.7, which is an acceptable value for internal consistency reliability. Similarly, the values of composite reliability are greater than 0.7, which is also acceptable, as recommended values should be greater than 0.7 (Tavakol and Dennick, 2011). Convergent validity was ensured through assessing the value of average variance extracted (AVE). AVE values ranging from 0.5 and above are considered to be acceptable. Discriminant validity was achieved, as the square root of AVE was greater than the value of intercorrelation between the variables and other variables (Fornell and Larcker, 1981).

Data analysis

SEM was used to analyse the collected data. It is considered the best multivariate statistical model for analysing latent variables (Hooper *et al.*, 2008). It is thought to be a good multivariate statistical model for studies that have multiple constructs, each of which is defined or measured by a set of measurement items.

Common method variance

We used the Harman single-factor test to determine if there was a common method bias. Unrotated factor analysis was conducted to determine if the majority of the variance could

Variables	α	CR	AVE	MSV	MaxR(H)	ASV	Supplier selection	Supplier monitoring	Cost reduction
Supplier selection	0.871	0.872	0.631	0.154	0.875	0.139	0.794		
Supplier monitoring	0.941	0.942	0.845	0.246	0.949	0.200	0.392	0.919	
Cost reduction	0.908	0.909	0.770	0.246	0.927	0.185	0.353	0.496	0.877
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Note: Italicized values represent the square root of AVE

Table 1. Reliability and validity

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be explained by a single factor. The results indicated that approximately 37.68% of the variance can be explained by a single factor. Because the value was less than 50%, common method variance was not a concern (Podsakoff *et al.*, 2003).

Results and discussion

Confirmatory factor analysis

The discriminability of variables was determined by confirmatory factor analysis (CFA) and measurement model properties (Tahiry and Ekmekcioglu, 2022). Results show that the model fit indices for CFA are goodness-of-fit index = 0.955, adjusted goodness-of-fit index = 0.923, normed fit index = 0.967, relative fit index = 0.953, incremental fit index = 0.991, Tucker-Lewis index = 0.987 and comparative fit index = 0.991. The value of $\chi^2/df = 1.369$ and root mean square error of approximation = 0.046, which are within the acceptable thresholds (Hooper *et al.*, 2008).

Structural model and hypothesis testing

The model fit indices for the structural model are presented in Table 2 and are within the recommended range (Hooper *et al.*, 2008). So, the results validate the proposed structural model. Then we performed a path analysis to see how supplier selection and monitoring affect cost reduction.

Supplier selection and public procurement cost reduction

To answer RQ1, the study developed H1, and the findings presented in Table 2 support H1 (p=0.009 and $\beta=0.272$). These results imply that a unit improvement in supplier selection results in a cost reduction by 27.2%. Therefore, supplier selection is a positive and significant predictor of cost reduction, and hence, it is a necessary tool to ensure public procurement efficiency. The plausible reason for the relationship rests on the fact that buying organisations are more likely to incur costs when they select poor suppliers. For example, costs associated with re-evaluation of suppliers may prevail when supplier selection is not effectively done. Also, supplier selection enables buying organisations to be aware of current prices through market analysis. This will allow purchasing organisations to reduce procurement costs by purchasing goods at reasonable market prices. These results are in line with those of Krop and Iravo (2016). Their studies established that supplier selection is related to procurement performance. Also, Hosseini *et al.* (2022) emphasised the role of supplier selection in enhancing supplier availabilities and reducing uncertainties that are linked to increased costs.

Supplier monitoring and public procurement cost reduction

As it was hypothesised (H2) for RQ2, the results indicate that supplier monitoring has a significant impact on cost reduction (p < 0.001 and $\beta = 0.373$). The results imply that

Regressed variabl	es		Estimate	S.E.	C.R.	þ
Cost reduction	←	Supplier selection	0.272	0.104	2.615	0.009
Cost reduction	←	Supplier monitoring	0.373	0.062	5.988	

Table 2.Regression weights for the study variables

Notes: Model fit indices: GFI = 0.933, NFI = 0.948; RFI = 0.930; IFI = 0.973; TLI = 0.963 and CFI 0.973; $\chi^2/df = 2.064$; RMSEA = 0.077

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supplier monitoring is a positive and important predictor of procurement cost reduction and hence determines public procurement efficiency. In this aspect, the study establishes that supplier monitoring influences public procurement efficiency in terms of cost reduction. The plausible explanation for this is the fact that supplier monitoring enables organisations to identify and control costly suppliers. The supplier costs pertain to the expenses incurred by purchasing organisations when purchasing products from available suppliers. Thus, through supplier monitoring, buying organisations are able to enhance procurement efficiency by controlling procurement costs. These findings are supported by Maestrini *et al.* (2018) who established a significant relationship between supplier monitoring and performance. Our study suggests that monitoring reduces procurement costs. This is because monitoring identifies anomalies in supplier engagements. Although the need to correct these anomalies may result in more costs, if rectified earlier, buying organisations are more likely to enhance cost reduction in the long run.

Conclusions

This study analysed the role of supplier selection and supplier monitoring in public procurement efficiency through cost reduction. Focusing on the research questions and hypothesised relationships, the study findings lend the concluding remark that supplier selection and supplier monitoring significantly play a role in cost reduction as a measure of public procurement efficiency in Tanzania. Literature shows that an efficient procurement process can improve the quality of services provided to citizens (Patrucco *et al.*, 2021). Therefore, this current study focuses on cost reduction as an indicator of public procurement efficiency. Findings from this study suggest that procurement practitioners are more likely to keep public procurement costs down and achieve procurement efficiency if they do a good job of selecting and monitoring the engaged suppliers.

Contributions and limitations of the study

Theoretical contributions

Our findings add to the body of knowledge currently available on public procurement efficiency through cost reduction. Despite the fact that the role of suppliers in public procurement has been emphasised in the literature (Changalima *et al.*, 2021a; Krop and Iravo, 2016), the contribution of supplier selection and supplier monitoring to procurement cost reduction in the Tanzanian public sector has remained relatively unexplored. Therefore, by concluding that supplier selection and monitoring contribute positively to procurement cost reduction in the public sector, our study contributes to developing a new perspective on how to conceptualise public procurement efficiency from cost reduction. As supplier selection is among the important decisions in purchasing and supply chain management (Essien *et al.*, 2019; Olanrewaju *et al.*, 2020; Taherdoost and Brard, 2019), the current study then supports the rational choice theory regarding the important decision-making problems in procurement and supply chain management contexts. Finally, Akamp and Müller (2013) and Yang and Zhang (2017) examined supplier selection and supplier monitoring as supplier management practices. By focusing on these practices, this study adds to the discussion about supplier management and public procurement in general.

Practical contributions

This study has practical implications for procurement practitioners in the public sector. It provides insights for decisions about supplier selection that can be made more effective if the circumstances under which the decisions are made are considered. Procurement practitioners can use our findings because the public procurement function is highly

dependent on the decision-making process. Thus, before engaging suppliers, it is critical to consider the selection criteria and any other factors that may influence the decision. By doing this, organisations can make sure that the criteria and other factors that influence supplier selection decisions are thoroughly thought through, which leads to the selection of suppliers who can do business with the purchasing entities and lessens the chance of anomalies during monitoring.

The literature unequivocally identifies dominant performance factors in the supplier selection process, including quality, productivity, technological capabilities and human resource management, among others (Haeri and Rezaei, 2019; Parthiban *et al.*, 2012). As a result, the study emphasises the importance of using proper selection criteria when looking for reliable suppliers with whom to do business. This can be accomplished with considerable effort in determining the quality of suppliers in terms of the required requirements. Managerial efforts, such as encouraging training for procurement practitioners involved in supplier selection and evaluation, may play a role in improving procurement efficiency by lowering costs. This can be enhanced further through supplier monitoring, which includes tracking major suppliers' delivery schedules, potential suppliers' timeliness and their costs in relation to what they offer to public procuring entities.

Limitations and suggestions for future studies

The scope of this study is limited by the circumstances in which it was carried out. This study concentrated primarily on public procuring entities in Tanzania, governed and regulated by the country's legal procurement framework. Thus, the results should be generalised with caution because each country has a unique procurement structure and regulatory framework that governs public procurement endeavours. In addition, other measures of public procurement efficiency can also be taken into consideration, as the current study concentrated primarily on procurement cost reduction.

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