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## Article

# Supplier development and public procurement performance: Does contract management difficulty matter?

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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Supplier development and public procurement performance: Does contract management difficulty matter?

Ismail Abdi Changalima<sup>1\*</sup>, Alban Dismas Mchopa<sup>2</sup> and Ismail Juma Ismail<sup>1</sup>

**Abstract:** This paper investigates the relationship between supplier development and procurement performance in the public sector. Furthermore, the paper examines the moderating role of contract management difficulty on the relationship between supplier development and procurement performance. Using cross-sectional data collected from 179 public procuring entities, the main findings of the study are two-fold. Firstly, the relationship between supplier development and procurement performance in public sector is positive and significant ( $\beta = 0.2343$  and  $p = 0.0014$ ). Also, contract management difficulty negatively and significantly moderates the relationship between supplier development and procurement performance ( $\beta = -0.1447$  and  $p = 0.0190$ ). In this aspect, the influence of supplier development on procurement performance is negatively affected by contract management difficulties. The study contributes to the supplier management, procurement performance, and contract management literature by providing empirical evidence on the role of supplier development on procurement performance in developing countries like Tanzania. Also, the conditional effects of contract management difficulty on the relationship between supplier development and procurement performance matter. The study's findings have important implications for procurement practitioners in the public sector and policy makers.

### ABOUT THE AUTHORS

Ismail Abdi Changalima is a PhD candidate at the University of Dodoma (UDOM) in Tanzania. Alban Dismas Mchopa (PhD) is a senior lecturer in the department of marketing, procurement, and supply management at Moshi Co-operative University in Tanzania. Ismail Juma Ismail (PhD) works as a senior lecturer in the department of business administration and management at UDOM in Tanzania.

### PUBLIC INTEREST STATEMENT

For a long time, academics and practitioners have been concerned about the public procurement performance. This is due to a reported public outcry over public-sector procurement outcomes. Given the importance of suppliers in procurement activities, this study investigates the role of developing suppliers in ensuring that public-sector organizations improve their performance by receiving goods and services that meet their specified requirements. The study discovered that the difficulties that public organizations face when managing procurement contracts have a negative impact on the role of developing suppliers in improving procurement performance. In this way, organizations with a low level of contract management difficulty are more likely to have good procurement performance than those with a high level of contract management difficulty.

**Subjects: Business, Management and Accounting; Public & Nonprofit Management; Corporate Governance**

**Keywords: Suppliers; supplier development; procurement; public procurement; procurement performance; contract management difficulty**

## 1. Introduction

Public sector procurement entails the acquisition of goods, services, and works, the function that is conducted by public organizations to enhance government operations. This function is critical to the national and economic development of many countries around the world (Changalima et al., 2021b; Zabala-Iturriagagoitia, 2022). The function is important in several aspects, including the acquisition of health equipment and medicines (Israel et al., 2019a), the construction of classrooms, and other infrastructure for educational services. The function accounts for approximately 11% of GDP for most countries in the world (Organisation for Economic Co-operation and Development (OECD), 2019), with others ranging from 17% to 30% (Djankov et al., 2016; Organisation for Economic Co-operation and Development (OECD), 2021). Given the magnitude of the expenditure, the function must be well managed in order to avoid misusing public funds. However, empirical evidence suggests that most public funds directed to public organizations are managed in ways that do not correspond to their deserving attention. According to the literature, the procurement functions in the public sector are bungled (Dzuke & Naude, 2015; Matto, 2017; Mohamad Azmi & Ismail, 2022; National Audit Office of Tanzania (NAOT), 2022). Studies that have focused on procurement performance in the public sector have centered on various aspects such as professionalism (Mrope, 2017), ethics (Israel et al., 2019b), centralization (Chiappinelli, 2020; Patrucco et al., 2021), and procurement record management (Matto, 2022). The success of procurement functions and desired procurement deliverables, on the other hand, is dependent on a well-established link between suppliers and buyers. Suppliers are regarded as valuable resources by purchasing organizations (Changalima et al., 2021a; Modi & Mabert, 2007). Thus, proper management of these vital resources in purchasing organizations may be a critical point for public procurement performance.

Existing studies opine that supplier development is one of the dominant practices in supplier management literature (Akamp & Müller, 2013; Avery et al., 2014; Changalima et al., 2021a; Yang & Zhang, 2017). The practice entails the activity of the buyers to ensure that potential suppliers can meet the short and long-term requirements of the buyers (Krause & Ellram, 1997). Through supplier development, buyers can obtain the required goods and services timely (Krause & Ellram, 1997) and improve buyer-supplier relationships (Changalima et al., 2021a; Sillanpää et al., 2015). Despite the importance of supplier development in various contexts, the literature on the subject is diverse, with the majority focusing on manufacturing firms (Akamp & Müller, 2013; Bai & Satir, 2020; Mohanty et al., 2014; Talluri et al., 2010). Though the study done by McKevitt and Davis (2014) uncovered the point of intersection between supplier development and public procurement, the available empirical-based literature is abundantly focused on manufacturing firms, which are predominantly private enterprises, with little evidence in the public sector. Based on the limited empirical evidence on supplier development and procurement performance in the context of public procurement in developing countries (Oromo & Mwangangi, 2017), this study fills in the gap by looking at the role of supplier development in improving the performance of procurement functions in the public sector in Tanzania.

In addition to that, previous research has produced contradictory findings regarding the effects of supplier development and performance. For example, while many researchers have linked supplier development to positive effects on performance (Akamp & Müller, 2013; Humphreys et al., 2004; Krause, 1997; Sánchez-Rodríguez et al., 2005; Yang & Zhang, 2017), others have concluded that supplier development has an insignificant influence on organizational financial performance (Carr & Kaynak, 2007). Direct supplier development has been linked to purchasing

performance (Wen-Li et al., 2003) while also Blonska et al. (2013) opined that investing in supplier development does not always directly result in relationship benefits and can even be harmful. These findings raise questions about the situations in which supplier development is important towards improving the performance of buying organizations. As a result of this, the effects of supplier development on performance may vary across levels of another variable, necessitating further empirical research into analyzing the influence of supplier development on performance. This investigation can be justified by one of the classical literature that highlights the need for more research when there are inconsistencies or contradictions among variables of interest (Baron & Kenny, 1986).

Supplier development is one of the supplier management practices that is thought to perform successfully in the presence of adequate contract management (Changalima et al., 2021a; Galt & Dale, 1991; Mukucha & Chari, 2021; Narasimhan et al., 2008). Procurement contract management has been linked to assisting buyers in ensuring that engaged suppliers are appropriately managed. However, despite the importance of contract management in the public sector, the literature shows that these organizations are swimming around problems related to procurement contract management (National Audit Office of Tanzania (NAOT), 2022; Oluka & Basheka, 2014; Rasheli, 2016). Contract management difficulties entail the costs and efforts that buying organizations incur when managing formal contracts with their involved suppliers (Williamson, 1993; Yang et al., 2016). These difficulties affect the extent to which purchasing organizations achieve their goals when engaging suppliers (Zhao et al., 2018). Therefore, purchasing organizations should adhere to the axiom of effectively addressing issues related to contract management while involving suppliers to improve procurement endeavors. The current study adds to the body of literature by investigating the interaction effect of contract management difficulty on the link between supplier development and procurement performance in the context of Tanzanian public procurement. By doing so, the study contributes to the ongoing debate on the influence of supplier development on performance and broadens the relationship by examining the moderating effect of contract management difficulty in a public-sector procurement context.

## 2. Literature review and development of study hypotheses

### 2.1. Transaction cost theory

The Transaction Cost Theory (TCT) emphasizes the fact that by lowering exchange costs, organizations can improve their economic efficiency (Williamson, 1993). It is a theory that provides a framework for analyzing the governance structure of contractual relationships within a supply chain. The theory sheds light on the various factors that contribute to interorganizational cooperation in supply chains. The practices that go into supplier development are in line with the buyer-supplier relationships and include mechanisms for maximizing the benefits that are intended to be gained. Depending on the nature of supplier development practices (direct or indirect practices), transaction costs are observable, and some of them may be concealed in buyer-supplier relationships. There is some evidence in published research that links supplier development practices to lower costs (Krause, 1997, 1999).

The TCT provides an effective framework for managing procurement contracts and other important contractual mechanisms (Rasheli, 2016). Consequently, since the contractual mechanisms govern the relationships between buyers and suppliers, buyers can strive for improved management of suppliers to ensure procurement deliverables are met. The TCT suggests that buyers may experience more costs and efforts that are directed at managing the contracts (Williamson, 1993; Zhao et al., 2018). Therefore, based on this, organizations that experience greater contract management difficulties in terms of the costs associated with managing contracts with engaged suppliers are less likely to achieve the desired procurement outcomes. These difficulties can be assessed in terms of the efforts and costs spent in managing formal contracts with engaged suppliers.

## **2.2. Supplier development and procurement performance in public sector**

Despite the fact that public procurement is critical to government operations and national development (Changalima et al., 2021b), studies describe undesirable practices in public procurement functions that impede procurement performance. Furthermore, there is sufficient evidence of supplier development in the context of the electronics industry and manufacturing firms to improve purchasing performance (Sánchez-Rodríguez et al., 2005; Wen-Li et al., 2003), as well as another stream of literature on supplier development and supplier performance (Akamp & Müller, 2013; Yang & Zhang, 2017). The first stream of literature focuses on manufacturing and electronics industries, while the second focuses on supplier performance rather than procurement performance in the public sector. Despite the fact that literature has presented several benefits that buyers can obtain through effective supplier development (Changalima et al., 2021a), empirical-based evidence on the role of supplier development in the public sector in developing countries is limited (Oromo & Mwangangi, 2017). This could be because of the regulatory framework that governs the nature of interactions between suppliers and buyers in the context of public procurement (McKevitt & Davis, 2014).

It should be noted that various types of supplier development activities are carried out depending on the extent of the buyer's involvement with the supplier (Krause et al., 2007). Supplier development practice in the form of increasing suppliers' performance targets is considered to be indirect supplier development (Sucky & Durst, 2013). In the literature, there is enough evidence to back up the call for the application of supplier development practices in public procurement (McKevitt & Davis, 2014). This can be possible through the application of indirect supplier development practices (Changalima et al., 2021a). Some of these practices include certification of suppliers, communication, and setting targets for suppliers (Ağan et al., 2018). The practices can be well established during contract negotiations, which are primarily conducted in procurement activities due to the nature of their application (Mwagike & Changalima, 2022). Therefore, given the importance of procurement functions in the public sector and limited empirical-based research on the role of supplier development and procurement performance in this context, the current study focuses on examining the effect of supplier development on public procurement performance. Thus, it is worth hypothesizing the following:

*H<sub>1</sub>: supplier development significantly relates to procurement performance in the public sector.*

## **2.3. The moderating role of contract management difficulty**

When suppliers are employed to provide goods, works, or services, procurement contracts are typically an integral part of the transaction. In this regard, buyers have a responsibility to ensure the effective management of procurement contracts is in place in order to guarantee that the agreed-upon deliverables will be met. The current research investigates the proposition that improving procurement performance can be accomplished through the development of suppliers if contract management is properly handled. Buyers may have difficulty ensuring that the deliverables are met due to the difficulties and challenges that are presented in procurement contract management (Oluka & Basheka, 2014; Public Procurement Regulatory Authority (PPRA), 2021a; Rasheli, 2016). These difficulties and challenges are experienced by public procuring organizations in the process of procurement contract management. The study hypothesizes that the link between supplier development and procurement performance may be affected by the difficulties that are experienced with contract management in terms of the efforts and costs associated with maintaining the contracts that have been entered into. Therefore, difficulties in contract management can interact with the influence of supplier development on procurement performance in the public sector. This interaction can take place in such a way that the lower the level of difficulties in contract management, the more likely it is that supplier development will have a strong effect on procurement performance. To this end, it is worth hypothesizing the following:

*H<sub>2</sub>: contract management difficulty significantly moderates the relationship between supplier development and procurement performance in the public sector*

Based on the literature review and developed hypotheses, the study proposed a model grounded on the TCT. The proposed model in Figure 1 suggests that supplier development will lead to procurement performance. Also, the model proposes that the relationship between supplier development and procurement performance is interacted by another variable which acts as a moderating variable (contract management difficulty). All the proposed relationships between study variables result into the formulation of H<sub>1</sub> and H<sub>2</sub> as presented in Figure 1.

### 3. Methodology

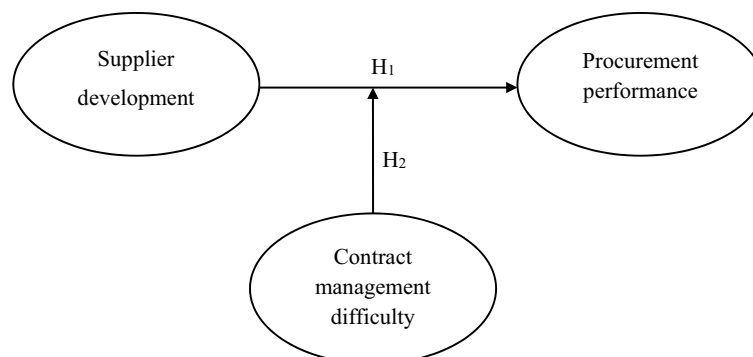
#### 3.1. Study areas and research design

This study was conducted in Dar es Salaam, Arusha, Dodoma, Mbeya, and Tanga within Tanzania. The selection of study regions was based on variations in procurement performance among public procuring entities located in these regions that were audited in the past three years (Public Procurement Regulatory Authority (PPRA), 2019, Public Procurement Regulatory Authority (PPRA), 2020, and Public Procurement Regulatory Authority (PPRA), 2021a). Consequently, a cross-sectional survey design was chosen in which data was collected just once. This design allows the researcher to acquire a large amount of data in a short amount of time and is therefore regarded as being efficient and economical. This design was appropriate given that the purpose of the study was not to track changes over time. Instead, the design permits the researcher to obtain a snapshot of the studied variables.

#### 3.2. Sample and data collection

In the selected regions, the target population consisted of 336 public procuring entities (Public Procurement Regulatory Authority (PPRA), 2021b). A Slovin formula was used to compute the sample size with the target population of 336 and a confidence interval of 95%, which resulted in 183 public procuring entities as a sample size. During the time of data collection, only 179 valid responses were collected, with a response rate of 97.81 percent. Public procuring entities were selected using simple random sampling, and the heads of procurement departments (from each selected entity) were contacted for collecting data. When employing a simple random technique, each element in the sampling frame has an equal chance of being selected, allowing researchers to avoid bias. The heads of the procurement department were involved as they are familiar with managing departmental functions such as supplier management and assuring procurement deliverables in their respective organizations. The questionnaire was used to collect data on the main study variables so that conclusions could be drawn. Using this technique, it was easier and enabled the researchers to obtain more responses from respondents quickly.

Figure 1. The conceptual model.



### **3.3. Variables measurements, reliability and validity**

The study employed measurement scales that had previously been validated and used in previous studies. A five-point Likert scale was used to measure all of the main constructs of the current study, ranging from strongly disagree to strongly agree. Items adapted from Akamp and Müller (2013) and Yang and Zhang (2017) were used to measure supplier development. Contract management difficulty was measured using indicators adapted from Handley and Benton (2012) and Zhao et al. (2018), and procurement performance was measured using items adapted from Akamp and Müller (2013), Wachiuri (2018), and Yussuf et al. (2021). Internal consistency reliability was assessed by using Cronbach's alpha under which all variables have values of Cronbach's alpha coefficients above 0.7 and hence the internal consistency reliability was achieved (Hair et al., 2010). Moreover, the values of composite reliability for all variables were greater than the threshold of 0.7, and hence the reliability was achieved in this study (Hair et al., 2010). Furthermore, the discriminant validity was evaluated using the Fornell-Larcker criterion, which determines validity by comparing the square root of the Average Variance Extracted (AVE) to the correlation of latent constructs. Because the values of the square roots of AVE (bold italicized values) as presented in Table 2 are greater than the corresponding intercorrelations, discriminant validity was achieved (Fornell & Larcker, 1981). The results in Table 2 show that all AVE values are above 0.5 and thus within the recommended range (i.e., convergent validity was achieved; Hair et al., 2010; Ab Hamid et al., 2017).

#### **3.3.1. Data analysis**

The collected data was analyzed by using Confirmatory Factor Analysis (CFA), which was used to determine the measurement model fit indices and Hayes' PROCESS macro was used to analyze the moderation effect of contract management difficulty on the effect of supplier development and procurement performance. The CFA is considered relevant for the determination of the validity of measured items for latent variables in multivariate analysis (Barati et al., 2019; Ab Hamid et al., 2017). Therefore, results from CFA were utilized for analyzing the reliability and validity of utilized measurement scales. Also, PROCESS macro was employed because is considered to be a current and powerful tool for conducting regression analysis with other variables such as mediators, covariates, and moderators by using bootstrapping confidence intervals (Hayes, 2022).

### **3.4. Common method variance**

Since data was collected from a single individual within each public procuring entity, common method bias may be a concern and, hence, as recommended, the study employed a Harman single factor technique to determine if there was any serious issue of common method bias (Podsakoff et al., 2003). Results showed that about 41.14% of the variance was explained in the model by a single factor. Due to the fact that the value is below 50%, it was concluded that common method bias was not a significant issue in this study.

## **4. Results and discussion**

### **4.1. Respondents' characteristics**

The majority of those who participated in the study were males, 112 (62.6%), compared to females, 67 (37%). In addition, the majority of respondents, 93 (52%), were between the ages of 28 and 37, followed by those aged 38 to 47, who were 67 (37.4%). The remaining respondents had 48–57 years and 18–27 years, who were 17 (9.5%) and 2 (1.1%), respectively. On the level of education, 41 (22.9%) of the respondents in this study held bachelor's degrees, while 138 (77.1%) held master's degrees. The majority of respondents, 79 (44.1%), had working experience of between 6 and 10 years, followed by 63 (35.2%) with 11 to 15 years of experience. The remaining respondents had working experience of less than 5 years, 22 (12.3%), between 16 and 20 years, 8 (4.5%), and more than 20 years, 7 (3.9%). These findings indicate that participants in the current study have adequate knowledge of supplier management matters, including developing suppliers in the public procurement context. In addition, they are able to provide pertinent information

**Table 1. Measurements, factor loadings, AVE, reliability, and validity**

<b>Constructs/ Items</b>	<b>Loadings</b>	<b>AVE</b>	<b><math>\alpha</math></b>	<b>CR</b>
<i>Supplier development (SDE)</i>		0.521	0.761	0.765
• We suggest improvement targets to our suppliers (SDE1).	0.707			
• We provide feedback about performance evaluation to our suppliers (SDE2).	0.776			
• The allocated personnel in managing suppliers enhance suppliers' know-how (SDE3).	0.678			
<i>Contract management difficulty (CMD)</i>		0.646	0.844	0.845
• The time and efforts put into developing formal contracts with our suppliers are significant (CMD1).	0.743			
• The costs associated with developing and maintaining formal agreements with our suppliers are significant (CMD2).	0.836			
• Ensuring that our contracts adequately represent our evolving relationships with our suppliers requires substantial resources (CMD3).	0.829			

(Continued)

**Table1. (Continued)**

Constructs/ Items	Loadings	AVE	$\alpha$	CR
<i>Procurement performance (PERF)</i>		0.678	0.886	0.893
• We are very satisfied with our suppliers (PERF1).	0.850			
• Our complaints to engaged suppliers have reduced significantly (PERF2).	0.913			
• If we had to start all over again, we would still choose the same suppliers (PERF3).	0.836			
• We respond to user departments' orders in time (PERF4).	0.676			

**Model fit indices:**  $\chi^2/df = 1.766$ , CFI = 0.973, PClose = 0.171, SRMR = 0.058, RMSEA = 0.066, GFI = 0.943, NFI = 0.940, RFI = 0.915, IFI = 0.973, and TLI = 0.961

regarding contract management and procurement functions within their respective public procuring entities.

#### 4.2. Descriptive statistics and correlations

The mean value of supplier development (SDE) is 3.4786, with a standard deviation of 0.81420, indicating that, on average, respondents' perceptions of SDE's aspects ranged between neutral and agree, with a medium range of opinions. Moreover, respondents are decently in agreement regarding the procurement contract management difficulties their respective public procuring entities face when engaging suppliers. The results for contract management difficulty (CMD) indicate a mean value of 3.5950 and a standard deviation of 0.92753. Lastly, according to the results of procurement performance (PERF), the mean value of PERF is 4.0307 and the standard deviation is 0.80668, indicating that respondents agreed that their respective public procuring entities perform well adequate in public procurement functions. Also, for determining the normal distribution of data, the skewness and kurtosis values presented in Table 3 are considered to be within the recommended threshold (Hair et al., 2010).

Furthermore, bivariate correlations were conducted and the results are presented in Table 3. It should be noted that the value of correlation coefficients, which is 0.7 and above, may suggest the presence of multicollinearity between the two variables (Pallant, 2020). Based on the results of correlation coefficients, multicollinearity issues were not a concern in this study as all values were below 0.7. The correlation results show that SDE and CMD correlated significantly ( $r = 0.179$  and  $p < 0.05$ ). SDE and PERF also correlated significantly ( $r = 0.316$  and  $p < 0.01$ ) and lastly, CMD and PERF correlated significantly ( $r = 0.248$  and  $p < 0.01$ ). Based on the recommendations of (Pallant,

2020) the strength of the correlation between SDE and PERF is considered to be of medium effect, and the rest of the correlation coefficients present small effects between the study variables as the value of  $r$  is between 10 to 29. These results show that the study variables are associated, and hence further regression analysis was conducted to determine the statistical results of the hypothesized relationships.

#### 4.3. CFA results

In order to evaluate the model measurements and, at the same time, determine the validity of all of the study variables, CFA was utilized. Therefore, the results of the CFA provide model fit indices that can be used to evaluate whether or not the model provides a good fit for the data. Table 1 contains the model fit indices, in addition to that, the values of model chi-square ( $X^2$ ) = 56.522 and  $df = 32$  at  $p = 0.005$  were obtained. Therefore, according to the findings, all of the model fit indices fall within the recommended thresholds, indicating that the model adequately represents the data (Hair et al., 2010; Hooper et al., 2008).

#### 4.4. Testing of hypotheses

The PROCESS macro was used to test the study hypotheses under which the tool is considered to be robust in analyzing the conditional, mediation, and moderation effects among a number of variables. Results in Table 4 present the moderation model of contract management difficulty on the effect of supplier development on procurement performance. Results reveal that the variables in the model contribute significantly to about 16.45% of the variance of the procurement performance ( $R^2 = 0.1645$ ,  $F = 11.4862$ , and  $p < 0.001$ ). Also, to begin, the study hypothesized that “ $H_1$ : supplier development significantly relates to procurement performance in the public sector.” The results presented in Table 4 show that the effect of supplier development at the mean of contract management difficulty is positive and significant related to procurement performance ( $\beta = 0.2343$ ,  $p = 0.0014$ , and confidence intervals between 0.0922 and 0.3763). These results show that the study’s data is consistent with  $H_1$ . Therefore, supplier development is considered to be a key determinant of procurement performance in the surveyed public procuring entities. The results further present the effect of another variable (contract management difficulty) at the mean of the predictor (supplier development). Results show that the effect of contract management difficulty at the mean of supplier development is positively and significantly related to procurement performance ( $\beta = 0.1674$ ,  $p = 0.0068$ , and confidence intervals ranging from 0.0468 to 0.2880).

Secondly, the study hypothesized that “ $H_2$ : contract management difficulty significantly moderates the relationship between supplier development and procurement performance in the public sector”. Based on the results in Table 4, it is evident that the interaction term (SDE\*CMD) was significant and negatively related to procurement performance with  $\beta = -0.1447$ ,  $p = 0.0190$  and confidence intervals between  $-0.2654$  and  $-0.00241$ . These values of confidence intervals have no zero in between and hence suggest the significant relationship between variables under the study. The results in the interaction term suggest that contract management difficulty is a significant moderator of the relationship between supplier development and procurement performance. The results reveal that there is a significant change (about 2.68%) in the variance of the dependent variable (procurement performance), which is contributed by the interaction variable as the values of  $\Delta R^2 = 0.0268$ ,  $F = 5.6078$  and  $p = 0.0190$ . These results support the study hypothesis, and hence it is concluded

**Table 2. The Fornell-Larcker criterion of discriminant validity**

	CR	AVE	MSV	ASV	MaxR(H)	SDE	CMD	PERF
SDE	0.765	0.521	0.247	0.181	0.771	<b>0.722</b>		
CMD	0.845	0.646	0.363	0.305	0.852	0.497	<b>0.804</b>	
PERF	0.893	0.678	0.363	0.239	0.915	0.338	0.603	<b>0.823</b>

**Table 3. Descriptive statistics and correlations**

Variables	Mean	Std. deviation	Skewness	Kurtosis	SDE	CMD	PERF
SDE	3.4786	0.81420	−0.430	0.191	1		
CMD	3.5950	0.92753	−0.603	−0.067	0.179*	1	
PERF	4.0307	0.80668	−1.275	2.251	0.316**	0.248**	1

\*p < 0.05

\*\* p < 0.01

**Table 4. Regression results on the moderation model**

	Coeff	Se	T	p	LLCI	ULCI
<b>Constant</b>	4.0502	0.0562	72.0823	****	3.9393	4.1611
<b>SDE</b>	0.2343	0.0720	3.2537	0.0014	0.0922	0.3763
<b>CMD</b>	0.1674	0.0611	2.7387	0.0068	0.0468	0.2880
<b>SDE*CMD</b>	−0.1447	0.0611	−2.3681	0.0190	−0.2654	−0.0241
<b>R<sup>2</sup></b>	0.1645					
<b>F(sig.)</b>	11.4862			****		
<b>ΔR<sup>2</sup></b>	0.0268					
<b>F(sig.)</b>	5.6078			0.0190		

\*\*\*\* p < 0.001

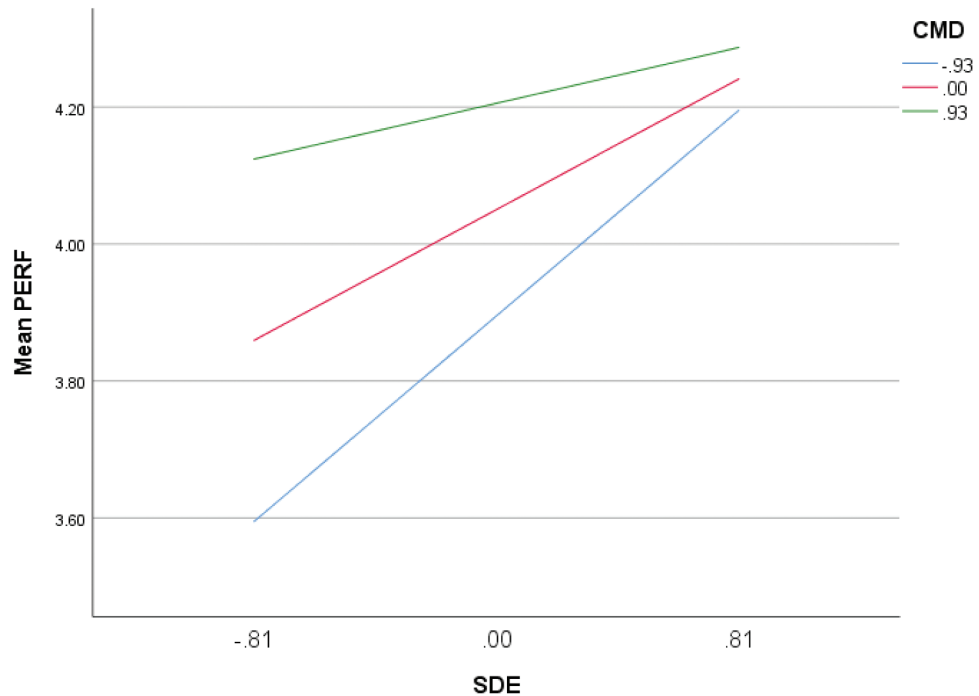
that contract management difficulty significantly interacts with the relationship between supplier development and procurement performance of surveyed public procuring entities in Tanzania.

The study conducted further analysis to present the slope plot for the moderating effect of contract management difficulty on the effect of supplier development on procurement performance. The moderation effects are presented in high and low levels and the Hayes' PROCESS macro provides the option of presenting the moderation effects at +1 standard deviation, mean (0), and −1 standard deviation (Hayes, 2022). Thus, the results in Figure 2 present the effect of supplier development (SDE) on procurement performance (PERF) at conditioning values of one standard deviation above the mean (+0.93), the mean (0.0) and one standard deviation below the mean (−0.93). These values of standard deviation present the high and low levels of the moderating variable (CMD). Generally, the results in Figure 2 show that CMD dampens the positive relationship between SDE and PERF.

Therefore, the findings suggest that contract management difficulty negatively moderates the effect of supplier development on procurement performance. Thus, at a low level of contract management difficulty (standard deviation = −0.93), the effect of supplier development on procurement performance is stronger than at a high level of contract management difficulty (standard deviation = +0.93). The results imply that the effect of supplier development on procurement performance is significantly increasing at the decreased level of contract management difficulty. Therefore, public procuring entities with a high level of contract management difficulty are less likely to improve procurement performance through supplier development.

Using Hayes' PROCESS macro, the study examined the effect of supplier development on procurement performance in the public sector to better comprehend the contribution of supplier development to performance. The study further examined the moderating effect of contract management difficulty on the relationship between supplier development and procurement performance. According to the study findings, supplier development improves procurement performance in the public sector. Also, contract management difficulty interacts with the influence of supplier development on procurement

**Figure 2. Slope plotting for the moderating effect on the influence of supplier development on procurement performance.**



performance in the surveyed public procuring entities. These findings suggest that supplier development enhances public procurement performance but that the effect of supplier development on procurement performance is hampered by contract management difficulties. Consequently, public procuring entities with low contract management difficulties are more likely to improve procurement performance via supplier development. In other words, the effect of supplier development on procurement is weak for public procuring entities that face significant contract management difficulties.

This study empirically examined the positive effect of supplier development on public sector procurement performance. These findings are consistent with those of Sánchez-Rodríguez et al. (2005), who examined the supplier development practices and purchasing performance of Spanish manufacturing firms. According to their findings, implementing supplier development practices significantly predicts purchasing performance. Similarly, Wen-Li et al. (2003) conducted a study on enhancing purchasing performance through supplier development on various Hong Kong based companies in the electronics industry. According to their research, direct supplier development was a significant predictor of purchasing performance. Also, experience from Africa in Kenya indicates that supplier development is a significant predictor of Kenya Electricity Generating Company Limited's procurement performance (Oromo & Mwangangi, 2017). In South Africa, a study conducted by Van der Westhuizen and Ntshingila (2020) revealed that supplier development determines business performance of small and medium enterprises. Therefore, these previous studies indicate that supplier development contributes significantly to purchasing performance in different contexts. The study extends the contribution of supplier development to procurement performance in the context of public procurement in Tanzania and hence, adds to the existing literature.

In addition, difficulties with contract management have a negative impact on the outcome of procurement performance by way of supplier development. According to the findings of the current research, the influence of supplier development on procurement performance is dwindling and becoming less effective as a due to growing range of difficulties associated with the management of procurement contracts. There is a body of research that focuses on the difficulties that are connected to the management of procurement contracts and how these challenges impact public

sector procurement undertakings (National Audit Office of Tanzania (NAOT), 2022; Oluka & Basheka, 2014; Public Procurement Regulatory Authority (PPRA), 2021a; Rasheli, 2016). Based on the results of the current study, the difficulties that public procuring entities encounter in managing contracts with their suppliers have a negative effect on the procurement undertakings when supplier development is involved.

The results indicate that contract management difficulty interacts negatively with the effect of supplier development on procurement performance. In implementing supplier development initiatives, Sikombe and Phiri (2021) specified contract management issues at the institutional level. Therefore, when buyers engage suppliers in supplier development to improve procurement performance and maintain a low level of contract management difficulty, they are more likely to realize the intended benefits. These results are consistent with the TCT, which emphasizes the transaction costs that may be incurred at the time of an exchange. Since public buyers interact with suppliers during the purchasing process, transaction costs are more likely to affect the overall procurement performance. Consequently, costs associated with contract management difficulties are more likely to affect performance; and hence, procurement professionals should be aware of the required efforts to control contract management difficulties in order to improve procurement performance.

## 5. Conclusions

The literature on the contribution of supplier development in procurement and supply chain management endeavors is obviously extensive (Krause, 1997; Modi & Mabert, 2007; Yang & Zhang, 2017). However, there is a scarcity of evidence-based studies on the role of supplier development in public procurement in developing countries such as Tanzania. Based on this, the current study used the TCT to investigate both the moderating effect of contract management difficulty on the influence of supplier development on procurement performance and the direct influence of supplier development on procurement performance. On the basis of the findings, it can be concluded that the development of suppliers is the factor that determines the procurement performance, and the effect of developing suppliers on procurement performance varies across different levels of contract management difficulties. In this regard, the low level of contract management difficulty strengthens the influence of supplier development on procurement performance; consequently, organizations should strive to ensure that problems and difficulties associated with procurement contract management are resolved.

## 6. Study implications

### 6.1. Theoretical implications

The current study examined the relationship between supplier development and procurement performance in the Tanzanian public sector and also examined the moderating role of contract management difficulty on the relationship between supplier development and procurement performance. Thus, the study contributes to the role of supplier development in the aspect of explaining procurement performance in the context of public procurement. Therefore, unlike previous studies that focused on the manufacturing sector, this study provides empirical insights into the public sector. In addition, the study adds to the already available stream of empirical evidence of supplier development practices and performance by extending the relationship through the moderating effect of contract management difficulty.

Lastly, this study used a TCT to examine the influence of contract management difficulty on the role of supplier development and performance. The theory assumes that contract management difficulty as costs and efforts that are needed by the organization to ensure that the engaged contracts between the organization and suppliers are done effectively. Like a previous study that examined the negative moderating effect of contract management difficulty on the studied relationship (Zhao et al., 2018), the TCT also supports the findings of the current study as organizations through engaged contracts with suppliers are likely to encounter transaction costs that may affect their overall performance.

## 6.2. Practical implications

The findings also provide the practical implications for public procurement practitioners. Some of these implications include ensuring the proper application of supplier development practices by procurement professionals in the public sector in Tanzania. This could be done with respect to suggestions for improvement targets for potential suppliers; provision of feedback on performance evaluation to these suppliers; and enhancing suppliers' know-how by allocating personnel from the buying organizations. By doing so, practitioners in public procurement are more likely to enhance procurement performance in their respective organizations. Furthermore, contract management difficulties impaired the effect of supplier development on performance. In this regard, proper procurement contract management is critical for public procuring entities, and thus, deliberate efforts should be made to ensure contract management problems and difficulties are addressed. Lastly, efforts should be made to ensure that there is a design for the necessary set of public procurement procedures that may enhance the development of potential suppliers. These procedures may provide important avenues for the incorporation of supplier development practices into public procurement undertakings to enhance public procurement performance and encourage supplier improvements for the benefit of public-sector organizations.

## 7. Limitations and directions for future research

Despite the fact that the current study is geographically limited in terms of the context in which it was conducted, it establishes interesting results for future research. To begin with, the study gathered cross-sectional data from public buying organizations, so it included opinions from the perspective of the buyer. Future studies can include opinions from suppliers and thus focus on suppliers' perspectives. In addition, the study adapted procurement performance measures that included unidimensional aspects of procurement performance. Other studies may include multi-dimensional measures of procurement performance to supplement the current study's findings. Finally, the paper suggests additional research on other relevant moderating variables or includes a moderated-mediation model for established relationships that may provide necessary empirical insights to extend the current study.

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No potential conflict of interest was reported by the author(s).

### Ethical clearance

The ethical clearance for this study was granted by the University of Dodoma (UDOM) ethical committee in accordance with postgraduate regulations of UDOM.

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