

## **Nexus of Value for Money and Competitive Tendering Procurement: The Influential Effects of Bounded Rationality**

Hamisi K. Sama,<sup>1</sup> Philibert C. Ndunguru<sup>2</sup> and Paul K. Nsimbila<sup>3</sup>

1. Hamisi K. Sama, *Procurement and Supplies Department, College of Business Education, Dodoma Campus, P. O. Box 2077, Dodoma, Tanzania;*
2. Philibert C. Ndunguru, *Faculty of Science and Technology, Mzumbe University P.O Box 6, Mzumbe, Morogoro, Tanzania;*
3. Paul K. Nsimbila, *Department of Procurement and Logistics, School of Business, Mzumbe University, P.O Box 6, Mzumbe, Morogoro, Tanzania;*

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### **Abstract**

*The recent shifts to new modes of procurement governance whereby procurement officials are increasingly delegated decision-making powers have created important legitimacy to procurement officials. In such a context and in addition to growing public distrust towards public procurement practitioners – bounded rationality is likely to become more rampant and endangered competitive tendering legitimacy to attain value for money due to distort nature of decision-making processes. The present study aims to evaluate the moderating effect of bounded rationality on value for money and competitive tendering. The research is empirical and is supported by a descriptive quantitative approach, using structured questionnaire as a data collection technique in a cross-sectional design. Whereas public procurement practitioners in Singida and Dodoma Region in Tanzania are key respondents, while descriptive statistics, confirmatory factor analysis, hierarchical regression analysis were employed to analyse data. The results indicate that bounded rationality moderate the relationship of value for money and competitive tendering.*

**Keywords:** *Bounded Rationality, Value for Money, Competitive Tendering and Public Procurement*

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### **I. Introduction**

Nowadays, there is increasing interest in improving public procurement because of its significant effect on economic development (Arrowsmith, 2011). However, public procurement is faced with the challenges imposed by a variety of information asymmetry on value for money in CTP (Kakwezi and Nyeko, 2010; Wittig and Jeng, 2005). CTP has an immense intuitive appeal, and its pervasiveness in today's mindset as reflected in many widely-spread beliefs that value for money (VFM) can easily be attained with the same expected utility are equivalent (Ackah *et al.*, 2000; Erridge and McIlroy, 2002). Although the decision making perspective has been fundamental in VFM and competitive tendering procurement (CTP) research in public procurement, predominantly emphasizes direct and indirect causal effects of transactional relationships, does not contribute sufficiently to the understanding of all relevant sources that causes failure in obtaining VFM when exposed to bounded rationality.

Thai (2009) suggested that public procurement must be seen in two ways with the internal demands in the form of many stakeholders expectations whereas transparency, integrity and exemplary behaviour by actors as the external demands. It was once noted that public procurement decisions in CTP are kind of behavioural decisions and represent a conscious choice of different practitioners with a voluntary act of a decision maker activities (Adusei, 2018; Farca, 2018). The mechanisms for behavioural connection highlight links of various, non-linear intensities, in view of a finality which should be related every time to the decisional intensity and public interest in CTP. However, it is not necessarily that most accessible decision content in VFM is also the most relevant to good decisions or intentional errors. Existences of systematic errors in CTP stemming from reliance on heuristics are known as cognitive biases—systematic deviations from the norm whereby individual subjective social reality directs responses to stimuli as opposed to objective standards (Bless, *et al.*, 2004).

Structuring decision making in ways that positively influence cognitive biases has the potential to moderate complexity in the public sector environment, subsequently reducing learning, psychological, and compliance costs (Cantarelli, Bellé, and Belardinelli, 2018). It has been noted that the public procurement area is facing continuous with many threats and opportunities determined by the human behaviour context, increasingly affected by globalization as well as by the national context which needs to meet the requirements for ensuring the sustainable growth (Choi, 2010; Lloyd and McCue, 2004).

World Bank (2016) noted that, whenever procurement decisions are made throughout the procurement process, there will be a tradeoff between the benefit gained and the cost of the approach relative to the benefits and costs of alternative arrangements. In fact, the government in CTP has only limited regulatory options and decision-maker can only do limited cost-benefit analysis. The information, resources, political support and time of the regulatory tools are all limited; therefore, the decisional choice in CTP has been limited. And situation of CTP with complexity of procurement decisions will be worse in areas where decision makers lack expertise and decision analysis requires complex reckoning.

The recent shifts to new modes of procurement governance whereby procurement officials are increasingly delegated decision-making powers have created important legitimacy to procurement officials (Shakya, 2012; Morgner and Chêne 2014). In such a context and in addition to growing public distrust towards public procurement practitioners – BR is likely to become more rampant endangered CTP legitimacy of attaining VFM due to distort on nature of decision-making processes. Unlike rational decision making process, whereby it is assumed that the individual has unlimited information processing capability and perfect information, Ostrom (2005) believes that given our natural limitations, the option of optimal design is not available to mere mortals. In such situation, CTP participants as human beings are characterized by bounded rationality. Presence of decisional constraints prevents them from calculating a solution based on a complete and comprehensive optimum solution in CTP to attain VFM. Thus, public procurement practitioners will always try to find a merely satisfactory solution given resources and objectives and not complete and comprehensive optimum solution in CTP.

Differences in degree of decision making on CTP to a given situation set stage for a better understanding of how individuals actually make decisions in obtaining VFM. Indeed, heuristics generate systematic errors through the attribute substitution mechanism, which implies that people tend to “evaluate a difficult attribute by substituting a more accessible one” (Kahneman 2002). In addition to systematic errors, extent of integrity and transparency often prevents public decision-maker to consider all possible alternatives of a decision evolved in CTP. This pose questions on rationality of certain decisions of the CTP when attaining VFM.

Bounded Rationality studies have depicted the influence of behavioural factors on decision-making process in organizations. In a study to understand the combined influence of organisational and behavioural factors on the bounded rationality, Hernandez and Ortega (2019) reported that the bounded rationality occurs when companies lack context information of the results of their actions, being forced to make less than optimal decisions because they have to adjust to the conditions in which they operate. In a similar study, Hargreaves and Price, (2015) identified that given the level of financials flows generated, public sector procurement is an area prone to overt and covert corrupt practices which are exacerbated by “weak governance which hinders market competition and raises the price paid by the administration for goods and services, directly impacting public expenditure and therefore tax payers resources.

Thus, the role played by behavioural factors on VFM and CTP moderated by bounded rationality can never be undermined because they provide inputs and pose as constraints to public procurement decision making process. Previous studies have also examined the predictive ability of individual factors on value for money and competitive tendering. Roman (2014) argued that while the bounded rationality perspective provides the basis for understanding the decision-making process and how accountability is defined in public procurement, it falls short in terms of capturing several important perspectives. Despite these efforts little is known about the moderating influence of bounded rationality on VFM and CPT. Thus, necessitate examination on relationship between VFM and CPT when moderated by bounded rationality.

This study aligns with the concept of VFM as explained by Carpineti et al (2006) such that efficient procurement practices, both the public and the private sectors play a key role in modern economies as they ensure reduction of wasteful activities. But, public procurement the process takes place at both a national and local level, subject to specific rules and regulations covering relevant decisions in CTP to attain VFM. This study considers a CTP as one that has capability to maintain a competitive edge and drive a better VFM. From this consideration, this study is intended to evaluate the moderating effect of bounded rationality on VFM and CTP. This paper is divided into five sections. Section one is the introduction, section two is a review of related literature, section three discusses the methodology employed in carrying out the study, and section four is data presentation and analysis, while section five concludes the study and proffers recommendations for policy and procurement professional decisions.

## **II. Methodology**

### **2.1 Design and Participants**

This study is a cross-sectional design and made use of quantitative approaches whereby target population for the study comprises public procurement practitioners’ participated in CTP. Purposive sampling was used to select the respondents from Singida and Dodoma region. The data collection was through structured

questionnaire administration. A conveniently selected sample of 220 procurement practitioners who were randomly selected aged 20–60 years working in different public and private sector in Singida and Dodoma participated in this research. The participants were carefully matched on demographic variables, education (graduation), gender (double) and socio-economic status (business).

### 2.2 Measuring Instrument and Sampling

The measurement used in this paper is the Likert Scale Method of summated ratings. It consists of statements where respondents indicate their degree of agreement or disagreement on a five- point scale - Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. The sampling method was referred to the Krejcie and Morgan (1970) table whereby if the population is 112, the sampling size required would be 87 participants. The measures of CTP were adapted from Choi (2010), Lloyd and McCue (2004), Steane and Walker, (2000) and Cable (2013). Measures for Value for Money were adopted from Jackson (2012), Basheka (2009), and Ackah *et al.*, (2014) and measures for bounded rationality were adopted from Xie (2019), Wang and Ruhe 2007), and Sama, *et al.*, (2014).

## III. Results and Findings

### 3.1 Data Analysis

This Table 1 shows two tests that indicate the suitability of your data for structure detection. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in variables that might be caused by underlying factors. Bartlett’s Test of Sphericity the hypothesis that correlation matrix is an identity matrix, which would indicate that variables are unrelated and therefore unsuitable for structure detection. Small values (less than 0.05) of the significance level indicate that a factor analysis may be useful with data.

**Table 1: Kaiser-Meyer-Olkin (KMO) and Bartlett’s Test**

Factorability Assessment	Value For Money	Competitive Tendering	Bounded Rationality
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.812	0.886	0.814
Bartlett's Test of Approx. Chi-Square Sphericity	414.974	682.329	275.922
df	45	45	15
Sig.	0.000	0.000	0.000

\*\* Correlation is significant at the 0.01 level (2-tailed).

The independent and dependent variables were validated using factor analysis. Table 1 depicts the results of Kaiser-Meyer-Olkin (KMO) and Bartlett’s Test for the study variables. The values of Kaiser-Meyer-Olkin for Measuring of Sampling Adequacy (KMO/MSA) were 0.812, 0.886 and 0.814 for value for money, CTP, and bounded rationality respectively. All the KMO values had reached the minimum value of 0.6 for a good factor analysis (Hair *et al.*, 2010). The Bartlett’s Test of Sphericity was statistically significant ( $p < 0.001$ ), thus supported the factorability of the correlation matrix.

### 3.2 Correlation Analysis

Correlation analysis was conducted in this study to investigate the association between the study variables. The purpose of regression analysis is to relate a dependent variable to a set of independent variables. In order to examine the impact of independent variable on dependent variable, a multiple regression analysis was employed. Table 5 shows the correlation between four variables. From the table, it was revealed that the relationship between bounded rationality (BR) and value for money (VFM) is high ( $r=0.677$ ) and the correlation coefficient is significant at the  $p<0.001$ . Other the other hand, the relationship between transparency (TP) and integrity (TE) was found to be moderately high ( $r=0.633$ ). There is also a positive relationship between integrity and value for money ( $r = 0.505$ ,  $p<0.01$ ). The relationship between employee performance and transparency shows a moderate and positive relationship ( $r=0.469$ ,  $p<0.01$ ). In summary, correlation analysis indicates significant association between the study variables and it is deemed suitable to proceed with regression analysis.

**Table 2: Correlation Analysis**

Variables	Transparency	Integrity	Value for Money	Bounded Rationality
Transparency	1			
Integrity	0.633**	1		
Value for Money	0.398**	0.431**	1	
Bounded Rationality	0.469**	0.505**	0.677**	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

**3.3 Regression Analysis**

Table XX shows the linear regression analysis results among the independent variables and value for money. The analysis indicates that 22.0 % ( $R^2 = 0.220$ ) of the variance of value for money can be explained by the two independent variables of CTP. The analysis shows that transparency ( $\beta=0.469, p<0.001$ ) and integrity ( $\beta=0.505, p<0.01$ ) have a significant positive relationship with value for money. Therefore,  $H_1$  and  $H_2$  were accepted.

**Table 3: Regression Analysis between Independent Variable and Value for Money**

Independent Variable	Value for Money				Hypothesis	Result
	$\beta$	Sig.	R	$R^2$		
Transparency	0.469***	0.000	0.469	0.220	$H_1$	Accepted
Integrity	0.505***	0.000	0.5055	0.255	$H_2$	Accepted

\*\*\* Significant at the 0.001 level, \*\* Significant at the 0.01 level

Table 4 and 5 shows the hierarchical regression analysis results for the moderation effects. It was discovered that bounded rationality ( $\beta = 0.583, p<0.001$ ) partially moderate the relationship between transparency and VFM where transparency was still significantly associated with value for money ( $\beta =0.237, p<0.001$ ) however its standardized coefficient has been reduced from 0.439 to 0.237 and  $R^2$  increased from 0.220 to 0.505. Thus,  $H_3$  was supported. On the other hand, bounded rationality ( $\beta = 0.564, p<0.001$ ) was found also partially mediates the relationship between integrity and VFM, whereby integrity was still significantly associated with value for money ( $\beta = 0.262, p<0.001$ ) however its standardized coefficient has been reduced from 0.505 to 0.262 and  $R^2$  increased from 0.255 to 0.514. Thus,  $H_4$  was supported.

**Table 4: Hierarchical Regression Analysis for Bounded Rationality Moderates Transparency and Value for Money**

Independent Variable	Value for Money				Hypothesis	Result
	$\beta$	Sig.	R	$R^2$		
Transparency	0.237***	0.000	0.220	0.514	$H_3$	Accepted
Bounded Rationality	0.583***					

\*\*\* Significant at the 0.001 level, \*\* Significant at the 0.01 level

**Table 5: Hierarchical Regression Analysis for Bounded Rationality Moderates Integrity and Value for Money**

Independent Variable	Value for Money				Hypothesis	Result
	$\beta$	Sig.	R	$R^2$		
Integrity	0.262***	0.000	0.255	0.514	$H_4$	Accepted
Bounded Rationality	0.564***					

\*\*\* Significant at the 0.001 level, \*\* Significant at the 0.01 level

#### **IV. Discussion**

From the findings, it can be discovered that the implementation of transparency as the first step of any transactional process in one's procuring entity is imperative. By implementing transparency, the procuring entity may identify the most needed information for specified decisions and behaviours thus disclosing and discouraging malpractices in public procurement and facilitating CTP, thus improving capabilities and competitiveness, subsequently leading to a more competitive bidding process, and finally, to more efficient spending of public funds. With transparency, a procuring entity is able to prioritize the effective decisions and behaviours. The process of identifying procurement decisions on CTP enhances and upgrades VFM and productivity. This finding is in line with a study of Sjöberg (2010) who determine aspects involved in increasing levels of transparency, apart from implementing the law, thereby increases chance of preventing corruption to a higher extent.

Apart from that, the finding of this study also indicates that integrity has a positive relationship with value for money. Studies of Beth (2007) and Ojo and Gbadebo (2014) are conversant on how countries developed flexible integrity regulatory frameworks and simplified procedures, there will be a trend develop uniform behavioural perspectives in CTP to ensure consistent achieving value for money. Both studies of Nieuwenburg (2007) and OECD (2009) found that integrity of public officials is said to be a key determinant of public trust in government and a central concept in good governance. In addition, Kannan-Narasimhan and Lawrence (2012) and Davis, and Rothstein (2006) also proved that there is a tremendous impact of individual behaviour on the ethical behaviour of individuals within the organization and indirectly can manipulate the integrity of individuals involved in the CTP. Besides, it is also important in increasing honesty, rational approaches to decision making, framed around logical arguments informed by accurate analysis.

In examining the moderating effects of bounded rationality on the relationship between transparency and VFM, the result shows that bounded rationality is a partial moderator for VFM and transparency. However, there was not much research conducted on the moderating role of bounded rationality. This is probably due to the reason that most researchers focus on general public policy instead of behavioural perspective on transparency. For example, a study of Emiliani (2010) suggests that practitioners of modern industrial purchasing and supply chain management lack a historical perspective in the execution of their strategic and day-to-day procurement practices whereby in that study one of the indicator is VFM. On the other hand, in this study the moderating effect of bounded rationality was found to be significant on the relationship between integrity and VFM. This finding is consistent with a study of Papavinasam, *et al.*, (2006) and Duggar (2009) where it was discovered that an ideal integrity management would focus on the prevention of damage to integrity in a manner that offers scope for individual responsibilities and requires public procurement servants to arrive at carefully considered decisions on specific integrity issues within society and public administration. In a nutshell, procuring entity should focus more on transparency, integrity and VFM as they pose great impacts towards CP.

#### **V. Conclusion, Implications, Limitations and Future Study**

##### **5.1 Conclusion**

The findings show that CTP is significantly related to value for money and bounded rationality is partially moderating the relationship between public procurement and value for money. Therefore, it is important for any public procurement practitioner to ensure a proper transparency and integrity in order to improve decision making process. By having a systematic decision making process, it will assist public procurement practitioners to increase competencies in handling day-to-day activities and providing excellent service to the public. With excellent service delivery, it is expected that the public complaints on public procurement will be reduced.

Furthermore, this study is an insight into getting a more appropriate model relating to CP in public sector. It has been found that bounded rationality acts as a moderator. It acts public procurement practitioners as an obstacle in achieving VFM more efficiently as reduces degree of integrity and transparency in CTP. Furthermore, it leads to public procurement decision-makers to act as satisfiers seeking a satisfactory CTP solution rather than an optimal one. In presence of bounded rationality, public procurement decision-makers would not be able to influence the decision-making capacity of humans in CTP cannot be fully rational because of a number of limits such as information failure, which ultimately deter intension to achieve VFM in CTT. So the policy makers in public procurement should give due consideration to behavioural model with respect to effects of bounded rationality in CTP which deter better VFM. So the policy makers in public procurement should give due consideration to behavioural model with respect to effects of bounded rationality which directly and indirectly manipulate integrity and transparency in CTP.

## 5.2 General and Practical Implications

Policy makers need to pay close attention to the bounded rationality which directly and indirectly manipulates integrity and transparency in CTP. Policy makers should focus on creating an environment in which VFM goals linked with CTP goals with the help of integrity and transparency. Public procurement practitioners should make their decisions more transparent by exhibiting consistency in their logic and reasoning. Remaining impartial in decision making will help public procurement practitioners to instill trust and respect in the minds of public procurement stakeholders in general. Generally, in public procurement practitioners attuning of VFM goals can help in application of CTP regulations aligned with individual and societal needs to instill confidence and inspire stakeholders on existence of trusts, honesty and professional integrity.

## 5.3 Limitations and Future Study

This research was conducted under certain limitations that have to be taken into consideration. The research was conducted in one of the region in Tanzania, Dodoma. The results may not able to generalize for the other regions in Tanzania. As such, it is suggested that future research may expand the study population and establish a broader research setting where it may cover all individuals who are participation in public procurement in Tanzania and explore more factors that may influence bounded rationality and VFM.

This study represents a cross sectional investigation as responses was gathered from respondents at a particular point of time. Moreover, the study is confined to public procurement practitioners operating in Dodoma Region only. Due to privacy involved, respondents might have been reluctant to share correct information due to their defensive attitude. The element of subjectivity might have not been checked completely as public procurement practitioners have responded on the basis of their own experience and perceptions regarding the statements in the questionnaire. In future, longitudinal study can be conducted. Comparative study between private and public sector on moderating role of bounded rationality when subjected to other principles of public procurement can be undertaken in future. More outcomes can be taken into account, for example, social cultural differences, other individual behavioural affections, and so on for better understanding of the moderating concept.

**Conflicts of interest:** The authors declare that no competing interests exist.

**Originality/value** – The unique value contribution of this paper comes from a critical review of the public procurement literatures, the articulation of a bounded rationality as moderator of value for money and competitive tendering in public procurement.

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