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Influence of E-Procurement on the Performance of State Corporations in Kenya

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Abstract: The purpose of study is to investigate the influence of e-procurement on the performance of state corporations in Kenya. Descriptive research design is adopted with the use of questionnaire as tool for primary data collected. The data yielded a response rate of 95.2 percent from a sample size of 62 used, which were drawn mainly from senior procurement managers of Kenya Rural Roads Authority (KeRRA). The data collected was statistically analysed to test content validity and reliability. In addition, a simple regression model was used conducted to test relationship between e-procurement and the performance of state corporations in Kenya. From the findings it was found out that e-procurement has transformed all routine purchasing transactions within KeRRA. However, it was established that e-procurement does not reduce the costs of acquiring materials and freeing up KeRRA resources. It was also noted that e-procurement positively increases the performance of state corporations.

Keywords: E-procurement, Performance, state corporations.

1. Introduction

Nowadays, the strategic importance of the procurement function has been emphasized in the in the organizations (Kim, et al., 2015). In addition, strategic procurement has been associated with the e-procurement, supplier rationalization, buyer-supplier relationships and negotiations (Johnson & Whang, 2002; Kim, et al., 2015). Procurement function plays an important role in organization by ensuring high performance of the organization and enhancing shareholders value (Ghossein et al., 2018). For example, Djankoy et al. (2017) reported that in the year 2016, most government agencies spent about \$35tn on the transactions relating to public procurement. Equally, public procurement signifies about 18.4% of the world gross domestic product (GDP) and 50% or more of total expenditure in developing countries (Changalima et al. 2020).

Globally, there has been increase uptake of strategic procurement. For example, Djankoy et al. (2017) reported that in the year 2016, most government agencies spent about \$35tn on the transactions relating to public procurement. Equally, public procurement signifies about 18.4% of the world gross domestic product (GDP) and 50% or more of total expenditure in developing countries (Changalima et al. 2020). Additionally, economies of the developing countries, procurement expenditures are estimated to be about 9-13% of their GDP (Witting, 2002). For example in Jamaica the total procurement expenditures in the financial year 2015 was accounted to 30% of her GDP (Dawar & Oh, 2017). Because of these huge expenditures, strategic procurement has become synonymous as a way of accounting the best way use of the public resource to get value for money.

In Kenya, public procurement is estimated to be about 45% of her GDP and thus procurement should not be regarded as a clerical function which involves only buying goods and service, but it should be observed as a strategic way of spending organizational resources to achieve maximum benefits in order to get value for money (Nollet & Beaulieu, 2005). Thus,

state corporations should take a more strategic perspective towards procurement as a way improving the organizations competitiveness and acceleration of the economic prospective of the organization (Mitrega et al., 2016). Tummala et al. (2006) and Murray (2007, 2009) noted that public procurement managers should develop procurement strategies options and present to local political leaders to make the choice regarding the county's specific objectives.

Public procurement in developing countries accounts about 50% or more of the total expenditure of the government is channeled to public procurement (Knack et al., 2019). Equally, in developing economies the procurement function accounts about 9% to 13% of their GDP (Changalima et al., 2020). However, it was observed that in public entities there is lack of policy alignment and the strategic procurement processes and this has led to poor procurement policies decisions (Changalima et al., 2020). For example, Kenya Rural Roads Authority (KeRRA) has been experiencing various with regard to the poor procurement practices in terms of procuring from vendors, who are no approved, acquiring high cost of goods, services or works, procuring goods, services or works without legally binding contracts, inadequacy of skills in personnel on e-procurement and inadequate planning and control (Controller & Auditor General (CAG) Report, 2020). All these challenges affect negatively the allocation of resources that are engaged in the procuring entity (Knack et al., 2019).

Therefore, there is need for procurement function to adopt a strategic role within the organization (Guarnieri & Gomes, 2019). The procuring organization should ensure that all procurement processes must be directed towards the strategic thinking in the procurement function. To succeed in the implementation of strategic role in procurement function, there is need to incorporate it with the e-procurement (Mrope, 2018).

Several studies have been conducted to strategic procurement practices and the performance of organizations. For example, a study by Nyabuto (2017), Nyamai (2018), Masiko (2013), Mutembei (2019) and Mueni et al. (2018). However, most of these studies focused on different sectors with the emphasis on financial performance. Therefore the purpose of this study was to fulfil the gaps that other existing studies have not addressed adequate.

2. Literature Review

2.1 E-procurement and the Performance of State Corporations

E-procurement is a process that uses information technology in processing purchasing records by exchanging information with the vendors and supporting purchasing decisions (Sanchez-Rodrigues et al., 2020; Ordanini & Rubera, 2008). Organizations are nowadays increased the uptake of information technology to their procurement processes in order to gain competitive advantage. Actually, the report from Boston Consulting Group found out that 9 of the top 20 Fortune 500 companies captured in their annual reports digital technologies assisted them greatly in their procurement operations (Hogel et al., 2018). Adoption of e-procurement can reduce time required in processing of orders, reduce the cost of managing orders and payment to suppliers, minimize transactional errors, improve data accuracy and quality of information received (Bahaddad et al., 2018). Similarly, e-procurement could save material cost between 5 and 10 percent, increase productivity to about 30 and 50 percent, enhance innovation, quality, high speed of processing documents in real time and assist in risk management (Hogel et al., 2018).

In addition, McKinsey consulting group noted that the procurement officers anticipate a 40% rise of annual savings, 30 to 50% reduction on time spent on sourcing 50% reduction wastage of resources due to uptake of digital procurement programs (Zeller & Drescher, 2017). Also, businesses performances reported improvements in overall firm's productivity in terms of financial performance due to digitalization of their procurement processes. Some of the procurement process performance benefits that organizations have accrued from e-procurement include the reduction of manufacturing costs as result of good coordination of manufacturing activities between buyers and vendors (Vaidya & Campbell, 2016) and better customer satisfaction due to lesser procurement errors.

Evidence have shown that e-procurement positively increase the performance of organizations (Tai et al., 2010). Equally, e-procurement improves the quality of information being shared between buyers and suppliers and hence improves decision making that contributes to overall effectiveness of organization (Tai et al., 2010). Indeed, e-procurement increases organizational performance in large firms and small and medium enterprises (SMEs) (Sanchez-Rodrigues et al., 2020).

2.2 Performance Measurement of State Corporations

The objective of performance measurement system is to aid in strategy implementation through formal systematic approach to monitoring and evaluating purchasing activities. Performance measure can help focus purchasing on adding value in a number of ways such as decision making, communication and visibility. Right measures enable improved decision making, by directing activity which is aligned to the needs of the organization and identifies variances from planned results. Establishing targets which are relevant to both purchasing personnel and their internal customers can facilitate an improved level of communication throughout the organization. It is important that other functions are aware of the contribution which purchasing can make so they may draw on it to their own advantage. A well-structured set of

objectives and targets will improve the visibility of activity both within the purchasing process and with the departments, identify areas of waste in terms of defects, delays and surplus and mistakes. It may also contribute to the status and profile of purchasing with the organization (Harrison & New, 2002).

Harrison and New (2002) in their study established that two of the top four management priorities in terms of SC performance were reduced order cycle time and reduced inventory costs. Moreover, reducing delivery costs and serving costs was also noted to be important operational objectives in organization. Likewise, the improvement of customer satisfaction and loyalty contributed to market share growth, which can be transformed into better financial performance (Yeung, 2008). The fact that customer satisfaction offers a broad range of benefits for organizations is well established in the literature. Procurement productivity cost and orders cycle time will be used to measure performance of state corporations.

Previous studies revealed that a satisfied customer is more likely to repurchase, which leads to increased sales and market share (Cronin & Morris, 1989). Customer satisfaction can also lead to profitability because it stimulates customers to purchase now and then (Verhoef, 2003). Therefore, customer satisfaction may lead increase customer loyalty and brand image, which in turn leads to high sales and profitability of an organization (Mittal & Kamakura, 2001). Furthermore, customers who are well satisfied may be willing to purchase products at premium prices and hence increase profitability (Homburg et al., 2005). In addition, according to Ennew (2003), he established that organization that is willing to retain customers is likely to attract new ones and increase organizations' profitability. Thus as a matter of fact, customer retention is an integral outcome of customer loyalty which increases the financial profitability of the organization and its market share (Anderson et al., 1994).

3. Methodology

3.1 Research Design, Sampling Technique and Sample Size

The study adopted a descriptive research design and involved gathering of facts opinions and views of procurement managers on how e-procurement influence the performance of KeRRA This design was appropriate since it identify characteristics, frequencies, trends, correlations, and categories. This study used Pagano et al. (2018) formula to calculate a sample size of 62 responds who were simple randomly pick from 47 branches of KeRRA in Kenya.

3.2 Instrument Development

Content validity is ensured by adapting all the instruments from the existing previous researches in e-procurement, which are deemed to have reliable and valid scales. A five-point Likert scale anchored by 1 (Strongly Disagree) 5 (Strongly agree) is used to investigate the degree of e-procurement in the opinion statements provided "kindly assess to what extent you agree or disagree with the following opinion statement". Performance of procurement state corporation was also measured using a five-point Likert scale of 1(Strongly Disagree) 5(Strongly Agree) and by ticking in the box of the revenue indicators provided for the last five years.

3.3 Data Collection

The study focused on the performance of state corporations because few studies are featured in this sector. The study targeted senior procurement managers to answer the dropped questionnaires since they possessed sufficient knowledge regarding the implementation and operations of e-procurement in their organisation. A random sample was used to collect the respondents from 47 branches of KeRRA across the 47 counties in Kenya. The sample size of 62 was used in the study and a response rate of 95.2% (59) was yielded.

4. Results

The following section contains the findings of e-procurement on the performance of state corporations in the descriptive and inferential statistics form. The respondents were asked to indicate the extent to which they agreed with e-procurement opinion statements executed in the KeRRA. The results of the analysis are presented in Table 4.1. From the findings in Table 4.1, the study findings showed that the majority of the respondents with (a mean = 4.12, SD=0.85) agreed that e-procurement has transformed all their routine purchasing transactions to high efficiency. Similarly, the study showed that

the majority of the responded with (a mean = 3.51, SD=1.02) were not sure if e-procurement provided them with better management information and knowledge regarding their suppliers. However, the majority of the respondents with (a mean = 2.77, SD=1.21) disagreed that e-procurement freed up procurement efforts and resources. Likewise, the study established that the majority of the respondents with (a mean = 2.91, SD=1.20) disagreed that e-procurement reduces the costs of acquiring materials. Further, study finding revealed that the majority of the respondents with (a mean = 3.86, SD=0.83) were not sure if e-procurement leads to better supply performance measurement.

Table 4.1: Descriptive Statistics of E-procurement

Statements	Std.	
	Mean	Deviation
a) E-procurement transforms all routine purchasing transactions to high efficiency.	4.12	0.85
b) E-procurement provides better management information and knowledge regarding suppliers	3.51	1.02
c) E-procurement frees up procurement efforts and resources	2.77	1.21
d) E-procurement reduces the costs of acquiring materials	2.91	1.20
e) E-procurement leads to better supply performance measurement	3.86	0.83

Simple linear regression findings on E-procurement

Simple linear regression was conducted to determine the influence of e-procurement on the performance of State Corporation. The model used was $Y = \beta_0 + \beta_1 X + \epsilon$. Where:

Y= Performance of State Corporation.

β_0 =Constant of the Model

β_1 is the coefficient for X1

X1= E-procurement

ϵ = error term

The linear regression model showed that adjusted R=0.243 which implied that 24.3 change of performance of State Corporation can be explained by unit change of e-procurement as shown in Table 4.2.

Table 4.2: Model Summary of E-procurement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.506 ^a	.256	.243	.87818

a. Predictors: (Constant), E-procurement

Results on ANOVA test found out that e-procurement is statistically significance with F-statistics value of (19.613) less than 0.05 since p value, p=0.00, as shown in Table 4.3.

Table 4.3: ANOVA of E-procurement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.125	1	15.125	19.613	.000 ^b
	Residual	43.958	57	.771		
	Total	59.084	58			

a. Dependent Variable: Performance of State Corporations

b. Predictors: (Constant), E-procurement

Additional test on beta coefficients of the resulting model, showed that the constant $\beta = 1.299$, if the independent variable of e-procurement was held constant then there would be a positive performance of State Corporations by 12.99. The regression coefficient for e-procurement was positive and significant ($\beta = 0.330$) with a t-value=2.705 (p-value<0.007). As shown in Table 4.4. Thus the regression equation was given as

Performance =1.299 +0.330 E-procurement + error

Table 4.4: Coefficients of E-procurement

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
				Beta		
1	(Constant)	1.299	.418		3.109	.003
	E-procurement	.330	.388	.506	2.705	.007

a. Dependent Variable: Performance of State Corporations

5. Discussion

5.1 Theoretical Contribution

The study findings showed that the majority of the respondents with (a mean = 4.12, SD=0.85) agreed that e-procurement has transformed all their routine purchasing transactions to high efficiency. This study finding, is in agreement with other studies reviewed in the literature that the adoption of e-procurement can reduce time required in processing of orders,

reduce the cost of managing orders and payment to suppliers, minimize transactional errors, improve data accuracy and quality of information received (Bahaddad et al., 2018).

Similarly, the study showed that the majority of the responded with (a mean = 3.51, SD=1.02) were not sure if e-procurement provided them with better management information and knowledge regarding their suppliers. However, the majority of the respondents with (a mean = 2.77, SD=1.21) disagreed that e-procurement freed up procurement efforts and resources. This study finding is not in harmony with the studies reviewed in the literature which indicates that e-procurement reduces wastage and free organizational resources due to uptake of digital procurement programs (Zeller & Drescher, 2017).

Likewise, the study established that the majority of the respondents with (a mean = 2.91, SD=1.20) disagreed that e-procurement reduces the costs of acquiring materials. This study finding is in agreement with studies reviewed in the literature that e-procurement process benefits that organizations have accrued from e-procurement include the reduction of manufacturing costs as result of good coordination of manufacturing activities between buyers and vendors (Vaidya & Campbell, 2016) and better customer satisfaction due to lesser procurement errors. Similarly, e-procurement could save material cost between 5 and 10 percent, increase productivity to about 30 and 50 percent, enhance innovation, quality, high speed of processing documents in real time and assist in risk management (Hogel et al., 2018).

Further, study finding revealed that the majority of the respondents with (a mean = 3.86, SD=0.83) were not sure if e-procurement leads to better supply performance measurement. From the literature reviewed, it showed that e-procurement positively increase the performance of organizations (Tai et al., 2010). Indeed, e-procurement increases organizational performance in large firms and small and medium enterprises (SMEs) (Sanchez-Rodrigues et al., 2020).

Results on ANOVA test found out that e-procurement is statistically significance with F-statistics value of (19.613) less than 0.05 since p value, $p=0.00$. This means that e-procurement positively influence the performance of State Corporations. This study finding is in harmony with other study reviewed in the literature that e-procurement positively increase the performance of organizations (Tai et al., 2010). Equally, e-procurement improves the quality of information being shared between buyers and suppliers and hence improves decision making that contributes to overall effectiveness of organization (Tai et al., 2010).

5.2 Managerial Contribution

The study concludes that e-procurement has transformed all their routine purchasing transactions to high efficiency at KeRRA. Similarly, the study concludes that KeRRA procurement officials were not sure if e-procurement provided them with better management information and knowledge regarding their suppliers. However, the study concludes that e-procurement does not freed up procurement efforts and resources. Likewise, the study concludes that e-procurement does not reduce the costs of acquiring materials in the organization. Further, study concludes that KeRRA procurement officials were not sure if e-procurement leads to better supply performance measurement. The study concludes that change of performance of State Corporation can be explained by unit change of e-procurement. Therefore, there is a positive significant relationship between e-procurement and the performance of State Corporations. Thus, the study recommends that KeRRA should use e-procurement appropriately to reduce the costs of acquiring materials in the organization.

5.3 Limitations and Future Research

The study provides relevant knowledge in formulating a policy framework on efficient and effective management and implementation e-procurement in the public sector. Also, the study shows that if the e-procurement is properly embraced, it will increase the performance of state corporations. However, the study limited only to the e-procurement and yet it can only be applied in certain thresholds. Thus, a similar study can be conducted in the private sector to validate the findings.

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