



**INFLUENCE OF E-PROCUREMENT ON PERFORMANCE OF STATE CORPORATIONS IN KENYA**

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### ABSTRACT

The purpose of this study was to establish how E-procurement influence performance of state corporations in Kenya. The study employed descriptive research design with sample population of 127 State Corporations in Kenya. The study used primary data which was collected using a comprehensive questionnaire. Quantitative data collected was analysed by the use of descriptive statistics using SPSS (version 23). The study findings indicated a very strong positive relationship between the independent variables and dependent variable. The study concluded that the set of independent variables were very significant and they therefore needed to be considered in any effort to enhance performance of the state corporation in Kenya. The study recommended that there was need to enhance E-Ordering to enhance electronic preparation of specification to facilitate error reduction in the specifications for the goods to be procured. E-ordering also enhances electronic advertisement of tender and transmission of bid documents to tenderers for filling can reduce the bureaucracy in the bid evaluation process to enhance time savings. The study recommended that E-sourcing can foster integrity in the procurement process. It can also facilitate evaluation improvement especially on the audit trail in bid evaluation thus contributing to transparency in the tendering process. It can also enhance transmission of contract awarded results to bidders to enhance faster dissemination of information. The study recommended for the E-ordering especially for electronic preparation of purchase order to enhance error reduction to foster accuracy in the orders prepared. The electronic approval of purchase can help the supplier minimize manual paper trail thus reduction in the stationery expenses. This would facilitate the faster information exchange thus good buyer/supplier relationship. Electronic transmission of purchase order to the supplier allows faster delivery of goods. The study recommended for E-Invoicing especially receiving of invoices from the suppliers allows error reduction in the invoices thus enhancing accuracy of invoice details. Electronic approval of invoices allowed management to visualize the status on each tendering process thus enhanced transparency.

**Key Words:** E-tendering, E-sourcing, E-ordering, E-invoicing, State Corporations

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## INTRODUCTION

The public sector and corporate world have faced new technological developments in the way they operate with the aim of managing the operational costs while meeting the organizational goals and objectives. The advent of technological invasion has created e-market which has led to faster connectivity within the public sector (Muhia & Afande, 2015) This can be seen with the benefits of E-procurement especially online purchasing not only has enhanced saving of costs but also improving the way public sector operate. It has helped the public sector to connect with the suppliers and strategically in better position to get better buying as well as slash down the administration costs (Kamotho, 2014).

E-procurement has been defined in terms of usage of internet-based information and communication technologies (ICTs) to carry out individual or all stages of the procurement process including; sourcing, negotiation, ordering, receipt, and post purchase review (Shale, 2015). While there are various forms of e-procurement that concentrate on one or many stages of the procurement process such as e-tendering, e-market place, e-auction/reverse and e-catalogue/purchasing, e-procurement can be viewed more broadly as an end to end solution that integrates and streamlines many procurement processes throughout the public sector.

Electronic procurement has been embraced by many public organizations as a way of doing business is around the globe and is projected to reach \$3trillion in transaction by the year 2018, up from \$75 billion in 2012 (Kinoti, 2013). E-procurement has enhanced competitive purchasing strategies in the public sector by many governments around the world (Amayi & Ngugi, 2014) as a way to maximize the use internet based technologies (including e-procurement) in every aspect which supply chain, increasing the speed of information transfer and reducing non-value adding tasks with the aim of cost reduction and service delivery.

In Africa, many public sector organizations view effective E-procurement a truly sustainable solutions which can often cost less over the whole life of the purchase (Ngeno & Omwenga, 2015). According to Shale (2015) highlighted benefits of E-procurement adoption include: value for money, protection and enhancement of the environment, more efficient use of resources, greater social inclusion, better risk management, lower whole-life costs improved supplier relationships, a diverse and flexible supply chain with aim of enhancing service delivery

Shale (2015) explains that both levels of governance are split into economic and administrative structures, which are managed jointly. GoK (2015) explains that GoK does not only focus on effectiveness and efficiency of public procurement processes, but has a responsibility of ensuring accountability, transparency, and interactive access of information pertaining public expenditure though E-procurement. All these are done in an effort to improve public service delivery. Wainaina (2014) explains that to meet this level of expectation, emphasis is laid on procurement practices and operations.

State Corporations in Kenya are formed by the government to meet both commercial and social goals. They exist for various reasons including: to correct market failures, to exploit social and political objectives, provide education, health, redistribute income or develop marginal areas. In 2013, the Presidential Task Force on Parastatal Reforms (PTFPR) published a list of all state-owned enterprises (SOEs) and recommended proposals to reduce the number of State Corporations from 262 to 187 in order to eliminate redundant functions between parastatals, close or dispose of non-performing organizations, consolidate functions wherever possible, and reduce the workforce. However, progress is slow.

According to Guidelines on State Corporations from the Office of the President (2010), state corporations in Kenya being classified into eight broad functional categories based on mandate and

core functions. The eight categories are Financial; Commercial; Regulatory; Public Universities; Training and Research; Service; Regional Development Authorities; and, Tertiary Education (Kamotho, 2014). A Commercial state corporation is a statutory entity created by the government to conduct commercial activities on behalf of the government. It is also referred to as a parastatal or state business because it is the part of the economy that is entirely controlled by the government for the purpose of providing essential government services

### **Statement of the Problem**

According to McKinsey report (2016), government purchases of goods and services account for about 5%-8% of the GDP in OECD countries. Public sector procurement spending accounts for huge percentage of total budget, approximated at 30% of the public budget in Kenya (GoK, 2010). Effective ICT pre supposes strategy; hence it evolves a cooperative model needed to maximize the supplier's value to the enterprise Shale, 2015). State Corporations in Kenya have been experiencing a myriad of problems including corruption, nepotism and mismanagement (G.o.K, 2017).The public investment committee reports out of 130 reports examined by the Auditor General, only 23 Corporations managed a clean bill of health (Kamotho, 2014). The general story is one of loss, fraud, theft and gross mismanagement which are hampering improved and sustained performance and service delivery

A number of studies have been carried out on E-procurement and public procurement. Ruth (2012) in her study of information technology and procurement process in Kenya found out that, information technology if used appropriately can offer: smoother and faster process flow, efficient distribution of information, decentralization of tasks and decisions, increased transparency and better control in public procurement. Her findings however fall short of focusing on e-procurement as the main ICT tool that radically enhances

procurement performance in the public sector which was the domain of the current study. Meso (2010) carried out a study on Public e-procurement in Kenya: a critical analysis of the legal technological and governance challenges. According to her findings, E Procurement is slowly gathering momentum but the existing legal framework does not adequately support it. Orina (2013) in her study on E-procurement readiness factors in Kenya's. Public sector found that resistance to change, lack of enthusiasm, staff skills, and to some extent procurement policies impacted the readiness of e-procurement in public institutions.

From the foregone discussion, it is clear that; despite the centrality of e-Procurement as a key strategy for performance in organisation, there is inadequate literature from previous empirical studies relating e-Procurement and procurement performance particularly among the state corporations. While a number of past studies have unraveled the impact of e-Procurement most of them have not exhaustively investigated the role of e-procurement in enhancing procurement performance in state corporations. Against this backdrop the current study was set to establish the influence of E-Procurement on enhancing performance among state corporations in Kenya.

### **Objectives of the Study**

The general purpose of the study was to establish the influence of E-procurement on performance of state corporations in Kenya. The specific objectives were:-

- To establish the influence of E-sourcing on performance of state corporations in Kenya.
- To determine influence of E-tendering on performance of state corporations in Kenya.
- To examine influence of E-Ordering on performance of state corporations in Kenya
- To find out influence of E-Invoicing on performance of state corporations in Kenya.

## LITERATURE REVIEW

### Theoretical Review

#### Adaptive Structuration Theory

Based on structuration theory, the study intends to determine the effects of E-procurement on organizational performance. Structuration theory was first proposed by Anthony Giddens in his constitution of the society in 1984, which was an attempt to reconcile social systems and the micro/macro perspective of organizational structure. Desanctis and Poole (2014) borrowed from Giddens to propose AST and the rise of group decision support systems.

AST provides the model whereby the interaction between advancing information technologies, social structures, and human interaction is described, and which social structures, rules, and resources provided by IT as the basis for human activity. AST is a viable approach in studying how IT affects supply chain performance because it examines the change from distinct perspectives. AST is relevant in today's supply chain practices due to the expanding influence that advancing technologies have had concerning the human- interaction aspect of AST and its implication on socio-biologically inspired structuration in security software applications (Ramakrishna, 2005).

#### Technology Acceptance Model (TAM)

Davis (1993) developed and validated the Technology Acceptance Model (TAM) to explain the mechanisms that influence and shape users' acceptance of new information technology. According to TAM, there are two specific variables that are fundamental determinants of users' attitude towards using information technology and actual use of the system: perceived usefulness and perceived ease of use relatively to new information system design features. Usefulness is defined as the degree to which someone believes that using a system will enhance his performance and ease of use is defined as the degree to which user believes that benefits

of systems' use are outweighed the efforts for using it (Hu, et al, 1999).

ICT implementation entails changes that includes reengineering the existing system within the organization that will ultimately impact on the way tasks are conducted (Kaliannan, et al, 2008). Major tasks carried out within a firm that can be greatly changed as a result of E-Procurement adoption include the ordering process which involves tasks like: order preparation, order approval and order transmission to the supplier.

#### Institutional Theory

Institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions. As such, Scott identifies three pillars of institutions as regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism with a view of ensuring compliance. As the basis of compliance, normative pillar defines norms and the things that should be done; preferred or desirable values that should be adhered to; and social responsibility. Finally, cultural-cognitive pillar rests on common beliefs, symbols, perceptions that together bolster shared understanding (Scott, 2005). Studies have indicated that state corporations are much more vulnerable to institutional forces than for profit oriented entities.

As such, institutional theory has become a prominent lens through which organizational processes are interpreted and understood (Makau, 2014). This is more visible in state procurement during procurement of goods and services in open tendering. Since there is need for achievement for value for money in state procurement, there are a lot of rules and regulations put in place by the government that public entities are expected to adhere to (Oliver, 1991).

#### Transaction Cost Theory (TCT)

This theory is anchored on the premise that the relationship between human and environmental

factors is the reason why transaction costs increase in the economic system (Wang, 2003).The interdependence of factors contributing to transaction costs can contribute to their increase or decrease. Thus, effort to reduce transaction costs should not aim at reducing the effect of a single factor but the effects of the interdependence between factors (Grover, & Malhotra, 2003).As such, in the procurement of goods and services for state corporations, transactional cost can be reduced by automating procurement processes.

During tender award in an open tendering in state corporations, sourcing of suppliers and subsequent process of evaluation is normally carried out to make a decision on the winning bidder. As such, the analysis of the amount quoted by various bidders in terms of cost and overheads is normally conducted in order to determine the actual price chargeable that can be negotiated. Since one of the major objectives of ICT adoption is to enhance cost reduction by eliminating transaction cost, TCT remains the best model to be used in answering all questions pertaining to E-Sourcing on t performance of state corporations in Kenya.

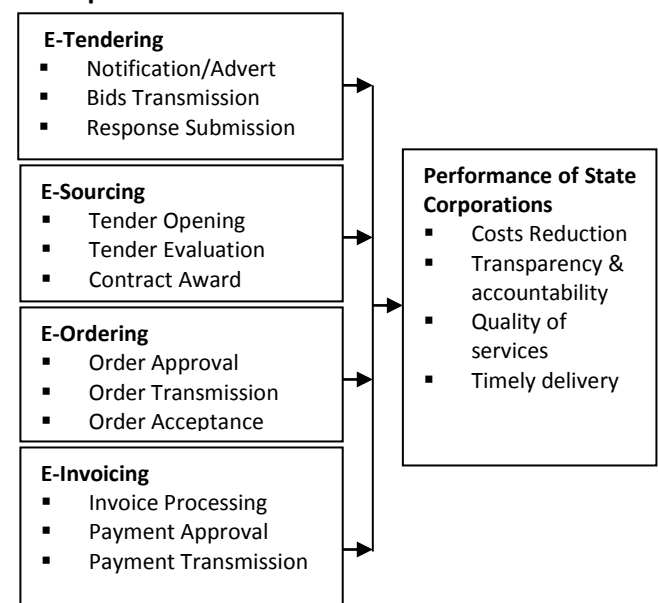
### Technology-Organization Environment (TOE) Framework

TOE framework was developed in 1990 (Oliveira & Martins, 2011).TOE model has three areas that an organization uses to determine how to take advantage of the new technology relating to E-business, which can influence the process of adopting, implementing and using technological innovations. These areas include: firstly; technological context. This refers to the existing as well as new technologies relevant to the firm. These include consideration factors such as: prior technology usage, and number of computers in the firm.

Secondly, Organizational context; which refers to descriptive measures about the organization such as scope, organization structure, size, financial support, managerial beliefs and managerial structure (Lee,et al,2009).Thus an organization

replaces a new innovation in its processes with a view of improving the effectiveness and efficiency of its performance (Wen & Chen,2010).Finally; Environmental context which focuses on the external factors that drive firms to adopt new technology such as linking up with strategic suppliers, corporations branches, key customers of a corporation and tax collection government agencies (Gibbs,& Kraemer,2004).

### Conceptual Framework



Independent Variables      Dependent Variable

Figure 1: Conceptual Framework

Source: Author (2019)

### Empirical Review

#### E-Tendering

Kamotho (2014) investigated the E-Procurement and procurement performance among state corporations in Kenya. Findings of the study revealed that E-Tendering and E-Invoicing has greatly enhanced performance. As a result, the following has been realized: reduction of errors in order transmission, reductions in inventory, assured supply and reduction of production stoppages, reduced work content in the total 'requisition to payment" process, transaction cost reduction, reduction in the time taken to complete the procurement process, ensuring stronger

vendor-buyer relationship, improved procurement resource utilization, ensuring better contracts and delivery of best-value contracted goods and service.

Gathima and Njoroge (2018) examined the effect of e-tendering on the performance of County Government of Nairobi. The study was guided by innovation diffusion theory and transaction cost theory. It utilized the descriptive research design and explanatory design. The target population comprised 750 respondents drawn from the finance, payment and information technology department. The study sample comprised 75 respondents selected from the three departments using stratified random sampling technique. The data was collected through the administration of the questionnaires to the selected sample. The correlation analysis results indicated that at 95% confidence interval, E-tendering practices had positive and significant relationship with the performance in Nairobi City County Government. The study recommended that the Nairobi City County pay a lot of attention in adopting and implementing various aspects of e-tendering to ensure that its activities remain improved

### **E-Sourcing**

Kimutai and Ismael (2016) sought to establish the role of strategic e-sourcing practices on supply chain performance in state corporations and thereby determine the value addition in the value chain. The study was a cross-sectional survey and an analysis of purchasing activities in state corporations at given period. The target population in this study included staff in top level management, supply chain, ICT, Finance and customer service at Kenya Generating Co. Ltd drawn from the one hundred and eighty seven (187) state corporations.

Stratified random sampling was adopted for commercial and non-commercial State Corporation based on government shareholding in various ministries within Nairobi County. Data collection was both quantitative and qualitative; questionnaires, unstructured interviews and

observation were used to collect data. Further analysis using linear regression model was used to establish the relationship between the independent and dependent variables. The study found that Organization cost reduction is important in customer service, return on investment and total cost while organization cost reduction is slightly important in impacting return on investment and speed of delivery.

### **E-Ordering**

Oteki (2019) examined the influence of electronic procurement practices on supply chain performance of sugar processing firms in Kenya guided by specific objective, to establish the influence of electronic order processing practice on supply chain performance. Mixed research design was applied and the target population comprised of 12 sugar processing firms in Kenya with a target population of 7,584. Stratified random sampling was applied to come up with a sample size of 367. Data was gathered by a self-administered drop and pick questionnaire, interviews and observation. The results revealed that there was significant relationship between electronic order processing practice and supply chain performance. The study concludes that electronic order processing practice enhances supply chain performance.

Chepkwony and Lagat (2016) sought to determine the effect of E-ordering and E-informing on supply chain performance. The study was informed Innovation Diffusion Theory. Explanatory research design was employed in this study. Targeted population was 244 procurement officers from 112 Kenyan Retail outlets. Multiple regression mode findings showed that e-ordering and e-informing had a positive and significant effect on supply chain performance. The study concludes that e-ordering and e-informing which are elements of e-procurement dimensions increases supply chain performance.

### **E-Invoicing**

Chepkwony and Lagat (2016) investigated influence of technology (Electronic Data Interchange and

Electronic Invoicing) adoption and implementation on buyer-seller relationships in the business-to-business market. The methodology applied in the study was qualitative. The research comprised the study of three case companies that operated in different fields, such as textile production and marketing, machinery and power plant building, and airlines. Based on the results of this study, the implementation of electronic invoicing affects the various aspects of the business-to-business relationship with different strength.

Poel, Marneffe and Vanlaer (2016) argued that governments around the world identify the advancement of electronic invoicing in businesses as crucial for tackling administrative burdens. In their study which examined the potential cost savings of e-invoicing in Belgium, showed that the total cost of invoicing for Belgian private sector businesses in 2014 amounted to €3.47 billion (0.96% of GDP) and could be reduced to €1.46 billion (0.38% of GDP) if all invoices were sent digitally. Furthermore, an analysis of both barriers and enablers of e-invoicing revealed significant concerns that remain regarding the safety of e-invoicing, although a majority of private sector businesses clearly identifies the potential efficiency gains.

## METHODOLOGY

This study adopted descriptive research design to establish the relationship between E-procurement on performance of state corporations in Kenya (Maxwell, 2012). The population of the study was state corporations in Kenya. According to the GoK (2019) there were one hundred and eighty seven (187) Kenyan State Corporations spread across all twenty two ministries as at 3st January, 2019Yin (2017) states the study population as the entire group of individuals or items under considerations in any field of inquiry and had a common attribute in the study. This study applied both primary and secondary data. The primary data was entered into a computer and analyzed using Statistical Package for Social Sciences (SPSS Version 24). The multiple

linear regression model that aided the analysis was as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y = Performance of state corporations

X<sub>1</sub> = E-Tendering

X<sub>2</sub> =E-Sourcing

X<sub>3</sub> = E-Ordering

X<sub>4</sub> = E-Invoicing

- i.  $\{\beta_i; i = 1, 2, 3, 4\}$  = The coefficients representing the various independent variables also called predictor variables
- ii.  $\epsilon$  is the error term

## RESULTS

### E-Tendering

The study sought to assess the influence of E-tendering on performance of state corporations in Kenya. This section presented findings to statements posed in this regard with responses given on a five-point Likert scale (where 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5= Strongly Agree). Table 1 presented the findings. The scores of 'strongly disagree' and 'disagree' had been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' had been taken to represent a statement equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' had been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.0.

Table 1 presented the findings as tabulated, a majority of respondents were found to agree with the statement posed in regard to the influence of E-Tendering on performance of state corporations in Kenya. The study established that Electronic preparation of specification led to error reduction in the specs for the goods to be procured



(Mean=3.788, std=.987). Electronic advertisement of tender to the public had led to reduction in the cost of advertisement (Mean= 4.164; Std=.769). Electronic transmission of bid documents to tenderers for filling in had reduced the bureaucracy in the bid evaluation process (Mean= 4.009; std= .876). Electronic submissions of bid documents by tenderers had reduced manual document handling activities (Mean= 4.217; std= .546). Electronic advert of bids reaches a wider scope (Mean=4.214; std= .588). The study results implied that E-tendering influence performance of state corporations in Kenya.

The study finding collaborated with other studies which have revealed key aspects of output enhancement in the procurement cycle (Kamotho, 2014). These include: Increased efficiency which can be realized through faster response to questions and points of clarification during tender period; better access to procurement spending information and analytical reports; remote office operation is made possible as all authorized parties can access E-tender via a secured channel thus cross border tendering process can be achieved; shortening of tender analysis and procurement cycle thus allowing users to allocate resources and time for other critical issues(Hardy & Williams,2011).

**Table 1: Influence of E-Tendering on Performance of State Corporation**

<b>E-Tendering</b>	<b>Mean</b>	<b>Std. Dev</b>
Electronic preparation of specification has led to error reduction in the specs for the goods to be procured	3.788	.987
Electronic advertisement of tender to the public has led to reduction in the cost of advertisement.	4.164	.769
Electronic transmission of bid documents to tenderers for filling in has reduced the bureaucracy in the bid evaluation process	4.009	.876
Electronic submissions of bid documents by tenderers have reduced manual document handling activities	4.217	.546
Electronic advert of bids reaches a wider scope	4.214	.588

### **E-Sourcing**

The study sought to assess the influence of E-sourcing on performance of state corporations in Kenya. This section presents findings to statements posed in this regard with responses given on a five-point Likert scale (where 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5= Strongly Agree). Table 2 presented the findings. The scores of 'strongly disagree' and 'disagree' had been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' had been taken to represent a statement equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.0.

Table 2 presented the findings as tabulated, a majority of respondents were found to agree with the statement posed in regard to the influence of E-sourcing on performance of state corporations in Kenya. The study established that electronic tender opening fosters integrity in the procurement process (Mean=4.121, std=.789 Electronic tender evaluation improves audit trail in bid evaluation (Mean= 4.231; Std=.721). Electronic transmission of contract award results to bidders allows faster dissemination of information (Mean= 3.987; std= .609). Electronic signing of contract allows easy tracking of agreements. (Mean= 4.198; std= .316). Electronic tender evaluation allows speed in the evaluation process thus increased time saving (Mean= 3.876; std= .767). The study results implied that E-sourcing influence performance of state corporations in Kenya.

**Table 2: Influence of E-Sourcing on Performance of State Corporation**

<b>E-Tendering</b>	<b>Mean</b>	<b>Std. Dev</b>
Electronic tender opening fosters integrity in the procurement process	4.121	.789
Electronic tender evaluation improves audit trail in bid evaluation	4.231	.721
Electronic transmission of contract award results to bidders allows faster dissemination of information.	3.987	.609
Electronic signing of contract allows easy tracking of agreements	4.198	.316
Electronic tender evaluation allows speed in the evaluation process thus increased time saving.	3.876	.767

**E-Ordering**

The study sought to assess the influence of E-ordering on performance of state corporations in Kenya. This section presented findings to statements posed in this regard with responses given on a five-point Likert scale (where 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5= Strongly Agree). Table 3 presented the findings. The scores of 'strongly disagree' and 'disagree' had been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' had been taken to represent a statement equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' had been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.0.

Table 3 presented the findings as tabulated, a majority of respondents were found to agree with the statement posed in regard to the influence of E-

**Table 3: Influence of E-Ordering on Performance of State Corporation**

<b>E-Ordering</b>	<b>Mean</b>	<b>Std. Dev</b>
Electronic preparation of purchase order has led to enhanced error reduction	4.210	.785
Electronic approval of purchase order has increased audit trail	4.431	.865
Electronic transmission of purchase order to the supplier minimizes manual paper trail	4.271	.568
Electronic acceptance of the purchase order by the supplier allows faster information exchange	4.321	.798
Electronic transmission of purchase order to the supplier allows faster delivery of goods thus increased order fulfilment.	4.111	.787

**E-Invoicing**

The study sought to assess the influence of E-Invoicing on performance of state corporations in Kenya. This section presented findings to statements posed in this regard with responses

ordering on performance of state corporations in Kenya. The study established that electronic preparation of purchase order had led to enhanced error reduction (Mean= 4.210, std=.785); Electronic approval of purchase order had increased audit trail (Mean= 4.431; Std=.865). Electronic transmission of purchase order to the supplier minimizes manual paper trail (Mean= 4.271; std= .568). Electronic acceptance of the purchase order by the supplier allowed faster information exchange (Mean= 4.321; std= .798). Electronic transmission of purchase order to the supplier allows faster delivery of goods thus increased order fulfilment (Mean= 4.111; std= .787). The study results implied that E-ordering influence performance of state corporations in Kenya.

given on a five-point Likert scale (where 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree). Table 4 presented the findings. The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The

score of 'Neutral' had been taken to represent a statement equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.0.

Table 4 presented the findings as tabulated, a majority of respondents were found to agree with the statement posed in regard to the influence of E-Invoicing on performance of state corporations in Kenya. The study established that Electronic receiving of invoices from the suppliers allows error reduction in the invoices. (Mean= 4.324, std=.549);

Electronic processing of invoices in payment preparation minimized manual paper trail thus reduction in the stationery expenses (Mean= 4.098; Std=.784). Electronic approval of invoices allows management to visualize the status on each tendering process (Mean= 4.122; Std= .765; Electronic transmission of payment to the supplier against goods delivered increases audit trail (Mean= 4.009; Std= .238). Electronic transmission of payment to the supplier allows speedy remission of funds (Mean= 3.989; Std= .009). The study results implied that E-Invoicing influence performance of state corporations in Kenya.

**Table 4: Influence of E-Invoicing on Performance of State Corporation**

E-Invoicing	Mean	Std. Dev
Electronic receiving of invoices from the suppliers allows error reduction in the invoices	4.324	.549
Electronic processing of invoices in payment preparation minimizes manual paper trail	4.098	.784
Electronic approval of invoices allows management to visualize the status on each tendering process	4.122	.765
Electronic transmission of payment to the supplier against goods delivered increases audit trail	4.009	.238
Electronic transmission of payment to the supplier allows speedy remission of funds	3.989	.009

**Performance of State Corporation**

On the extent to which state corporation performed in terms of cost reduction, timely delivery of services, transparency and accountability respondents were asked to indicate the extent to which the E-procurement determined the procurement performance. The data was collected from the different indicators of the variable performance which was ordinal categorical. The data was therefore presented in frequency tables with the median being used as the appropriate measure of central tendency. The results were presented in Table 5. The first indicator for the dependent variable required to know what the organizations level procurement performance was compliance with procurement regulations was, 0% of the respondents had 0-20%, 3% had 21-30%, 11% had 31-40%, 17% had 41-50%, 69% had had over 50%. The modal class was of the respondents who had over 50% compliance. The median was found to be 5 which implied that on average the organizations level of compliance with procurement regulations was over 50%. The next indicator

required the respondents to state the level of minimization of procurement expenditure in the organization, 3% of the respondents had 0-20%, 3% had 20-30%, 14% had 31-40%, 26% had 41-50%, 49% had over 50%. The modal class is of the respondents who had over 50%. The median was found to be 5 which implied that on average firm's levels of minimization of procurement expenditure was by over 50%. When the respondents were asked what the level of transparency and accountability of procurement funds was, 0% of the respondents 0-20%, 3% had 21-30%, 3% had 31-40%, 34% had 41-50%, 60% had over 50%. The modal class was of the respondents who had over 50% transparency. The mode was found to be 5 which implied that on average the level of transparency and accountability of procurement funds in organizations is over 50%. Finally, the respondents were asked what the level of quality of procured goods and services offered was, 0% of the respondents 0-20%, 3% had 21-30%, 20% had 31-40%, 43% had 41-50%, 34% had over 50% The modal class is of the respondents who had between

41-50% quality level. The mode was found to be 4 which imply that on average the level of quality of

procured goods and services offered is between 40-50%.

**Table 5: Performance of State Corporations**

Statement	0%-20%	21%-30%	31%-40%	41%-50%	Over 50%	Mode
What is the level of compliance with procurement regulations?	0	3	11	17	69	5
What is the level of minimization of procurement expenditure?	3	3	14	26	49	5
What is the level of transparency and accountability of procurement funds	0	3	3	34	60	5
What is the level of quality of procured goods and services offered?	0	3	20	43	34	4

### Multiple Regression Analysis

**Table 6: Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	.833	.694	.677	.000

**Table 7: ANOVA**

Model	Sum of Squares	d.f	Mean Square	F	Sig.
Regression	40.169	4	10.042	55.573	.000 <sup>a</sup>
Residual	17.712	98	.1807		
Total	57.881	102			

NB: F-critical Value = 18.908;

#### Regression Coefficients

The results of multiple regression analysis obtained regression coefficients t value and significance level. The study conducted a multiple regression analysis so as to determine the relationship between the dependent variable and independent variables. The general form of the equation was to predict performance of state corporations from E-tendering, E-sourcing, E-ordering and E-invoicing is:  $(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon)$  becomes:  $Y = 15.780 + 0.789X_1 + 0.768X_2 + 0.735X_3 + 0.658X_4$ .

From the study findings on the regression equation established, taking all factors into account (independent variables) constant at zero performance of state corporation was 15.780. The data findings analyzed also showed that taking all other independent variables at zero, a unit increase in E-tendering would lead to a 0.789 increase in performance of state corporation. Based at 5% level of significance, E-sourcing had a t-value

(4.320>1.96) with a .002 level of significance. The study findings were in agreement with literature review by Ansari (2009) that E-sourcing allows firm to make better use of their suppliers capabilities and coordinating operational activities through joint planning also results to inventory reduction, smoothing production, improve product quality, and lead time reduction

Further, a unit increase in E-sourcing would lead to a 0.768 increase in performance of state corporation. Based at 5% level of significance, E-sourcing had a t-value (4.122> 1.96) with a .006 level of significance. The study findings are in agreement with literature review by Walker et al., (2013) notably, public strategic procurement is well elaborated by the Agency theory that focuses on relationships between firms and organizations. Walker et al., (2013) argue that organizations may benefit more by E-sourcing than by acting alone because of economies of scale, process, and/or

information. E-sourcing may reduce waste in the procurement system, achieve better outcomes for taxpayers, and, hence, improve the overall socioeconomic position

Additionally, a unit increase in E-ordering would lead to 0.735 increases in performance of state

corporation. Based at 5% level of significance, ICT had a t-value (3.657 > 1.96) with a .009 level of significance. A unit increase in E-Invoicing would lead to 0.658 increases in performance of state corporation. E-Invoicing had a t-value (2.890 > 1.96) with a .011 level of significance.

**Table 7: Coefficient Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	B		
(Constant)	15.780	2.933		5.380	.000
X <sub>1</sub> _E-Tendering	.789	.182	.522	4.320	.002
X <sub>2</sub> _E-Sourcing	.768	.186	.458	4.122	.006
X <sub>3</sub> _E-Ordering	.735	.200	.388	3.657	.009
X <sub>4</sub> _E-Invoicing	.658	.227	.376	2.890	.011

## CONCLUSIONS

The study concluded that E-tendering influence performance of state corporations in Kenya. The regression coefficients of the study showed that E-tendering had a significant positive influence on sustainable performance of state corporations in Kenya. This implies that increasing levels E-tendering would increase the levels of performance of state corporations in Kenya. This showed that E-tendering has a strong positive influence on performance of state corporations in Kenya.

In addition, the study concluded that E-Sourcing influence performance of state corporations in Kenya. The regression coefficients of the study show that E-sourcing has a significant positive influence on sustainable performance of state corporations in Kenya. This implies that increasing levels E-sourcing would increase the levels of performance of state corporations in Kenya. This showed that E-sourcing has a strong positive influence on performance of state corporations in Kenya.

Further, the study concluded that E-Ordering influence performance of state corporations in Kenya. The regression coefficients of the study showed that E-Ordering has a significant positive

influence on performance of state corporations in Kenya. This implies that increasing levels E-Ordering would increase the levels of performance of state corporations in Kenya. This showed that E-Ordering had a strong positive influence on performance of state corporations in Kenya.

Finally, the study concluded that E-Invoicing influence performance of state corporations in Kenya. The regression coefficients of the study showed that E-Invoicing has a significant positive influence on performance of state corporations in Kenya. This implied that increasing levels E-Invoicing would increase the levels of performance of state corporations in Kenya. This showed that E-Invoicing had a strong positive influence on performance of state corporations in Kenya.

## RECOMMENDATIONS

The study recommended that there is need to enhance E-Ordering to enhance electronic preparation of specification to facilitate error reduction in the specifications for the goods to be procured. E-ordering also enhances electronic advertisement of tender and transmission of bid documents to tenderers for filling can reduce the bureaucracy in the bid evaluation process to enhance time savings.

The study recommended that E-sourcing can foster integrity in the procurement process. It can also facilitate evaluation is improved especially on the audit trail in bid evaluation thus contributing to transparency in the tendering process. It can also enhance transmission of contract awarded results to bidders to enhance faster dissemination of information.

The study recommended for the E-ordering especially for electronic preparation of purchase order to enhance error reduction to foster accuracy in the orders prepared. The electronic approval of purchase can help the supplier minimizes manual paper trail thus reduction in the stationery expenses. This will facilitate the faster information exchange thus good buyer/supplier relationship. Electronic transmission of purchase order to the supplier allows faster delivery of goods.

The study recommended for E-Invoicing especially receiving of invoices from the suppliers allows error reduction in the invoices thus enhancing accuracy

of invoice details. Electronic approval of invoices allowed management to visualize the status on each tendering process thus enhanced transparency. Electronic approval of invoices allowed management to visualize the status on each tendering process thus enhanced transparency.

#### **Areas for Further Research**

The study was a milestone for further research in the field of public procurement in state corporations in Kenya. The findings demonstrated that E-procurement affected performance of the state corporations to include; E-tendering, E-sourcing, E-Ordering and E-Invoicing. The current study should therefore be expanded further in future in order to determine the effect of E-procurement on service delivery in the state corporations in Kenya. There is need to undertake similar research in other government institutions and public sector organization and private sector in order to establish whether the explored factors can be generalized.

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