ADOPTION OF E-PROCUREMENT AND FINANCIAL PERFORMANCE OF MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY, KENYA

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ABSTRACT

The core and critical challenge mostly experienced by MOEST include application of effective supply chain management procedures and practices as well as poor information and communication technology integration among others. MOEST is operating in emerging markets that have multi-businesses linked through supply chain management practices cross-subsidization and are therefore generally viewed as having a complex supply chain management system. The concept of finance considerably contributes to the performance of public institutions. In the current dynamic business environment, organizations require reliable and fast information so as to improve their decision making regarding adapting in an effort to improve organizational performance. The general objective of this study was to determine how e-procurement adoption affects the financial performance of Ministry of Education, Science and Technology, Kenya. The specific objectives were to find out the effect of e-tendering, e-sourcing, e-ordering and e-informing on financial performance of Ministry of Education, Science and Technology, Kenya. Descriptive research design was used. The population of the study was employees in the Ministry of Education, Science and Technology. The study used census method, implying that all the individuals in the target population were used. The study's sample size was 40 staff working in information technology, accounts, procurement and finance departments. Primary data was collected from respondents via questionnaires. Descriptive statistics included percentages, frequencies, mean and standard deviation. Inferential statistics made use of multiple regression analysis. Statistical analysis of the data gathered revealed that e-tendering, e-sourcing, e-ordering and e-informing have a statistically significant effect on financial performance. The study found that e-tendering has a significant effect on the financial performance in the Ministry of Education, Science and Technology (r=0.788, p-value=0.006). In addition, E-sourcing had a significant effect on the financial performance in the Ministry of Education, Science and Technology (r=0.611, p-value=0.016). Further, e-ordering had a significant effect on financial performance in the Ministry of Education, Science and Technology (r=0.578, p-value-0.021). Also, e-informing had a significant effect with financial performance in the Ministry of Education, Science and Technology (r=0.852, p-value=0.000). The study recommends that MOEST should ensure that procurement policies and regulations are adhered to so as to be ethical in the tendering process. MOEST should enhance their e-sourcing activities so as to gain control over their tender processes and an audit path for compliance purpose and to support collaboration and allow various stakeholders to easily work together. MOEST should practice e-ordering in order to improve employee productivity, receive accurate orders, create a better experience for customers. Since e-informing has a positive influence on financial performance, the study recommends that it is important for MOEST to obtain the information of the suppliers on their previous clients as well as their experiences. It is also important to consult references for product/service quality, electronically, so as to improve the financial performance of MOEST.

Key Words: *e-procurement, financial performance, ministry of education, science and technology, Kenya*

INTRODUCTION

Any procurement principle`s goal is to obtain the correct service or product, at the correct time, at the correct place, at the correct price in the possible manner that is most efficient. If procurement is carried out correctly, the accruing benefits from best practices like those include; save money, value addition and time to their product or service (Aboelmaged, 2010). Archer and Yuan (2010) observe that communication technologies and information are transforming the organizations ways of doing business especially e-commerce and e-business adoption. Organizations in many industries utilize electronic procurement (e-procurement) by trying to raise the supply/purchasing management function efficiency as well as reducing the price.

The process of procurement entails specifying and identifying the initial need by users, by the search, contracts negotiation and sourcing stage as well as placement of order which include mechanisms of receipt registration, payment triggering and supporting post-supply evaluation. According to Croom and Johnston (2013) systems of e-procurement symbolizes a vital development for the process of purchasing thereby offering gains to the organizations by the process of purchasing, reductions of price and gains of efficiency. E-procurement is quickly changing how the organizations coordinate and structure the relationships of their business. Therefore, evaluating the factor affecting adoption of e-procurement on organizational financial performance becomes critical.

Adoption of E-procurement

Any organizations success relies on financial management which is sound. All firms that are private or public which have been put under statutory management for the last ten years experienced the problems of liquidity and did not pay their financial requirements of short term when it was time to (NSE, 2010). Due to liquidity problems, public projects were either delayed or not completed as anticipated. Business and people without internet access may not participate in the processes of e-procurement (Njihia, 2013). There also have been challenges with e-procurement system malfunctioning to a case that National and County Governments cannot literally pay the suppliers bills, creating problems for the firms and in the process causing a confidence crisis. There are infrastructure issues too which is required in supporting electronic procurement. This is a pushback against the anti-corruption aspect of the system.

E-procurement is a solution of technology which enhances corporate buying by use of the internet (Jain & Bandyopadhayay, 2018). Eadie, Perera, Heaney and Carlisle (2017) indicate that e-procurement symbolizes an effective and vital development in the e-business employment in chain management of supply, note that an organization which uses e-procurement benefits from reduction of price in tendering, reduction of time in sourcing of materials, lower costs of administration, procurement staff reduction as well as

communication improvement. Adoption of e-procurement is constructed to include e-tendering e-sourcing, e-ordering and e-informing.

As a major strategy in the development of initiatives and different programs of electronic procurement, contributing additional opportunities for businesses industry, leading to an economy that is globally competitive and assisting to secure an economic growth that is sustained (Lou & Alshawi, 2009).Vaidya, Sajeez and Callender (2016) observe that the primary benefit government agencies pursue to obtain adopting e-tendering is to lower the price of business doing and services delivery which are a bit community efficient. Vaidya, Sajeez and Callender (2016) further indicate that the gains from introduction of system of e-tendering in the sector of government is to bring the best value for the money of the tax payers, high effectiveness and efficiency, practice of consistent tendering all over government, enhances general initiative of e-commerce; as well as environmentally as a result of chiefly 'paperless'process.

Use of internet in decisions making strategies concerns where and how products and services are sourced (Farrington & Lysons, 2012). Barbara and Maxfield (2013) observed that, keeping pace with competition and delivering against strategic objectives procurement have to use state-of -the art technologies entailing e-sourcing.E-sourcing is a great and fast growing component where it requires various forms from sell-side and buy-side e-catalogs to post specifications and solicits of bids whereby sellers as well as buyers come together to trade.

During the sourcing of items many transactions that are of low value are performed, raising theeffectiveness ofthe transactions of procurement to become valuable. Jahanshahi, Rezaei, Nawaser and Pitamber (2012) explains that the process of making and approving requisition of purchasing, placement of purchasing orders and reception of services and goods that are ordered, by use of a systemof software that is based on the technology of the internet that improves greatly the performance of the supply chain. In e-ordering case the services and goods which are ordered are indirect services and goods, that is, services and goods that are non-product related.Kim (2017) states that e-ordering improves greatly the performance of the supply chain because the placement of purchasing orders and reception of services and goods are ordered is enabled by using the technology of the internet.

Stonebraker (2006) observe that e-informing is a type of Enterprise Resource Planning (ERP) which is not associated directly with any stagein the process of purchasing such as ordering or contracting. E-informing means the gathering as well as the distributing process of the information of purchasing both to and from external and internal parties, by use of thetechnology of the internet. Making sure that shared information quality has turned out to be an effective idea of the management of the supply chain. Croom and Johnston (2013) states that E-informing makes sure that quality together with accuracy, adequacy, criticality, timeliness and credibility improving performance of supply chain that is more noticeable.

Financial Performance of MOEST

A subjective measure of how perfectly a firm may make use of assets from its principal business mode generating revenues (Metcalf, 2011). Performance of finances is as well used like an overall measure of the general financial health of a firm over a specified time period and may beused in comparison of the firms that are in similar industry or comparison of sectors in aggregation.Naser and Mokhtar (2014) indicates that the topic of financial performance always had interested the scholars and remains still a great concern area to the practitioners of business of all organization types. The health of an organization as well as its survival is affected by financial performance.

Harrington and Wilson (2012) argue that different ways have been used to measure performance of finances, items which are in statement of cash flow and income and financial position statement may be used like the business ability to achieve its financial obligations is measured by liquidity as they take place affecting not the common business operations of the company, it as well gives a sign of the ability of the business to endure risks by availing information concerning the ability of the operations to go on operating after a key financial adversity. Performance that is high is a sign of efficiency and effectiveness of management in using the resources of the company and has an impact which is positive to the economy of the country at large.

The measurement of financial performance in the public sector is not similar to that in the private sector. While private institutions have an objective to maximize profit, most public institutions seek to ensure efficient and effective utilization of available funds. According to Mule, Mukras and Nzioka (2015) analysis of profitability concentrates on the connection between expenses and revenues and on the profit levels relative to investment sizein business for example sales returns shows the much that is earned by a firm in connection to sales made, Returnson Assets (ROA) indicates the ability of the firm to utilize its assets and Return on Equity (ROE) discloses the investment returns. Organizations are often looking for ways of attaining great performance and thus formulation of many theories has been done and studies which firms conduct in the effort of determining the factors which affect the firm's performance.

Mihaiu (2014) indicates that the analysis of the public sector performance is of great importance to public institutions, which most of the times experience high volumes of public debt. In most countries public institutions have accumulated public debt as a result of the imbalance between revenue and cost of service delivery. Mihaiu (2014) therefore highlights that it is necessary for institutions to give value for money. The combination of the citizens needs and the limited government budget, pressurize the government to realize the importance of ensuring that there is value for money. According to Public Sector Accounting Board (2013), indicated that the financial performance in the public sector is measured in terms of budget compliance, annual deficit/surplus, tangible assets and sources and use of cash. In Kenya, Office of the Auditor General (2017) reports that the financial performance measure of public institutions included inadequacies in accounting of unsupported expenditures, imprest management and pending bills (public debt).

Ministry of Education, Science and Technology

The mission of the Kenya Ministry of Education, Science and Technology (MOEST) is to coordinate, provide and promote lifelong education, research and training for sustainable development of Kenya. From 2008, the sector of education has gone through key changes which will influence the sector'splanning. These changes entail The Kenyan constitution of 2010 promulgation, Sessional paper no. 14 0f 2012, policy of Science, Technology and Innovation (ST&I) and 8 parliament Acts enacted for policies implementation.

The Education, Science and Technology Ministry employed a Sector Wide Approach to Programme Planning (SWAP) over the 2005-2010 periods. This was realized in the Kenya Education Sector Support Programme (KESSP), which provided an Investment Programme that is multi-sector driven. Over the second period of MTP the NESP is anticipatedto run the sector`s development strategies. The present restructuring process of the Education, Science and Technology Ministry and the need of responding to the needs of the Kenya Constitution of 2010; the Kenya Vision 2030 and the Jubilee Manifesto plays part in the aspirations for equitable and affordable quality education, training, science&technology realization. Thus, this forms the necessity of the development of the Education, Science and Technology Ministry Strategic Plan for the 2013-2018 periods.

STATEMENT OF THE PROBLEM

In addition, Education, Science and Technology Ministryhas not in the last one decade been performing as expected in procurement and in the financial performance. In an Ethics and Anti-Corruption Commission (2018) report, the Ministry was ranked the fourth most corrupt entity in the country. The report indicates that over sh. 70 million was lost in procurement processes and corruption cases in the year 2017. In the year 2012, Britain -The biggest bilateral lender of Kenyastopped the funding towards free primary education after failing to account4.2 billion Kenyan shillings (Oduor, 2016). Public Procurement Oversight Authority (2015) indicates that there was lack of prequalification of suppliers for specialized and complex tendering procedures that has led to expensive procurement and unacceptable procurement practices in the Ministry of Education, Science and Technology. Besides, there was lack of standard bidding documents as provided by the regulations for requisitioning, processing, solicitation and contracting of procurements. The PPOA (2015) report also indicates that there was incompleteness of records, data and documentation relating to the procurement processes. Also, the report indicated that the Ministry does not have clear and documented operational procedures to undertake proper procurement functions in the Ministry and its semi-autonomous government agencies.According to the Office of the Auditor General (2017) the public debt in the Ministry of Education, Science and Technology increased from the financial year 2012 to 2013 by 98.06 percent. It also increased by 98.51 per cent in the year 2014. Between the year 2015 and 2016, the level of unsupported expenditure increased from Ksh. 3,886,029 to Ksh. 43,840,320 by 91.13 per cent. Orori (2011) studied the influencing factors of the e-procurement introduction in the industry of retail business. A Kenya retail chain supermarkets survey; Njoroge (2010) on procurement practices influencing factors in Kenya in the industry of construction and Mburu (2011) on e-

procurement role in enhancement of effectiveness in the industry of telecommunication (A Study Case of Kenya Safaricom Limited). Meso (2010) studied on Kenya Public Procurement, a challenge of governance and legal technological critical analysis,Orina (2013) in her E-procurement factors of readiness study in the public sector in Kenya discovered that change resistance, not being enthusiastic, skills of the staff as well as to some degree policies of procurement affected the e-procurement readiness in public institutions. Of the studies reviewed, none incorporated the e-procurement effect on performance of finances in the public sector and thus the study purposes.

GENERAL OBJECTIVE

The general objective of this study wasto investigate how adoption of e-procurement affects Financial Performance of Ministry of Education, Science and Technology, Kenya

SPECIFIC OBJECTIVES

1. To find out the effect of e-tendering on financial performance of Ministry of Education, Science and Technology, Kenya.
2. To examine the effect of e-sourcing on financial performance of Ministry of Education, Science and Technology, Kenya
3. To assess the effect of e-ordering on financial performance of Ministry of Education, Science and Technology, Kenya
4. To investigate the effect of e-informing on financial performance of Ministry of Education, Science and Technology, Kenya

THEORETICAL REVIEW

Transactional Cost Theory

This theory was guided by Transaction Cost Theory (TCT) as advocated by Williamson (1989). The theory argues that organization come across the opportunism challenge when in a situation of bargaining with few other organizations. Therefore, then when suppliers are more, this lowers the risk and affords better procurement deals negotiating ability for the organization as the one purchasing depends less on any specific supplier (Dedrick, XinXu & Xiaogou Zhu, 2008). The author furtherargues that the chosen suppliers number by an organization includes a balance that is optimal among the following major factors of transaction: opportunism of risk and costs of coordination.

This theory is anchored on the premise that connection between environmental and human factors is the cause of increasing costs of transaction in the system of the economy (Hart, 2006). Factors that contribute to costs of transaction interdependence may lead to their riseor reduction. Thus, the effort of lowering the costs of transaction ought not to target reducing a single factor effect but the interdependence effects between factors (Ghoshal, 2008). As such,

in the procurement of goods and services for state corporations, transactional cost can be reduced by automating procurement processes.

During tender evaluation and award stages in an open tendering in state corporations, financial 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. As one of the major e-procurement adoption objectives is to enhance cost reduction by eliminating transaction cost, transaction cost theory best explains e-tendering variable.

Logistics Theory

The theory of Logistic was designed in order to help in management of transportation and logistics (Garver & Williams, 2018). Russo, et al. (2016) indicates that the origin of the logistic theory concept has been motivated by a lot of research fields that include the quality revolution, management of materials notions and logistics that are integrated.Swanson, Francisco and Stock (2017) indicates that logistics may be defined as an organizing, controlling and planning of different activities in the in-flow of material, from raw material till the finished products and the manufactured products reverse flows with the purpose of demands of customers satisfaction in the market as well as providing a customer service that is good, costs reduction, capital which is less tied-up and less impact on the environment (Altun, Khan, Alizadeh, Ozel & Butt, 2010).

Logistics can as well bedefined as activities which relate to the reception of the correct service or product in the correct quantity, in the correct quality, in the correct place, at the correct time, delivery to the correct customer and at the correct price. In most circumstances, logistics is seen from an operative way perspective of transportation and movement of materials from one place to another or production of services. This operations credibility is based on how effective is the systems design which results to this type of logistics. Systems of logistics entails responsibilities which are operative that include the purchase and operation of routine, administration and responsibilities that are constructive and detailed plan or design (Al-Saffar & Kim, 2017).

The theory to the study connects management of logistics as that part of procurement management which controls, plans and implements the effective, efficient reverses and forward flow and services and goods storage as well as information that is related between the origin point and the consumption point so as to meet the needs of the customer. The theory explains the e-ordering variable.

Technology Acceptance Model Theory

The Technology Acceptance Model (TAM) was proposed by Liebenberg, Benadé & Ellis, (2018). This theory forms a basis of tracing how variables that are external affect attitude, intention to use and belief. TAM posits two beliefs which are cognitive: perceived usefulness and perceived ease of use. One's initial system of a technology use according to TAM is

affected indirectly or directly by the behavioral intentions of the user, attitude, the systems perceived usefulness and the systems perceived ease. TAM proposes also that factors which are external play part with an intention to actualize the effects that are mediated on perceived ease of use and benefits (Davis, 1989).

Generally, variables which relate to the behavioral intention of using technology of information or to the initial utilization of technological information could be categorized into four groups: context of the individual, context of the system, social context and context of the organization. As social context means social influence on information technology use and personal acceptance, context of the organization puts more emphasis on information technologyuse and one`s support which has influencein the organization.

Marangunic and Granic (2014) figured out accessibility and visibility of the system, relevance as variables of context of a firm. They affirmed that the organizational context influences perceived ease of use and perceived benefits of an information communication technology. According to Wu and Wang (2005) reported the same that accessibility of information communication technology contributes to greater business returns with better technology of communication use in comparison with the manual operation.

This model informs the study through stating that before adoption of e-procurement, attitude of the employeeshas to be assessed by administrators across this new technology of information, so as to avoid waste of resources and implementation failure. A policy willing and process that is well designed may be pre-conditions that are crucial for the implementation of e-procurement. The theory explains e-sourcing variable.

Technology Diffusion Theory

This theory came from Rogers (1962) whereby the diffusion definition entails five elements that are made of early adopters, innovators, late majority laggards and early majority. He gives an explanation that over time information of a product or an idea acquires momentum therefore spreading by a social system which is specific. This theory is the usual lens by which theorist carry out study on development and adoption of newideas. Diffusion is basically defined as innovations acceptable and process to be adopted by the community members or individual.

Technology Diffusion Theory contributes to the current study since its relevant in the revolution of new technology that has effected the processes of procurement that are the change drivers in the function of purchasing that entails paperless transactions making goal to a system which is secure and promotes procure to pay as a procurement of world top class objective in the public sector procurement function performance (Lysons & Farrington, 2016). The theory of Technology Diffusion is vital in firm guidance for change initiation and technologies in procurement adoption therefore moving to a process of world class procurement. The theory explains e-informing variable.

EMPIRICAL REVIEW

E-tendering and Financial Performance

Waka (2016) studied E-tendering adoption as well as procurement performance of oil marketing firms in Kenya. Explanatory study was employed in the research study. The population of the study was 20 (twenty) of the leading firms in Kenya. A questionnaire was used in the collection of primary data. The collected data was then analyzed through quantitative analysis. A multivariate regression analysis was established if there existed association amid e-tendering adoption and procurement performance. The findings show that most oil marketing firms in Kenya still apply the traditional tendering method to a large degree.

Kisurkat (2017) studied the impact of tendering on the performance of the public institutions in Kajiado County. In the study, descriptive research design was adopted. Collection of data was done from three procurement professionals per entity in Kajiado County using questionnaires. Simple random sampling was employed in selection of the study sample. The study concludes that entities that conduct tendering procedures as per the act improves the performance of their department.

Barng'etuny and Kimutai (2015) examined the impact of e-tendering on performance of supply chain performance of Medical Supplies Agency. The study used descriptive approach research design where 85 respondents were drawn from the Kenya Medical Supply Agency and it targeted executive staff, managerial staff, supervisory staff, operation and other staff. Primary data was gathered with an aim of evaluating effectiveness of e-tendering in Kenya Medical Supply Agency. The study concluded that Kenya Medical Supply Agency has recorded favorable performance in supply chain operations by improving supplier relationships and management practices as well as enhancing productivity. The effect of e-tendering in the public institution is seen in the improvement of productivity in supply chain activities.

Eunice (2015) carried out a study on the function of the process of e-tendering on public institution performance: A Case Study of County Government of Nakuru. A case study design was employed for this particular study. This study targeted 43 officers of procurement from 10 Nakuru County Headquarters Ministries. The census technique was used where questionnaires were used to collect the data. Analysis of data was carried out through inferential and descriptive statistics. The findings showed that the transparency degree was good in the County Government, corruption in the process of tendering was reduced through openness leading to good performance and improved accountability in the public institutions.

E-ordering and Financial Performance

Evans, Gregory, Maurice and John (2018) study investigated the electronic order processing influence onperformance of supply chain of Kenya sugar processing firms. Mixed research design was applied and the population targetentailed 12 sugar processing firms in Kenya with

a target population of 7,584. Stratified random sampling was employed to produce a 367-sample size. Data was gathered by a self-administered drop and pick questionnaire, interviews and observation. The results revealedthe relationship that significantly existed amid processing practice of electronic order and performance of the supply chain. The study concludes that electronic order processing practice enhances supply chain performance.

Georgiou and Westbrook (2010) study investigated the e-ordering consequences for the environment of communication of the Services of hospital laboratory. Adoption of theoretical techniques of sampling was done to test and develop hypothesis and ideas that are emerging. The research took place during new system implementation amid November 2005 and October 2007.The study concluded that the information processing and communication are major facets of the functioning of the organization.

Turner, Deans, Kite and Croal (2013) carried out a study on the impact of ordering of electronic on pre-analytical errors in primary care. Dataerror were revised in the two periods of six months, post and pre-implementation of Primary Care electronic requisition. The study established that there was a reduction in the pre-analytical errors that followed the electronic requisition introduction (2764 pre-implementation vs498 post-implementation<0.001). The study concluded that primary care electronic requisition introduction may lower the pre-analytical errors number and may upgrade the information quality that is received with every request.

Nancy (2017) study investigated e-ordering and e-informing on performance of supply chain in Kenyan state corporations in Nairobi County. Explanatory research design was used in the undertaking of this research. Using 262 officers of procurement from 112 state corporations of Kenya, the findings of the model of multiple regression findings indicated that e-ordering has a significant and positive impacton performance of supply chain. The study makes a conclusion that e-ordering that is the element of the dimensions of procurement raises the performance of supply chain.

Georgiou, Greenfield, Callen and Westbrook (2009) study examined considerations of safety and efficiency for electronic ordering introduction in a blood bank. The study was done in the blood bank of a teaching hospital in Sydney, Australia with a 600 bed capacity. Qualitative data was obtained throughinterviews, observation of participantsand telephone conversation. The study concluded that effective channel of communication enhancement and maintenance between the clinical staff who are ward-based and the staff of blood bank together with goodcontrols of monitoring are vital for the effective and safe implementation of the systems of electronic ordering.

E-sourcing and Financial Performance

Kimutai and Ismael (2016) study investigated the work of strategic practices of e-sourcing on performance of supply chain in Kenya Electricity Generating Company. The study was a cross-sectional survey. 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 187 state corporations. Stratified random sampling was adopted for respondents in the study. Questionnaires, unstructured interviews and observation were used in data collection. The study concludes that supply chain risk management is another aspect of strategic e-sourcing practices that affects the supply chain performance of organizations.

Maureen and Josphat (2016) studied the effects of electronic sourcing on procurement function performance in the County Government of Nakuru. The design of Descriptive Research was adopted. The population target of the study comprised of all the 168 procurement staff of the County Government of Nakuru from which a sample of 118 was chosenby use of the simple technique of random sampling. The study used questionnaires in the collection of primary data. The study found that adoption of e-sourcing in the County Government of Nakuru has not been fully implemented thus the full benefits of e-sourcing have not been realized.

Isaac and Robert (2015) study investigated the function of strategic sourcing on performance of Kenya public procurement. The paper conducted a systematic literature papers review in the procurement and strategic sourcing field using the analysis of content. The study established strategic sourcing as a tool of supply management which delivers effective reductions of cost as well as other benefits. This study entails that sourcing through supplier's location and identification is quite simple but becomes more complicated while the amount of parts, components, ingredients, products, apparatus, connectors, services, supplies and equipment goes up and the buyers number engaged in decisions becomes more complex.

Geoffrey, Muma and Elyjoy (2016) study examined e-maintenance, performance of public procurement and e-sourcing in Kenya, Kericho County. The target respondents target were Kericho County employees in procurement, accounts and finance as well as the department of IT were chosen purposively so as to form the frame of the sample. The study findings showed positive connection between procurementperformance ande-sourcing and procurement performance and e-maintenance.

E-informing and Financial Performance

Nancy (2017) study investigated e-informing and e-ordering on performance of supply chain of State Corporations in County Government of Nairobi. Explanatory research design was used in the undertaking of this research. Using 262 officers of procurement from 112 State Corporation of Kenya, findings of the model of multiple regression indicated that e-informing has a significant and positive impact on performance of supply chain. The study makes a conclusion that e-informing that is the element of the dimensions of e-procurement raises the performance of supply chain. Thus, it is necessary for firms to utilize e-informing in the process of e-procurement.

A study carried out by Kennedy (2015) investigated the connection between systems of e-procurement and procurement function performance in Kenya Commercial Banks. The target population constituted 486 members of staff of Kenya Commercial Bank. From this target population, total 97 participants who were chosen by simple random sampling.

Questionnaires were employed to collect data. The study discovered that e-informing helps companies in decentralizing processes of operational procurement and also centralize processes of strategic procurement. The study made a conclusion that e-informing plays a major role in ensuring an organizations' effective communication.

Rashed, Azeem and Halim (2010) study examined sharing of knowledge and information on performance of supply chain. Formulation of a conceptual model was done on the basis of the previous literature. Performance of a questionnaire-based survey was done. 30 Bangladeshi of Garments Readymade Industry data was collected by mail survey and interview. The study findings indicated that sharing of information is a prerequisite and the close buyer-supplier connection is an important factor for escalation of the operational performance.

Van den Abbeele, Roodhooft and Warlop (2009) studied the impact of cost information on negotiations of supplier-buyer in different settings of power. The study used experimental design and recruitment of participants was done from a Master's Program in Business Administration course ofaccounting management at a large university of West-European. The experiments results showed that less powerful buyers' disadvantage of performance is pronounced less if the buyer is well informed on cost of information and that this finding may be well explained by the negotiation behavior of the buyer.

RESEARCH METHODOLOGY

Research Design

Descriptive research is used to clearly show the happening of a specific situation (Pastore, 2017). It can be applied in justification of current practice and judgment making and theories development as well. For this study's purpose, descriptive research design was applied in obtaining the e-procurement adoptionpicture in the Kenya public service.The approach is suitable since it permits the investigator to avail data generalization obtained from methods that are qualitative and it also helps the researcher in generation of data which is rich and thick derived from methods that are qualitative (questionnaires) (Teddlie & Tashakkori, 2009).According to Kombo and Tromp (2012), descriptive survey is an information collection way through interviews or questionnaires administration to a group of individuals who are chosen.

Target Population

The study population was employees in the Education, Science and Technology Ministry and these were the targeted departments: Accounts, Information Technology, Finance and Procurement. The study targeted a total of 120 employees in the MOEST who were engaged in e-procurement adoption and financialperformance in the Ministry of Education, Science and Technology.

Sampling Design and Sample Size

In a statistical population, a sample is a finite part where a study is carried out on specific properties of individuals so as to get the studies' information (Mugenda & Mugenda, 2003). This study applied census methodwhere in the study the entire population was involved. The sample size of the study was 40 respondents from the department of Information Technology, Procurement, Finance and Accounts in the Kenya Education, Science and Technology Ministry because they were knowledgeable in the study areain the Kenyan public sector on financial performance and e-procurement.

Data Collection Instruments

This is the information gathering and measuring process on the variable of interest in a systematic fashion established which helps an individual in answering hypotheses of stated questions of research and outcomes evaluation. Primary data in this study is important since it enables the researcher to handle issues that are study specific. Primary data making it possible for the researcher to control better the collected information and provide freedom of deciding on the size of the sample, time and research location (Mugenda & Mugenda, 2003). Through questionnaires primary data was gathered from the respondents. Administration of questionnaires was done to choose the respondents from the Ministryrandomly. The questionnaire entailed intended in answering formulated questions with reference to the questions of research and the studyobjectives. The questionnaire also had questions which were open and closed ended for uniformity enhancement and maximum data collection.

Data Collection Procedure

Questionnaires were used to carry out collection of data. The respondents were equipped with a letter of introduction that the university issued to impart respondents with confidence. It was not necessary for the respondents to indicate their personal details like names so as to make sure that they provide information that is detailed, accurate, and reliable with no prejudice. Administration of questionnaires was done by the method of drop and pick. If in any case a respondent failed after two weeks to fill the questionnaire, then through a phone call a follow up will be done and collection will be done at a conveniently arranged time between the respondents and the researcher. The study considered the industry studies information on account and the previous studies results.

Data Analysis and Presentation

Before the analysis of data, the consistency of the responses was examined. The coding of data was then done to enable grouping of responses into different categories. Descriptive statistics entailed frequencies, percentages, standard deviation and mean. Descriptive assisted in generating the measures of summary of the sample observed and preparing the qualitative data for more statistical analysis. Presentation of the findings of the descriptive analysis was done using tables as well as figures. Statistics of inferential employed analysis of multiple

regression since several variable of explanatory applied in this study were there. Statistical analysis was directed by the model of multiple regression presented below.

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Where: Y = Financial Performance for the last 5 years (2012–2016); X_1= E-tendering; X_2= E-sourcing; X_3= E-ordering; X_2= E-informing; B_0, $\beta 1$, β_2, β_3 = Beta coefficients; ε = error term

RESEARCH RESULTS

The study`s overall objective was to investigate the effect of e-procurement function on financial performance of Education, Science and Technology Ministry (MOEST). The first research objective was to find out the effect of e-tendering on financial performance of MOEST in Kenya. E-tendering was measured using indicators comprising of online tender notice, online tender response and electronic bidding. The descriptive statistics analysis results showed that practice of e-tendering measuring activities was done in MOEST. Gathered data statistical analysis showed that e-tendering has a significant effect on financial performance, statistically.

The second objective of research was to examine the effect of e-sourcing on financial performance of MOEST in Kenya. E-sourcing was measured using indicators comprising of online supplier search, electronic supplier evaluation and electronic supplier categorization. The descriptive statistics analysis results indicated that e-sourcing measuring activities were done in MOEST. The data gathered statistical analysis showed e-sourcing has a significant impact statistically on financial performance.

The third objective of the research was to assess the effect of e-ordering on MOEST financial performance in Kenya. E-ordering was measured using indicators comprising of online purchases, electronic invoice processing and online order requisitions. The descriptive statistics analysis results indicated the e-ordering practices were done in MOEST. Gathered data statistical analysis showed that e-ordering has a significant effect on financial performance, statistically.

The fourth objective of the research was investigating the effect of e-informing of financial performance of MOEST. E-informing was measured using indicators comprising of gathering of electronic information, gathering of electronic clientele and gathering of electronic information distribution. The analysis of descriptive statistics results indicated that practice of the e-informing measuring activities was done in MOEST. Gathered data statistical analysis showed that e-informing has a significant effect on financial performance, statistically.

INFERENTIAL STATISTICS

The study used correlation analysis and multiple regression analysis in the assessment of the effect of e-procurement (e-tendering, e-sourcing, e-ordering and e-informing) on financial performance of the Ministry of Education, Science and Technology, Kenya.

Correlation analysis is a statistical method that outlines the association between two variables. Correlation coefficients whose values range from zero to one and the associations can be positive or negative. A correlation coefficient of zero implies that there is no relationship, positive (+) shows that there is direct association and negative (-1) shows that there is an inverse association. The study used Pearson correlation to assess the association between independent variables (e-tendering, e-sourcing, e-ordering and e-informing) and the dependent variable (financial performance). The results are presented in Table 1.

Table 1: Correlation Analysis

		Financial performance	**E-tendering**	**E-sourcing**	**E-ordering**	**E-informing**
Financial performance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	37				
E-tendering	Pearson Correlation	.788**	1			
	Sig. (2-tailed)	.006				
	N	37	37			
E-sourcing	Pearson Correlation	.611**	.852**	1		
	Sig. (2-tailed)	.016	.000			
	N	37	37	37		
E-ordering	Pearson Correlation	.578**	.102	.788**	1	
	Sig. (2-tailed)	.021	.137	.006		
	N	37	37	37	37	
E-informing	Pearson Correlation	.852**	.073	-.161*	.823	1
	Sig. (2-tailed)	.000	.288	.019	.001	
	N	37	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The results indicated that e-tendering has a significant relationship with performance of finances in the Education, Science and Technology Ministry (r=0.788, p-value=0.006). In addition, e-sourcing had an effective connection with financial performance in the Ministry of Education, Science and Technology (r=0.611, p-value=0.016). Further, e-ordering has a significant relationship with financial performance in the Ministry of Education, Science and Technology (r=0.578, p-value-0.021). Further, e-informing has a significant relationship with financial performance in the Ministry of Education, Science and Technology (r=0.852, p-value=0.000). Nonetheless, while correlation analysis shows the associations between

independent variables and the dependent variable, it cannot show the weight of the relationship.

The R-squared generally explains the proportion of the dependent variable that can be attributed to an independent variable. R-squared normally ranges from 0 to 1, with 0 implying the independent variable does not in any way influence the dependent variable. The proportion of the dependent variable that can be explained by independent variables increases with increase in the value of R-squared. To determine the strength of the relation as given by correlation analysis, regression analysis was carried out. First, the model fit was tested. The result is given by table 2.

Table 2: Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.781[a]	.609	.589	1.423

a. Predictors: (Constant), E-tendering, E-sourcing, E-ordering, E-informing

Table 2 indicates a summary model which gives ability of regression line information on total variation accounting in the variable that is dependent. R squared referred also as the determination coefficient, is the statistical measure of the closeness of data to the fitted line of regression that is 0.609 (60. 9 percent).The R squared adjusted referred also as the multiple coefficient determinations is the dependent variance percent explained jointly or specifically by the independent variables.0.589 (58.9 percent) of the financial performance changes of MOEST variables may be seen as a result of the predictor variables combined effect. This means that other variables not studied contribute to 41.1 percent.

The analysis of variance (ANOVA) in normally used to examine whether a regression model to be used is a good fit for the data. The most important components of an ANOVA include the F-test statistics and the p-value. For a regression model to be a good fit for the data, the F-calculated must be greater than the F-critical, which is normally obtained F-distribution table. In addition, for a regression model to be a good fit for the data, the p-value must be less than the significance level (0.05).

Table 3: ANOVA Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.771	4	7.44275	55.0696749	0.002
	Residual	4.46	33	0.13515152		
	Total	34.231	37			

a. Predictors: (Constant), E-tendering, E-sourcing, E-ordering, E-informing
b. Dependent Variable: Financial Performance

The value of probability of 0.002 shows that the model of regression of 0.002 was highly significant in prediction of how E-tendering, E-sourcing, E-ordering and E-informing affected financial performance of MOEST. The F calculated at 5 percent significance level

was 55.0696749 is greater than the F critical (2.69), this indicates significance of the entire model.

The results of determination of the coefficients for the predictor variables are as given in table 4.

Table 4: Determination of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.781	0.494		1.581	0.002
	E-tendering	0.720	0.159	0.683	4.528	0.001
	E-sourcing	0.613	0.171	0.598	3.585	0.004
	E-ordering	0.594	0.188	0.578	3.160	0.003
	E-informing	0.860	0.155	0.812	5.548	0.001

a. Dependent Variable: Financial Performance

As shown in Table 4, the established regression equation by the study was:

$$Y = 0.781 + 0.720X_1 + 0.613X_2 + 0.594X_3 + 0.860X_4.$$

Where: Y = Financial Performance; X_1= E-tendering; X_2= E-sourcing; X_3= E-ordering; and X_4= E-informing. From the Table 4.11 results, the variables e-tendering, e-sourcing, e-ordering, e-informing and financial performance of MOEST would be 0. 781.

The first research objective was to find out the effect of e-tendering on financial performance of MOEST in Kenya. The respondents were called to indicate the effect of e-tendering on financial performance. The result is provided by table 4.11 with a p-value of 0.001. E-tendering was found to have a positive and significant relationship with financial performance as the p-value of 0.001 was less than the alpha value of 0.005 at 95 percent significance and confidence level. The result confirms the findings by Vaidya, Sajeez and Callender (2016) observe that the primary benefit government agencies pursue to obtain adopting e-tendering is to lower the price of business doing and services delivery which are a bit community efficient and Kisurkat (2017) found that entities that conduct tendering procedures as per the act improved the performance of their department.

The second research objective was to examine the effect of e-sourcing on financial performance of MOEST in Kenya. The respondents were also called to indicate the effect of e-sourcing on financial performance. The result is provided by table 4.11 with a p-value of 0.004. E-sourcing was found to have a positive and significant relationship with financial performance as the p-value of 0.004 was less than the alpha value of 0.005 at 95 percent significance and confidence level. The result confirms the findings by Isaac and Robert (2015) study which established strategic sourcing as a tool of supply management which delivers effective reductions of cost as well as other benefits. This is also in concurrence with

Geoffrey, Muma and Elyjoy (2016) where indicated positive connection between procurement performance and e-sourcing.

The third objective of the research was to assess the effect of e-ordering on MOEST financial performance in Kenya. The respondents were also called to indicate the effect of e-ordering on financial performance. The result is provided by table 4.11 with a p-value of 0.003. E-ordering was found to have a positive and significant relationship with financial performance as the p-value of 0.003 was less than the alpha value of 0.005 at 95 percent significance and confidence level. The result confirms the findings by Kim (2017) who posits that e-ordering improves the performance of supply chain greatly because purchasing orders placement and reception of services and goods ordered is enabled by internet technology use. It is also in agreement with the findings of Evanset al. (2018) on electronic order processing which has influence on supply procurement performance on supply chain.

The fourth objective of the research was to investigate the effect of e-informing on financial performance of MOEST. The respondents were called to indicate the effect of e-informing on financial performance. The result is provided by table 4.11 with a p-value of 0.001. E-informing was found to have a positive and significant relationship with financial performance as the p-value of 0.001 was less than the alpha value of 0.005 at 95 percent significance and confidence level. The result confirms the findings by Croom and Johnston (2013) affirming thate-informing guarantees timeliness, criticality, credibility, adequacy and quality with accuracy therefore performance of supply chain that is more noticeable more noticeable supply chain performance. This concurs with the study carried out by Kennedy (2015) that e-informing plays a major role in ensuring an organizations' effective communication.

CONCLUSIONS

The study concludes thate-tendering has a significant effect on MOESTfinancial performance. This shows that e-tendering improvement would result to financial performance improvement. E-tendering allows electronic bidding, creates evaluation matrices, help identify tender shortlist and control prequalification process.

The study concludes that e-sourcing had a significant effect on MOEST financial performance. This implies that an improvement in e-sourcing would lead to an improvement in the financial performance. E-sourcing allows for online supplier search and electronic supplier evaluation.

The study concludes that e-ordering has a significant effect on MOEST financial performance. This shows that an improvement in e-ordering would lead to an improvement in financial performance. E-ordering leads to reduced ordering error and increases ability to track orders.

The study concludes that e-informing has a significant impact on MOEST performance. This implies that an improvement in e-informing would lead to an improvement in financial

performance. In addition, Electronic information gathering, Electronic clientele gathering and Electronic information distribution have an influence on financial performance.

RECOMMENDATIONS FOR POLICY AND PRACTICE

Financial performance is useful in showing the information about the capability of an organization in terms of position, performance of finances and changes in the organization financial positionwhich is useful to many users in economic decisions making. Therefore, this study recommends the following:

MOEST should ensure that procurement policies and regulations are adhered to so as to be ethical in the tendering process. They should increase their funding towards investing in computer technology so as to use automated tendering in their activities including storage of tender documents for future reference.

MOEST should enhance their e-sourcing activities so as to gain control over their tender processes and an audit path for compliance purpose and tosupport collaboration and allow various stakeholders to easily work together. Succeeding in e-sourcing initiatives requires, well defined category strategies which includes business needs analysis, supply market analysis, sourcing strategy, supplier selection and finally implementation.

MOEST should practice e-ordering in order to improve employee productivity, receive accurate orders, create a better experience for customers.Necessity is there for MOEST implementation of e-ordering use in the chain of supplyfor paper work reduction and cost save as well. E-ordering as well forms improved customer service avenueand high productivity thus creating the necessity for its organization implementation.

As e-informing has an influence on financial performance that is positive, the study recommends that it's important for MOEST to gather experiences of supplier's information, previous clientele and information distribution to suppliers who are relevant. It is also necessary to consult quality of service/product references electronically to improve the financial position of MOEST.

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