ROLE OF E-PROCUREMENT IMPLEMENTATION ON PROCUREMENT PERFORMANCE IN STATE CORPORATIONS IN KENYA: A CASE OF KENYA PORTS AUTHORITY

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ABSTRACT
The main purpose of this study was to determine the role of e-procurement implementation on procurement performance in State corporations. Specific objectives of the study were; to find out the role of systems integration in e-procurement implementation on procurement performance in KPA; to determine the role of supplier support in e-procurement implementation on procurement performance in KPA, to establish the role of staff training in e-procurement implementation on procurement performance in KPA and to determine the role of top management support in e-procurement implementation on procurement performance in KPA. The study adopted a descriptive research design. The target populations of this study were 240 staffs working in procurement and supplies, finance and accounts and logistics department of Kenya ports authority. The study used stratified random sampling and the sample size was 72 respondents. Primary data was collected by use of questionnaires. The study generated both qualitative and quantitative data. The quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 24.0) and was analyzed using descriptive and inferential statistics. Qualitative data was presented in tables while the explanation to the same was presented in prose. The study concluded that e-procurement implementation makes the purchasing process faster; facilitates better management of the purchasing activities through improved accountability and transparency; improves relationships with business partners; reduces operational costs and reduces prices of procurement goods in state corporations. The study recommends that organizations should embrace e-procurement as a strategy for improving procurement performance.

Key words: E-procurement implementation, Procurement performance, State corporations
Introduction

Over the last few years, the internet has changed the way business is done in every industry. Extensive use of information and communication technology (ICT) has been observed in both private and public sector administrative and decision processes in their widest sense. Within the scope of public sector organizations’ activities, a major role is played by procurement processes so it comes as no surprise that ICT solutions to public procurement, simply, e-procurement is constantly in media’s headlines as well as stimulates an intense debate among scholars, policy makers and practitioners (Albano and Dae, 2010). The electronic procurement system or e-procurement as it is called involves purchase and sale of products, supplies and services through the various networking systems such as electronic data interchange and internet. E-procurement, however, does not mean just online purchasing decisions. It involves connecting the suppliers and employees of the organizations into the purchasing network. Companies that embark on e-procurement buying programs will be able to aggregate purchasing across multiple departments or divisions without removing individual control, reduce rogue buying, can get the best price and quality products from a wide range of suppliers. For the suppliers, E-procurement is a boom because they can be very proactive in their business proceedings (Shale, 2014).

Internationally, governments are continually investing a great deal of resources to streamline and improve public supply chain management and are implementing new supply chain management systems that manage tenders through a web site. These is in an effort to enhance accessibility of tenders, increase efficiency and save on costs (faster and cheaper) in government supply chain management and improve transparency (to reduce corruption) in supply chain management services (Baily, 2008). McManus (2002) determined the rate of e-procurement implementation in the US public sector, and remarked that motivation for implementation was based on expectations of lower purchase prices, reduced transaction costs, and increased speed. Croom and Brandon-Jones (2004), similarly, reported for the UK public sector the significant motivation for e-procurement implementation was considered to be the economic benefits.

In Africa the concept of e-procurement is just gaining popularity especially in the public sector to deal with the problems of lack of accountability and transparency in procurement activities in the public sector (Geoffrey and Barrak, 2015). In Nigeria, the e-GP system has led Nigerian public sectors to increase competition among bidders in public projects and ultimately government can better select actual bidders. The e-GP system helps the Nigerian government to eliminate the associated bottlenecks with existing system (Adebiyi et al., 2010). In Kenya, public procurement has been undergoing reforms starting with the public procurement and disposal act, 2005 that saw the creation of public procurement oversight authority (R.o.K, 2009). The next step was the implementation of e-procurement for the public sector. More recently, the government reformed the public procurement law to comply with the citizens’ needs and aspirations, the Constitution of Kenya 2010 and international best procurement standards by introducing the Public Procurement and Asset Act 2015. (Section 64) of the act provides for use of ICT in communicating matters relating to procurements. This is a clear shift from the previous requirement to have procurement communication run through newspapers of national circulation. Despite the encouraging rhetoric on benefits of e-procurement implementation, e-procurement systems are however, not always implemented successfully. For instance, a study by Boston Consulting Group in 2001 found that only 20% of all e-procurement investments were successful (Caniato et al., 2012). Similarly, a study by Calyptus Consulting Group in 2009 reported this value to be 27% (Caniato et al., 2012). It is thus, important to
understand the role of e-procurement implementation on procurement performance. This would help organization’s reap the gains from investments in e-procurement initiatives.

E-procurement implementation in State corporations in Kenya
State corporations play a major role in the development of the country through provision of public services and have become a strong entity in Kenya and very useful engines to promoting development (Shalle, 2014). The e-procurement system was expected to streamline procurement within the public sector which has been experiencing a myriad of problems including corruption, nepotism and mismanagement (R.o.K, 2009). However, e-procurement systems have been slowly adopted among many public organizations (Kisang and Rotich, 2014) including state corporations. This slow implementation raise concern as whether these public organizations, particularly state corporations have a more detailed picture of the actual importance of implementing e-procurement solutions and its role on procurement performance. This argument is consistent with the view expressed Rahim et al. (2008) who suggest that e-procurement in the public sector warrants immediate attention from governance and finance researchers.

Kenya Ports Authority Profile
Kenya Ports Authority is a statutory body under the Ministry of Transport established by an Act of Parliament of 20 January 1978 with the mandate to maintain, operate, improve and regulate all scheduled seaports situated along Kenya’s coastline. It is the first Government Corporation to embrace E-procurement by implementing the Supplier Relationship Management (SRM) module. Just like the government’s Integrated Financial Management Information System (IFMIS), SRM aims at giving equal access and opportunities to all by attaining compliance with the Public Procurement and Disposal Act 2005 and Public Procurement and Disposal Regulation (2006) and establishing a customer Care Centre to provide dedicated services to the suppliers. (Wachira, 2015).

Automation of the port operations started in the year 2000 and the authority deployed the system application product (SAP) which incorporates Enterprise Resource Planning (ERP) system for all its financial, procurement, human resources and engineering functions. In an effort to realize the governments’ vision of e-procurement, the authority sourced for SAP SRM (supplier relationship management) to facilitate supplier collaboration in e-procurement. The system aims to enable the suppliers to receive and respond to request for quotations and tenders online via the sap net weaver portal. The suppliers will also be able to receive the purchase orders and create purchase order response, confirmation, advance shipping notification and invoice on the supplier portal. The tender opening process is also being done via the portal. The SAP SRM application requires one to log in to the web to access it (Wachira, 2015).

Statement of the Problem
Being attracted by the reported success of e-procurement systems in the private sector organizations, government agencies around the world have begun implementing these systems to help them reduce their operational costs, exercise greater control over purchasing, and improve image by involving greater information exchange with suppliers for timely receipt of the items they seek to purchase (Rahim et al., 2008). In the e-government literature, some studies have reported adoption phenomenon of e-procurement systems in the government organizations. Examples of studies include; Moe (2004), Henriksen and Mahnke (2005), Moon (2005), Doherty et al. (2013) and Geoffrey and Barrak (2015). Relatively, limited information is available on e-procurement implementation aspects role on procurement performance in state corporations in Kenya. As such, it is not clearly known on how state corporations are experiencing efficiency,
improved relationships with suppliers, transparency and accountability from implementing e-procurement systems, and how the attainment of those benefits are being shaped by the context of the state corporations. Moreover, a survey contacted by national treasury showed that 30 per cent of the state corporations have partially automated procurement systems in Kenya while 14 per cent had fully automated their procurement process (Wanzala, 2015). This is a clear indication that e-procurement is still not utilized to its full potential in Kenyan state corporations thus most of them hardly realize the potential of e-procurement. Wachira(2015) study focused on the challenges of Implementing E-Procurement in Kenya ports authority. However, it is important to note that the hesitation to adopt and to fully implement e-procurement, for example, does not stem from expected difficulty or constraints, but arises due to being unaware of clear anticipated benefits (Min and Galle,2003).Focus should thus, not only be on challenges facing e-procurement implementation in state corporations, but also on establishing the procurement performance effect after adoption and implementation of e-procurement. It’s against this backdrop that this study seeks to determine the role of e-procurement implementation on procurement performance in state Corporations in Kenya with reference to the Kenya Ports Authority.

**General objective of the Study**

The general objective of the study was to determine the role of e-procurement implementation on procurement performance in state corporations in Kenya.

**Specific objectives of the Study**

i. To find out the role of Systems integration in e-procurement implementation on procurement performance in KPA.

ii. To determine the role of supplier support in e-procurement implementation on procurement performance in KPA.

iii. To establish the role of staff training in e-procurement implementation on procurement performance in KPA.

iv. To determine the role of top management support in e-procurement implementation on procurement performance in KPA.

**LITERATURE REVIEW**

**Innovation Diffusion theory (IDT)**

E-procurement use as an innovation generates uncertainty, thus, procurement organizations must be aware of the relative advantage and risk of implementing such innovation. Also, different public sector organizations have different adoption intensity; hence they can perceive the characteristics of an innovation differently. As organizations are motivated by the perceived benefits from the adoption of an innovation Iacovou et al.(1995) they realize the need to use the technology fully and integrate it with existing applications. Once the organizations are convinced of the relative advantages, they tend to allocate the managerial, financial and technological resources necessary for adoption (Cohen et al., 2003). Relative advantage can be seen in organizations in the form of increased efficiency. Kalling and Cadeerskold, (2004) argue that e-procurement does not replace an existing system (but is rather a complement to existing ones. The practitioner literature, also, has reported the relative advantage of e-Procurement in various contexts. For instance, according to the e-Procurement Benchmark report by the Aberdeen Group (2005), organizations have been able to reduce off-contract spending by 64%, requisition-to-order cycles by 66% and requisition-to-order costs by 58%.
The risk of implementing e-procurement as an innovation can be explained by perceived complexity. According to Rogers (1995) perceived complexity can be defined as the degree to which an innovation is perceived as relatively complex to understand and use. Zaltman et al. (1973) highlight two levels of complexity as; First e-Procurement implementation may contain complex ideas, i.e., e-Procurement may be difficult to understand from a business as well as technical perspectives, and second using e-Procurement may be difficult to understand and visualize the whole process of procurement-to-pay (P2P). It is also of utmost importance to note that ease of use is an important indicator of information systems success (DeLone and McLean, 2004). The concepts in this theory are very relevant to this study as they help build on the study and enable the researcher understand the expected relationship between e-procurement implementation and procurement performance.

Resource-Based View theory (RBV)

Introduced by Wernerfelt in (1984), the Resource based view theory suggests that the competitive advantage of a firm is based on its resources and its ability to exploit them, rather than on exogenous conditions. Resources do not exist in a vacuum, but are heavily embedded in a firm’s business processes (Ray et al., 2004). In particular, the specific activities within each process are handled through systems (or networks) of organized resources, called capabilities. The resource-based view describe capabilities as the capacities of a firm to organize resources, regularly in combination, to affect a preferred result (Amit and Schoemaker, 1993). Capabilities are the capacity to use those resources effectively and efficiently to achieve the desired end. It is achieved through a set of complex relationships between intangible and tangible resources in a period of time. Through continuous repetition and practice, the knowledge will be accumulated throughout the firm and finally will lead to capabilities. Since knowledge has become more important as the main ingredient in the creation of capabilities, top companies such as Microsoft has emphasized that its best asset is the intellectual strength of its employees. In this study, e-procurement implementation is viewed as an approach that optimizes use of available resources to enhance efficiency and effectiveness in procurement and hence deliver a competitive advantage. The competitive advantage in this case manifests in terms of improved accountability, transparency and cost efficiency. E-procurement implementation leads to better coordination and use of procurement resources towards seamless procurement operations that enhance procurement performance.

Contingency Theory of Management

The contingency theory is concerned with organizational structure which consists of both the formal and the informal organization of hierarchical and information as well as decision making structures within an organization. Each organization has unique circumstances and the management has to tailor decision making to create best fits that address contextual issues. Thus, there are no predetermined notions that every organizations can fit into and there are no universal approaches that deliver results for every organization (Donaldson, 2001). Donaldson (2001) further posits that the contingency theory holds that circumstances play a critical role in determining the best possible response. As such, there is not good fit for all situations as other theories of management may tend to suggest. Thus, all organizations have to attempt to uniquely respond to their circumstances and create a good fit for the emergent circumstances. Applied to the procurement function, these theories lead to appreciation that the procuring environments are very different and unique and there are no models that are universal and can enable any organization that applies them to achieve procurement outcomes (Donaldson, 2001). While one
approach works in one context or organization, the same approach would lead to failure when applied to other organizations. These are important considerations when it comes to adoption and implementation of e-procurement in organizations. E-procurement has to be implemented to fit the organizations unique circumstances thus stimulating optimal performance. Thus, if the organization does not adopt its operations to circumstances or business environment contingencies, it will not be adequately fitted for operations in a given business environment leading to failures (Woodward, 2001). This study puts into consideration the contribution of e-procurement implementation to procurement performance. Thus, this theory supports this study in terms of assessing the implementation aspects and how they enhance procurement performance in state corporations. The extent to which e-procurement is integrated to the unique procurement circumstances is the extent to which its efficiencies are likely to be realized by the organization. Some of the contingencies to consider are, but not limited to technology integration, stakeholder support, the capacity of staff and top management support for e-procurement implementation.

Figure 2.1: Conceptual framework

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<thead>
<tr>
<th>Systems integration</th>
<th>Procurement performance</th>
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<tr>
<td>• Real-time information Sharing</td>
<td>• Reduced prices of procured goods</td>
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<tr>
<td>• Information accessibility</td>
<td>• Faster purchasing process</td>
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<tr>
<td>• Sharing of sensitive information with stakeholders</td>
<td>• Better management of the purchasing activities through improved accountability and transparency</td>
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<td></td>
<td>• Reduced operational costs</td>
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<td>• Improved buyer-supplier relationship</td>
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<tr>
<th>Supplier support</th>
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<tr>
<td>• Early buyer-supplier involvement</td>
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<tr>
<th>Staff training</th>
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<tr>
<td>• Developing skills and proficiency</td>
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<th>Top management support</th>
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<tr>
<td>• Collective commitment</td>
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<td>• Allocation of responsibility</td>
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<td>• Supportive organizational structure</td>
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Systems Integration

Integration is defined as the extent to which data and applications through different communications networks can be shared and accessed for organizational use (Wyse and Higgins, 1993). As e-procurement is inter-organizational in nature (Hsu and Chen, 2004), two types of integration (e.g. internal and external) can influence how a reduction in manual data entry can affect gaining benefits (Rahim, Ilhan and Chen, 2011). Internal integration is concerned with establishing electronic interface between an e-procurement system and other internal systems (e.g. financial systems) for seamless data exchange. External integration involve making an interface with the suppliers’ front-end systems to facilitate electronic exchange of documents.

An e-procurement system has even the ability to support e-catalogues (Vaidya, et al., 2006). Use of e-catalogues promotes organizational policy to guide employees for buying from approved suppliers only. Hence, maverick buying practice can be largely minimized. For an e-procurement system to be effective and ultimately being successful, it is important that the system is integrated with existing IT systems especially financial systems. It is also very important that the information shared in real-time across systems is reliable and accurate. All the stakeholders should have controlled access to the e-procurement system data (Panda and Sahu, 2012). Most organizations implementing or looking to implement e-procurement software already have significant investments in the relevant technology systems. As such, failure to integrate these technologies with existing platforms creates duplicative work steps and jeopardizes the reliability of e-procurement information (Davila et al, 2003).

Sundarraj and Talluri, (2003) argue that IT integration in supply chain processes helps to resolve the traditional problem of single vendor and working with uncoordinated supply chain. Thus, using information technology in the procurement provides stability in goals achievement. Tanner et al. (2006) found out that using IT software reduces total costs that include internal process cost, logistic and quality assurance cost and the authors highlighted that it also leads to transparency and control over the processes of procurement and improves over all procurement process performance.

Supplier support

According to Panda and Sahu, (2012), suppliers are one of the most important groups of stakeholders for assuring the success of an e-procurement system. Early supplier involvement is closely related to the success, and they must be involved in every step of the implementation. Showing the proposed solution to the suppliers and discussing concerns and issues such as development and maintenance of supplier catalogues are important (Vaidya et al., 2006). Further, allowing suppliers to offer feedback should be encouraged, and may allow the purchasing department to find areas of improvement and adjust practices accordingly (Panda and Sahu, 2012, Vaidya et al., 2006).

Corini (2000) asserts that supplier participation is critical to the successful implementation of any e-procurement solution. He notes that without supplier participation the software is useless. Neef (2001) also recommends that key suppliers should be seen as an integral part of the e-Procurement project, provided with clear and attainable milestones and directly included in the change management plan. The adoption of e-Procurement solutions by supplier’s can improve the relationship with the buyer. But this may depend on the type of tools used by the purchaser. For certain goods the use of tools like electronic reverse auctions may have the opposite effect, by destroying the trust and mutual interdependence between the buying company and a key strategic supplier (Beall et al., 2003). Moreover, Linking to a customer directly and collaborating to ensure
accurate and on-time delivery provides better service and lower overall procurement costs to the customer. This can result in much more collaborative buyer-seller relationships. As a preferred supplier, or if the buyer begins to provide forecasts of requirements to its vendors, the supplier can begin to predict and prepare for individual buyer requirements well ahead of time, reducing the uncertain on sales (Neef, 2001).

**Staff Training**
As e-Procurement includes new technologies and changes in traditional procurement approaches, the need to train staff in procurement practices and the use of e-Procurement tools are critical to the success of an e-Procurement initiative (WB, 2003 cited in Vaidya et al., 2006). End-users can realize the immediate benefits of the e-Procurement system once they understand the operational functionalities (CGEC, 2002 Vaidya et al., 2006). This means that training should be given a high priority, alongside the need for public sector agencies to identify the skills required by all those engaged in procurement (ECOM, 2002 cited in Vaidya et al., 2006).

Oakland (1993) noted that employees, including supervisors are to be won over, not by compulsion but by training, leadership and recognition. Education and training are the most important component of any change process in an organization. In order to be successful, it is important that we have the full co-operation of employees at all levels; otherwise, technologies alone will not help to improve the organizational competitiveness and business performance. To implement and subsequently use any IT/ IS, workforce needs to be motivated to work in a transparent and open communication environment which comprises the chain. Research by Ettlie (1990) indicates that organizations with employees who have high level of technical expertise are more likely to implement a technical innovation. On the other hand organizations with less IS expertise are less likely to be in the forefront of IS implementation.

**Top management support**
Technological implementation in procurement process is vital for the top management to adopt. However, most of the management is reluctant to adopt the E-procurement because of fear of change, insufficient financial resources, lack of skills and immature technology (Gunasekaran et al., 2009). According to Grover (1993) top management support facilitates the adoption and implementation of information systems. Top management support is essential in order to provide moral support as well as the financial and technical support for the implementation of IT for achieving SCM (Gunasekaran and Ngai, 2004) and procurement efficiency.

Indeed, considerable attention and support need to be provided by senior management to ensure that the procurement reform has been well understood in the agency (S&A, 2003 Cited in Vaidya et al., 2006). In addition, the executive management team is responsible for setting the vision and goals, bringing about collective commitment for change in process and organizational structures, and formulating the policies and strategies necessary to put an e-Procurement initiative in place (WB, 2003 Cited in Vaidya et al., 2006).

According to Panda and Sahu, (2012), Top management buy-in and political will have been found to be the most important factors in e-procurement implementation. The management team must involve stakeholders such as project manager, project consultants, and staff in order to develop an implementation strategy and policies necessary for initiation of the e-procurement implementation. Considerable attention and support is needed by management to make sure that the reform is well understood in the organization. Moreover, a vision with goals must be set forth to create a collective commitment for change (Vaidya et al. 2006; Panda and Sahu, 2012).

**Procurement performance**
According to OECD, (2006), Increasing the effectiveness, efficiency and transparency of public procurement systems has become an on-going concern of governments and of the international development community. Measuring performance is thus a graceful way of calling an organization to account. It has been suggested that e-Procurement has to be evaluated in its complexity, which encompasses numerous goals: to rationalize expenditure, to reduce “administrative confusion” and costs, to foster operational efficiency, to strengthen organizations’ network vision and technological collaboration with business partners, even to completely automate certain procurement activities (Croom, 2000). In order to achieve these goals, the implementation of e-Procurement has to be carried out alongside a complete revision of procurement processes, which would include an accurate selection of suppliers, strategic bargaining of contracts, monitoring of performance, both of buyers and suppliers (Ramayah et al., 2007).

The potential for technology to enhance governance and transparency has been noted by others for public administration generally, example, (Shadrach and Ekeanyanwu, 2003). E-commerce in government provides the opportunity for major enhancements to transparency, primarily through more effective audit, for the great volume of simple low value transactions. Technology can, at very low cost, transform procurement fraud control from a process that relies largely on chance to one based on audit sampling of 100% if required. Performance in terms of value-for-money outcomes can be affected by improvements in management information facilitated by technology, but these benefits can only be fully realized where the application of technology is accompanied by adequate skill sets of procurement managers (Schapper et al., 2006).

Research Methodology

Research Design
The study adopted descriptive research design while using a case study method. Both quantitative and qualitative analysis was done for the collected data.

Target population
The target population of this study was 240 KPA employees in procurement and supplies department, finance and accounts and logistics department.

Sample and sampling technique
This study employed stratified random sampling technique. The researcher used a sample size of 72 employees that constituted 30% of the whole population. This was according to Mugenda & Mugenda, (1999) who assert that at least 30% of the cases per group are required for research.

Data collection instruments
A structured questionnaire was adopted in this study. The questionnaire was preferred for this study as it is easy to use and allow collection of the data. The questionnaires had both open and closed ended questions in order to enable effective data collection filled in the questionnaire.

Data analysis and presentation
The study generated both quantitative and qualitative data. Returned questionnaires were then sorted to ensure their completeness and accuracy. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS version.24). This technique gives simple summaries about the sample data and present quantitative descriptions in a manageable form (Orodho, 2003). Content analysis was used on data that was qualitative in nature. To establish the relationship between the independent and
dependent variables multiple regression analysis was employed. Analysis of Variance (ANOVA) was also used to test the goodness of fit. Data was presented in tables

Research findings and discussions

Table 1. Role of systems integration in e-procurement implementation on procurement performance

<table>
<thead>
<tr>
<th>Role of systems integration</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tbody>
<tr>
<td>Ensures information shared in real-time is reliable and accurate</td>
<td>72</td>
<td>4.40</td>
<td>.494</td>
</tr>
<tr>
<td>Automate and integrate the procurement activities</td>
<td>72</td>
<td>4.40</td>
<td>.494</td>
</tr>
<tr>
<td>Helps build tighter relationships between buyers and suppliers</td>
<td>72</td>
<td>4.39</td>
<td>.491</td>
</tr>
<tr>
<td>Helps develop a network and process the transactions in least time and provides contact direct to supplier</td>
<td>72</td>
<td>4.39</td>
<td>.491</td>
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<tr>
<td>Enhance cost reduction of internal processes outside purchasing</td>
<td>72</td>
<td>4.31</td>
<td>.464</td>
</tr>
<tr>
<td>Leads to transparency and control over the processes of procurement and improves overall procurement process performance</td>
<td>72</td>
<td>4.46</td>
<td>.502</td>
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</table>

From the research findings majority of the respondents agreed that; Systems integration ensured that information shared in real-time was reliable and accurate in the state corporation (mean =4.40, std deviation =0.494), E-procurement System integration ensured automation and integration of procurement activities in the state corporation (mean =4.40, std deviation =0.494). E-procurement Systems integration helped build tighter relationships between buyers and suppliers (mean =4.39, std deviation =0.491). E-procurement system integration helped the state corporation to develop a network and process the transactions in least time and provides contact direct to supplier (mean =4.39, std deviation =0.491), system integration enhanced cost reduction of internal processes outside purchasing in the state corporation (mean =4.31, std deviation =0.464) and system integration led to transparency and control over the processes of procurement and improved over all procurement process performance in the state corporation (mean =4.46, std deviation =0.502). This depicts that e-procurement integration with existing systems has a great influence on procurement performance in the state corporation.
Table 2: Role of Supplier support in e-procurement implementation on procurement performance

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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tbody>
<tr>
<td>Our suppliers are reluctant to change to new system</td>
<td>72</td>
<td>3.29</td>
<td>.458</td>
</tr>
<tr>
<td>KPA allows suppliers to offer feedback on the procurement system changes</td>
<td>72</td>
<td>4.60</td>
<td>.522</td>
</tr>
<tr>
<td>KPA perceives suppliers as an integral part of the e-procurement project</td>
<td>72</td>
<td>4.64</td>
<td>.512</td>
</tr>
<tr>
<td>Suppliers have been directly included in the change management plan in KPA</td>
<td>72</td>
<td>4.61</td>
<td>.491</td>
</tr>
<tr>
<td>Adoption of e-procurement solutions by suppliers has improved their relationship with KPA</td>
<td>72</td>
<td>4.63</td>
<td>.488</td>
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From the research findings majority of the respondents agreed to some extent that; the suppliers were reluctant to change to new systems (mean =3.29, std deviation =0.458). Majority of the respondents agreed to a great extent that, KPA allows suppliers to offer feedback on the procurement system changes (mean =4.60, std deviation =0.522), KPA perceives suppliers as an integral part of the e-procurement project (mean =4.64, std deviation =0.512), Suppliers have been directly included in the change management plan in KPA(mean =4.61, std deviation =0.491) and that Adoption of e-procurement solutions by suppliers had improved their relationship with KPA(mean =4.63, std deviation =0.488). This depicts that supplier support plays a key role on procurement performance in the state corporation.
Table 3. Role of staff training in e-procurement implementation on procurement performance

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<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tr>
<td>Our employees have very little knowledge about how e-procurement can help improve procurement operations</td>
<td>72</td>
<td>1.63</td>
<td>.488</td>
</tr>
<tr>
<td>Our employees have the technical knowledge to start using e-procurement</td>
<td>72</td>
<td>4.54</td>
<td>.502</td>
</tr>
<tr>
<td>Training motivates employees to work in a transparent and open communication environment</td>
<td>72</td>
<td>4.47</td>
<td>.503</td>
</tr>
<tr>
<td>Employees who have a high level of technical expertise are more likely to implement a technical innovation</td>
<td>72</td>
<td>4.57</td>
<td>.499</td>
</tr>
<tr>
<td>Education and training are the most important component of any change process in an organization</td>
<td>72</td>
<td>4.69</td>
<td>.464</td>
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<tr>
<td>Valid N (listwise)</td>
<td>72</td>
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</tbody>
</table>

From the research findings majority of the respondents disagreed that; the state corporations’ employees had very little knowledge about how e-procurement could help improve procurement operations (mean = 1.63, std deviation = 0.488). Majority of the respondents agreed that the state corporations’ employees had the technical knowledge to start using e-procurement (mean = 4.54, std deviation = 0.502). Training motivates employees to work in a transparent and open communication environment (mean = 4.47, std deviation = 0.503). Employees who have a high level of technical expertise are more likely to implement a technical innovation (mean = 4.57, std deviation = 0.499) and Education and training are the most important component of any change process in an organization (mean = 4.69, std deviation = 0.464). This shows that staff training has a great influence on procurement performance in the state corporation.
Table 4. Role of Top management support in e-procurement implementation on procurement performance

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top management is interested in the adoption and implementation of e-procurement system</td>
<td>72</td>
<td>4.15</td>
<td>.362</td>
</tr>
<tr>
<td>Top management considers e-procurement adoption and implementation as important to the organization</td>
<td>72</td>
<td>4.11</td>
<td>.358</td>
</tr>
<tr>
<td>Top management in KPA has set a vision with goals to create a collective commitment for change in the agency</td>
<td>72</td>
<td>4.44</td>
<td>.500</td>
</tr>
<tr>
<td>The management team in KPA involves stakeholders in order to develop an implementation strategy and policies necessary for initiation of the e-procurement implementation</td>
<td>72</td>
<td>4.08</td>
<td>.278</td>
</tr>
</tbody>
</table>

From the research findings majority of the respondents strongly agreed that Top management is interested in the adoption and implementation of e-procurement system (mean =4.15, std deviation =0.362), Top management considers e-procurement adoption and implementation as important to the organization (mean =4.11, std deviation =0.358), Top management in KPA has set a vision with goals to create a collective commitment for change in the agency(mean =4.44, std deviation =0.500) and the management team in KPA involves stakeholders in order to develop an implementation strategy and policies necessary for initiation of the e-procurement implementation in the state corporation (mean =4.08, std deviation =.278). This implies that top management support for e-procurement implementation play a great role on procurement performance procurement in the state corporation.
From the research findings majority of the respondents agreed to a large extent that; E-procurement makes the purchasing process faster(mean =4.44, std deviation =0.500), E-procurement facilitates better management of the purchasing activities(mean =4.51, std deviation =0.503), E-procurement improves relationships with business partners(mean =4.58, std deviation =0.524), E-procurement reduces operational costs(mean =4.53, std deviation =0.530) and E-procurement reduces prices of procurement goods (mean =4.10, std deviation =0.417).

**Regression Analysis**

**Analysis of Variance (ANOVA)**

Analysis of variance refers to a data analysis procedure that is used to determine whether there is significant difference between two or more groups or samples at a selected probability level (Mugenda & Mugenda, 2003).

**Table 5. Procurement performance**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-procurement makes the purchasing process faster</td>
<td>72</td>
<td>4.44</td>
<td>.500</td>
</tr>
<tr>
<td>E-procurement facilitates better management of the purchasing activities through improved accountability and transparency</td>
<td>72</td>
<td>4.51</td>
<td>.503</td>
</tr>
<tr>
<td>E-procurement improves relationships with business partners</td>
<td>72</td>
<td>4.58</td>
<td>.524</td>
</tr>
<tr>
<td>E-procurement reduces operational costs</td>
<td>72</td>
<td>4.53</td>
<td>.530</td>
</tr>
<tr>
<td>E-procurement reduces prices of procurement goods</td>
<td>72</td>
<td>4.10</td>
<td>.417</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>72</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Regression Analysis**

**Analysis of Variance (ANOVA)**

Analysis of variance refers to a data analysis procedure that is used to determine whether there is significant difference between two or more groups or samples at a selected probability level (Mugenda & Mugenda, 2003).

**Table 6. Analysis of Variance**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>6.461</td>
<td>4</td>
<td>1.615</td>
<td>37.335</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>2.899</td>
<td>67</td>
<td>.043</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9.360</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Procurement performance
b. Predictors: (Constant), Systems integration, Supplier support, Staff training, Top management support
The overall Anova results indicate that the model was significant at $F = 37.335.405$, $p = 0.000$. This indicates that the identified factors have a statistically significant relationship with procurement performance.

**Multiple Regression Analysis**

Multiple Regression aims at determining whether a group of variables together predicts a given dependent variable (Mugenda & Mugenda, 2003).

**Table 7. Multiple Regression Analysis**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.427</td>
<td>.518</td>
<td>2.752</td>
<td>.008</td>
</tr>
<tr>
<td>Systems integration</td>
<td>.262</td>
<td>.066</td>
<td>.313</td>
<td>.000</td>
</tr>
<tr>
<td>Supplier support</td>
<td>.249</td>
<td>.079</td>
<td>.251</td>
<td>.003</td>
</tr>
<tr>
<td>Staff training</td>
<td>.360</td>
<td>.106</td>
<td>.265</td>
<td>.001</td>
</tr>
<tr>
<td>Top management support</td>
<td>.522</td>
<td>.124</td>
<td>.330</td>
<td>.000</td>
</tr>
</tbody>
</table>

Dependent Variable: Procurement Performance

The regression equation was:

$Y = 1.427 + 0.262X1 + 0.249X2 + 0.360X3 + 0.522X4$

Where:

$Y =$ the dependent variable (Procurement Performance)

$X1 =$ Systems Integration

$X2 =$ Supplier support

$X3 =$ Staff training

$X4 =$ Top Management Support

From the regression model obtained above, a unit change in systems integration in e-procurement implementation holding the other factors constant would positively change procurement performance by a factor of 0.262, a unit change in supplier support in e-procurement implementation while holding the other factors constant would positively change procurement performance by a factor of 0.249, a unit change in staff training in e-procurement implementation while holding the other factors constant would positively change procurement performance by a factor of 0.360, while a unit change in top management in e-procurement implementation while holding the other factors constant would positively change procurement performance by a factor of 0.522 in state corporations. This implied that top management support played a major role on procurement performance in state corporations, followed by staff training, then systems integration and finally supplier support. It was an implication that systems integration, supplier support, staff training and top management support in e-procurement implementation promoted procurement performance in state corporations. Analysis for this study was undertaken at 5% significance level. The criteria for comparing whether the predictor
variables were significant in the model was done by comparing the obtained probability value and \( \alpha = 0.05 \). If the probability value was less than \( \alpha \), then the predictor variable was significant otherwise it was not. The predictor variables adopted in this study were significant in the model as their probability values were less than \( \alpha = 0.05 \).

### Correlation Coefficient

The correlation coefficient shows the magnitude of the relationship between two variables and the direction of the relationship between two variables.

Table 8. Model summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.831*</td>
<td>.690</td>
<td>.672</td>
<td>.20800</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Systems integration, supplier support, Staff training, Top management support

The \( R \) value is used to explain how well the whole model describes the data. In this case, the model explained 83.1% of the data. The "R Square" (coefficient of determination) indicates a measure of how much the variance in the dependent variable is explained by the model. In other words, the coefficient of determination indicates the extent to which the dependent variable is influenced by the independent variables as given in the regression model. As shown in table 4.6, the value "R Square" is 0.690. This means that the extent of influence of independent variables in the model on the dependent variable is 69%. Such a percentage indicates a fair level of prediction, that is, 69% of the variation in procurement performance could be explained by the changes in E-procurement system integration—procurement supplier support, e-procurement staff training and e-procurement management support. The remaining percentage can be explained by other factors excluded in the study.

### Summary, Conclusion and Recommendations

The study established that systems integration; Supplier support, Staff training and Top management support in e-procurement implementation had positive and statistically significant relationships with procurement performance in Kenya ports authority. An examination of the joint relationship confirmed these findings and established that the variables jointly account for 69% of the variability in procurement performance.

### Discussion of the findings

#### Systems Integration and procurement performance

The study established through systems integration; Information shared in real-time was reliable and accurate; system integration ensured automation and integration of the procurement activities; system integration promoted tighter relationships between buyers and suppliers; systems integration helped develop a network and process the transactions in least time and provided contact direct to supplier; Enhanced cost reduction of internal processes outside
purchasing and systems integration ensured transparency and control over the processes of procurement and improves over all procurement process performance. There was a positive and significant relationship between systems integration and procurement performance. This implies that a unit change in e-procurement integration would increase procurement performance by 0.262. The findings concur with Sundarraj and Talluri, (2003) who argue that IT integration in supply chain processes helps to resolve the traditional problem of single vendor and working with uncoordinated supply chain. The findings are also supported by Aguiar, et al. (2008) who asserts that systems Integration between the focal firm and its main suppliers moderates the relationship between EPS Implementation Success and the Procurement Performance achieved by the firm.

Supplier support and procurement performance
The study established that although to some extent the suppliers were reluctant to embrace e-procurement system, KPA ensured that the suppliers had the opportunity to offer feedback on the procurement changes. By way of perceiving suppliers as an integral part of the e-procurement project, KPA has also directly included the suppliers in the change management system. Suppliers who had embraced the e-procurement system solution recorded improved relationship with the state corporation. There was a positive and significant relationship between supplier support and procurement performance. This implies that a unit change in supplier support increase procurement performance by 0.249 units. The findings concur with Corini (2000) who asserts that supplier participation is critical to the successful implementation of any e-procurement solution and without supplier participation the software is useless.

Staff training and procurement performance
The study revealed that a unit change in Staff training in e-procurement implementation while holding the other factors constant would positively change procurement performance in state corporations by a factor of 0.360. This correlates with Dessler (2000) who opined that due to the increase of technological advancement constant training on the skills to handle all kinds of problems in communication to achieve effective communication is essential. The study also established that KPA staff had the required knowledge on how e-procurement can help improve procurement operations. The study further deduced that training motivates employees to work in a transparent and open communication environment and that education and training were the most important component of any change process in an organization. The findings are supported by the study of Croom and Johnston (2013) who pinpoints that training ensures that an organization has people with the correct mix of attributes which is achieved by the provision of appropriate learning opportunities and enabling them to reform to the highest levels of quality and service.

Top management support and procurement performance
The study revealed that a unit change in Top management support in e-procurement implementation while holding the other factors constant would positively change procurement performance in state corporations by a factor of 0.522. The findings above concur with Arabind (2003) who assert that management support is essential to ensure the realization of benefits from using e-procurement systems. The results also show that improved procurement performance is achieved when; top management is interested in the adoption and implementation of e-procurement system; top management considers e-procurement adoption and implementation as important to the organization; top management sets a vision with goals to create a collective commitment for change in the agency and when the management team involves stakeholders in
order to develop an implementation strategy and policies necessary for initiation of the e-
procurement implementation.

**Procurement performance**
The study revealed that e-procurement implementation plays a key role on procurement performance. The study established that; Implementation of e-procurement makes the purchasing process faster; facilitates better management of the purchasing activities through improved accountability and transparency; improves relationships with business partners; reduces operational costs and reduces prices of procurement goods in state corporations. This concurs with Aberdeen Group (2005), who indicate that, e-procurement is associated with reduced transaction cost, improved process efficiency, increased contract compliance, reduced cycle times and reduced inventory costs.

**Conclusions of the study**
The study concludes that systems integration, supplier support, staff training and top management support in e-procurement implementation are critical in enhancing procurement performance in state corporations. The research concludes that e–procurement makes the purchasing process faster; facilitates better management of the purchasing activities through improved accountability and transparency; improves relationships with business partners; reduces operational costs and reduces prices of procured goods in state corporations.

**Recommendations**
From the above conclusions, the following recommendations were arrived at: First, the state corporations should seek ways to enhance greater collaboration with suppliers so as to hasten the pace of implementation of e-procurement; The government should train its employees to reduce resistance to ICT in the organization; In order to ensure successful implementation of e-procurement in state corporations, the top management should show full commitment throughout the implementation process; this will serve as a motivation to the personnel in the lower levels of management; All public sector organizations should consider adoption of ICT in their procurement process as this was found to enhance faster purchasing process; facilitate better management of the purchasing activities; improve relationships with business partners; reduces operational costs and reduce prices of procurement goods. The study also recommends that organizations should embrace e-procurement as a strategy for improving procurement performance.
References


