# CHALLENGES FACING THE USE OF E-PROCUREMENT APPLICATIONS IN PUBLIC ORGANIZATIONS IN KENYA: A CASE OF KENYA REVENUE AUTHORITY

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## ABSTRACT

Despite government initiative for public organization to adopt e procurement, the process has been slowly adopted among many public organizations E-procurement is a practice if adopted can lead to efficiency, transparency, reduction in costs among public organizations in Kenya. Its slowed adoption raises questions as to what challenges face its adoption in public sector. This underlined the need to carry out the study on Challenges facing the use of e-procurement applications in public organizations in Kenya with reference to Kenya Revenue Authority. Like other public institutions, Kenya Revenue Authority has not fully adopted e-procurement and there for continue to miss the benefits. This study established the Challenges facing the use of e-procurement applications in public organizations in Kenya with reference Kenya Revenue Authority. The specific objective was to investigate whether e- procurement processes is a challenge facing the use of e-procurement applications in selected public organizations in Kenya. Also to find out whether e- procurement effectiveness, e- procurement capability and e-Procurement efficiency are challenges facing the use of e-procurement applications in selected public organizations in Kenya. The study is of benefit to the scholars, Government of Kenya and other researchers. The study adopted a descriptive survey design with a target population of 200 Kenya Revenue Authority staff which generates a sample of 86 respondents. Questionnaires were the main data collection instruments. The study employed both quantitative and qualitative research in its data analysis. Data was presented using tables, pie charts and bar graphs. The study was limited by confidentiality and uncooperative respondents. In data analysis and presentation, the study adopted both ANOVA and multiple regression. The study found that Kenya Revenue Authority has sufficient resources to implement the use of e-procurement application it was also found that E-Procurement applications sometimes is faced with technical hitches which leads to delay of procurement processes.

*Key Words:* *challenges, e-procurement applications, public organizations, Kenya Revenue Authority*

## Introduction

The study sought to find out the Challenges facing the use of e-procurement applications in public organizations in Kenya A case of Kenya Revenue Authority. E-procurement is the acquisition of goods and services without the use of paper processes (Panayiotou, Sotiris &Tatsiopoulos 2004). Procurement activities can be grouped and defined in three different ways: indirect procurement, direct procurement and sourcing (Minahan&Degan, 2001).

According to Public Procurement and Disposal Act (PPDA) Act (2005) "procurement" means acquisition by purchase, rental, lease, hire purchase, license, tenancy, franchise, or any other contractual means, of any type of works, services or supplies or any combination. Procurement is the acquisition of goods and services at the best possible total cost of ownership, in the right quality and quantity, at the right time, in the right place and from the right source for the direct benefit or use by corporations, individuals, or even governments (Gilbert A, 2010). Sound public procurement policies and practices are among the essential elements of good governance (World Bank, 2002).

According to Lysons (2006), the procurement process consist of three main phases, the identification phase which consist of notification of the need to purchase and this is done by either requisition issued by the stores or potential user or bill of materials issued by the drawing office. The second phase is the ordering phase. The requisition or bill of materials is checked for accuracy, and conformity to specification and purchase records to ensure whether it's a re-buy or new buy. If it's a rebuy a repeat order will be issued. However if it is a new buy a request for quotation is sent to possible suppliers, and a quotation will be received in response to the enquires. A purchase order is then issued to the vendor that gave the quotation. Thirdly there is the post ordering phase. There is little history of extensive e-procurement use in the public sector except perhaps in certain entities in the military and public health sectors. As would therefore be expected, the academic literature covering public sector e-procurement is very limited. However, there are some useful examples including, (Allen 1998; Arnold & Essig 2002; Cater 2001; Harink& Van Rooijen 2002). Information about public procurement initiatives are most commonly elicited through relevant conferences or through unpublished reports, for example, (Griffith & Cattroll 2003; Parker &Lawes 2003; Ritchie 2003).

Much of the commentary on public sector e-procurement arises from the popular press announcing forth coming projects or the awarding of related contracts to supply "solutions", (Denton 2002; Moodie 2000). In addition, various government agencies advise public sector entities on the uptake of e-procurement. One of the most thorough approaches in this regard has been that of the United Kingdom Government through the Office of Government Commerce, (Birks, Simon & Radford, 2001). There is also evidence of networks supporting the development of electronic commerce in procurement, for example the Australian Procurement and

Construction Council, (Anonymous 2002), and the European Commission sponsor relevant networks.

It has been suggested that the public sector is likely to benefit more from the use of electronic commerce for the purpose of sourcing than for transaction management, (Baker 1999), and that electronic commerce promotes economic efficiency in public sector procurement, (Arnold & Essig, 2002). The implications for supply chain transformation from the perspective of transaction cost optimization have been considered, (Croom 2001; Essig & Arnold 2001; Rasheed & Geiger, 2001). The use of e-procurement is thought to have implications for information asymmetries or impactedness in inter-organizational relationships and in particular for search and monitoring costs. Alternative explanations for the benefits of e-procurement arise from the resource based perspective through which the resources of the firm may be leveraged to achieve competitive advantage with electronic commerce presenting opportunities to enhance firm resources (Dhillon&Caldeira 2000).

## Kenyan Perspective on e -procurement

Most developing and developed countries governments would like to implement public e-procurement technology in such a way, as to enhance transparency and accountability in government procurement processes. The basic principle of the government procurement is straightforward: to acquire the right item at the right time with the right price. The process should be open, objective and transparent. However, corruption in public procurement processes leads to problems such as lack of accountability and transparency, lack of political control and auditing, weak professionalization of the bureaucracy and many more.

To overcome these concerns relating to corruption in the government procurement, information and communication technology (ICT) can play an important role to reduce corruption by promoting good governance (Jennings D, 2001) enhancing relationships between government employees and citizens tracking activities, monitoring and controlling the government employees and reducing potentiality of corrupt behaviors. ICT enabled technology especially public e procurement plays an important role for minimizing the risk of corruption in public procurement processes (OECD, 2008).

Recently many least developed countries have focused on e-procurement systems as a key tool to reduce the corruption by opening competition in government procurement processes to the public. The public procurement in the Kenyan public sector has been undergoing reforms starting with the Public Procurement and Disposal Act 2005 that saw the creation of Public Procurement Oversight Authority. The next step was the implementation of e-procurement for the public sector. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007, but the process was very slow. The manual processes are costly, slow, inefficient and data storage and retrieval poor (Malela, 2010).

## Statement of the Problem

Technology especially public e-procurement plays an important role for minimizing the risk of corruption in public procurement processes (OECD, 2008). Developed countries have adopted e procurement at a much faster rate and hence have thus enjoyed the benefits. For instance, in year 2010, over 60% of Korea's total public procurement (124 billion USD) was conducted through e-procurement system (Chang, 2011). The EU missed a previous target to make 50 per cent of all procurements electronic by 2010. It is currently between 5 and 10% (European commission 2012). More than 50% of procurement processes in Kenya public organization are carried out manually (davis e.t al 1989). The manual processes are costly, slow, inefficient and data storage and retrieval poor (Malela, 2010).

According to e-government strategy paper (2004), e-procurement was one of the medium term objectives which was to be implemented by June 2007, but the process has been very slow and Findings show that most of the procurement processes in public sector are still manual with the internet only being used for e-mails and web browsing (PPOA, 2013). This slowed adoption of e-procurement in the public sector raises concern as to what challenges face adoption of e procurement in Kenya. Locally Mburu (2011) did a study on the role of e-procurement in enhancing efficiency in telecommunication industry while Mwangi (2011) studied factors affecting adoption of e-procurement in telecommunication industry. As per researchers knowledge no study has been done on challenges facing adoption of e-procurement in public sector. It is therefore in this light that the proposed study seeks to fill this knowledge gap by investigating Challenges facing the use of e-procurement applications in public organizations in Kenya A case of Kenya Revenue Authority.

## General Objective

To investigate the Challenges Facing the use of E-Procurement Applications in selected Public Organizations in Kenya.

## Specific Objectives of the study

1. To establish whether the e- procurement processes affect the Use of E-Procurement Applications in Selected Public Organizations In  Kenya
2. To establish whether e- procurement effectiveness affect the Use of E-Procurement Applications in Selected Public Organizations In  Kenya
3. To find out whether e- procurement capability affect the use of E-Procurement applications in selected public organizations in Kenya.
4. To determine whether e-Procurement efficiency affect the use of E-Procurement applications in selected public organizations in Kenya.

## Theoretical Review

### E-Procurement Adoption Model (EPAM)

The organizational adoption process is viewed as a sequence of individual adoption processes and passing through the change phases. The interplay between individual and organizational adoption is dealt with by researching seven different roles. These elements are included in this study by structuring the empirical data finding process during in a matrix with the eight change phases from horizontally and the seven roles that show individual adoption vertically. The matrix is referred to as the EPAM Matrix, as it provide the basis for the design of the EPAM (Reunis, Raaij & Santema, 2004).

### The conventional model

The conventional model of the technology life-cycle, as developed by Utterback and is well known. It describes how, for a given industry, the type of innovation (product vs. process), the location of innovation, and the barriers to innovation change over time. It also relates these changes to an account of changing relations between and among sellers and buyers (or producers and users). The model begins with a 'fluid' phase of technology-competition, in which there is a high level of product innovation and a low level of process innovation. A fairly large population of producing firms within the industry, each with a distinctive product concept, is in competition to capture sufficiently large shares of an emerging market. In addition to technological uncertainties, therefore, there are also market uncertainties, constituting a major problem for product developers. (Edquist & Hommen, 1998).
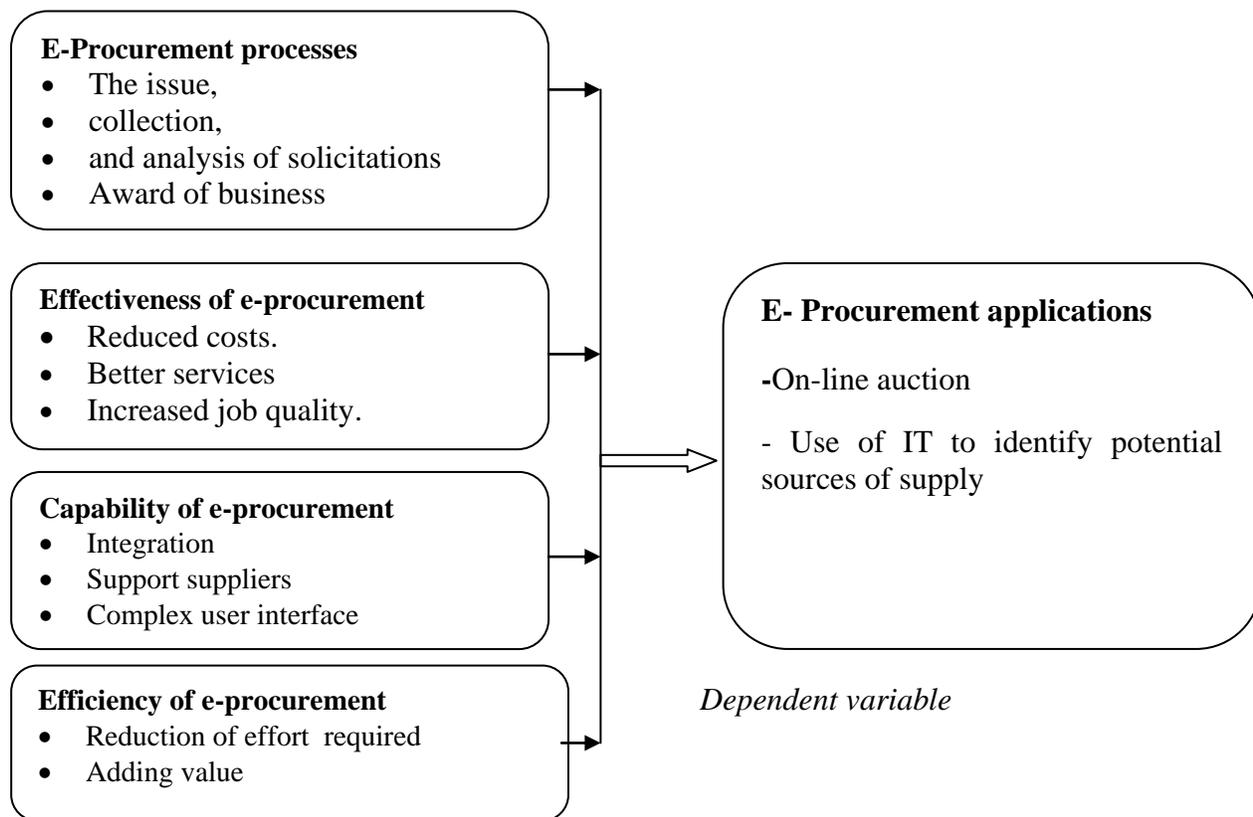
### Dosi's Theory

Dosi's formulation makes possible a more discerning perspective on the relations among and between sellers and buyers in the historical development of a given technology. According to the classic Schumpeterian narrative, both sellers and buyers of a new technology are motivated by the desire to capture temporary monopoly gains from innovation. The first adopter(s) whose buying decision to procure an innovative technology leads to the establishment of one or another seller's product-concept as a dominant design will enjoy this same status within the buyer industry. The decisive influence of the demand-side, however, is exercised only at this time; after the dominant design has been established, an oligopoly of sellers comes into being that effectively controls the technology's further development (Edquist & Hommen, 1998).

## Conceptual framework

The popularity of the Internet has significantly influenced organizations' intentions to use new inter-organizational systems (IOS) technologies such as e-Procurement. While researchers from Information Systems (IS) and management disciplines have studied the implementation issues of

the traditional IOS in the private sector from various perspectives, there have been few implementation studies on Internet/Web-based IOS, especially on e-Procurement in the public sector. Furthermore, while there have been some academic studies conducted on the value of B2B e-Procurement (Subramanian & Shaw, 2002), the e-Commerce procurement process (Yen & Ng, 2003), the classification of e-Procurement transactional structures (Croom & Brandon-Jones, 2004), and the impact of e-Procurement on buyer-seller relationships (Carr & Smeltzer, 2002), there appear to be relatively few detailed empirical studies on e-Procurement implementation (Croom & Brandon-Jones, 2004).

**E-Procurement processes**
- The issue,
- collection,
- and analysis of solicitations
- Award of business

**Effectiveness of e-procurement**
- Reduced costs.
- Better services
- Increased job quality.

**Capability of e-procurement**
- Integration
- Support suppliers
- Complex user interface

**Efficiency of e-procurement**
- Reduction of effort required
- Adding value

**E- Procurement applications**

**-**On-line auction

- Use of IT to identify potential sources of supply

*Dependent variable*

*Independent variables*
**Figure 1: Conceptual Framework**

Building on the traditional IOS implementations, e-Procurement research has included a variety of constructs and measures in understanding and predicting implementation success (OSD, 2001; CGEC, 2002). A CGEC study (2002) has confirmed that a significant portion of the initial value proposition is often not ultimately delivered due to problems related to technology, business process, and/or people/organizational issues. Similarly, the Local Authority Strategy for e-Procurement report (IBM, 2003) has identified the three areas where e-Procurement implementation strategy should be focused to ensure that the required practices, processes, and systems are developed and rolled out in a consistent manner across the public sector. As such, the three areas - organization and management, practices and processes, and systems and

technology - have been termed as "implementation perspectives" that is the process itself for the purpose of this study. Each of these perspectives highlights important aspects of the e-Procurement implementation process. The overall conceptual model for this study presented above, emphasizes the interplay between the perspectives and different constructs that he wants to investigate. The study will be guided by the following conceptual framework.

**The principal–agent framework**

Conceptual building block of organization economics is the classification of people or parties involved in transactions. Transactions can be characterized by an imbalance of information, so there is likely to be a dependency relationship between the parties involved. In particular, one party to the transaction often has either more information and/or better bargaining power than the other. On this basis the theory identifies two types of parties to a transaction. The principal is a party who wishes to secure provision of some good or service but does not have the necessary specialized knowledge, skills or assets. The principal employs an agent to undertake this task and in the process delegates some control to that party (Grossman & Hart, 1983).

The problem faced by the principal is to secure some service benefit from the agent while not knowing the true value of those benefits, or being forced to accept those benefits the agent wishes to supply. Either way the information imbalance can make it difficult for the principal to be sure that the agent is acting in the principal's true interests. Even when the course of action that the principal wishes the agent to undertake has been established to a satisfactory extent, a motivation problem remains. The principal needs to put in place an incentive structure that motivates the agent to act appropriately.

Eisenhardt (1992) discusses the assumptions of the theory and raises the issue of principals learning about the agents when there is a long term relationship, when there may be less need for outcome-based contracts. This may be more the case with procurement in the private sector, where there are fewer regulations than in the public sector, and where tendering is not required. Private businesses are free to have long term relationships with software developers and consulting firms. Jones (1995) suggests that long term relationships with vendors may in the long run lead to higher effectiveness, due to the stability of the relationship being dependent on controlling goal conflicts.

Flak and Rose (Flak & Rose, 2005) have done a thorough literature study of stakeholder theory and discusses the strengths and weaknesses of the theory for theoretical contribution to the e-government field. Jones (1995.) defines stakeholders as applying not only to groups easily characterized by words such as customers or employees but also to subgroups of customers and employees (e.g. shop workers and middle managers) who may have distinct and competing interests. In my work I plan to identify different stakeholders in a number of case organizations, what conflicting goals or interests they may have, and to what extent this influences the process. Two obvious groups of stakeholders which may have conflicting goals are IT managers and

users. There may also be conflicting goals between different external stakeholders (e.g. small compare to big vendors, local compared to national vendors).

According to Sharma (1987), there are some specific distinctions of the principal-professional agency exchange.  The greatest is the power asymmetry.  In an owner-manager or manager-worker relationship, the principal have the power to design and enforce contracts and hence the power to enter or to dismiss incentives for the managers and the workers.  In contrast, principal-professional exchanges are inherently those in which professionals have the power over lay principals by virtue of their expertise, functional indispensability, and intrinsic ambiguity associated with the services they provide. It also involves a considerable information asymmetry; the principal does not only not know how the professional agent does the job, but also not what he or she does. This information asymmetry also makes it difficult for the principals to know beforehand how much service is actually needed.

**E-procurement**

Internet technology has been increasingly used to enhance the global competitiveness of various business applications through the widespread electronic commerce functions. Many internet based systems have been designed and developed for supply chain management in various areas such as computer, garment and publishing industries, which mainly centre on communication infrastructure, coordination between production and distribution, and procurement functions with security mechanisms. However, electronic commerce is not a panacea. In many occasions, participants including buyers, sellers, and enablers face various risks and overheads during the deployment of new technology (Netessine, & Shumsky, 2001).

The traditional market of electronic commerce was founded in the 1990s along with the rapid growth of the internet. By 1991 EC was mainly supported by five basic facilities: electronic mail, enhanced fax, electronic data interchange (EDI), transaction processing and groupware and by 1995 EC began to mature with emphasis of security with a variety of secure transaction processing services Watson (2002). In the 21st century EC has become a hot topic in both research and business areas , and, among the many definitions of EC, we can simply summarize EC and the buying and selling activities of information, products, and services via computer networks. There has been an increasing trend for organisations to migrate their businesses onto the internet because they want to sell on the internet in order to increase sales and has a competitive business norm to establish their visibility in the electronic market.

With buying processes typically involving a large amount of information processing and communication, Gabauer, Beam, and Segev, postulate that procurement is well suited to information technology support and automation throughout all its steps. Supporting this view, Chia, noted that the purchasing function is traditionally a labour intensive activity whereby 20% of the company's purchases constitute 80% of its total purchase value. A large proportion of this time is spent on non -value adding activities such as data entry, correction of errors in paperwork

and delivery expedition. Two critical factors to success of purchasing management have been identified as reduction in the number of routine tasks and reduction of the overall procurement cycle through the use of appropriate technology (Desanctis & Poole 1994).

Research suggests that the organizational procurement process involves complex series of events that allows a firm to move from the basic recognition of a need, through technical specification and potential supplier evaluation, to reaching and evaluating a final purchase decision (Woodside, 2004). Although a general pattern exists, execution of the procurement events varies greatly from organization to organization to account for the many differences in purchasing products as diverse as raw materials, accessory equipment, component parts, and capital equipment.

In summation it is noted that the extent of e-procurement adoption remains in a formative stage, falling short of the type of e-sourcing and e-collaboration suggested by Bartezzaghi & Ramsay (2001). Common e-procurement tools are online catalogues and direct auctions, where reverse auctions remain unpopular with sellers. E-procurement implementation is characterized by the direct and indirect procurement divide, where firms tend to use online systems for uncritical items (Min and Galle, 2003). The transition to modern e-procurement calls for strategic adaptation. It is one strategy, though, that requires much organizational change (Vrazalic, 2005).

## Empirical review

A study by Wyld (2007) reports that currently almost half of all American companies use e-procurement systems although the adoption of e-procurement has rapidly increased in recent years, companies face different challenges associated with the advent and use of e-procurement. In seeking to explain differences in e-procurement adoption process between organizations, several factors are identified in literature.

**Migration phases of the e-procurement process**

The first phase of migration would be digitalization of database systems arranged in a local network (LAN) to manage the information storage and retrieval within the organization. In order to maintain such system, security and financial issues such as login and password control and firewalls to protect the LAN, and costs for computer hardware and staff training should be treated as important as technical requirements.

The next phase is the setup of coming communication infrastructure with other companies where information is transferred or exchanged with inter-organizational connections through e-mails and EDI. Costs for internet access and building of EDI and email systems, and a more sophisticated firewall to protect such systems are required. The third phase is the implementation of EC front-end-system for the procurement business processes where information processing can be facilitated with web sites and search engines. Costs for staff training for implementation

and maintenance of the EC consultants, and firewall to protect front-end system are required. The last phase is the integration of vertical portal where front- end system is coordinated with third parties, such as transaction and logistic bodies. There are also other costs of maintaining such systems and charges for transactions which are paid to third parties.

**Potential factors in adoption to the process of e-procurement**

In seeking to explain differences in e-procurement adoption between organizations, several factors are identified in the literature. There are five main types of factor that appear to influence the adoption of e-procurement namely, organizational, readiness, supply, strategic and policy factors.

*Organizational factors*

The main organizational factors that appear to impact on the likely adoption of e-procurement are size and type of operation. E-Procurement is more evident in bigger organizations than smaller ones. Small to medium enterprises (SMEs) often lag behind larger organizations in e-procurement adoption (ISM/Forrester Research, 2003). Reasons for this include owners' attitude, resource poverty, limited IT infrastructure, limited knowledge and expertise with information systems (Harland et al., 2007).

Some types of organizational operations seem to lend themselves to e-procurement. The use of e-procurement applications often goes hand-in-hand with repetitive purchases from suppliers, reducing human intervention and paperwork and often resulting in improved performance for buyers and suppliers (Sullivan, 2005). Routinization and repetition in the procurement system will increase the efficiency in this process and result in a higher level of electronic integration between buyers and suppliers (Choudhury et al., 1998).

Make-to-order supply chains differ from make-for-stock supply chains, impacting on implementation of e-business (Gosain et al., 2005). High volume operations with substantial logistics, requiring regular tracking of items are more likely to use e-procurement (Lancioni et al., 2000). Operations with high usage of MRO supplies are more likely to use e-procurement (Croom, 2000). The B2B e-commerce solution is likely to vary with the number of buyers and suppliers, their connectivity and the purpose of trading (Cullen and Webster, 2007).

*Readiness factors*

Organizational readiness and external pressure impact on e-business strategy (Mehrtens et al., 2001). Many firms are experiencing a number of major problems in implementing e-business projects, due to hasty decisions in the presence of considerable media and software vendor hype, and often no theoretical basis behind the determination of which applications are most appropriate (Cox et al., 2001). To attain the greatest benefits, purchasing processes should be evaluated and improved before adopting e-procurement tools (Presutti, 2003). Internet

technologies enable integration with trading partners, yet amplify the need for fundamental organizational change (Power and Singh, 2007). B2B seller competence depends on change disposition (Rosenzweig and Roth, 2007).

Lack of readiness has been attributed mainly to human readiness (Osmonbekov et al., 2002). Internal barriers to e-adoption are more significant than customer or supplier barriers (Frohlich, 2002); suggesting supply management professionals need to ensure their own organizations are ready for e-adoption (Hartley et al., 2006).

*Supply factors*

E-procurement is more likely to be beneficial in dispersed supply chains as it helps coordination (Liao et al., 2003). Different actors in supply chains have got different power, legitimacy and urgency to implement e-procurement and e-procurement can have an effect on trust in supply chain relationships (Klein, 2007). Lack of assistance and the structural inertia of large organizations in supply chains can be a disincentive to implement e-business (Zhu et al., 2006). Different industries show different propensities to e-procurement adoption, related to existing use of information exchange infrastructures prior to the advent of the internet (Cagliano et al., 2005).

The greatest benefits of e-business occur when its application is fully integrated throughout the supply chain (Currie, 2000). Some literature has pointed to the possibilities of greater integration and collaboration across e-business-supported supply chains (Mclvor and Humphreys, 2004). E-procurement is more likely to be adopted if it is perceived that suppliers have capability to deal with it; there are difficulties in integrating information systems across firm boundaries in supply chains if suppliers lack capability.

*Strategic factors*

A company may adopt e-technologies as part of its overarching business strategy, contributing to improving firm performance and increasing competitive advantage. The strategic use of e-business has been considered in several studies, and how e-business strategy aligns with the overarching business strategy of a firm.

The internet will only become a powerful source of competitive advantage if it is integrated in firms' overall strategies (Porter, 2001). The role of IT has evolved from a productivity tool to a more strategic level (Wu et al., 2003). An e-business strategy should specify the aims, goals and context of the application (Youssef, 2001); these choices should be aligned with other organizational and managerial choices, and integrated with the organization's processes (Hardaker, 2000). These studies suggest that if organizations are being strategic in their e-procurement adoption, they may have a specific e-procurement strategy, and that this will align with broader organizational strategy.

*Policy factors*

Public procurement can be used to support broader government policies, both through traditional and e-procurement processes. Electronic procurement in the public domain can be seen as a policy tool to support the delivery of public procurement policy, improving transparency and efficiency (Croom and Brandon-Jones, 2005). E-Procurement can assist a government in the way it does business by reducing transaction cost, making better decisions and getting more value (Panayiotou et al., 2004). E-Procurement adoption and usage in the EU and US public sector is being encouraged.

Looking beyond e-procurement policy to public procurement policy more generally, public procurement can be used to support societal reforms. There is evidence that public procurement organizations in the EU have used government spending as an instrument of industrial or social policy, placing contracts to support regional development objectives, or promoting industrial competitiveness (Arrowsmith, 1995). Public procurement has been used to promote social outcomes (McCrudden, 2004) and environmental benefits (Walker et al., 2008). This aspect of public procurement can be operationalized through e-procurement applications.  For example, some public sector e-catalogues list eco-labels so that buyers can choose environmentally friendly products.

**Effectiveness of e procurement**

Electronic commerce tools can be utilized in both internal and external settings. External e-commerce tools are geared primarily toward interactions between industrial buyers and sellers, whereas internal e-commerce tools are geared toward interactions within a firm. Many e-commerce tools have recently been developed thanks to the emergence of intranets and extranets. An intranet is a combination of one organization's computers linked together so that it is not accessible to people outside the organization. An extranet is a network of intranets that links different organizations and limits the access of people outside of the specific organizations involved. Consequently, various intranet applications are accessible to the employees of that particular firm, whereas extranet applications can be accessible throughout the network of firms.

**Research Methodology**

**Research Design**

Kumar (2005) defines a research design as a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically. A research design helps a researcher to conceptualize an operational plan to undertake the various procedures and tasks required to complete the study and to ensure that these procedures are adequate to obtain valid, objective and accurate answers to the research questions. The study adopted an exploratory approach using a descriptive survey design, which ensured ease in understanding the insight and

ideas about the area of study. Descriptive survey designs are used in preliminary and exploratory studies, to allow researchers to gather information, summarize, present data, and interpret it for the purpose of clarification (Creswell, 2003). According to Mugenda and Mugenda (2003), the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of the population under study. Borg, Gall & Gall (2003), note that descriptive survey research is intended to produce statistical information about the aspects of the area of study.

## Target Population

Cooper & Schindler (2003) describe a population as the total collection of elements whereby references have to be made. The population of interest for this study is the Kenya Revenue Authority employees from the procurement department. The research targeted top level managers, middle level employees and low rank employees who added up to a total of 170 respondents.

## Sampling Size

Since the population was selected public organizations in Kenya. Employees of Kenya Revenue authority from the procurement department were selected. Stratified random sampling method as described in Cooper and Schindler (2006) will be applied to come up with the sample size of 170 from the top management, middle level and Low level employees. The sample from the population shall be selected on the basis of suitability for the objective research, as a matter of convenience. According to Cooper and Schindler (2006) every sample must have a non-zero probability of selection.

## Data Collection Method

The study used both primary and secondary data collection in gathering data. The primary data collection used survey method by the use of open and closed form of questionnaires. The questions asked in the questionnaires are based on the research questions that are raised in the first chapter. The questionnaires had four sections with the first section containing bio data of the selected institutions. The second and third parts answering questions on objectives one, two and three while the last section answers questions on objective four. This method will provide immediate feedback and clarification of the questions asked to the respondents. The secondary data provided the trend of the effect of e-procurement on Government Procurement in the case study of the targeted institutions. The source of secondary data was from review of journals, past research findings, books, magazines, internet among others.

## Pilot Test

A pilot test involving 10 respondents was conducted to determine whether the questionnaires were clear enough and able to get the necessary information required from the respondents.

## Reliability and Validity

The reliability and validity of the research instruments was computed after pilot study was conducted. Reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In order to test the reliability of the instrument to be used in the study, a pilot study was carried out and a reliability coefficient computed. This established the extent to which the questionnaires elicited the same responses every time it was administered. A correlation coefficient of 0.5 arrived at was considered reliable for the study (Paton, 2001). The results obtained from the pilot study assisted the researcher in revising the questionnaire to make sure that it covered the objectives of the study.

According to Paton (2001) validity is quality attributed to proposition or measures of the degree to which they conform to establish knowledge or truth. It refers to the extent to which an instrument asks the right questions in terms of accuracy. Mugenda and Mugenda (1999) define validity as the accuracy and meaningfulness of inferences which are based on research results. The content validity of the instrument was determined through piloting, where the responses of the subjects were checked against the research objectives.

## Data Processing and Analysis

The study anticipated in generating both quantitative and qualitative data. According to Cooper and Schindler (2003), analysis of data is a process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Returned questionnaires were sorted to ensure their completeness and accuracy. Thereafter, responses were coded for analysis using Statistical Package for Social Sciences (SPSS).

Qualitative data was operationalised by arranging the data according to emerging themes or patterns with assigned numbers to make them measurable. Factor analysis was used to form the basis of analysis. For quantitative data, correlation coefficients were calculated for initial exploration of the relationships between variables. Correlation was used to measure the size and direction of the relationship between two variables (Tabachnick and Fidell 2001).

A correlation analysis was carried out to measure the inter-relationship between independent variables and dependent variables. The t-test was used to test the correlation between the variables. Analysis of Variance (ANOVA) was also used to test the goodness of fit. In addition, a

regression analysis was conducted in order to further evaluate and understand the relationships between the dependent and independent variables of the study.

**Research Results**

**Pearson Correlation Coefficient on Challenges facing the use of E-Procurement Applications**

Correlation coefficient indicates the measure of linear relationship between two variables. Table 1 shows the Pearson correlation coefficients between the independent variable – challenges facing the use of e-procurement application with the four variables: e-procurement processes, effectiveness of e-procurement, e-procurement and its capability and e-procurement efficiency. The items have a positive correlation with E-procurement processes having the highest correlation of 0.836. The table also shows the significant levels of those variables. E-Procurement capability, e-procurement effectiveness and e-procurement efficiency in explaining the challenges.

**Table 1: Pearson Correlation Coefficient between Use of E-Procurement Application and independent variables**

|  |  | Challenges | Efficiency | Processes | Capability | Effectiveness |
|---|---|---|---|---|---|---|
| Challenges | Pearson Correlation | 1 |  |  |  |  |
|  | Sig. (2-tailed) |  |  |  |  |  |
| E-procurement efficiency | Pearson Correlation | .625 | 1 |  |  |  |
|  | Sig. (2-tailed) | .000 |  |  |  |  |
| E-procurement processes | Pearson Correlation | .836 | 0.083 | 1 |  |  |
|  | Sig. (2-tailed) | .000 | 0.204 |  |  |  |
| E-Procurement Capability | Pearson Correlation | .536 | 0.093 | -.694 | 1 |  |
|  | Sig. (2-tailed) | 0.000 | 0.154 | 0 |  |  |
| E-procurement Effectiveness | Pearson Correlation | .712 | -0.04 | -0.052 | 0.009 | 1 |
|  | Sig. (2-tailed) | 0.000 | 0.55 | 0.426 | 0.894 |  |

### Regression coefficient Analysis

Table 2 shows the coefficients on the influence of the individual independent variables on the dependent variable. The Beta coefficients indicate the extent to which challenges of use of E-procurement application due to a unit change in the independent variable. The positive Beta coefficients indicate that a unit change in the independent variable leads negative change in use of e-procurement application a negative Beta coefficient indicates an inverse effect between the variables in that a unit change in the independent variable leads to a negative change in use of e-procurement application. Table 3 also presents the level of significance also called the p value. This is the coefficient that is used to research questions and the significance of the independent variables. The p-value of e-procurement processes, e-procurement efficiency, and e-procurement effectiveness are each zero. This means that these variables are significant in influencing positively the use of e-procurement application. The other variable of e-procurement capability has level of significance (p value) greater than 0.05 which indicates that these independent variables are not significant in explaining challenges facing the use of e-procurement application.

**Table 2: Regression Coefficients – Challenges facing the use of E-Procurement application**

| Indicator | B | Std. Error | T | Sig. |
|---|---|---|---|---|
| (Constant) | 7.971 | 1.183 | 6.738 | 0.000 |
| E-Procurement Processes | -0.038 | 0.034 | -1.12 | 0.264 |
| E-Procurement Effectiveness | 0.132 | 0.045 | 2.923 | 0.004 |
| E-procurement capability | -0.108 | 0.041 | -2.668 | 0.008 |
| E-procurement efficiency | 0.476 | 0.04 | 11.849 | 0.000 |

**Table 3: Optimal Model**

| Indicator | B | Std. Error | t | Sig. |
|---|---|---|---|---|
| Constant | 6.496 | 0.68 | 9.552 | 0.000 |
| Processes | 0.165 | 0.032 | 5.162 | 0.000 |
| Effectiveness | -0.104 | 0.041 | -2.558 | 0.011 |
| Efficiency | 0.472 | 0.038 | 12.325 | 0.000 |

### Multiple Regression Analysis for the challenges facing use of e-procurement application

A multiple regression analysis was conducted to investigate the joint causal relationship between the independent and dependent variables. Regression results in table 4 indicated that the goodness of fit for the regression of independent variables and challenges facing the use of e-procurement is satisfactory. An R squared of (0.980) indicated that (98%) of the variances in the use of e-procurement are explained by the variances in challenges facing the use of e-procurement application

The regression equation was as follows:

Successful Completion of Projects = 21421-0.831 E-Procurement Processes + 0.031 E-Procurement Effectiveness + 0.156 E-Procurement Efficiency + 0.014 E-Procurement capability

**Table 4: Model Fit challenges facing the use of e-procurement applications**

| Model | R | R Squared | Adjusted R Squared | Std. Error of the Estimate |
|-------|------|-----------|--------------------|----------------------------|
|       | .990 | .980      | .979               | .62060                     |

ANOVA results were presented in table 5. The results indicated that the overall model was significant, that is, the independent variables were good joint explanatory variables (F=1755.763, P value =0.000).

**Table 5: ANOVA on challenges facing the use of e-procurement applications**

| Model | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|----------------|-----|-------------|----------|------|
| Regression | 3381.109 | 5 | 676.222 | 1755.763 | .000 |
| Residual | 70.096 | 168 | .385 | | |
| Total | 3451.205 | 170 | | | |

## Summary of Findings

### E-Procurement processes

Concerning the e-procurement processes the section intended to establish the challenges of e-procurement processes have on the use of e-procurement application. A number of variables were analyzed which included whether Procurement decisions are made by the top management, whether the management embraced E- procurement Processes and whether the top management had confidence in the procurement department. Majority of senior level management and middle level management agreed that organization`s top management played a great role in hindering the use of the e-procurement application. This can be witnesses by majority responses either strongly agreeing or agreeing with the research questions.

**Effectiveness of e-procurement**

On the question of whether effectiveness of e-procurement application hindered the use of e-procurement applications, majority agreed that E-Procurement applications sometimes is faced with technical hitches which leads to delay of procurement processes though some mixed responses were received from the respondents who indicated that lack of Staff technical knowledge contributed to ineffective use of e-procurement applications. On the same question, majority of both the senior management and middle level management agreed that organization's E-Procurement applications effectively solved problems related to procurement.

**Capability of e-procurement**

The respondents gave their view on e- procurement and its capability, majority of respondents indicated that the organization had the required resources to implement the use of e-procurement application. This was tested through the four questions which included whether employees of your organizations adhere to the laid down programs of the organization with regard to e-procurement, whether the degree of familiarity and utilization of the e- procurement strategy vary across a variety of setting, E-procurement strategy in the Organization achieved its objectives and whether my organization has sufficient resources to implement the use of e-procurement application. From the responses it can be clearly noted that e-procurement capability was not a significant challenge in the use of e-procurement application.

**Efficiency of e-procurement**

Finally the research sought to find out whether e-procurement efficiency negatively impacted the use of e-procurement application. The results indicated that majority of respondents agreed that e-procurement efficiency hindered the implementation of the use of e-procurement.

## Conclusions

The majority of organizational spending consists of purchasing. In order to decrease the total costs spent on purchasing process, internet technologies are used and e-Procurement has become popular to implement in the latest era by both governments and enterprises. Although the opportunities for improvement seem abound, both private and public sector are still cautious as far as the adoption of electronic technologies is concerned (Zheng, Caldwell, Harland, Powell, Woerndl, & Xu, 2004). Ward & Peppard (2003) indicate that 60% of IT application in procurement initiatives and projects do not deliver the expected benefits.

## Recommendations

The study recommended that public organizations in Kenya fully automates its procurement operations besides replacing obsolete IT equipments with modern ones. The greatest potential of automation is not expected to be from the improvement of clerical and administrative tasks, but

from the ability of managers and other procurement personnel to gain increased control over their operations. The major reasons as to why public organizations in Kenya should consider fully automated systems are; first is a critical need to improve the productivity of employees. The second reason for interest in automation is the increasing complexity of organizational decision making and information needs. Bocij, Chaffey and Hickie (2003) were of the view that the correct incentive for applying automation is to increase productivity, and/or quality beyond that possible with current human labor levels so as to realize economies of scale, and/or realize predictable quality levels.

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