

EFFECTS OF E-PROCUREMENT ON SUPPLY CHAIN MANAGEMENT PERFORMANCE IN ELGEYO-MARAKWET COUNTY

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ABSTRACT

E-Procurement refers to the use of internet-based system used to carry out individual or all stages of procurement process, including search, sourcing, negotiation, ordering, receipt, and post-purchase review. The procurement function in Kenya has been characterized by massive scandals and indignity which have been attributed to poor handling of procurement information thus leading to excessive corruption. It is against this problem that the study sought to investigate the effects of E-procurement on supply chain management performance in Elgeyo Marakwet County. The study was based on the following research objectives: To find out the effects of e-tendering on supply chain management, to find out the effect e-invoicing on supply chain management and to find out the effect of e-payment on supply chain management. The study will be conducted on public entities in Elgeyo Marakwet County. The study was limited to e-procurement and supply chain management performance. The study adopted the use of questionnaires and interview schedules to collect primary data. The research also adopted descriptive design to collect the quantitative and qualitative data that describes the effects of e-

procurement and supply chain management. The target population for this study was employees in public entities in Elgeyo Marakwet County; this included the County Government of Elgeyo Marakwet and Iten County Referral Hospital. This study also adopted stratified sampling technique where the study population was stratified into management and non management strata. Then purposive sampling was used to select 30 employees of Elgeyo Marakwet County and 10 employees from County referral hospital Iten. Data collected was done through both qualitative and quantitative. Qualitative data was analyzed through content analysis. Quantitative data was analyzed through the use of frequency distribution, mean scores and standard deviations. These analyses were used to address specific objectives I to IV. With the help of Statistical Package for Social Science (SPSS) the findings were then presented in form of frequency distribution tables, bar charts and pie charts. The data was finally summarized according to the study's specific objectives.

Key Words: *e-procurement, supply chain management performance, Elgeyo-Marakwet County*

INTRODUCTION

E-Procurement refers to the use of internet-based system used to carry out individual or all stages of procurement process, including search, sourcing, negotiation, ordering, receipt, and post-purchase review (Croom and Brandon, 2004). Koorn et al (2001) describes three types of e-Procurement systems which are buyer e-Procurement systems; seller e-Procurement systems; and online intermediaries. There are various forms of e-Procurement that concentrate on one or many

stages of the procurement process, such as e-tendering, e-marketplace, e-auction/reverse auction, and e-catalogue. The e-Procurement application can be viewed more broadly as an end-to-end solution that integrates and streamlines many procurement processes throughout the organization.

As noted by Nelson et al. (2001), purchasing accounts for the majority of organizational spending. As such, the advent of web-based electronic procurement has been heralded as a 'revolution' because of its potential to reduce the total cost of acquisition (Croom, 2000; Essig & Arnold, 2001; de Boer et al, 2002, Wyld 2002; Rai et al. 2006). It is also expected to impact on the nature of supplier governance, either reinforcing market-based relationships (Malone et al. 1989; Barratt & Rosdahl, 2002) or encouraging virtual hierarchies (Brosseau, 1990). Finally, the e-procurement revolution is expected to enhance the status and influence of the purchasing function within organizations (Croom, 2000; Osmonbekov et al, 2002).

In today's dynamic global competitive business environment, technology-based service is no longer an afterthought; rather it is a must for public and private organizations. It has become necessary for companies to provide their customers with cost-effective total solution and better customer satisfaction with innovative ideas and methods. With the emergence of Information and Communication Technology (ICT), companies have been forced to shift their operation from the traditional style to e-Business, e-Procurement and e-Supply Chain philosophy in order to sustain themselves (Lee et al, 2007). Over the past decade, both private and public sector organizations have been utilizing Information Technology (IT) to streamline and automate their purchasing and other processes (Koorn et al, 2001).

Continuous replenishment supply model has been integrated in Elgeyo Marakwet County for supply chain management. The idea of the continuous replenishment supply chain model is to constantly replenish the inventory by working closely with suppliers and/or intermediaries. However, if the replenishment process involves many integrated partners to enhance its effectiveness. Therefore very tight integration is needed between the order-fulfillment process and the production process. Real-time information about demand changes is required in order for the production process to maintain the desired replenishment schedules and levels. This model is most applicable to environments with stable demand patterns, as is usually the case with distribution of prescription medicine. The model requires intermediaries when large systems are involved.

The actual supply chain in Elgeyo-Marakwet County supply chain model is focused on tracking customer demand in production process and finished goods inventory efficiently. This integration is often achieved through use of an information system that is fully integrated (an enterprise system). Through application of such a system, the organization can receive the access to timely information that can be used to develop and modify production plans and schedules.

This information is also integrated further down the supply chain to the procurement function, so that the modified production plans and schedules can be supported by input materials

PROBLEM STATEMENT

The procurement function in Kenya has been characterized by massive scandals and indignity which have been attributed to poor handling of procurement information thus leading to excessive corruption (Thuo, 2009). There is need to have a robust automated procurement system which is interlinked and this will lead to enhanced competitiveness and lowered costs (Ouko et al., 2009). The county government is faced with a challenge when it comes to the issue of tendering. The significant number of complaints that the county government is blamed for in the procurement process varies. Currently, the performance of the county in delivering services to the stakeholders has reduced. The lack of transparency in the procurement process has made it impossible for the county to conduct proper procedure in giving out contracts to the suppliers. The capacity of the county government to achieve the best supply deals in terms of supplies provided by the suppliers is not giving the exact results and the process continues to deprive other suppliers a better chance to access the procurement services and contracts due to lack of viable information about the procurement process. The lack of an E-procurement system in the county level has made it impossible for the county to achieve the best deal of the supply contract and thus little is done in terms of giving the right information. Payments are delayed when it comes to service delivery and thus the county is slow in delivering as a result of timelessness in supply. Furthermore, the county has not been able to effectively pay the suppliers due to late invoicing and delayed approvals for supply of goods and services to the county government. It is due to these backgrounds that this study has been undertaken to assess the effects of e-procurement on supply chain management performance in Elgeyo-Marakwet County

RESEARCH OBJECTIVES

1. To find out the effects of e-tendering on supply chain management in Elgeyo Marakwet County.
2. To find out the effect e-invoicing on supply chain management in Elgeyo Marakwet County.
3. To find out the effect of e-payment on supply chain management in Elgeyo Marakwet County.

HYPOTHESIS OF THE STUDY

H₀₁: There is a significant relationship between e-tendering and supply chain management

H₀₂: There is a significant relationship between e-invoicing and supply chain management

H₀₃: There is a significant relationship between e-payment and supply chain management

THEORETICAL REVIEW

The Institutional Theory

The institutional theory is the traditional approach that is used to examine elements of public procurement (Blair, 2010). Kamau (2004) identifies three pillars of institutions as regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism, with expedience as basis for compliance. According to Scott (2004), institutions are composed of cultural-cognitive and regulative elements that, together with associated activities and resources give meaning to life. The author explains the three pillars of institutions as regulatory, normative and cultural cognitive. The regulatory pillar emphasizes the use of rules, laws and sanctions as enforcement mechanism, with expedience as basis for compliance. The normative pillar refers to norms (how things should be done) and values (the preferred or desirable), social obligation being the basis of compliance. The cultural-cognitive pillar rests on shared understanding (common beliefs, symbols, shared understanding). In Kenya, public procurement is guided by the PPDA Act 2005, regulations and guidelines which are from time to time issued by the Public procurement Oversight Authority only and which must be complied with to the latter by all the private entities and providers.

The principal agent theory as advocated by Donahue, (1989) explains that procurement managers in private sector play a relationship role. But his findings are based on the buyer/supplier relationship and the need of the buyer, as the principal, to minimize the risks posed by the agent. The author argued that procurement managers including all civil servants concerned with public procurement must play the agent role. Therefore procurement managers take on the role of agent for elected representatives. The principal-agency theory holds that sabotage is likely to occur when there is some disagreement between policy makers and the bureaucracy. The democratic perspective focuses on responsiveness to citizens and their representatives (Strom 2000; Lupia 2003). In relation to the study the drive for legitimacy ensures that the actions of an organization are desirable, proper, or appropriate within the environmentally and socially constructed system of norms, values, beliefs, and definitions. In other words, organizations benefit from perceptions of credibility, persistence, and meaningfulness, thereby increasing the possibility of survival.

Socio-Economic Theory

Lyons (1986) propounded the socio-economic theory by integrating economic theory with theories from psychology and sociology to account for moral obligation and social influence as determinants of individuals' decisions on compliance. Lisa (2010) also adds that psychological perspectives provide a basis for the success or failure of organizational compliance. According to Lyons (1986), the legitimacy theory postulates that the organization is responsible to disclose its practices to the stakeholders, especially to the private and justify its existence within the boundaries of society. This theory, which focuses on the relationship and interaction between an organization and the society, provides a sufficient and superior lens for understanding

government procurement system (Hui et al., 2011). In relation to the study, the theory provides a paradigm shift in supply chain management towards sustainable sourcing initiatives has resulted in the consequent change of the business behavior in regard to purchasing strategies and relationships with suppliers.

Principal-Agent Theory

The principal-agent theory is an agency model developed by economists that deals with situations in which the principal is in position to induce the agent, to perform some task in the principal's interest, but not necessarily the agent's (Health & Norman, 2004). Donahue, (1989) explains that procurement managers including all civil servants concerned with public procurement must play the agent role of appointed representatives. As cited by Krawiec (2003), compliance may represent a principal-agent problem (Langevoort, 2002). Festinger (1957) proposed the theory of cognitive dissonance. This theory led to a number of derivations about opinion change following forced compliance. From this theory, it is inferred that that when someone is forced comply, dissonance is created between their cognition (I did not want to do this) and their behaviour (I did it). In relation to the study, principal agent theory is very useful to have when it comes to behavioral control measures and creating contracts. Due to the great importance found in inter-organizational management concepts, e.g. in supply chain management, it's helpful to investigate principal-agent problems in business relations between different companies. For a lasting, successful achievement of supply chain management, it's therefore of great necessity to investigate potential problems that may occur between the principal and agent within the existing business relations.

Theory of Cognitive Dissonance

Leon Festinger formulated the original theory of cognitive dissonance in the mid-1950s, and the first formal and complete presentation of the theory appeared in 1957. Festinger (1957) theorized that, when an individual holds two or more elements of knowledge that are relevant to each other but inconsistent with one another, a state of discomfort is created. He called this unpleasant state "dissonance."

EMPIRICAL REVIEW

E-procurement

The potentials of e-Procurement have already been proven in a number of studies (Aberdeen, 2001; Eyholzer and Hunziker, 2000; Andersen, 2001). According to these studies, eProcurement enables companies to decentralize operational procurement processes and centralize strategic procurement processes as a result of the higher supply chain transparency provided by e-Procurement systems.

A study by (Eyholzer and Hunziker, 2000) shows that only 18 percent of the Swiss companies analyzed used electronic product catalogs, auctions or requests for quotations in procurement in

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the year 2000. According to this study, however, many companies were planning to implement e-Procurement systems at that time. Other studies show similar proportions for other countries (e.g. Industrial Distribution, 2001 and Administration, 2000 for the USA). A study by (Wyld, 2004) reports that currently almost half of all American companies use e-Procurement systems.

The analysis by (Wyld, 2004) shows that in the US only 30% of the companies surveyed use e-Procurement systems for requests for quotations, online auctions (25%) or eMarkets (33%). A second challenge is that, despite the overwhelming evidence which shows the advantages of e-Procurement systems, proprietary systems such as electronic data interchange (EDI) continue to persist, and have to be included in a company's overall e-Procurement infrastructure. To do so, companies need to know the critical success factors in implementing e-Procurement strategies, processes and systems.

Croom (2000) & De Boer et al., (2002) mentioned that internal process efficiencies and automation are seen to be key drivers for increasing process efficiency. Tan et al., (2002) supported that supply chain integration influence majorly in product quality and customer service levels. Narasimhan & Das (2001) and Narasimhan & Kim (2002) definitely pointed that improved integration improves the performance of both the buyer and supplier. All of these indicated that firms which improve their supply chain integration are likely to increase their supply chain performance.

Studies in ICT adoption frequently highlight in house technical capabilities and experience with ICT, as key contributory factors (Chapman et al, 2000). Price Waterhouse coopers (2002) defend this view by stating "we don't have enough internet human resources, and can't hire people". Implementing a new technology needs skill and knowledge to operate in the organizations and most organizations do not implement because organizations' employees are not familiar with new technology. Empirical evidence identifies that organization whose employees have the necessary skills and technical knowledge are more likely to implement e- Government applications (Lin and Lee, 2005).

Petersen et al. (2003) conducted several case studies in both Japan and the US and concluded that only trusted and carefully chosen suppliers have to be involved in projects. They also stated that involving suppliers in organizations teams is critical when technology is advance or when the buying firm lacks sufficient knowledge or expertise. Langfield-Smith and Greenwood (1998) traced the origins of supplier partnership to Japanese automotive industry, and indicated that it was adopted by Western companies in the 1990s. They pointed to information exchange and cooperation as pillars of supplier partnership. Supplier partnership and development involves cooperative efforts to improve supplier capabilities with respect to technology, quality, delivery, and cost. It also encourages continuous improvements (Watts and Hahn, 1993).

Burnes and Whittle (1995) stated that the main dimensions that characterize successful supplier development would include, but not limited to: integrating and improving activities and

processes, continuous cooperation and long-term relationships, mutual benefits as a result of any improvement efforts, and apparent structure for both companies with regard to cost, price, and profit. Moreover, successful relationships in manufacturing setting are attributed by supplier development, cost savings and technology sharing (Handfield, 1993).

Lascelles and Dale (1990) indicated that buying firms should treat their suppliers as partners. Handfield and Bechtel (2002) argued that investments in supplier relationships will reduce risk; by involving in activities that is usually regarded in the area of the other firm. Vonderembse and Tracey (1999) indicated that supplier partnership enables both parties to improve decision making process, enhance knowledge sharing, advance communication, and improve the overall performance of both parties. MacDuffie and Helper (1997) argued that the buying firm will gain from efforts done to improve the supplier performance, as both will share the productivity benefits.

Rebecca (2007) sought to pursue the understanding of current business-to-business e-procurement practices by describing the success factors and challenges to its implementation in the corporate setting. The study through factor analysis resulted in three e-procurement success factors: supplier and contract management; end-user behaviour and e-procurement business processes; and information and e-procurement infrastructure. Three challenge-to-implementation factors also emerged: lack of system integration and standardisation issues; immaturity of e-procurement-based market services and end-user resistance; and maverick buying and difficulty in integrating e-commerce with other systems.

Gordon (2009) sought to establish perceived local government (LG) procurement best practice. Secondary research was then drawn upon to establish LG procurement's response to the economic recession. The study was set within the context of English LG. Its contribution is in highlighting that perceived best public procurement practice may well, in the short-term, be inappropriate and perhaps delay economic recovery. Suggestions for more radical short-term procurement strategic interventions were set out and justified as accelerating the economic recovery. The suggestions were considered appropriate, not only for the crisis, but also for future economic downturns or indeed any country facing such a situation. The analysis suggested that British LG procurement strategy generally remain unaltered from that adopted prior to the economic recession. It is then argued that current best practice may well hinder an economic recovery and a short-term shift in procurement strategy is required.

Effects of E-tendering on Supply Chain Management

According to Eadie et al (2007), An organization which uses E-procurement has the following advantages: First, Price reduction in tendering: Empirical studies carried out Gebauer et al (1988) in the United States of America indicated that the two most important measures for the success of procurement processes are cost and time. In this method, there is no paperwork, postage fee and other costs associated with preparation and sending tender documents. It is also faster to

send a document electronically as compared to the traditional method of sending tender documents through post office. It results to improved order tracking and tracing, for it is much easier to trace the orders and make necessary corrections in case an error is observed in the previous order.

Secondly, there is reduction in time to source materials: In Reduction in time has been proved as a relevant benefit by Knudsen (2003) quoted in Eadie et al (2007), who says “E-procurement is a rapid efficient method of finding and connecting new sources, being a lean channel for communication”. A lot of time is spend on paper invoicing in terms of writing, filing and postal communication but while in e-procurement, staff have sufficient time to engage on strategic issues of procurement The time wasted in moving from one town or country to another to look for a potential supplier or buyer is greatly reduced since with a click of a button, you can readily get the information in the internet. By extension, E-procurement leads to reduction in maverick buying. Maverick buying is when staff buys from suppliers than those with whom a purchasing agreement has been negotiated. Thirdly, Lower Administration costs: in his research, Rankin (2006) argues that e-procurement results in reduction in paperwork and this leads to lower administration costs. Fourthly, Reduction in procurement staff: since most of the procurement process is done electronically, the number of staff needed to facilitate the process reduces.

As Eadie et al (2007) noted, the reduction in staff is an important way of producing competitive advantage through reduced costs. This is further supported by Egbu et al (2003) in his study which revealed that through implementation of an e-procurement system, a steel supplier was able to carry out a multi-million pound project with only 20% of the staff the company would normally have used. Fifthly, e-procurement gives an organization competitive advantage over its competitors. As a centralized department can oversee all procurement activities and different offices worldwide can access the same documentation when required, this gives a distinct advantage over the much slower process of having to post documentation between offices. This extends the supply chain beyond geographical boundaries to a much wider group. Suppliers can be monitored on timely delivery, quality delivery of products and services hence performing suppliers can be contacted in future. This raises other logistical considerations which may impact on scheme quality (Eadie et al, 2007). This implies that with e-procurement, every prospective supplier and buyer is always accessible to his/her convenience. The result is not only greater market access but also increased productivity.

Another benefit of e-procurement is improvement of communication: Eadie et al (2007) argues that e-procurement allows sections of electronic documentation to flow through the supply chain; it improves the speed of returns and subcontractor price visibility. He further notes that since it is easier to communicate requirements in a quicker more accessible manner, it will result in a better understanding of requirements and due compliance besides allowing clients to gauge the state of the market by seeing how much interest is shown in the tender. Hawking et al, (2004) as quoted in Eadie et al (2007) considered market intelligence and the decisions made on that intelligence

as two separate drivers. They however state that since reliable procurement decisions cannot be made without market intelligence and each is reliant on the other for the purpose of this study these two are considered together as “Improved Market Intelligence and Enhanced Decision making”. A reduced Operating and Inventory cost is also another benefit of e-procurement: This is from the fact that much if not all paperwork is eliminated. Postage costs are also not incurred, among other expenses associated with sending and receiving documents when sending them by post.

Effect of E-invoicing on Supply Chain Management

E-invoicing offers many benefits: significant cost reduction, process simplification, reduced payment time, greater security of data, as well as numerous environmental benefits. This is confirmed by enterprises and public authorities which already use it. Benston and Smith (1976:215) introduce transaction costs. They attempt to explain why individual corporations do not perform asset transformation themselves as a function of the transaction costs incurred in conducting such activities. As shown in transaction cost economics, the cost of the infrastructure is reduced per transaction when the volume of transactions increases.

To create a financially viable e-invoicing solution, corporate needs to create this critical mass by a value network of alliance partners and technology solution providers to add the necessary desirability for electronic invoicing through the Financial Supply Chain. A Value Network is a web of relationships that generates economic value and other benefits through complex dynamic exchanges between two or more individuals, groups or organizations. The Value Network models mediating firms as creating value through three basic primary activities: network promotion and contract management; service provisioning; and infrastructure operations (Stabell and Fjeldstad, 1998). In a network firm (Economides, 1996) the customers are offered direct access to each other, as in payment mediation, or indirect access to a common pool, as in saving and loan services (Stabell and Fjeldstad, 1998) through the set of mediation activities performed by the firm.

Both value and cost are postulated as driven mainly by network characteristics (Stabell and Fjeldstad, 1998). Value and costs depend on the number of access points (network size effects), nodes or users that can be reached (positive demand externalities), and the variety of links between users (services provided). The costs for the users are in terms of charges for access to and use of the network, while the value is determined by the possibility to reach a large and relevant number of nodes through a variety of links. To provide greater value, value networks can increase their range of services offered by layering new services on top of the contract set and the infrastructure, (vertical expansion of service range) or increasing access to a larger pool of users (horizontal expansion of network scope).

Electronic financial supply chain players need to streamline the settlement process in terms of both workflow and transaction cost by creating e-marketplaces with standardized settlement

mechanisms via a finite number of trusted providers with both the range of necessary solutions and the openness and reach to enable transactions throughout the e-marketplace. Buenger et al. (1996) provide a framework of competing value drivers, indicating that organizations face different value propositions, which may change over time due to internal and external influences and experiences.

Effect of E-payment on Supply Chain Management

E-payment is the fastest growth area in the global economy and almost carries potentials beyond measure. It provides consumers with the benefits of any time, any where transactions, with lower costs. Moreover it, shortens the distance between the buyer and the seller and shrinks the world into a small village. (Porter, 2001; Alberta E-Future Center, 2007). The uptake of e-payment is influenced by its potential to create business value and by awareness of its participants of the potential benefits (Salnoske, 1997). A major reason for most companies, irrespective of size, to participate in business is to extract some benefit from it. E-payment is no different (Kuzic, Fisher and Scollary, 2002). Standing [2001] stated more than ten e-payment benefits for both buyer and seller. Such as cost savings and speed in selling and purchasing, exposure to new customers (global reach), convenience and transparency to users, better quality of product/service (global reach), reduce need for office space and fewer resources required (ecological).

The development of information technology and computer networks enhanced the usage of e-payment and improved the use of supply chain management (SCM). SCM focuses on the integrated planning, co-ordination and control of all logistical business processes and activities in the supply chain to deliver superior consumer value at less cost to the chain as a whole, whilst satisfying requirements of other stakeholders, such as consumer interest organisations and government. Eventually, the complete implementation of the SCM concept should result in fully integrated much more effective supply chains with full information transparency and optimal allocation of value-adding processes (Mentzer & John, 2001; Vorst, 2002). All transactions are done in a specific virtual place called Business-to-Business (B2B) electronic marketplaces (e-marketplaces). E-marketplaces are one of the most heralded developments in recent years. These marketplaces bring together businesses buying and selling goods and services in an online buying community. E-marketplaces propose to increase the efficiency and effectiveness of procurement activities by replacing traditional manual processes with automated electronic procedures and by expanding the number of available trading partners (Koch 2003; Chong, Shafaghi, Woollaston and Lui, 2010).

CONCEPTUAL FRAMEWORK

The study will be guided by the following conceptual framework

Independent Variable

Dependent Variable

E-procurement

E-tendering

- Accessibility to Market structures
- Coordination between suppliers
- Customer-supplier relationships

E-invoicing

- cost of procurement transactions
- Speed of communication
- Reliability of service delivery

E-payment

- Level of Convenience
- Costs of payments online
- Level of trust payments systems

Supply Chain Management

- ✓ Inventory management and forecasting
- ✓ Warehousing
- ✓ Transport
- ✓ Customer service
- ✓ Procurement and supply management

Government policies

Source: Author (2015)

Figure 1: E-Procurement on Supply Chain Management Performance

In the figure 1, the Independent Variable will be E-procurement and will be measure by e-tendering, e-invoicing and e-payment. The independent variable will directly have an impact on the dependent variable which is supply chain management. The dependent variable will be supply chain management and will be affected by the independent variable which will be E-procurement. The dependent variable will be measured by the following factors: inventory

management and forecasting, warehousing, transport, customer services, procurement and supply chain management. The intervening variable will be government policy. The intervening variable will be an intermediate factor that affects the relationship between the independent variable and the dependent variable.

RESEARCH METHODOLOGY

Research Design

Oliver (2006) defines research design as all pragmatic aspects of the way the research will be carried out. According to Kothari (2008) the research design is the conceptual structure within which research is conducted, it constitutes blue print for collection, measurement and collection of data. Research design was a plan outlining how information is collected for evaluation. The research adopted descriptive research design to collect the quantitative and qualitative data that describes the effects of supplier performance and e-procurement strategy. This research study considered gathering of consistent and accurate data, as such, the study will adopt a descriptive survey design. According to Merriam (1998) descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables. Further, Kothari, (2006) also highlights that survey study is a way of organizing data and looking at the object to be studied as a whole. Descriptive survey study aims at collecting information about people's attitudes, opinion, and behavior (Orodho 2002).

Target Population

Target population represents all cases of people or organizations which possess certain characteristics; it is the larger group from which a sample is taken (Mugenda and Mugenda 2003). The target population for this study was the employees in public entities in Elgeyo Marakwet County and their suppliers; this included the County Government of Elgeyo Marakwet and Iten County Referral Hospital. However, the study was limited to the Procurement departments in the selected entities. The County Government of Elgeyo Marakwet has a total of 30 employees from the department of procurement, while the County referral Hospital of Iten has 10 procurement officers from the procurement department. The total number of food stuff suppliers from both entities is 200. The total population therefore was 40 employees and 200 suppliers. This population was selected because both are partners in procurement services in the county.

Sample Size and Sampling Procedures

A sampling frame describes a list of all population from which a sample is selected (Cooper & Schindler, 2003). The study population will be the employees in procurement departments in the selected public entities in the county. Due to time and financial constraints, the researcher carried out simple random selection from the procurement departments and the suppliers. The sampling frame for this study was from the list containing the names of the respondents that was sourced

from the respective Human Resource Departments of the corporations. The research focused on the employees who will be in the procurement departments in these selected public entities.

Chandran, (2003) defines a sample as a small proportion of an entire population; a selection from the population. "Sampling is the process of selecting a number of individuals for a study in such a way that the individual selected represents the large group from which they are selected." (Mugenda & Mugenda, 2003: 260). Probability sampling occurs when the population has equal chance of being selected. This includes simple random, stratified random sampling and cluster sampling. This study will adopt a stratified sampling technique where the study population is stratified into management and non management strata. Then purposive sampling was used to select the 30 employees of Elgeyo Marakwet County and 10 employees from County referral hospital Iten. According to Mugenda and Mugenda (2009), a population of less than 100, 100% will be suitable to get a representative sample, between 101 and 1000, 10% will be suitable to get a representative sample while for 1001 and above 1% is recommended for a descriptive survey study.

Instrumentation

Data collection instruments are tools used to collect the information from the intended target population Dwivedi, (2006). The study employed the use of primary sources of data where the researcher used questionnaires'. The questionnaires were issued to the procurement staff through their managers in an effort to ensure that all the information that the researcher sought was availed. The questions were closed ended and mainly consisted of the lickert scale kind of questions. This ensured that the respondents are restricted to certain desirable responses that the study employed in the analysis.

Data Collection Procedures

Both primary and secondary data was used for the study. The research study used questionnaire as a key instrument for primary data collection. Secondary data was then obtained from relevant literature like journals, internet and books. The use of questionnaires was preferred as they were to ensure confidentiality is upheld, save on time, and were easy to administer (Bell 1993). The questionnaire was ideal because the researcher will be able to collect information from a larger sample. It also gave a greater feeling of anonymity hence encourage open responses to sensitive questions and was free from bias and so accurate and valid data was gathered. The questionnaire to be used was structured (close ended) and unstructured (open ended) to elicit specific responses for quantitative and qualitative analysis respectively. Some of the close ended questions required a response on a five point Likert scale, showing to what extent each factor influences e-procurement implementation. The questionnaire was organized into six sections. The first section of the questionnaire dealt with demographic statistics such as name, age, years of service of the employees. The other sections included questions from the four objectives. To make high response rate, the researcher delivered questionnaires individually by making an appointment. As

a strategy aimed at minimizing the time it took to carry out the exercise, the researcher adopted both self administered and drop and pick strategies in questionnaire administration.

Data Analysis and Presentation

The questionnaires will be first edited then coded to facilitate statistical analysis. Data collected will be both qualitative and quantitative. Qualitative data was analyzed through content analysis. Quantitative data was analyzed through the use of frequency distribution, mean scores and standard deviations. These analyses were used to address specific objectives I to IV. With the help of Statistical Package for Social Science (SPSS) Version 20. The findings were presented in form of frequency distribution tables, bar charts and pie charts. The data was then summarized according to the study's specific objectives. In addition, to determine the level of significance between the independent variables and the dependent variable, thus Chi-Square test was carried out. The study also adopted a Fixed-effects model which assumes that the data came from normal populations which may differ only in their means. Chi-Square test is a data analysis procedure used to determine whether there is significant difference between two or more groups or samples at a selected probability level (Hinkelmann, Klaus & Kempthorne, 2008).

RESEARCH RESULTS

With regard to E-tendering and Supply Chain Management the findings of the study, was that majority 80.6% of the respondents strongly agreed that there is increased tendency towards market structures. In addition to this, another 2.9% of the respondent agreed and another 5.8% of the respondents being undecided while another 7.2% of the respondent disagreeing and finally, 3.6% of the respondents strongly disagreeing that there is increased tendency towards market structures.

The finding of the study was discussed as follows: that the market that enabled the supply of the companies products and services is large enough to accommodate the business; that the market is promising and thus profitable to the organization; that the ability of the institution to penetrated into the market is not difficult as a result of low cost and little time needed in accessing the market and thus it enables that institution to make more strides, in addition to this, the study finding could also be interpreted to mean that it is due to small legal issues needed that the institution has been able to access the market.

In relation to e-invoicing and supply chain management the findings of the study was that majority 70.4% of the respondents strongly agreed that there are secure and low cost procurement transactions with another 15.1% of the respondents agreeing and another 6.5% of the respondents being undecided while another 5.1% of the respondents disagreeing and finally, 9.4% of the respondents being of the opinion that the strongly disagreed on the statement that There is secure and low cost procurement transactions.

The study findings were interpreted to mean: that; E-invoicing has a great significance in the companies operation; the ability to reduce payment time, greater security of data, as well as numerous environmental benefits has made E-invoicing to be more applicable in the companies operating in the county; cost economics has been streamlined with the cost of the infrastructure having been reduced per transaction when the volume of transactions increases.

In relation to e-payment and supply chain management the study finding was that majority of the respondents (80.4% of respondents) were of the opinion that they find payments online more convenient. Another 15.1% of the respondents agreed in support of the statement, with another 6.5% of the respondents were undecided that with another 1.1% of response rate stating that they disagreed with the statement and finally, 3.4% of the respondents strongly disagreed.

The main finding of the study was that; the complete implementation of the website usage has to a large extent integrated, much more effective supply chains with full information transparency and optimal allocation of value-adding processes.

E-Tendering and Supply Chain Management

From the findings of the study, based on the fact that the main finding of the study was that majority of the respondents were of the opinion that there is increased tendency towards market structures and could be interpreted to mean that the market that enabled the supply of the companies products and services is large enough to accommodate the business. This could also imply to mean that the market is promising and thus profitable to the organization. The ability of the institution to penetrated into the market is not difficult as a result of low cost and little time needed in accessing the market and thus this enables that institution to make more strides, in addition to this, the study finding could also be interpreted to mean that it is due to small legal issues needed that the institution has been able to access the market. This is supported by a study done by Rebecca (2007) who reveals that to pursue the understanding of current business-to-business e-procurement practices by describing the success factors and challenges to its implementation in the corporate setting. The study through factor analysis resulted in three e-procurement success factors: supplier and contract management; end-user behaviour and e-procurement business processes; and information and e-procurement infrastructure. Three challenge-to-implementation factors also emerged: lack of system integration and standardization issues; immaturity of e-procurement-based market services and end-user resistance; and maverick buying and difficulty in integrating e-commerce with other systems.

E-Invoicing and Supply Chain Management

The fact that the majority of the respondents agreed that there is secure and low cost procurement transactions could be interpreted to mean that E-invoicing has a great significance in the companies operation. The ability to reduce payment time, greater security of data, as well as numerous environmental benefits has made E-invoicing to be more applicable in the companies operating in the county. This is confirmed by enterprises and public authorities which already

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exist. This could also be interpreted to mean that cost economics has been streamlined with the cost of the infrastructure having been reduced per transaction when the volume of transactions increases. If there were no cost cutting in the supply chain and procurement, there would have been a lot of stress encountered by the institution. There would be more time taken to transact without E-procurement since the checking of qualifications would require manual work. Additionally, there would be congestion during the procurement process and thus making it hard for the institution to operate.

This finding is in support of the study conducted by Stabell and Fjeldstad (1998) which states that both value and cost are postulated as driven mainly by network characteristics. Value and costs depend on the number of access points (network size effects), nodes or users that can be reached (positive demand externalities), and the variety of links between users (services provided). The costs for the users are in terms of charges for access to and use of the network, while the value is determined by the possibility to reach a large and relevant number of nodes through a variety of links. To provide greater value, value networks can increase their range of services offered by layering new services on top of the contract set and the infrastructure, (vertical expansion of service range) or increasing access to a larger pool of users (horizontal expansion of network scope).

E-Payment and Supply Chain Management

The main finding of the study was that were of the opinion that they find payments online more convenient could be interpreted to mean that the development of IT has enhanced the usage of e-payment and improved the use of supply chain management. This could also be interpreted to mean that the complete implementation of the website usage has to a large extent integrated, much more effective supply chains with full information transparency and optimal allocation of value-adding processes. This study finding is in line with a study done by Mentzer and John (2001) who reveal that the development of information technology and computer networks enhanced the usage of e-payment and improved the use of supply chain management (SCM). This is also associated with Vorst (2002), who states that SCM focuses on the integrated planning, co-ordination and control of all logistical business processes and activities in the supply chain to deliver superior consumer value at less cost to the chain as a whole, whilst satisfying requirements of other stakeholders, such as consumer interest organizations and government. Eventually, the complete implementation of the SCM concept should result in fully integrated much more effective supply chains with full information transparency and optimal allocation of value-adding processes.

Chi-Square Test

On determining if all the variables on E-procurement (independent variable) and there significant relationship to Supply chain management (independent variable) the study went ahead to compute a Chi-square test indicating how the variables interacted in the study.

The researcher wanted to give the correlation between the two variables through the use of Chi-square test. The research hypothesis was as follows:

H₀₁: There is a significant relationship between e-tendering and supply chain management

H₀₂: There is a significant relationship between e-invoicing and supply chain management

H₀₃: There is a significant relationship between e-payment and supply chain management

The model summary indicated that over 60.2% of the data was used to compute the Chi-square test. This was deemed sufficient because it was over 50% which is the desired amount of data. The Chi-square test provides an overall test of significance of the fitted test. The p-value of 9.831 indicates that all the variables in the equation are important hence the overall regression is significant.

Before running a regression, the researcher compared the correlation matrix whose results are shown in table 4.10.

The idea was to see whether there was a problem of multi-co linearity within variables. It also showed association between variables.

Table 1: Chi-square test

Variables	Correlation Parameters	E-tendering	E-invoicing	E-payment
E-tendering	Pearson Correlation	1	.945**	.890**
	Sig. (2-tailed)		.000	.000
	N	66	66	66
E-invoicing	Pearson Correlation	.945**	1	.880**
	Sig. (2-tailed)	.000		.000
	N	66	66	66
E-payment	Pearson Correlation	.890**	.880**	1
	Sig. (2-tailed)	.000	.000	
	N	66	66	66

** . Correlation Is Significant At The 0.01 Level (2-Tailed).

The Chi-square coefficient test of E-tendering and E-invoicing is 0.945. This implies that there is a positive association of 94 percent E-tendering and E-invoicing. The Chi-square coefficient test for E-payment is 0.890. Collinearity was observed in all the variables tested in the study. This did not allow for regression to be computed as the results would have resulted in biased estimates.

CONCLUSIONS

With regard to E-tendering and Supply Chain Management the findings of the study, was that majority 80.6% of the respondents strongly agreed that there is increased tendency towards market structures.

From the findings of the study, based on the fact that the main finding of the study was that majority of the respondents were of the opinion that there is increased tendency towards market structures and were interpreted to mean that the market that enabled the supply of the institution's products and services is large enough to accommodate the business. This also implied to mean that the market is promising and thus profitable to the organization.

In relation to e-invoicing and supply chain management the findings of the study was that majority 70.4% of the respondents strongly agreed that there are secure and low cost procurement transactions.

The fact that the majority of the respondents agreed that there is secure and low cost procurement transactions and was interpreted to mean that E-invoicing has a great significance in the companies operation. The ability to reduce payment time, greater security of data, as well as numerous environmental benefits has made E-invoicing to be more applicable in the companies operating in the county. This was also interpreted to mean that cost economics has been streamlined with the cost of the infrastructure having been reduced per transaction when the volume of transactions increases.

In relation to e-payment and supply chain management the study finding was that majority of the respondents (80.4% of respondents) were of the opinion that they find payments online more convenient.

The main finding of the study was that were of the opinion that they find payments online more convenient and was interpreted to mean that the development of IT has enhanced the usage of e-payment and improved the use of supply chain management. This was also interpreted to mean that the complete implementation of the website usage had to a large extend integrated, much more effective supply chains with full information transparency and optimal allocation of value-adding processes.

RECOMMENDATIONS

1. The institution should provide the supplier with access credentials for the supplier portal. This will increase users access to information in the e-procurement (electronic procurement) service with effective internet and thus an increase in chances of selecting the best supplier company for e-tendering
2. The system should enhance government financial controls and improve accounting, recording and reporting through proper systems of invoicing with regard to both the supplier and the institution.
3. Automated procurement process should be specific with requisition, tendering, contract warding and payment. The goal of the e-procurement in the institution should be to enhance the quality of public service delivery in the county and to provide timely, transparent and accurate financial and accounting information across both national and county government.

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