



**FACTORS INFLUENCING EFFICIENCY IN PROCUREMENT SYSTEMS: A CASE
STUDY OF PUBLIC INSTITUTIONS IN NYAMIRA SOUTH SUB COUNTY, KENYA**

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Abstract

Procurement is the nerve centre of performance in every institution, whether public or private and thus needs a tight system to be followed and adopted. Procurement is part of the fiscal policies and programs directed towards achieving effective and efficient public financial management and national development. As an economic instrument for guaranteeing national development, when well planned, has the potency of contributing to the realization of improved resource mobilization, promote debt sustainability, effective management of debt, improves public expenditure. This research study therefore seeks to assess the factors that assess the efficiency of procurement systems in public institutions. The study aimed at examining how supplier evaluation and reliability, procurement planning, procurement policies and regulations and top management support affect the efficiency of procurement systems by the public institutions in Kenya. The scope of the study was public institutions in Nyamira South Sub County. The theoretical framework for this study was built on the Quality Management in Procurement Model, Agency theory, Institutional Theory and Economic Order Quantity Model. The study employed a descriptive research design. The target population was 234 users in procurement department of the public institutions in Nyamira South Sub County. A survey questionnaire was developed and employed to collect data from a purposive sample of 70 respondents. Data was collected by means of a drop and pick later questionnaire. Data analysis was done using descriptive statistics such as percentages and presented in tables and figures. Regression analysis was utilized in this study to determine if there is a relationship between the variables, as well as the strength of that relationship.

Keywords: procurement systems, public institutions

INTRODUCTION

Procurement function is vital to any organization and procurement strategies have become part of a business's success than ever before. There has been increasing demand by the public and other government services consumers' world over for timeliness in materials, goods and services availing by the public procurement entities to enhance efficiency, effectiveness, transparency and accountability by various user departments; all these are captured in the World Bank Procurement guidelines (World Bank, 2006). The procurement function has become increasingly important over the past decades since purchasing and supply has become a major determinant of corporate success. Significant business pressure as a result of globalization, innovations, technological changes, cost pressure, and regulatory compliance has forced the procurement function to focus on cost reduction and attaining more value for money (Kaya, 2004).

Globally, in many developed nations, government organizations across the world tend to spend between 8 per cent and 25 per cent of GDP on goods and services (Organization for Economic Co-operation and Development, 2006); in the UK, public procurement expenditure is approximately £150 billion (Department of Environment, Food, and Rural Affairs, 2007). Every business organization depends on conversion of inputs (goods/services) into outputs both tangible and intangible that must be put in place in an effective logistical system to ensure its operations run effectively and efficiently. Effective procurement process is one in which efforts are made at all times to have a transparent and corruption free process and use of good practices (Ombaka, 2003).

In Africa, public procurement procedures are poorly executed and this negatively affects realization of increased economic development in the region. In Nigeria for instance, high level of corruption and bureaucratic procedures in the government are some of the key challenges responsible for lack of development of road network infrastructure in the northern parts of the country (Edward, 2009). Equally, Kakwezi and Nyeko (2010) argues that the procurement departments of public entities in Uganda are faced with the problem of not having enough information about the procurement procedure, its inputs, outputs, resource consumption and results, and are therefore unable to determine their efficiency and effectiveness.

According to Makori (2011), public procurement systems are inherently complex and dynamic due to the multiplicity of objectives they have to achieve. For instance, the main motive of public procurement is to serve the public through a political purpose and the general well-being of the society unlike privately funded projects whose agenda is the profit motive.

Procurement has an important role to play and according to Shaw (2010), every organisation should put in place effective systems of procurement to protect shareholders funds. The procurement function forms a key part of any management strategy. The particular features of procurement are the budgets involved, the frequency of activities and technical complexity of the functions.

Statement of the problem

Public procurement has, for long, been overshadowed with inefficiency, corruption and disregard of fundamental "value for money" considerations. This has adversely impacted the rate and quality of progress in realizing the objectives of national development, especially in developing and transition countries.

Despite the reforms in Public Procurement it still suffers from poor performance characterized by non-compliance with the Act, lack of policy on green procurement, slow with a lot of bureaucracy, overspending, poor planning, poor project monitoring, need for more transparency and accountability, eradication of wastage and corruption, addressing collusion in the tender evaluation and award, inadequate training of the procurement officers especially on the technical fields (Mutiga, 2005). Many procurement activities still suffer from neglect, lack of proper direction, poor co-ordination, slow with a lot of bureaucracy, lack of open competition and transparency, differing levels of corruption and not having a cadre of trained and qualified procurement specialists who are competent to conduct and manage the procurement process in a professional, timely and cost effective manner (Mburu, S. Njeru, A. 2014).

The inefficiency and incompetence of overall administration and management of procurement function in many public institutions contributes to loss of over Kshs 50 million annually (PPOA, 2010). Were (2014) in a study of factors affecting efficiency of the procurement function at the public institutions in Kenya analysed institutional culture, legal framework, competency of staff and information communication technology. The study did not however show how procurement planning, supplier selection and evaluation, management support and procurement policies and regulations affect the efficiency of the procurement function. Wanyonyi (2015), factors affecting performance of procurement function among public technical training institutions in Kisumu county analysed how information technology, competency of staff and ethical issues affected performance of procurement function. It is against this background therefore, that this research study seeks to assess the factors influencing efficiency in procurement systems among public institutions in Nyamira South Sub County, Kenya.

Specific Objectives

The study was guided by the following specific objectives;

1. To examine how procurement planning affects the efficiency of procurement systems among public institutions in Nyamira South Sub County.
2. To discuss how management support affects the efficiency of procurement systems among public institutions in Nyamira South Sub County.
3. To evaluate how procurement policies and regulations affect the efficiency of procurement systems among public institutions in Nyamira South Sub County.

4. To determine how supplier selection and evaluation affects the efficiency of procurement systems among public institutions in Nyamira South Sub County.

Theoretical Framework

The following theories and models constituted the theoretical framework on which this research study was built on.

Quality Management theory in procurement

The term quality management has different meaning within many business sectors. It is considered to have four main components: quality planning, quality control, quality assurance and quality improvement. Quality management is focused not only on product/service quality, but also the means to achieve it. Quality management theory focus on continuous improvement therefore uses quality assurance and control of processes as well as products to achieve more consistent quality. Walter A. Shewhart made a major step in the evolution towards quality management by creating a method for quality control for production, using statistical methods, first proposed in 1924. This became the foundation for his ongoing work on statistical quality control. W. Edwards Deming later applied statistical process control methods in the United States during World War II, thereby successfully improving quality in the manufacture of munitions and other strategically important products.

Quality management has become such an influential element of doing business that companies have adopted the cost of quality (COQ) model to predict the possible financial burdens of selling a product that is flawed. The COQ recognizes prevention costs, appraisal costs, internal failure, and external costs as foreseeable quality management issues that could not fulfill the needs of the customer. Furthermore, an international body has come forward to create a unifying single quality standard known as the ISO 9000, which published a series of quality assurance standards. For a company to become a member of ISO 9000, they must be observed for 9 to 18 months and must meet rigorous quality standards on their goods and services. However, quality control cannot just focus on individual function in order for a procurement manager to be successful they need to implement total quality management (TQM).

Agency Theory

According to Jensen and Mackling (1976) an agency relationship is “a contract under which one or more persons (principals) engages another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the Agent. Agency theory is concerned with agency relationships. The two parties have an agency relationship when they cooperate and engage in an association wherein one party (the principal) delegates decisions and/or work to another (an agent) to act on its behalf (Eisenhardt, 2009). The important assumptions underlying agency theory is that; potential goal conflicts exist between principals and agents; each party acts in its own self-interest; information asymmetry frequently exists between principals and agents; agents are more risk averse than the principal; and efficiency is

the effectiveness criterion. Two potential problems stemming from these assumptions may arise in agency relationships: an agency problem and a risk-sharing problem (Xingxing, 2012).

The Institutional Theory

According to Obanda (2010), the institutional theory is the traditional approach that is used to examine elements of public procurement. Scott (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 the basis of compliance. The normative pillar refers to norms and values with social obligation as the basis for compliance. The cultural cognitive pillar rests on shared understanding, that is, common beliefs, symbols and shared understanding. Borrowing from this theory, public entities in Kenya are guided by rules and regulations as espoused in the PPDA, 2015, the Regulations, 2006 and the guidelines directing procurement activities which are issued from time to time by the PPOA and which shall be complied with by all public procurement entities.

Economic Order Quantity (EOQ) Model

The EOQ model is the method that provides the company with an order quantity. This order quantity figure is where the record holding costs and ordering costs are minimized. By using this model, the companies can minimize the costs associated with the ordering and inventory holding. In 1913, Ford W. Harris developed this formula whereas R. H. Wilson is given credit for the application and in-depth analysis on this model (Edward, 2010).

The EOQ is a model that is used to calculate the optimal quantity that can be purchased or produced to minimize the cost of both the carrying inventory and the processing of purchase orders or production setups (Edward, 2010). Following is the formula for the order quantity model:

$$Q^* = \sqrt{\frac{2DS}{H}}$$

Where Q is optimal order quantity; D is units of annual demand; S is cost incurred to place a single order or setup and H is carrying cost per unit. This formula is derived from the following cost function: Total cost = purchase cost + ordering cost + holding cost.

The economic order-quantity model considers the tradeoff between ordering cost and storage cost in choosing the quantity to use in replenishing item inventories. A larger order-quantity reduces ordering frequency, and, hence ordering cost/ month, but requires holding a larger average inventory, which increases storage (holding) cost/month. On the other hand, a smaller order-quantity reduces average inventory but requires more frequent ordering and higher ordering cost/month (Edward, 2010).

Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Biklen, 2003). In conducting the study, a conceptual framework was developed to show the relationship between the independent variables and dependent variable. In this study, the dependent variable is efficiency of procurement systems and the independent variables are; procurement policies and regulations, supplier evaluation and reliability, procurement planning and top management support. The constructs and relationships between research variables are illustrated in the following figure 1.

Independent variables

Dependent variables

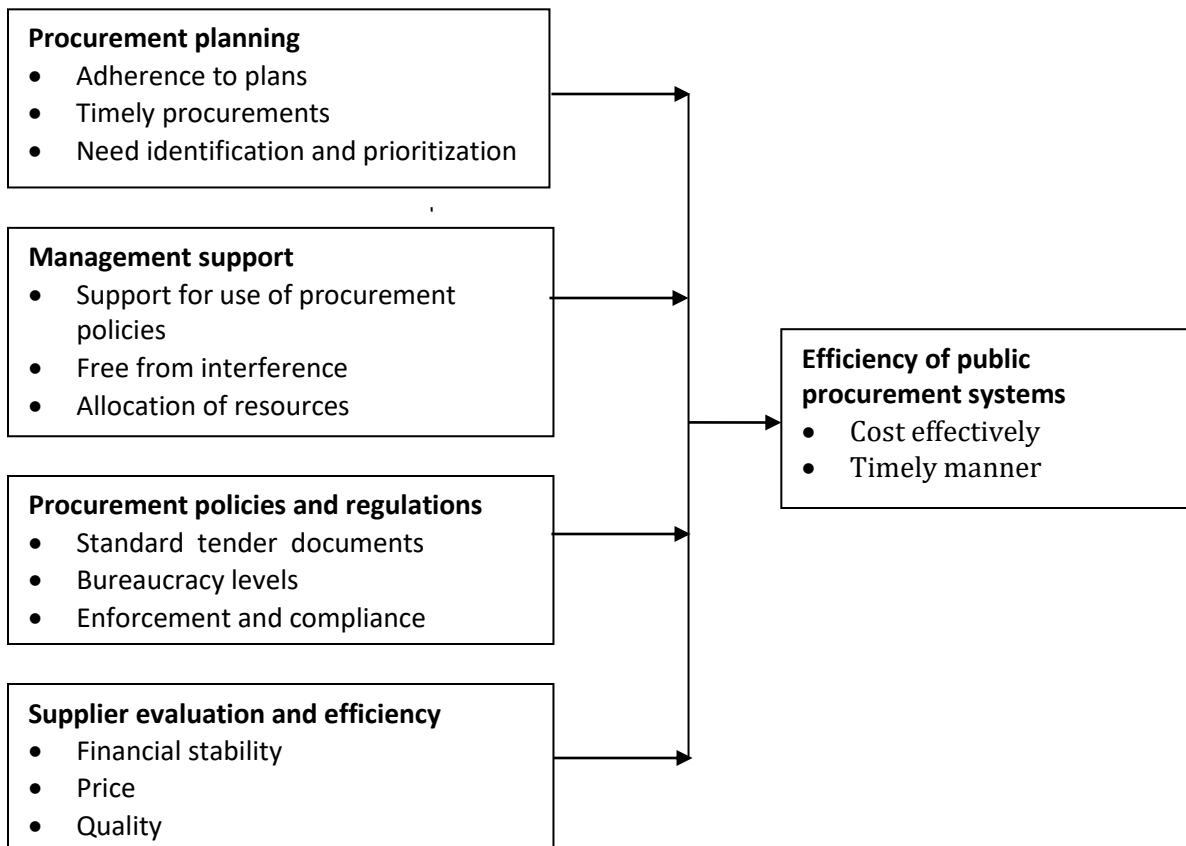


Fig 1: Conceptual Framework

Research Gap

During the last two decades public procurement has undergone profound changes. Policy makers, academics and practitioners alike share the broad view that public procurement has evolved from a clerical signoff-ridden set of activities to a strategic tool that can enhance efficiency in public organizations, regulate markets and promote sustainable development, (Kenneth and Brian, 2006).

RESEARCH METHODOLOGY

Target Population

For the purpose of this study, the target population was 234 employees working in the procurement department of various public institutions in Nyamira South Sub County. These are employees who are involved in the day to day use of the procurement system who are therefore able to provide answers to the research questions. The county government of Nyamira has two arms of government, that is, the county executive and the county assembly, there are also 22 public health facilities in Nyamira South Sub County and 86 education institutions (secondary and tertiary). The study will target 234 procurement officers in public institutions in Nyamira South Sub County.

Table 1: Target population

NO	DEPARTMENT	No. of staff
1	County Assembly Procurement Officers	10
2	County Executive Procurement Officers	8
3	Public education institutions	172
4	Public health facilities	44
	TOTAL	234

Sampling Design and Sample size

The study will sample 70 respondents representing 30% of the target population for the purpose of this study. This is because the greater the sample size, the smaller the sampling error and the more representative the sample becomes (Mugenda & Mugenda, 2003) a sample of 30% is representative.

Table 2: Sample size

S/NO	DEPARTMENT	No. of staff	Percentage	Sample size
1	County Assembly Procurement Officers	10	30	3
2	County Executive Procurement Officers	8	30	2
3	Public education institutions	172	30	52
4	Public health facilities	44	30	13
	TOTAL	234		70

DATA ANALYSIS AND PRESENTATION

Department of work

The study sought to establish the department in which the respondents worked and their views on electronic procurement system at Nyamira County Government. The response rate from the field were recorded in table 3.

Department of work

Department of work	Frequency	Percentage
Agriculture, Livestock & fisheries	2	5
Education	4	11
Finance & economic planning	4	11
Health	4	11
Planning, land & housing	4	11
Tourism	4	11
Trade, energy and industry	2	5
Transport & infrastructure	4	11
Water & environment	3	8
Youth, gender & sports	4	11
Inspectorate	2	5
Total	37	100

Table 3 indicates that 5% of the total respondents worked in the department of agriculture, livestock & fisheries in the county government of Nyamira, 11% of the total respondents worked in the department of education in the county government of Nyamira, 11% of the total respondents worked in the department of finance & economic planning in the county government of Nyamira, 11% of the total respondents worked in the department of health in the county government of Nyamira, 11% of the total respondents worked in the department of planning, land & housing in the county government of Nyamira, 11% of the total respondents worked in the department of tourism in the county government of Nyamira, 5% of the total respondents worked in the department of trade, energy and industry in the county government of Nyamira, 5% of the total respondents worked in the department of agriculture, livestock & fisheries in the county government of Nyamira, 11% of the total respondents worked in the department of transport & infrastructure in the county government of Nyamira, 8% of the total respondents worked in the department of water and environment in the county government of Nyamira, 11% of the total respondents worked in the department of youth, gender & sports in the county

government of Nyamira and 5% of the total respondents worked in the department of inspectorate in the county government of Nyamira.

Duration of Work

The study sought to establish the number in years that the respondents had worked in Nyamira County Government. The response rate from the field were recorded in table 4.

Duration of Work

Duration in Years	Frequency	Percentage
Less than one year	8	22
2-3 years	17	46
4 years and above	12	32
Total	37	100

Table 4 indicates that 46% of the total respondents had worked in Nyamira County Government for 2-3 years, 32% had worked in Nyamira County Government for duration of above 4 years and 22% had worked in the bank for less than one year. This shows competent staff working in Nyamira County Government hence information given by the respondents was to be reliable.

Adoption of Government Electronic Procurement Module

The study sought to establish from the respondents on if different departments in Nyamira County Government had adopted government electronic procurement system module. The response rate from the field were record in table 5.

Adoption of Government Electronic Procurement Module

Adoption of Government Electronic Procurement Module	Frequency	Percentage
Yes	32	86
No	5	14
Total	37	100

Table 5 indicates that 86% of the total respondents said that different departments in Nyamira County Government had adopted government electronic procurement system module, 14% said that different departments in Nyamira County Government had not adopted government electronic procurement system module.

E- Procurement Practices-Level of Adoption

The study sought to establish from the respondents on the level at which electronic procurement practices had been adopted in Nyamira County Government to enhance its implementation. The response rate from the field was recorded in table 6.

E- Procurement Practices-Level of Adoption

E- Procurement Practices-Level of Adoption	SA 5	A 4	UD 3	D 2	SD 1	$\sum fi$	$\sum fiwi$	$\frac{\sum fiwi}{\sum fi}$
e-Requisitioning (sending requests of requirements to the AIE holders for approval)	21	9	1	4	2	37	154	4.16
e-Tendering- (sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology)	15	11	4	5	2	37	143	3.86
e-Catalogue- (list of goods or services on sale with their description and prices published as an electronic document)	13	17	2	3	1	37	146	3.95
e-Invoicing- (delivery of bills and related information using electronic communications)	19	11	1	4	2	37	152	4.11
e-Auction- (sell or bid for products or services via the Internet)	21	9	2	4	1	37	156	4.22
e-Sourcing- (identifying new suppliers using Internet technology)	15	12	3	5	2	37	144	3.89
e-Informing- (gathering and distributing purchasing information)both from and to internal and external parties using Internet technology)	18	10	3	3	3	37	148	4.0

Table 6 indicates that rating 4.16 of the respondents said that e-Requisitioning (sending requests of requirements to the AIE holders for approval) was the level at which electronic procurement practices had been adopted in Nyamira County Government. Rating 3.86 of the total respondents said that e-Tendering- (sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology) was the level at which electronic procurement practices had been adopted in Nyamira County Government. Rating 3.95 of the respondents said that e-Catalogue- (list of goods or services on sale with their description and prices published as

an electronic document) was the level at which electronic procurement practices had been adopted in Nyamira County Government. Rating 4.11 of the total respondents said that e-Invoicing- (delivery of bills and related information using electronic communications) was the level at which electronic procurement practices had been adopted in Nyamira County Government. Rating 4.0 of the total respondents said that e-Auction- (sell or bid for products or services via the Internet). Rating 3.89 of the total respondents said that e-Sourcing- (identifying new suppliers using Internet technology was the level at which electronic procurement practices had been adopted in Nyamira County Government. Rating 4.0 of the total respondents said that e-Informing- (gathering and distributing purchasing information) both from and to internal and external parties using Internet technology) was the level at which electronic procurement practices had been adopted in Nyamira County Government.

E- Procurement Readiness Aspects

The study sought to establish from the respondents on the level of readiness aspects on implementation of government electronic procurement system in Nyamira County Government. The response rate from the field were recorded in table 7.

E- Procurement Readiness Aspects

(Key: SA-strongly agree, A-agree, UD-undecided, D-disagree, SD-strongly disagree)

E- Procurement Readiness Aspects	SA 5	A 4	UD 3	D 2	SD 1	$\sum fi$	$\sum fiwi$	$\frac{\sum fiwi}{\sum fi}$
ICT infrastructure affects the implementation of e-procurement in my department.	15	10	5	4	3	37	141	3.81
My department has adequate computer hardware like computers and servers to implementation e-procurement.	10	13	6	5	3	37	133	3.59
Implementation of e-procurement in Nyamira County is very expensive in terms of acquisition costs, implementation costs, and maintenance costs.	20	11	2	3	2	37	158	4.27
Budgetary allocation affects the implementation of e-procurement in my department.	14	12	4	2	5	37	139	3.76
The top management is committed in seeing the effective implementation of the government e-procurement system in Nyamira County	12	15	2	4	4	37	138	3.73

Table 7 indicates that rating 3.81 of the total respondents said that ICT infrastructure affects the implementation of e-procurement in my department was the level of readiness on implementation of government electronic procurement system in Nyamira County Government. Rating 3.59 of the total respondents said that their departments had adequate computer hardware like computers and servers to implementation e-procurement hence the level of readiness on implementation of government electronic procurement system in Nyamira County Government. Rating 4.27 of the total respondents said that implementation of e-procurement in Nyamira County is very expensive in terms of acquisition costs, implementation costs, and maintenance costs was the level of readiness on implementation of government electronic procurement system in Nyamira County Government. Rating 3.76 of the total respondents said that Budgetary allocation affects the implementation of e procurement in my department was the level of readiness on implementation of government electronic procurement system in Nyamira County Government. Rating 3.73 of the total respondents said that top management is committed in seeing the effective implementation of the government e-procurement system in Nyamira County was the level of readiness on implementation of government electronic procurement system in Nyamira County Government. Orina (2013) in her study on E-procurement readiness factors in Kenya's Public sector found that resistance to change, lack of enthusiasm, staff skills, and to some extent procurement policies impacted the readiness of e-procurement in public institutions. According to her findings, the main e-procurement readiness factors include: technology, organization's finance, leadership and integrity, legal framework and technical preparedness, international law and employee attitude, procurement policy and national procurement law, e-procurement adoption and staff I.T adequacy, and online marketplace and government support.

Effect of Supplier Capacity Aspects on Efficiency in procurement Systems.

The study sought to establish from the respondents on the effects of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. The response rat from the field were record in table 8.

Effect of Supplier Capacity Aspects on Efficiency in procurement Systems

(Key: SA-strongly agree, A-agree, UD-undecided, D-disagree, SD-strongly disagree)

Supplier Capacity Aspects	SA	A	UD	D	SD	∑fi	∑fiwi	$\frac{\sum fiwi}{\sum fi}$
	5	4	3	2	1			
Supplier capacity influences the effective implementation of the government e-procurement system in Nyamira County.	16	12	2	3	4	37	144	3.89
Supplier adoption of ICT	14	10	4	7	2	37	138	3.73
Supplier involvement in the e-procurement system processes	18	11	2	5	1	37	151	4.08
Information processing capacity of the suppliers	15	13	3	4	2	37	146	3.95

Technical skills and knowledge of the suppliers to access Networking infrastructure of the suppliers	20	14	1	1	1	37	162	4.38
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Table 8 indicates that rating 3.89 of the total respondents said that supplier capacity influences the effective implementation of the government e-procurement system in Nyamira County was an effect of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. Rating 3.73 of the total respondents said that supplier adoption of ICT was an effect of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. Rating 4.08 of the total respondents said that supplier involvement in the e-procurement system processes was an effect of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. Rating 3.95 of the total respondents said that information processing capacity of the suppliers was an effect of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. Rating 4.38 of the total respondents said that technical skills and knowledge of the suppliers to access Networking infrastructure of the suppliers was an effect of supplier capacity aspects on implementation of government electronic procurement systems in Nyamira County Government. Aberdeen, (2005) indicates that suppliers become highly active internal marketers of e-procurement systems because of several interactions especially in the case of public procurement. Suppliers if involved early in e-procurement initiatives are therefore able to play an active role in the process's refinement and efforts in change management.

Conclusion

The study concluded that e-procurement readiness in Nyamira County Government was readily implemented despite the challenges of applying e-procurement like lack of cooperation from top management ineffective computer system, long lead-time and incorrect stock status and lack of supplier cooperation. E-procurement has experienced a good portion of it with its performance helping Nyamira County Government to the high levels like it has helped managers to reduce inventory control, minimized workforce overtime, high inventory turnover ratio improved consistency of time customer delivery and determine the most economical lot sizes for orders.

The study concluded that supplier capacity influenced the implementation of the government e-procurement system in Nyamira County through suppliers adopting ICT and supplier involvement in the e-procurement system processes which enhanced implementation of government electronic procurement systems in Nyamira County Government.

In the study it was concluded that user training influenced the effective implementation of the government e-procurement system in Nyamira County through trained staff being able to use the

system well. The fundamental aim of training is to help the organization achieve its purpose by adding value to its key resources the people it employs.

Recommendations of the Study

The study recommends that influence of user readiness on the implementation of government electronic procurement, the top management in different departments at Nyamira County Government should allocate enough resources for easy preparation on enhancing e-procurement to improve on its procurement performance.

The study recommend that on supplier capacity on the implementation on implementation of government electronic procurement system, Nyamira County Government procurement department should come up with the strategized methods of solving the problems encountered in enhancing e-procurement so as they may increase their productivity and performance at large.

On the effect of user training on implementation of Government electronic procurement system, Nyamira County Government should employ latest technological systems training to staff in doing their procurement activities so as they have their image to the public and society by reducing delivery time.

Suggestions for Further Studies

From the study, the researcher suggests that further studies should be done on the determinants of e-procurement on performance at Nyamira County Government. Other study should be carried out to establish strategies to be adopted by county governments to enhance procurement effectiveness and further research should be done on effect of staff skill on procurement innovativeness.

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