

Factors Affecting Implementation Of E-Procurement In Nzoia Sugar Company Limited In Bungoma County, Kenya

¹Lilian Weyala Waniani, ²Prof. Gregory Simiyu Namusonge, ³Moses Kiptoo Lagat

¹Jomo Kenyatta University of Agriculture & Technology (Msc. Procurement & Logistics)

²Jomo Kenyatta University of Agriculture & Technology(PhD)

³Jomo Kenyatta University of Agriculture & Technology(Msc. Procurement & Logistics)

Abstract: The aim of the study was to examine the factors affecting implementation of e-procurement in Nzoia Sugar Company. The Implementation of e-procurement in the public sector has been affected by several factors and it being one of the new technologies, most of the private organizations have already taken full advantage of the value of e-procurement systems. The overall objective of this study was to examine the factors affecting e-procurement implementation in Nzoia sugar company limited being one of the public organizations in Kenya. The study was guided by the following objectives: To determine whether lack of employee competency is a challenge in e-procurement adoption among staffs of Nzoia Sugar Company, to investigate whether inadequate legal framework is a challenge in e-procurement adoption in Nzoia Sugar Company and to establish whether inadequate technological infrastructure is a challenge in e-procurement adoption in Nzoia Sugar Company. The research design that was used in this study was a descriptive research design. The target population was staffs of Nzoia Sugar Company Limited who are 1091. The sample size of this study were 164 respondents which was equivalent to 15% of the staff working at Nzoia Sugar Company. The study adopted a stratified random sampling method to obtain a sample of the respondents. The process of data analysis involved several stages; the completed questionnaires were edited for completeness and consistency, checked for errors and omissions and then coded. Descriptive statistics and factor analysis was used to determine factors affecting implementation of e-procurement in Nzoia Sugar Company. Tables were used to present the data collected for ease of understanding and analysis. The study found out that employee competency was a challenge in e-procurement implementation; this study recommends that due to continuous turnover of the employees', continuous training for the incoming and current staff is required. The employees should also be informed on benefits of e- procurement over manual procurement systems. The suppliers also need to be trained on e – procurement usage and how it works and the benefits it will accrue to them as suppliers.

Keywords: E-procurement, Employee Competency, Legal Framework, Technological Infrastructure, Security of Data & Public Procurement.

1. INTRODUCTION

Procurement process is the same across all public sectors and therefore e-procurement process can be standardized in all of its processes from ordering to contract management. The Council of Governors recently admitted that e-procurement has led to delays in procurement functions because of poor network and system failures in their county governments. Globally, 60% of information and communication technology application in procurement activities and functions do not provide the expected results (Soudry, 2007). Organizations that computerize and streamline workflows across numerousstakeholders sites such as suppliers produce 66% more improvement in reducing total time from order to delivery, according to the Study done by Aberdeen in 2011.

Procurement is an in-house service offered by specialists. It manages relationships between the organizations, the third party logistic companies and marketplace (Knudsen D, 2003). This provides for a chance for participants to contribute through sharing information. According to Kiprono (2013), the applications which form the e-procurement landscape are designed to automate the buying cycle, optimize spend, improve process and workflow, support bidding and tendering and facilitate more effective search for products and services via the internet. It has also been suggested that such technologies will lead to closer partnership and integration within the buyer and the supplier because of timely communication (Garcia-Dastugue and Lambert, 2003).

Statement of the Problem:

In 2009, PPOA acknowledged that there is no enough technology in place to enable the government to take all advantage of internet commerce. It identified issues such as identification of parties in a transaction, synchronization, confidentiality, data confidentiality and bandwidth as the major considerations that the government had to consider before taking full advantage of the benefits of E-procurement.

In the government of Kenya strategy paper of 2004, one of the objectives was the introduction of a computer based procurement which was to be implemented by June of 2007; however it has not significantly been implemented as per the deadline. The adoption of ICT is to change the way businesses operate in this era of globalization by changing business structures and increasing competition, creating competitive advantage for businesses and by changing business operations. Hence, for public entities to grow and become successful, they must have the ability to compete and dynamically respond to rapidly changing markets (Ongori, 2009). The traditional procurement process has involved slow manual procedures and even inefficient systematic process of handling procurement transactions (Hawking et al. 2004).

According to Ongoro (2014), Public entities are beginning to recognize the huge potential offered by the internet in general and E-procurement systems in particular. On 11th March, 2015 President of Republic of Kenya, Uhuru Muigai Kenyatta gave a one week ultimatum to officials in charge of public entities to adopt e-procurement in order to curb corruption and enhance transparency in how tenders are awarded. The head of state said the objective is to make government procurement processes be open to scrutiny by the public so that everyone can know how a tender is awarded. Procurement of goods and services constitute 50% of the government's annual budget and the E-procurement platform will save substantial financial resources and help installing confidence among tax payers that they are getting value for their money (Daily Nation, 2015). In E-procurement practices in KRA, Ongoro (2014) states that the process of electronic gathering of information has increase business relationship between KRA and its suppliers.

Stratman (2007) notes that, factors such as poor records management, long documentation process and questionable filling systems plus lack of proper procurement plan and in-efficient post award contract execution, irregularly in making obligatory reporting to Public Procurement Oversight Authority and lack of utilization of standard requisitions are an obvious signal of an unsuccessful process. In public entities, procurement department is the avenue of spending on behalf of the organization hence this study focuses on finding out the factors that affect the implementation of e-procurement in Nzoia Sugar Company which is a public entity. In the prior studies on e-procurement application many have primarily focused on investigating its benefits or adoption mainly in manufacturing but research examining the factors influencing the application of e-procurement systems by public entities is minimal. This study aims to fill this gap by reviewing the literature that identifies potential e-procurement impediment factors and then by testing the latter's impact by gathering data from procurement processes operators.

Otieno et al. (2013) recommended that individual firms should optimize benefits of E-procurement by increasing the proportion of expenditure on E-procurement by widening the use scope of supplier's sourcing thereby justifying use of E-procurement. Factors affecting implementation of E-procurement in organization have been undertaken in several organizations but it has not been undertaken at Nzoia Sugar Company. Researchers have proposed that similar studies should be undertaken on separate organizations because different factors affect different organizations.

Research Objectives:

The general objective of this study was to examine the factors affecting implementation of E-procurement in Nzoia Sugar Company in Bungoma County in Kenya.

Specific Objectives:

- i. To determine the effect of employee competency on e-procurement implementation in Nzoia Sugar Company
- ii. To find out the effect of legal framework on e-procurement implementation in Nzoia Sugar Company
- iii. To establish the effect of technological infrastructure in e-procurement implementation in Nzoia Sugar Company
- iv. To examine the effect of security of data in e-procurement implementation in Nzoia Sugar Company.

2. LITERATURE REVIEW**E-procurement Implementation:**

Boer et al (2002) defines e-procurement as basically using Internet tools in the purchasing process. An e-procurement system is an information technology based acquisition system which is at the input end of the supply chain (Presutti, 2008). Hence, e-procurement is an acquisition and sale of goods and services through the Internet as well as networking systems, such as local networks, electronic data interchange and enterprise resource planning. E-Procurement has gained esteem due to benefits related with its implementation that include reduction in lead time and cost of procurement and enhanced transparency (Bof & Previtali, 2010). Therefore, e-procurement has a positive effect on an organization efficiency and effectiveness. This is because of huge savings, transparency, accountability and timely communication between the buyer and the seller which is brought about by embracing e-procurement. The benefits of implementing an e-procurement system provide numerous advantages to individual entities and the stakeholders involved such as suppliers and the employees of the companies. Numerous previous studies undertaken both in Kenya and world over (Kiprono 2013, Subramaniam and Shaw 2004, Croom and Johnston 2003, Puschmann and Alt 2005) unearth numerous encouraging effects that e-procurement system has to a company.

In state owned enterprises in Kenya, implementation of an electronic procurement system is not a trouble-free process to be accomplished in a short duration of time. This can be attributed to employees' commitment to a new system and also the challenge to resistance to change and anticipated changes that are expected. Hayward (2001) asserts that the benefits of electronic procurement are comprehensible and widely recognized but warns that the system must be implemented properly or it will never work. The first stride towards a successful implementation process is the demand of collaboration and commitment between the company, employees and suppliers. Because of the lack of collaboration and systematic action, suppliers are wasting time on activities which do not produce or add value (Angeles & Nath, 2007).

Both public and private companies use a lot of their expenditure on information technology systems, because of the anticipated improved performance and efficiencies that the system comes with (Arbin, 2008). Firm partnership between employees, suppliers and companies can yield the benefits of e-procurement system in an organization. Keiser (2000) agrees that implementing a system requires that procuring entities and suppliers should sustain each other for example sharing information on a timely basis, because otherwise implementation is not possible. Morrison (2009) asserts that the benefits of an e-procurement system can be seen in faster turnaround times and in transportation and shorter delivery times of the product.

Theoretical Framework:**Institutional Theory:**

Institutional theory is the appropriate theoretical framework for this study because it is well suited in understanding the behavior of organization. A study on institutional isomorphism and public sector organization by Frumkil et al (2004) concluded that governmental organizations are much more vulnerable to intuition process than for profits, this is supported by Asworth et al, 2007 who concluded that "intuitional theory has become a prominent length through which organizational processes are interpreted and understood". Given this applicability of intuitional theory, it would be used to explain the various factors affecting implementation of e-procurement in Nzoia Sugar Company which is a public organization as it focuses on a resilient aspect of the session structures. These factors are legal framework, staff competence, technological infrastructure and security of information. Institutional theory was proposed by Dimaggio and Powell (1983) they stated that organizations do not exist in a vacuum but interact with environment to achieve mission

and objectives. Therefore the theory emphasizes on how the organization should behave through a pattern on social norms that evolve over time and become legitimized within an institution or society (Isenhardt, 1988)

PPOA has developed guidelines to procurement practices and prices to common user items. The guidelines include; general and disposal manual, procurement manual for works, procurement manual for information and communication technology, procurement manual for insurance services, procurement manual for non-intellectual services and service industry procurement market price index (PPDA, 2005 and PPDAR, 2006). It is from these guidelines that e-procurement being a new technology should embrace changes in traditional procurement approaches. These guidelines must be applied to all public institutions and Nzoia Sugar Company is one of them. The question of legality will always arise if the procurement process is not done in accordance with the laws.

E-procurement involves working with computers which have software which help in the management of organizational activities. Users browse through databases which are easily reachable and therefore there is need to train them in order for them to be competitive enough to use the application software (World Bank, 2003). Computer operations require both internal and external integration of activities (Narasimhan and Kim, 2002). Through e-procurement suppliers capabilities can be compared through perusal of online catalogs and recognition of suppliers by engaging in collaborative efforts which increases the overall performance of an organization (Speckman and Myhr, 1998). An organization to perform well in its ventures it has to operate as an open system that collects information from the environment. Suppliers are an essential part in success of any company because they have vital knowledge of the source of the company inputs.

Conceptual Framework:

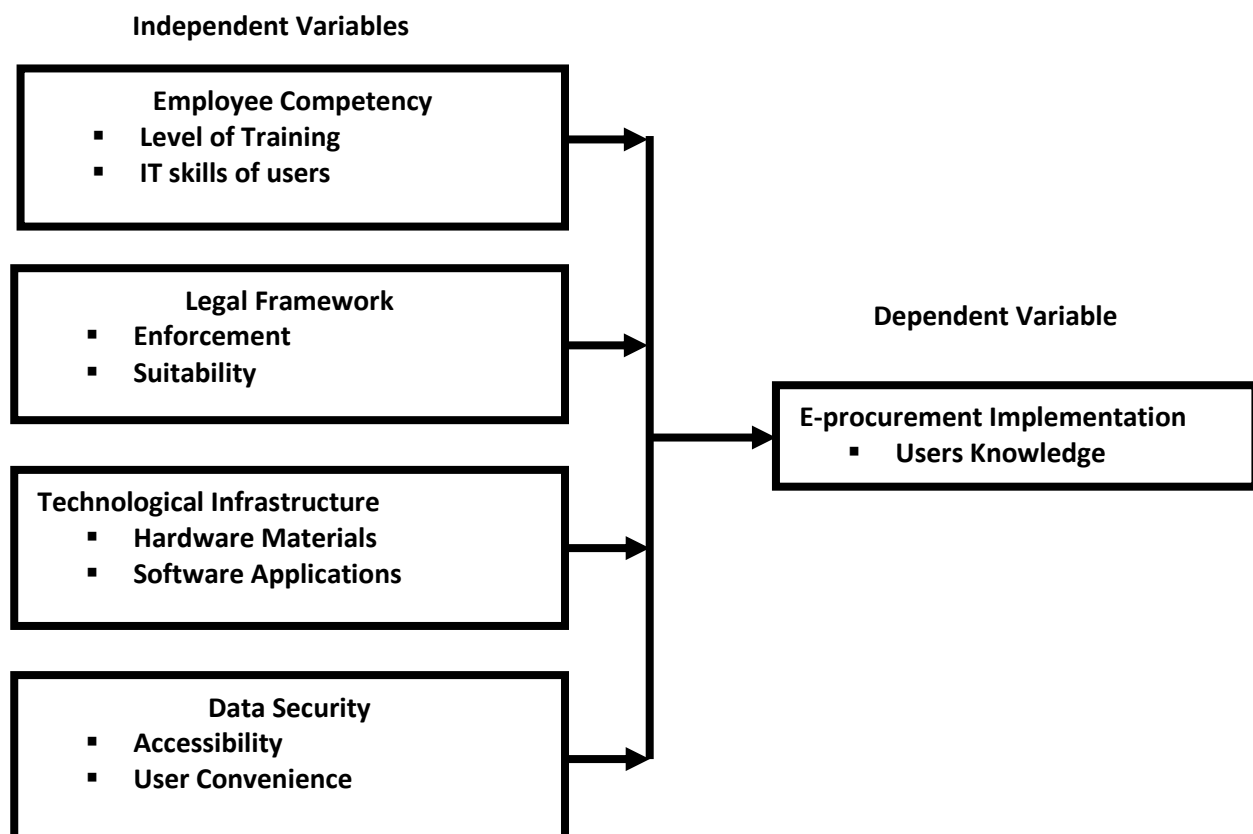


Figure.1: Conceptual Framework

Organization need to increase the E-procurement capacity in terms of IT expertise and IT infrastructure by injecting regular upgrading of IT system and management of firm to expand the use of E-procurement by incorporating procurement processes for example tendering, quotations and communication to suppliers (Otieno et al, 2013). According to Kirimi and Shalle, (2014), staff with IT related experience and training on E-procurement leads to effective implementation of E-procurement in an organization.

3. RESEARCH METHODOLOGY

The research design that was used in this study was a descriptive research design aimed at establishing the factors affecting implementation of e-procurement in Nzoia Sugar Company. The method is preferred because it allows for prudent comparison of the research findings and generating appropriate conclusions in respect to research questions (Mugenda & Mugenda, 2003). This was the most suitable design because data was collected from one organization and hence its adoption for this study.

Population is defined as a complete set of individuals, cases or objects with some common observable characteristics (Mugenda and Mugenda, 2003). The target population was staffs of Nzoia Sugar Company Limited who were 1,091. These respondents were suitable for the study because they were in the organization long enough and therefore must have experienced how procurement is carried out and have high level of information disclosure.

Sampling frame is the source list, it is a group of items or respondents from which sample has to be drawn; it constitutes all the components of the target population (Dempsey, 2003). According to Kothari, (2004) a sample size is a set of entities drawn from a population with the aim of estimating characteristics of the population. The sample size of this study was 164 respondents which were equivalent to 15% of the staff working at Nzoia Sugar Company. According to Mugenda and Mugenda, (2003) a representative sample is one that is at least 10% to 20% of the target population hence the study selected 164 respondents as a sample for the study.

Sampling Size and Sampling Technique:

Table.1: Sample Size

Category	Strata Size	Stratified Sample Formula	Sample Size
Head of Departments	12	$(164/1091)*12$	2
Head of Sections	64	$(164/1091)*64$	10
Supervisors	126	$(164/1091)*126$	19
Clerks	889	$(164/1091)*889$	133
Total	1091		164

The study adopted stratified random sampling method to obtain a sample of the respondents. This method was appropriate because it provided an equal opportunity to all staffs in the organization to participate in the study without bias (Kothari, 2004). According to Neuman, (2003) the main factor to be considered in determining the sample size is the need to keep it manageable enough. Stratified sampling results in more reliable and detailed information because each stratum is more homogeneous and we are able to get more precise estimates for each stratum (Kothari & Garg, 2014). In each strata, the researcher applied simple random selection of respondents to collect data from them.

Questionnaires were used in data collection from the respondents. A questionnaire is defined as a collection of items to which the respondent is expected to react in writing. The designed questions or items was in word format and distributed to the respondents (Kothari, 2007). This method is used to collect a lot of information over a short period of time. The method is suitable when the information needed can be easily described in writing. In the study the respondents were given time (5 days) to complete the questionnaires before returning them for analysis.

The process of data analysis involved several stages; the completed questionnaires were edited for completeness and consistency, checked for errors and omissions and then coded. Principal Component Analysis (PCA) under factor analysis was the model for specification and was used in analyzing how the various factors affect implementation of e-procurement in Nzoia Sugar Company. Through factor analysis, the variance explained by each component was determined.

4. FINDINGS AND DISCUSSIONS

Out of 164 questionnaires which were given out to the respondents, 139 were filled and returned. The response rate stood at 84.75%. This response rate was representative and conforms to Mugenda and Mugenda (2012) assertion that a response rate of 50% is adequate for analysis and reporting. This high response was achieved as the researcher self administered the questionnaires with the help of the research assistants on a drop and collect later basis.

Demographic Characteristics of the Respondents:

This section will discuss gender, age, position held, academic qualification and experience of respondents.

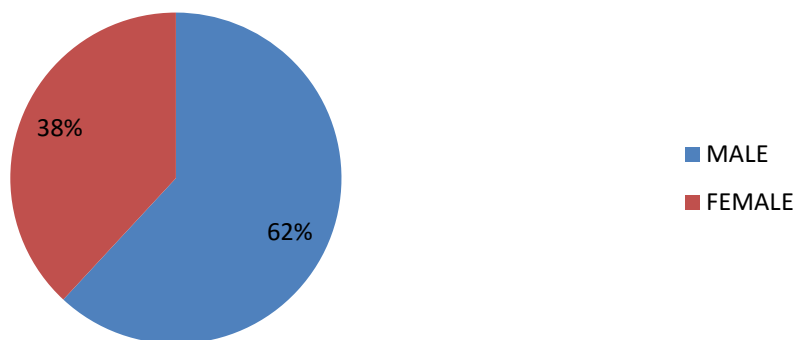
Gender of Respondents**Figure.4.1: Gender of the respondents**

Figure 4.1 showed that 61.9% of the respondents are male and while 38.1% female. This indicates majority of employees working at Nzoia Sugar Company are male. It was clear that females were more than 30% of the sample size hence meeting a third gender rule.

Age Bracket:**Table.4.2: Age of the respondents**

Age Bracket	Frequency	Percent
18 - 28 Years	40	28.8
29 - 39 Years	54	38.8
40 - 50 Years	32	23
Over 50 Years	13	9.4
Total	139	100

Table 4.2 showed that 28.8% of the respondents were aged between 18 and 28 years, 38.8% were aged between 29 and 39 years, 23% were aged between 40 and 50 Years and 9.4% were aged over 50 years. This indicated majority of employees were aged below 39 years implying that the workforce were young and energetic.

Position Held:**Table.4.3: Position held by respondents**

Position	Frequency	Percent
Head of Department	9	6.5
Head of Section	14	10.1
Supervisor	29	20.9
Clerk	87	62.6
Total	139	100.0

Table 4.3 showed that 6.5% of the respondents were heads of departments, 10.1% were heads of sections, 20.9% were supervisors and 62.6% were clerks in various departments in Nzoia Sugar Company. It indicated that all levels of management were represented and majority of the respondents were from low level of management.

Academic Qualification:**Table.4.4: Academic qualification**

Academic Level	Frequency	Percent
KCSE	17	12.2
Certificate	36	25.9
Diploma	31	22.3
Degree	41	29.5
Masters	14	10.1
Total	139	100.0

Table 4.4 shows that 12.2% of the respondents had attained KCSE, 25.9% a Certificate, 22.3% a diploma, 29.5 Bachelor's degree and 10.1% masters-level. This exhibited majority of the employee's level of education was adequate. This is in line with Stafford, (2006) who says that respondents' knowledge is critical to the subject content.

Work Experience:**Table.4.5: Work Experience**

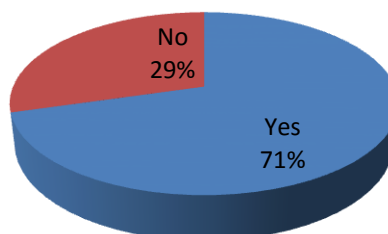
Period	Frequency	Percent
Less than 5 Years	87	62.6
6 to 11 Years	31	22.3
12 to 17 Years	11	7.9
18 to 23 Years	10	7.2
Total	139	100.0

The majority of the respondents reported having been in Nzoia Sugar Company for less than 5 years (56%) while 7.2% indicated they had been there for 6 to 11 years. 22.3% and 7.9% of the respondents reported that they have worked for the company for 6 to 11 years and 12 to 17 years respectively. The period worked in the organization of the respondents in this case will influence the response whereby respondents who have worked in the organization for longer will have better responses in regards to the capacity of the organization in relation to e-procurement implementation in Nzoia Sugar Company.

Adoption of e-procurement in Nzoia Sugar Company:

The researcher wanted to establish if e-procurement has been adopted by the company.

Adoption of E-procurement in Nzoia Sugar Company

**Figure.4.2: Adoption of e-procurement**

From table 4.6, 71% of the respondents acknowledged the adoption of e-procurement while 29% disagreed. It was clear that Nzoia Sugar Company had adopted e-procurement. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007 however Public Procurement and Disposal entities still use manual procurement process. In Nzoia Sugar Company still the manual procurement system is used up to some extent.

Employee Competency:**Attended Training on e-procurement:****Table.4.6: Attended training on e-procurement**

	Frequency	Percent
Yes	82	59.0
No	57	41.0
Total	139	100.0

Most of the respondents (59%) had participated in e-procurement training that was planned by the company while 57% of the respondents had never participated in any e-procurement training as shown in table 4.7. These findings are in line with World Bank survey which argued that since e-Procurement includes new technologies and changes in traditional procurement approaches, the need to train employees in procurement practices and the use of e-Procurement tools are critical to the success of implementation an e-Procurement initiative (World Bank, 2003).

Has Training improved employee's skills on e-procurement?**Table.4.7: Impact of training on employees**

	Frequency	Percent
Yes	56	68.3
No	26	31.7
Total	82	100.0

For those respondents (59%) who had participated in e-procurement training, majority of the respondents (68.3%) acknowledged that the training improved their skills in on e-procurement while 31.7% of the respondents said it had no impact. Kawalek et al, 2003 also considers training of employees as an example of an approach to successful implementation of organization Information Technology system. Training is important for employees to grasp new skills and to nature them perform better.

Nzoia Sugar Company Commitment on Employees Competencies:**Table.4.8: Commitment on competencies and skills of employees**

	Frequency	Percent
Yes	98	70.5
No	41	29.5
Total	139	100.0

On company commitment on employee competencies, 98 (70.5%) of the respondents agreed that Nzoia Sugar Company is committed on improving employees competencies while 41 (29.5%) of the respondents disagreed. This is in agreement with Kauffman and Kriebel (2008) that the contribution of electronic systems depends on several factors, such as employees and investments in associated processes.

Employee Competency and implementation of e-procurement:**Table.4.9: Employees Competency**

Statement	N	Mean	Std. Deviation
Do you think training of users of electronic procurement system will have an impact on the implementation of the system in your organization?	139	4.28	0.702
Interactions with e-procurement are clear and understandable	139	4.09	0.916
Employees have the ability to use e-procurement	139	3.2	0.918
It is easy to get e-procurement to do what an organizations wants it to do	139	2.45	0.979
Valid N (list wise)	139		

As indicated in table 4.9, the respondents agreed that the training of users of electronic procurement system will have an impact on the implementation of the system in the organization and interactions with e-procurement are always clear and understandable. They were neutral on the ability of employees to use e-procurement while they disagreed on the easiness of e-procurement to do what an organization wants it to do. This showed that the respondents had knowledge on e-procurement.

Effect of Legal Framework on e-procurement implantation Contribution of legal framework:

Table.4.10: Contribution of legal framework to e-procurement implementation

	Frequency	Percent
Yes	86	61.9
No	53	38.1
Total	139	100.0

On whether legal framework contributes positively to the Implementation of e- procurement, 61.9% of the respondents agreed while 38.1% of the respondents disagreed as shown in table 4.10.

Legal framework and implementation of e-procurement:

Table.4.11: Legal framework

Statement	N	Mean	Std. Deviation
PPOA has adequately addressed the legal framework for e procurement in the public sector	139	4.27	0.69
Electronic signatures are enforceable in your organization	139	3.33	0.502
There is the need of anchoring e- procurement in the constitution for it to be implemented fully	139	2.88	0.88
E-mail contracts are legal	139	2.46	0.81
Electronically copied documents are covered by the copyright laws	139	1.65	0.612
Valid N (listwise)	139		

According to table 4.11, the respondents agreed that PPOA has adequately addressed the legal framework for e procurement in the public sector and strongly disagreed on electronically copied documents are covered by the copyright laws. The respondents were neutral on electronic signatures are enforceable in Nzoia Sugar Company while they disagreed on the need of anchoring e- procurement in the constitution for it to be implemented fully and e-mail contracts are legal. This was attributed to the current procurement procedures and documentations required in the purchasing process of public entities.

Effect of Technological Infrastructure on e-procurement implantation Training of suppliers on e-procurement techniques:

Table.4.12: Supplier's training on e-procurement

	Frequency	Percent
Yes	34	24.5
No	105	75.5
Total	139	100.0

As indicated in table 4.12, 75.5% of the respondents acknowledged that the suppliers have not yet been trained in e-procurement techniques while 24.5% believe that the suppliers have been trained on e-procurement implementation. The higher response was confirmed by the filling systems and manual submission of tender documents to the company. The World Bank (2003) suggests that developing an e-Procurement system in an open environment allows it to link to other systems for interoperability and simplifies upgrading the system. Hence there is need to train suppliers and involve them in the process of implementing e-procurement in Nzoia Sugar Company.

Technological infrastructure and e-procurement implementation:**Table.4.13: Technological infrastructure**

Statement	N	Mean	Std. Deviation
Internet connection, poor network coverage and system failures are the challenges facing the company in e-procurement implementation	139	4.42	.798
The company has acquired the required ICT infrastructure to support e – procurement in advance	139	4.25	.682
Internal electronic communication on issues related to procurement using technologies other than email such as instant messaging, video conferencing	139	2.42	.647
Permitting the suppliers to directly access the internal systems e.g Enterprise Resource Planning Systems	139	1.84	.673
Technological integration of the e- procurement system with other internal systems	139	1.68	.626
Valid N (listwise)	139		

As indicated in table 4.13, respondents agreed that Internet connection; poor network coverage and system failures are the challenges facing the Nzoia Sugar Company in e-procurement implementation and company has acquired the required ICT infrastructure to support e – procurement in advance. They disagreed on internal electronic communication on issues related to procurement using technologies other than email such as instant messaging; video conferencing and they strongly disagreed on permitting the suppliers to directly access the internal systems e.g Enterprise Resource Planning Systems and Technological integration of the e- procurement system with other internal systems. The respondents considered the security of data and information as the most important element in procurement.

Adequacy of technological infrastructure in Nzoia Sugar Company:**Table.4.14: Technological infrastructure on e-procurement**

	Frequency	Percent
Yes	93	66.9
No	46	33.1
Total	139	100.0

As depicted in table 4.14, a large portion (66.9%) of the respondents agreed that the company has adequate technological infrastructure to support e-procurement. This included hardware and software, the internet and technical expertise. 33.1% of the respondents disagreed that the technological infrastructure was not adequate to support e-procurement. They attributed this to unreliable internet and lack of scanners. Mendoza et al. 2006 agrees with the findings that there are increasing challenges associated with integrating different systems and applications efficiently throughout the organization as it is implementing or adopting new technologies.

Effect of Security of data and information on e-procurement implementation:**Table.4.15: Security of data**

Statement	N	Mean	Std. Deviation
Security risks resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored	139	4.25	.703
Uncertainty over trust and commitment among trading partners.	139	3.17	.908
Privacy risks arising from inappropriate information collection and information transparency	139	2.57	.626
Transaction risks resulting from wrong products purchased due to incomplete or misleading information	139	2.14	.592
Lack of standardization	139	1.91	.717
Valid N (list wise)	139		

As shown in table 4.15, respondents agreed that security risks' resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored is a major concern while they

were neutral on uncertainty over trust and commitment among trading partners. The respondents disagreed on privacy risks arising from inappropriate information collection and information transparency and transaction risks resulting from wrong products purchased due to incomplete or misleading information. On lack of standardization, they strongly disagreed. The respondents considered e-procurement as a risky venture to invest into it. The findings are in agreement with Ward and Peppard (2003) who asserted that 60% of Information Technology application in procurement initiatives and projects do not deliver the expected benefits.

FACTOR ANALYSIS:

Factor analysis was used to construct the factors affecting implementation of e-procurement in Nzoia Sugar Company. The number of respondents who participated in this study was 139 students. The collected data was significant because it was distributed to a large sample size. The minimum sample size suggested by Ong & Coakes, (2011) is five for one variable. In this case, a 139 sample size was acceptable to fulfill the factor analysis.

Factorability:

Table.4.16: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.620
	Approx. Chi-Square	1071.903
Bartlett's Test of Sphericity	Df	210
	Sig.	.000

Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy are tests that were used to determine the factorability of the matrix as a whole. From table 4.16, it is clear that the results value of Bartlett's test of sphericity is significant ($p < 0.001$, $p = 0.000$). In addition, the Kaiser-Meyer-Olkin measure is 0.620 which is greater than 0.6. According to Altman et al. (2006), the Bartlett's test of sphericity is significant, and if the Kaiser-Meyer-Olkin measure is greater than 0.6, then factorability is assumed. Thus, based from the results, it was appropriate to precede with Factor Analysis to examine factors that are affecting implementation of e-procurement in Nzoia Sugar Company.

Total Variance Explained:

This indicates how much of the variability in the data has been modelled by the extracted factors.

Table.4.17: Total variance explained

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.962	18.866	18.866	3.578	17.038	17.038
2	2.389	11.376	30.243	2.199	10.469	27.507
3	2.044	9.735	39.977	1.96	9.331	36.838
4	1.569	7.471	47.449	1.759	8.375	45.213

Extraction Method: Principal Component Analysis.

Table 4.17 displays the total variance explained by four components for factors affecting implementation of e-procurement in Nzoia Sugar Company. The factors were extracted using parallel analysis. According to Ledesma & Valero-Mora (2007), Parallel Analysis is a Monte Carlo simulation technique that aids researchers in determining the number of factors to retain in Principal Component Factor Analysis. Four factors were extracted because their Eigen values from the research data were greater than those from simulation in the first four components as shown in table 4.18, indicating that only the first four components should be retained (> 1.4942). When four factors were extracted, then 47.46% of the variance would be explained. Component one explains 18.87%, component two explains 11.38%, component three 9.73% and four explains 7.47 of the variance.

Table.4.18: Random Data Eigen Values

Root	Mean	Prentyle
1.0000	1.769	1.8989
2.0000	1.6275	1.7252
3.0000	1.5158	1.5953
4.0000	1.4233	1.4942
5.0000	1.3435	1.4068

Rotated Component Matrix:

Table 4.19 shows the rotated factor matrix for the questionnaire. Tabachnick and Fidell (2001) stated variable with factor loadings more than 0.50 is considered average, whereas loadings 0.32 is considered less good.

Table.4.19: Rotated component matrix

	Component			
	1	2	3	4
QE3	.903			
QE4	.874			
QE6	.513			
QE1	.762			
QL1	-.472			
QE2		.753		
QT2		.616		
QT4		.523		
QT1		.515		
QL5			.740	
QL2			.561	
QL4		-.386	.561	
QL3			-.382	
QE5	.321	-.326	-.559	
QS2				.868
QS4				.687
QS3				.639
QS1				-.377

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

After performing Varimax Rotation Method with Kaiser Normalization as shown in table 4.19, Component 1 comprised of six items with factor loadings ranging from -0.321 to 0.903. The items in Component 1 are QE3, QE4, QE6, QE1, QE5 and QL1. Component 2 comprised of six items with factor loadings ranging from -0.326 to 0.753. The items in Component 2 are QE2, QT2, QT4, QL5, QE6 and QT1. Component 3 comprised of five items with factor loadings ranging from -0.559 to 0.740. The items in Component 3 are QL5, QL2, QL4, QL3 and QE5. Component 4 comprised of four items with factor loadings ranging from -0.377 to 0.868. The items in Component 4 are QS2, QS4, QS3 and QS1.

Four components were successfully constructed using factor analysis and assigned as the factors affecting e-procurement implementation in Nzoia Sugar Company. Table 4.20 shows the name of components and percentage of variance explained for each of the components. The first factor shows the highest percentage of variance explained when it was extracted. When the first factor, employee competency was extracted, then 18.87% percent of the variance would be explained.

Table.4.20: Naming of factors with percentage of Variance

Factor	Name	% of Variance Explained
1	Employee Competency	18.87%
2	Technological Infrastructure	11.38%
3	Legal Framework	9.74%
4	Security of Data	7.47%
Total Variance Explained		47.46%

In a nutshell, the findings indicate that the four factors accounts for 47.46% of the implementation of e-procurement in Nzoia Sugar Company. Employee competency accounts for 18.87% which is the highest among the variables while security of data is the least at 7.47%. Technological infrastructure and legal framework accounts for 9.74% and 7.47% respectively.

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary:

The purpose of the study was to establish the factors affecting implementation of e-procurement in Nzoia Sugar Company. The research questions included: What is the effect of employee competency on implementation of e-procurement in Nzoia Sugar Company? What is the effect of legal framework on implementation of e-procurement adoption in Nzoia Sugar Company? What is the effect of technological infrastructure on implementation of e-procurement in procurement processes at Nzoia Sugar Company? Does the concern about security of procurement transaction data pose a challenge in e-procurement adoption in Nzoia Sugar Company? The study specifically looked at how employee competency, legal framework, technological infrastructure and security of data affect implementation of e-procurement.

The study adopted a descriptive research design. The method was preferred because it allowed for prudent comparison of the research findings and generating appropriate conclusions in respect to research questions (Mugenda & Mugenda, 2003). The target population was the staffs at Nzoia Sugar Company Limited who were 1,091 employees. The sample size of this study was 164 respondents which were equivalent to 15% of the staff working at Nzoia Sugar Company. The study adopted stratified sampling method to obtain a sample of the respondents. This method was appropriate because it provided equal opportunity to all staffs in the organization to participate in the study without bias (Kothari, 2004). Questionnaire was the main tool for data collection. Factor Analysis (Principal Component Analysis) and descriptive statistics was used to determine factors affecting implementation of e-procurement in Nzoia Sugar Company.

The study had a response rate of 84.75%. This was statistically significant to analyze the data. This high response was achieved as the researcher self administered the questionnaires with the help of the research assistants on a drop and collect later basis. Majority of the respondents were male at 61.2% while 38.8% were female. In terms of age, majority of employees were aged below 39 years implying that the workforce were young and energetic. 12.2% of the respondents had attained KCSE, 25.9% a Certificate, 22.3% a diploma, 29.5 Bachelor's degree and 10.1% O - level. This exhibited majority of the employee's level of education was adequate. 70.5% of Most of the respondents acknowledged the adoption of e-procurement while 29.6% disagreed. It was clear that Nzoia Sugar Company had adopted e-procurement.

On factor analysis, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy are tests that were used to determine the factorability of the matrix as a whole. it was clear that the results value of Bartlett's test of sphericity is significant ($p < 0.001$, $p = 0.000$). In addition, the Kaiser-Meyer-Olkin measure is 0.620 which is greater than 0.6. According to Altman et al. (2006), the Bartlett's test of sphericity is significant, and if the Kaiser-Meyer-Olkin measure is greater than 0.6, then factorability is assumed. The factors were extracted using parallel analysis. According to Ledesma & Valero-Mora (2007), Parallel Analysis is a Monte Carlo simulation technique that aids researchers in determining the number of factors to retain in Principal Component Factor Analysis.

On the effect of employee competency on e-procurement implementation in Nzoai Sugar Company, the researcher established the training of employees on e-procurement, it was clear that 59% of the respondents had participated in e-procurement training that was planned by the company while 57% of the respondents had never participated in any e-procurement training. For those respondents who had participated in e-procurement training, majority of the respondents

(68.3%) acknowledged that the training had improved their skills on e-procurement while 31.7% of the respondents said it had no impact. On company commitment on employee competencies, 70.5% of the respondents agreed that Nzoia Sugar Company was committed on improving employee's competencies while 29.5% of the respondents disagreed. The respondents agreed that the training of users of electronic procurement system will have an impact on the implementation of the system in the organization and interactions with e-procurement are always clear and understandable. They were neutral on the ability of employees to use e-procurement while they disagreed on the easiness of e-procurement to do what an organization wants it to do. Employee competency accounted for 18.87% of e-procurement implementation in Nzoia Sugar Company. 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).

On matters pertaining to the effect of legal framework on e-procurement implementation, 61.9% of the respondents attributed legal framework to the implementation of e-procurement in the company while 38.1% disagreed. The respondents agreed that PPOA has adequately addressed the legal framework for e-procurement in the public sector and strongly disagreed on electronically copied documents are covered by the copyright laws. The respondents were neutral on electronic signatures are enforceable in Nzoia Sugar Company while they disagreed on the need of anchoring e-procurement in the constitution for it to be implemented fully and e-mail contracts are legal. This was attributed to the current procurement procedures and documentations required in the purchasing process of public entities. Legal framework accounted for 9.74% of e-procurement implementation in Nzoia Sugar Company.

The technological infrastructure available in Nzoia Sugar Company was considered to be adequate. A large portion (66.9%) of the respondents agreed that the company has adequate technological infrastructure to support e-procurement. This included hardware and software, the internet and technical expertise. 33.1% of the respondents disagreed that the technological infrastructure was not adequate to support e-procurement. They attributed this to unreliable internet and lack of scanners. The finding agrees with Lysons and Gillingham (2003) assertion that firms have made considerable gains as a result of having electronic integration system installed. The respondents agreed that Internet connection; poor network coverage and system failures are the challenges facing the Nzoia Sugar Company in e-procurement implementation and company have acquired the required ICT infrastructure to support e – procurement in advance. They disagreed on internal electronic communication on issues related to procurement using technologies other than email such as instant messaging; video conferencing and they strongly disagreed on permitting the suppliers to directly access the internal systems e.g Enterprise Resource Planning Systems and Technological integration of the e- procurement system with other internal systems. The respondents considered the security of data and information as the most important element in procurement. Technological infrastructure accounted for 11.38% of e-procurement implementation in Nzoia Sugar Company. The use of Information Communication Technologies (ICTs) has dramatically changed services, business operations and people's expectations of the quality and efficiency of information sharing and service delivery (Brown, 2005; Maniam, 2005).

On the fourth variable, security of data, respondents agreed that security risks' resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored is a major concern while they were neutral on uncertainty over trust and commitment among trading partners. The respondents disagreed on privacy risks arising from inappropriate information collection and information transparency and transaction risks resulting from wrong products purchased due to incomplete or misleading information. On lack of standardization, they strongly disagreed. The respondents considered e-procurement as a risky venture to invest into it. Security of data accounted for 7.74% of e-procurement implementation in Nzoia Sugar Company.

6. CONCLUSION

In a nutshell, the findings indicate that the four factors accounts for 47.46% of the implementation of e-procurement in Nzoia Sugar Company. Employee competency accounts for 18.87% which is the highest among the variables while security of data is the least at 7.47%. Technological infrastructure and legal framework accounts for 9.74% and 7.47% respectively. E-procurement is a profitable venture in each and every organization be it a private or public. Ogot et al, 2009 acknowledges that there is need to have a robust automated procurement system which is interlinked and this will lead to enhanced competitiveness and lowered costs.

The study concluded that employee competency, technological infrastructure, legal framework and security of data affect implementation of e-procurement in Nzoia Sugar Company. Although the company was committed to implementing e-procurement, it still faces myriad of challenges which it can overcome in order to benefit from e-procurement. Suppliers need to be involved in e – procurement implementation in every organization in order to ease its implementation. The company had adopted e-procurement but it had not been implemented in its totality. The benefits of implementing e-procurement in Nzoia Sugar Company include transparency and accountability, cost reduction and timely acquisition of goods and services. Neef (2010) affirms that e-procurement has a far greater potential for cost savings and business improvements than online retailing or enterprise resource planning systems, and will permanently and fundamentally reform the way we do business in the future.

The employees not only need to be trained on e-procurement, but be informed on the merits of e-procurement compared to the manual system. The legal framework was inadequate to foster the implementation of e-procurement in the required pace. Muguro & Iravo (2014) considers that PPOA has not adequately addressed the legality of e-procurement.

In addition, security of data is of paramount importance to both the suppliers and the company. The technological infrastructure is adequate to support e-procurement despite a few challenges which can be handled such as internet connection and limited number of computers. The top management has a say on e-procurement implementation because they are the decision makers on critical factors such as acquisition of goods and services to aid the implementation of e-procurement. This was in agreement with Jeyaraj et al. (2006) who found out that top management support was one of the best predictors of organization adoption of Information System innovations.

8. RECOMMENDATIONS

Employee competency was a challenge in e-procurement implementation; this study recommends that due to continuous turnover of the employees', continuous training for the incoming and current staff is required. The employees should also be informed on benefits of e- procurement over manual procurement systems. The suppliers also need to be trained on e – procurement usage and how it works and the benefits it will accrue to them as suppliers.

On the effect of technological infrastructure on e-procurement implementation, the study recommends that the top management should prioritize and offer financial support to the implementation of e – procurement in Nzoia Sugar Company.

Finally, on the legal framework and its hindrance to e-procurement implementation, formal recognition backed by legislation of the electronic procurement transactions should be legislated to accelerate the' rate of Implementation of e-procurement within the Public Institutions in Kenya.

9. SUGGESTIONS FOR FURTHER STUDIES

The study was only carried out at Nzoia Sugar Company which is a public entity thus the same study should be carried out in other public entities to find out if the same results will be obtained.

There is need to carry out further studies in private entities to compare the results with those found in this study. In addition there is need to determine other factors that pose a challenge in e-procurement implementation such as top management support and financing/cost other than those covered in this study.

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