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# FACTORS INFLUENCING IMPLEMENTATION OF E-PROCUREMENT IN BUNGOMA COUNTY

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**ABSTRACT**

*The general objective of this study was to establish factors influencing the implementation of e-procurement in Bungoma County. The study adopted descriptive survey research design. The researcher's target population for investigation was drawn from procurement departments which comprised of 52 employees who were directly involved in procurement activities. The target population constituted 4 senior managers, 12 middle-level managers and 36 support staff. So the census size for this study comprised of the 52 procurement employees. Census technique method was adopted to identify the respondents. This size was considered manageable and each respondent was easily accessible. Structured questionnaire was used in this study to collect quantitative data. Descriptive statistics like percentages, ratio, mean and standard deviation was used to analyze quantitative data. Multiple regressions and Pearson's correlation analysis was also adopted to determine the influence of independent variable and the dependent variable. Statistical Package for Social Sciences (SPSS 24.0) was used to analyze data. The study found that the factors have statistically significant influence on implementation of e-procurement of County Government of Bungoma, Kenya. Of these factors, Top management support had the highest statistically significant influence on implementation of e-procurement of County Government of Bungoma, Kenya, followed by, technological infrastructure and lastly staff competence. The study recommended that county governments should procure infrastructure such as high speed computers and internet services in order to facilitate e-procurement implementation. The study recommended that e-procurement system must have mechanisms for identifying and authenticating the user who places an order so that the supplier knows it is safe to fulfill the order. The study recommended that formal recognition backed by legislation of the electronic procurement transactions should be legislated to accelerate the' rate of Implementation of e-procurement within county governments in Kenya.*

***Key Words:*** *E-Procurement, Technological Infrastructure, Top Management Support, Implementation*

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## INTRODUCTION

In the recent past years, most organizations have shifted their daily operations from traditional style to electronic business. This is because traditional procurement process was time consuming and involved huge paper work and manpower as compared to electronic business which increases the speed of business transactions, improves technological infrastructure and allows the development of trust with the suppliers (Ruzindana & Kalaskar, 2016).As a result, governments of both developed and developing countries have embraced ICT in order to improve the quality of public service, increase public access to information and to energize more participation in civic affairs (Asare & Prempeh, 2017).

In Kenya, ICT is considered as a key pillar in the success of vision 2030 which aims at transforming the country into industrialized nation (Osir, 2016) .ICT advancement has enhanced governments across the world to adopt e-procurement as a way to ease access to the information. Due to this, public participation in government tendering process has been noted (Mambo, Ombui & Kagiri2015). Through e-procurement, traditional paper-based documents such as purchase orders, requisitions forms and invoices has been eliminated and it has revolutionized the buying function of an organization by streamlining and automating the labour intensive procurement routines (Rehan & Omwenga, 2017).

E- Procurement is a system of procurement that helps organization to lower the cost of procurement and brings work efficiency. Apart from the normal procurement process of buying goods, works and services, it also involves programs like e- tendering, e- vendor, e-Informing, e-Tendering, e-Auctioning, catalogue management, Purchase e-invoicing, e-payment, and contract management. Worldwide, procurement processes between various parties were organized through mail, phone, fax and electronic data interchange (EDI) and more recently internet (Shukla, Khan & Shah, 2016). E-procurement is done with a software application that includes features for supplier management and complex auctions (Otieno, Muthoni & Mungai, 2013).The two types of e-procurement systems used are the extranets and electronic markets where extranets connect the buyer and its suppliers with a closed network while electronic markets create open networks for buyer and supplier interactions (Korir, Afande & Maina, 2015).

In Kenya, the procurement system was anchored on the supplies manual of 1978, which was supplemented by the Kenyan government circulars that were issued from time to time. The first review of the procurement system was undertaken in 1999 (Osir, 2016). Chebii (2016), while quoting the e-government strategy paper (2004), e-procurement was one of the medium term objectives which were to be implemented by June 2007, however the process has been very slow. County government has explored the use of ICT as procurement options so that they can promote competitiveness and service delivery. It therefore integrates with suppliers/partners firms in supply chain management which helps in achievement of Just-In-Time strategy and streamlines the supply chain by removing inefficient intermediaries (Ngeno & Omwenga, 2015).

The recent government are putting it in the laws through different circular that all public supply chain activities should be done through e-procurement. Rotich and Okello (2015), indicate that the Kenya government actively got involved in adoption of e-procurement when the Jubilee government came into power. Moreover, for County governments in particular, Integrated Financial Management and Information System (IFMIS) was introduced in order to improve governance by providing real time financial information and effectively programs, formulate budget budgets. Mambo *et al*. (2015), revealed that a number of organizations in Kenya have successfully adopted the use of e-procurement technology for service delivery. In the public sector, several models have been tried by different public entities to implement e-procurement. These are

seller centric, buyer centric, e-marketplaces or third-party managed models**.**

County Government of Bungoma was established in 2013 as per the Constitution of Kenya 2010 which provides for the two levels of government. The County lies between latitude 00 28' and latitude 10 30' North of the Equator, and longitude 340 20' East and 350 15' East of the Greenwich Meridian. The County covers an area of 3032.4 Km2. It boarders the republic of Uganda to the North west, Trans-Nzoia County to the North-East, Kakamega County to the East and South East, and Busia County to the West and South West. The county is divided into 9 constituencies and 45 electoral wards. Its Sector Priority is to prevent, detect and eliminate corruption; increase public demand for accountability; enhance public contract management and performance (CIDP 2018-2022).

**Statement of the Problem**

Many organizations are adopting new technologies in their day to day operations. E-procurement systems have proven themselves within various government organizations as an effective tool for instituting procurement reforms and establishing a fully transparent and open procurement environment. Companies that use e-procurement technologies save 42% in purchasing transaction costs due to the easier purchase process and the reduction in purchasing cycle time which increases flexibility. Despite of the many benefits of e-procurement, organizations are facing many difficulties in adaptation of the system. The powers of the County are provided in Articles 191 and 192, and in the Fourth Schedule of the Constitution of Kenya and the County Governments Act of 2012.Bungoma County being a public entity, it has also adopted the e- procurement system in their procurement processes. The county procurement departments are also facing the adaptation problems. The County Governments have lost a lot of money in the procurement processes due to conflict of interests, poor records keeping, inadequate technological infrastructure and accountability, transaction inefficiencies, delays in delivery and collusion with suppliers. There have been many researches done on this topic including factors influencing e-procurement implementation. From the findings, vendor management, contract management, spend analysis, features and infrastructure are the attributes that affect intention towards the participation of an e-procurement system from the previous empirical studies, it is evident that most of them have not investigated factors influencing e-procurement implementation with regard to county government of Bungoma. Further, empirical studies have found inconsistencies in regard to factors affecting implementation of e-procurement therefore making it difficult to come up with conclusive and definite generalization. While some studies have establish positive and significant influence of factors such as technological infrastructure, legal framework, top management support and employee competence (Njagi & Kinoti, 2018; Ruzindana & Kalaskar, 2016; Chebii, 2016), Omwono et al., (2020) failed to indicate significant effect on staff competence on e-procurement implementation. Further, Liu (2018) and Kahiu (2015) found that legal framework was not significant determinant in implementation of e-procurement. Ongola (2017) indicated that top management support negatively influence implementation of e-procurement. This leaves a significant knowledge gap on how these factors affect e-procurement implementation. For any public entity to implement the e procurement system well, there must be a well-structured infrastructure, competent staff and receive enough top management support. The government should also put in place legal frameworks that are well articulated. Therefore, this study seeks to cover the research gap by examining factors influencing the implementation of e-procurement in County Government of Bungoma, Kenya.

**Objectives of the Study**

The general objective of this study was to examine factors influencing the implementation of e-

procurement in County Government of Bungoma, Kenya. The specific objectives were;

- To assess the influence of technological infrastructure on the implementation of e-procurement in the County Government of Bungoma, Kenya.
- To establish the influence of top management support on the implementation of e-procurement in the County Government of Bungoma, Kenya.

The study was guided by the following research hypotheses

- $H_{01}$: Technological infrastructure does not significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya.
- $H_{02}$: Top management support does not significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya.

## LITERATURE REVIEW

### Technology Organization Environment Framework (TOE)

According to Baker (2011), Technology–Organization–Environment (TOE) framework is described in Tornatzky and Fleischer's as the processes of technological innovation (1990).The TOE framework is an organization-level theory that explains that three different elements of a firm's context influence adoption decisions. These three elements are the technological context, the organizational context, and the environmental context. Chongand Olesen (2017) notes that Technological factors include relative advantage, compatibility, complexity, technological readiness, IT infrastructure, perceived direct benefits, perceived indirect benefits and perceived risks. Organizational factors include attitudes towards innovation, financial resources, organizational size, knowledge, information sharing culture, learning culture and top management support. Finally, environmental factors include competitive pressure, environmental uncertainty, regulatory support and trading partner readiness.

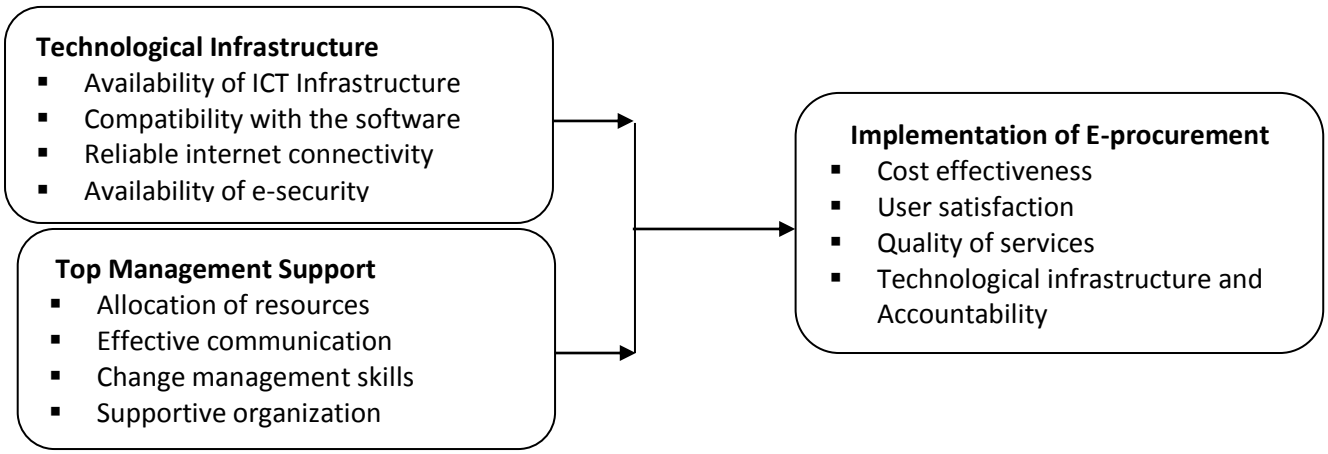
Ismail and Mokhtar (2016) indicate that TOE framework three aspects of a firm's contexts stimulate the adoption and implementation of a technological innovation. These three aspect determines how new technologies can be adopted in a firm. Oliveira and Martins (2011) note that the TOE framework as originally presented, and later adapted in IT adoption studies, provides a useful analytical framework that can be used for studying the adoption and assimilation of different types of IT innovation and has a solid theoretical basis, consistent empirical support, and the potential of application to Information System adoption. This study will therefore adopt this theory to assess the influence of technological infrastructure, top management and legal framework on the implementation of e-procurement in county government of Bungoma, Kenya.

### Expectancy Theory

Expectancy theory is the mental processes regarding choice, or choosing. It explains the processes that people go through to make different choices at work place. This theory was first proposed by Victor Vroom of the Yale School of Management. Simone (2015), reveal that expectancy theory was first developed by Victor Vroom (1964), and later expanded and refined by Porter and Lawler (1968) and others (Pinder, 1987). Expectancy theory has three key elements: Expectancy, Instrumentality, and Valence. A person is motivated to the degree that he or she believes that effort will lead to acceptable performance (expectancy), performance will be rewarded (instrumentality), and the value of the rewards is highly positive (valence). Expectancy is a person's estimate of the probability that job-related effort will result in a given level of performance.

The expectancy theory is based on the following assumptions that the behaviors are determined by a combination of forces in a person and in the environment, that people make decisions about their own behavior in an organization, that the

different persons have different types of needs, desire and goals and that the people make choices from among alternative plans of behavior bases on their perception of the extent to which a given behavior will lead to desired outcome.




**Independent Variables** **Dependent variable**

**Figure 1: Conceptual Framework**

**Empirical Review**

Ahimbisibwe, Wilson and Ronald (2018) define e-procurement as the application of electronic commerce in procurement**.** E-procurement system has replaced the manual systems in order to improve and swift delivery of services. More so, manual system has a significant input on the transaction costs of sourcing and payment for goods and services. According to Bof and Previtali (2010) point out that e-procurement simplifies work procedures and automates processes, for instant in order processing and the handling of invoices and payments. Kassim and Hussin (2013) indicate that public e-procurement system requires integration between government agencies and business organization. It enhances data transfer automation between and within organization which allows the agencies to gain process efficiency.

A study by Oketch and Moronge (2016) note that the applications which form the e procurement landscape are designed to automate the buying cycle, optimize spending, improve process and workflow, support bidding and tendering and facilitate more effective search for products and services via the internet. According to Tsuma and Kanda (2017), implementation of e-procurement depends on a variety of factors which include individual factors such as age or education, organizational innovation whereby decisions are made by committees, organizational size, decentralized organizational structure, supply chain strategy integration, transactional climate and supply chain member pressure, and environmental uncertainty.

Gheysari, Rasli, Roghanian and Jebur (2012) asserts that information technology infrastructure effectiveness can be assessed using criteria such as reliability, operation with low downtime, flexibility, efficiently adapting to changing business requirements, and upgradability, efficiently adapting to or deploying multiple, complex technologies as required. Proper technological infrastructure can efficiently provide homogenous services to customers from within and outside the company.

A study by Arasa and Achuora (2012) revealed that the adoption of new technologies can bring significant changes to the work practices of businesses and resistance to change, however, the changes should be compatible with its infrastructure, values and beliefs. The study

recommended that the government should direct efforts towards improving the IT infrastructure coverage such as fiber optics, telephone lines, and satellite disks. Nevertheless, the IT systems should be made flexible enough to adapt to changes in technologies and the users should be trained on how to secure their systems so that their level of trust in ICT can be improved. Waruguru and Kiruri (2015), conducted a study on factors affecting effectiveness of e-procurement in business organizations, a survey of Safaricom dealers in Nakuru CBD-Kenya.

When introducing e- procurement in an institution, top managers should be front line in supporting the implantation easy adaptation by other officers. Padhi and Mohapatra (2010) examined the adoption of e-procurement in the government departments. From the study, it was revealed that implementation of management policies plays a major role in e-procurement adoption. A study by Suleiman (2015) determined that a management attitude is one of the factors that influence e-procurement adoption. The finding of the study indicated that the adoption of e-procurement in any organization needs support from the top management. Additionally, when top management is aware of the e-procurement opportunities and benefits it encourages their employees to practice e-procurement and also allocate enough resource to enhance adoption of e-procurement. Rotich, Muma and Waruguru (2015) revealed that top management has to play the leadership role, create goodwill among employees, designating a champion, and ensure supplier participation and to put into place continuous measuring process. As per Mambo et al. (2015), top managers' emphasis on e-business facilitate performance gains from e-business adoption.

Farzin and Nezhad (2010) conducted a study on e-procurement, the golden key to optimizing the supply chains system. The study points out that the use of internet technologies in procurement is aimed at realizing faster and more efficient operational procurement processes which bypass the purchasing department and enable those people to concentrate on more strategic tasks. Consequently, e-procurement enables companies to decentralize operational procurement processes and centralize strategic procurement processes as a result of the higher supply chain technological infrastructure provided by E-procurement systems.

It facilitates the buyer/supplier relationships and improves financial control. Bof and Previtali (2010) revealed that successful adoption of e-procurement leads to reduction of transaction costs, operational efficiencies, and a better foundation for decision making. Moreover, it reduces the total cost of acquisition, reduces the time of the purchasing process, reduces the expenses of announcements management and increases technological infrastructure due to the uniformity of access to information without discrimination since the tender documents are online. According to Ombat (2015), many firms adopt e-procurement in an attempt to achieve the proposed benefits of lower costs and improved efficiency, however, it should be noted that the use of e-procurement does guarantee positive outcomes for buyers or suppliers.

According to Ahimbisibwe *et al*. (2016), e-procurement implementation has several benefits which include increase in level of efficiency and effectiveness, faith in transactions, data top management support and security. Waniani et al. (2016) established that e- procurement has a positive effect on an organization efficiency and effectiveness. This is because of huge savings, technological infrastructure, accountability and timely communication between the buyer and the seller which is brought about by embracing e-procurement. Chimtengo (2016) the use of e-procurement system has been one of the effective tools for introducing public procurement reforms and establishing a transparent and open procurement environment. A study by Barasa and Namusonge (2017) established that e-procurement web sites allow qualified and registered users to look for buyers or sellers of goods and services, helps buyers or sellers to specify cost, qualify

customers for volume discounts or special offers and automate some buying and selling. Nevertheless, it helps in initiating and completing transactions therefore leading to user satisfaction.

## METHODOLOGY

The study adopted descriptive survey research design. The target population included employees of Bungoma county government. The respondents were drawn from procurement department, finance and user department which comprised of 52 employees. A structured questionnaire was used in this study to collect quantitative data. The questionnaires contain closed-ended questions. Pilot study was done by selecting five respondents from the population and issuing them with the questionnaire. After data collection, it was cleaned and edited which was done by checking. Data was coded, summarized and then tabulated. Descriptive statistics like percentages, ratio, mean and standard deviation was used to analyze quantitative data. Multiple regressions and Pearson's correlation analysis was also adopted to determine the influence of independent variable and the dependent variable. Statistical Package for Social Sciences (SPSS 24.0) was used to analyze data. Moreover, assumption of normality, homoscedasticity, linearity assumptions and assumption of multicollinearity was tested.

$Y=\beta_0+\beta_1 X_1+\beta_2 X_2+_+\varepsilon$

Where;

Y= Implementation of E-procurement

$\beta_{0=}$ Constant of Regression which is the value of the dependent variable when the independent variable is 0.

$X_{1=}$ Technology infrastructure

$X_{2=}$ Top management support

$\beta_1 \beta_{2\,=}$ Regression co-efficient

ε=Error term

## FINDINGS AND DISCUSSION

### Descriptive Statistics

The study sought the respondents' views on factors influencing implementation of e-procurement in the county government of Bungoma. Descriptive analysis for this section used percentages, frequencies, means and standard deviation to illustrate responses from each variable. The respondents were expected to express their level of agreement on statements related to each variable. The level of agreement ranged from 1-strongly disagree, 2-disagree, 3-Nuetral, 4-agree and 5-strongly agree.

### Technological Infrastructure

The respondents were presented with six statements related to technological infrastructure as per first objective of the study. Percentages are in parenthesis (%) while S.D is the standard deviation. The results were as presented in Table 1.

**Table 1: Technological infrastructure**

| Statements | 5 | 4 | 3 | 2 | 1 | Mean | S.D |
|---|---|---|---|---|---|---|---|
| There is sufficient IT infrastructure | 17 (41.5) | 12 (29.3) | 5 (12.2) | 4 (9.8) | 3 (7.3) | 3.88 | 1.27 |
| There is enough IT equipment which facilitates the e procurement process i.e computers | 10 (24.4) | 26 (63.4) | 1 (2.4) | 2 (4.9) | 2 (4.9) | 3.98 | 0.96 |
| Our county government has adequate software and hardware which enhances the e-procurement process | 8 (19.5) | 15 (36.6) | 11 (26.8) | 3 (7.3) | 4 (9.8) | 3.49 | 1.19 |
| There is reliable internet connectivity & supply to all departments | 6 (14.6) | 19 (46.3) | 5 (12.2) | 5 (12.2) | 6 (14.6) | 3.34 | 1.30 |
| The presence of information security (e-security) helps in the adoption of e-procurement implementation | 7 (17.1) | 23 (56.1) | 2 (4.9) | 6 (14.6) | 3 (7.3) | 3.61 | 1.16 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| There is total security on unauthorized penetration and protection of transaction related data while being transmitted or stored. | 6 (14.6) | 25 (61) | 4 (9.8) | 3 (7.3) | 3 (7.3) | 3.68 | 1.059 |
| **Average** | | | | | | **3.66** | |

From Table 1, majority of the respondents confirmed that there was sufficient IT infrastructure; 41.5% strongly agreed and 29.3% agree. A few of them, 9.8% and 7.3% disagree and strongly disagree respectively; a clear indicator that there is sufficient IT infrastructure. This was also supported by a mean of 3.88. The results also revealed that 63.4% and 24.4% of the respondents agree and strongly agree respectively that there is enough IT equipment which facilitates the e procurement process i.e computers. A mean of 3.98 implied that there is enough IT equipment which facilitates the e procurement process i.e computers.

The results also revealed that 19.5% and 36.6% of the respondents strongly agree and agree respectively that county government has adequate software and hardware which enhances the e-procurement process. A mean of 3.49 implied that county government has no adequate software and hardware which enhances the e-procurement process. In terms of reliability of internet connectivity & supply to all departments, 14.6% and 46.3% of the respondents strongly agree and agree respectively that there is reliable internet connectivity & supply to all departments. A mean of 3.34 indicated that internet connectivity & supply to all departments is not reliable.

The results revealed that 56.1% and 17.1 % of the respondents agreed and strongly agree respectively that presence of information security (e-security) helps in the adoption of e-procurement implementation. A mean of 3.68 indicated that presence of information security (e-security) helps in the adoption of e-procurement implementation. Lastly, 61% of the respondents strongly agreed that there is total security on unauthorized penetration and protection of transaction related data while being transmitted or stored. A mean of 3.68 suggested there is total security on unauthorized penetration and protection of transaction related data while being transmitted or stored.

This finding was consistent with those of Eadie et al. (2010) who concluded that technological infrastructure is quite costly and as a result may prevent some firms from establishing an Electronic Procurement system. Also, Goo & Nam (2007) and Wong et al. (2007) indicate the relevance pertaining to reliability of web-based systems. They noted that if an entity is challenged in this technological area, the Electronic Procurement system as well as process will be a liability to the entity because Electronic Procurement systems are mainly based on the web. In addition, poor updating systems may reveal inaccurate information 40about the invoice owing to a customer. Such issues present further technological issues pertaining to information reliability as indicated by Wei & Wang (2007). This finding concurs with those of Anttiroiko (2008) who noted that the lack of basic facility to facilitate e-procurement including irregular power supply, the high cost of establishing an Electronic Procurement system and poor telecommunication network coupled with employees' lack of necessary skills and proficiency to handle e-tendering processes were major challenges inhibiting implementation of Electronic Procurement in Nigeria

**Top management support**

The sampled respondents were provided with six statements related to top management support as per second study objective. The relevant results were as shown in Table 2.

**Table 2: Top management support**

| Statements | 5 | 4 | 3 | 2 | 1 | Mean | S.D |
|---|---|---|---|---|---|---|---|
| Managers are committed to e-procurement implementation | 24 (58.5) | 9 (22) | 1 (2.4) | 2 (4.9) | 5 (12.2) | 4.10 | 1.39 |
| Top management provides the necessary resources on time | 8 (19.5) | 18 (43.9) | 10 (24.4) | 3 (7.3) | 2 (4.9) | 3.66 | 1.04 |
| Managers provide sufficient budget allocation for ICT infrastructure | 4 (9.8) | 18 (43.9) | 13 (31.7) | 5 (12.2) | 1 (2.4) | 3.46 | 0.92 |
| The management considers computer competencies and skills as prerequisite in e-procurement and thus they provide training | 18 (43.9) | 13 (31.7) | 5 (12.2) | 1 (2.4) | 4 (9.8) | 3.98 | 1.25 |
| Effective communication and coordination by top management leads to effective adoption of e-procurement. | 17 (41.5) | 10 (24.4) | 4 (9.8) | 6 (14.6) | 4 (9.8) | 3.73 | 1.40 |
| Managerial policies, set goals, strategies and the organizational structure favour implementation of e-procurement | 22 (53.7) | 8 (19.5) | 6 (14.6) | 2 (4.9) | 3 (7.3) | 4.07 | 1.253 |
| **Average** | | | | | | **3.83** | |

Majority of the respondents confirmed that managers are committed to e-procurement implementation; 58.5% agree and 22.0% strongly agree to this as shown in table 2 above. A mean of 4.10 indicated that managers are committed to e-procurement implementation. In terms of top management providing the necessary resources on time, 43.9% and 19.5% of the respondents agreed and strongly agreed respectively confirmed with this assertion. A mean of 3.66 indicated that top management provided the necessary resources on time.

From the results, 9.8% and 43.9% of the respondents strongly agree and agree respectively that managers provide sufficient budget allocation for ICT infrastructure. A mean of 3.46 indicated that not all respondent were of opinion that managers provided sufficient budget allocation for ICT infrastructure and this was also supported by 31.7% of the respondents who were neutral. Slight majority of the respondents (43.9%) strongly agreed that the management considers computer competencies and skills as prerequisite in e-procurement and thus they provide training while 31.7% agreed. A mean of 3.98 indicated that the management considered computer competencies and skills as prerequisite in e-procurement and thus they provide training.

In terms of communication and coordination, 41.5% and 24.4%of the respondents strongly agreed and agreed respectively that effective communication and coordination by top management leads to effective adoption of e-procurement. A mean of 3.73 revealed that effective communication and coordination by top management led to effective adoption of e-procurement. Lastly, 53.7% and 19.5% of the respondents strongly agreed and agreed respectively that managerial policies, set goals, strategies and the organizational structure favour implementation of e-procurement. However, 7.3% strongly disagree while 14.6% were neutral.

This is consistent with Mohammadi (2013) whose findings revealed that many entities are dependent on the commitment and motivation of the top management in influencing junior officers towards implementation of e-procurement by providing necessary resources. Furthermore, Teo et al. (2008) note that if the managers at the top level fail to support this implementation process, it becomes a

failure. This finding concurs with those of Mose et al. (2013) concluded that management support is the most critical success factor in Electronic Procurement implementation in large scale firms in Nairobi. The support of the management is relevant in ensuring that the implementation of Electronic Procurement is successful. If there is no support, the employees tend to lack direction on how to implement the relevant processes pertaining to Electronic Procurement.

**E-procurement Implementation**

The sampled respondents were provided with six statements related to e-procurement implementation. The relevant results are as shown in Table 3.

**Table 3: E-procurement Implementation**

| Statements | 5 | 4 | 3 | 2 | 1 | Mean | S.D |
|---|---|---|---|---|---|---|---|
| Our county government implements e-procurement during the procurement process hence obtaining quality of services | 11 (26.8) | 20 (48.8) | 3 (7.3) | 6 (14.6) | 1 (2.4) | 3.83 | 1.07 |
| E-procurement implementation has enhanced secured and low cost procurement transaction | 8 (19.5) | 18 (43.9) | 7 (17.1) | 4 (9.8) | 4 (9.8) | 3.54 | 1.21 |
| Procurement systems are efficient and effective thus leading to cost effectiveness | 16 (39) | 20 (48.8) | 2 (4.9) | 2 (4.9) | 1 (2.4) | 4.17 | 0.92 |
| Purchase requisition are made online therefore resulting to user satisfaction | 14 (34.1) | 15 (36.6) | 5 (12.2) | 2 (4.9) | 5 (12.2) | 3.76 | 1.32 |
| Our suppliers have fully adopted e-procurement system thus increase in technological infrastructure and accountability | 7 (17.1) | 11 (26.8) | 14 (34.1) | 6 (14.6) | 3 (7.3) | 3.32 | 1.15 |
| There is online submissions of proposals and quotation which leads to technological infrastructure and accountability | 15 (36.6) | 18 (43.9) | 4 (9.8) | 3 (7.3) | 1 (2.4) | 4.05 | .999 |
| **Average** | | | | | | **3.78** | |

Results in Table 3 showed that 48.8% and 26.8% (8) of the sampled respondents agreed and strongly agreed respectively that county government implements e-procurement during the procurement process hence obtaining quality of services. A mean of 3.83 indicated that county government implemented e-procurement during the procurement process hence obtaining quality of services similarly, 43.9% and 19.5% of the sampled respondents agreed and strongly agreed that E-procurement implementation has enhanced secured and low cost procurement transaction. A mean of indicated that E-procurement implementation has enhanced secured and low cost procurement transaction

In regard to cost effectiveness, 48.8% of the respondents agreed that procurement systems are efficient and effective thus leading to cost effectiveness while 39.0% strongly agreed. A mean of 4.17 revealed that procurement systems are efficient and effective thus leading to cost effectiveness. Slight majority of the respondents agreed that purchase requisition are made online therefore resulting to user satisfaction as shown by 36.6% and further 34.1% who strongly agreed with a mean of 3.76

Suppliers have fully adopted e-procurement system thus increase in technological infrastructure and accountability as shown by 26.8% of the respondents who agreed and 17.1% who strongly

agreed with a mean of 3.32. However, 34.1% of the respondents were neutral implying that not all respondents were in agreement that suppliers have fully adopted e-procurement system thus increase in technological infrastructure and accountability. Lastly, 43.9% of the respondents agreed that there are online submissions of proposals and quotation which leads to technological infrastructure and accountability and 36.6% strongly agreed. Arbin and Hultman (2008) noted in his research findings that, the biggest reason why companies implement an e-procurement system is the demand to reduce costs and increase compliance in choosing suppliers. It is found that many institutions have not been able to implement e-procurement because they lack the required infrastructure like internet, computers, and software's.

**Inferential Analysis**

**Table 4: Correlations**

| | | TI | TMS | IeP |
|---|---|---|---|---|
| **TI** :Technological Infrastructure | Pearson Correlation | 1 | | |
| | Sig. (2-tailed) | | | |
| | N | 41 | | |
| **TMS**: Top Management Support | Pearson Correlation | -.012 | 1 | |
| | Sig. (2-tailed) | .938 | | |
| | N | 41 | 41 | |
| **IeP:** Implementation of e-procurement | Pearson Correlation | .447** | .529** | 1 |
| | Sig. (2-tailed) | .003 | .000 | |
| | N | 41 | 41 | 41 |

**Simple Linear Regression**

**Technological infrastructure and Implementation of e-procurement**

The first objective was to assess the influence of technological infrastructure on the implementation of e-procurement in the County Government of Bungoma, Kenya. This was achieved using simple regression analysis, and the findings were presented in Table 5.

**Table 5: Model Summary; Technological infrastructure and Implementation of e-procurement**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .447[a] | .200 | .179 | .32204 | .200 | 9.725 | 1 | 39 | .003 |

a. Predictors: (Constant), Technological infrastructure

b. Dependent Variable: Implementation of e-procurement

**ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1.009 | 1 | 1.009 | 9.725 | .003[b] |
| | Residual | 4.045 | 39 | .104 | | |
| | Total | 5.053 | 40 | | | |

a. Dependent Variable: Implementation of e-procurement

b. Predictors: (Constant), Technological infrastructure

| Coefficients[a] | | | | | |
|---|---|---|---|---|---|
| **Model** | **Unstandardized Coefficients** | | **Standardized Coefficients** | **T** | **Sig.** |
| | **B** | **Std. Error** | **Beta** | | |
| 1 (Constant) | 1.591 | .682 | | 2.333 | .025 |
| Technological infrastructure | .635 | .203 | .447 | 3.118 | .003 |

a. Dependent Variable: Implementation of e-procurement

From the Table 5, the findings indicated that technological infrastructure had a value of r squared = 0.200 which translated to 20.0%. This was the percentage variation in implementation of e-procurement as a result of technological infrastructure. The results showed that F(1,39) = 9.725 and P value was 0.003 at 5% level of significance. The results indicated that technological infrastructure had a statistically significant effect on implementation of e-procurement of County Government of Bungoma.

The study also sought to find out the regression coefficient of technological infrastructure on implementation of e-procurement of County Government of Bungoma, Kenya. The value of regression coefficient B = 0.635 indicated that an increase in a unit of technological infrastructure was associated with an increase in 0.635 units of implementation of e-procurement. Based on the regression coefficient results, simple linear regression model equation was written as

Y = 1.591+0.635X1

Where;

Y = represents Implementation of e-procurement

X1 = represents Technological infrastructure

From the results, it was evident that technological infrastructure has significant positive effect on e-procurement implementation. Increase in acquisition of technological infrastructure such as hardware and software would results to better implementation of e-procurement in the county government of Bungoma.

**Top management support and Implementation of e-procurement**

The second objective was to establish the influence of top management support on the implementation of e-procurement in the County Government of Bungoma, Kenya. This was achieved using simple regression analysis, and the findings are presented in Table 6.

**Table 6: Regression Analysis; Top management support and Implementation of e-procurement**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .529[a] | .280 | .262 | .30537 | .280 | 15.189 | 1 | 39 | .000 |

a. Predictors: (Constant), Top management support

b. Dependent Variable: Implementation of e-procurement

| ANOVA[a] | | | | | |
|---|---|---|---|---|---|
| **Model** | **Sum of Squares** | **Df** | **Mean Square** | **F** | **Sig.** |
| Regression | 1.416 | 1 | 1.416 | 15.189 | .000[b] |
| 1 Residual | 3.637 | 39 | .093 | | |
| Total | 5.053 | 40 | | | |

a. Dependent Variable: Implementation of e-procurement

b. Predictors: (Constant), Top management support



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| Model | | Coefficients[a] Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.438 | .585 | | 2.455 | .019 |
| | Top management support | .631 | .162 | .529 | 3.897 | .000 |

a. Dependent Variable: Implementation of e-procurement

From the Table 6, the findings revealed that top management support had a value of r squared = 0.280 which explains that 28.0% variation of implementation of e-procurement is as a results of top management support. The results showed that F (1,39)= 15.189 and P value was 0.000. The results indicated that top management support had a statistically significant influence on implementation of e-procurement of County Government of Bungoma, Kenya at 5% level of significance.

The study also sought to find out the regression coefficient of top management support on implementation of e-procurement of County Government of Bungoma. The value of regression coefficient B = 0.631 indicated that an increase in top management support by a unit was associated with an increase in 0.631 units of implementation of e-procurement. Based on the regression coefficient results, simple linear regression model equation was written as

Y = 1.438+0.631X2

Where

Y = represents Implementation of e-procurement

X2= represents Top management support

The study found out that top management was significant factor in the electronic procurement implementation in the county government of Bungoma. Top management support ensures that required resources are available for effective implementation of e-procurement. Besides, top management support is vital for effective communication among different stakeholders as well as ensuring organization structure and culture promotes implementation of e-procurement.

**Multiple Linear Regression**

The study sought to find out the effect of the combined influence of two factors namely, Technological infrastructure and Top management support on implementation of e-procurement of County Government of Bungoma, Kenya. To accomplish this, Multiple Regression Analysis test was used and the results were presented in Table 7 and 8.

**Table 7: Multiple Linear Regression**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics R Square Change | F Change | df1 | df2 | Sig. F Change |
|---|---|---|---|---|---|---|---|---|---|
| 1 | .841[a] | .707 | .674 | .20287 | .707 | 21.696 | 4 | 36 | .000 |

a. Predictors: (Constant), Technological infrastructure, Top management support

b. Dependent Variable: Implementation of e-procurement

From the table 7, the findings showed that r squared = .707 which indicated that 70.7% of variations of implementation of e-procurement was caused by the four factors, while 29.3% variations of implementation of e-procurement was caused by other unexplained factors not covered in this study.

From the findings, the results showed that F(4,36) = 18.166 and P = 0.000 which indicated that the four factors had statistical significant effect on implementation of e-procurement of County Government of Bungoma, Kenya.

The study also sought to find out the regression coefficient the four factors on implementation of e-procurement of County Government of Bungoma, Kenya and the results are presented in Table 8.

**Table 8: Multiple Linear Regression Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | -1.952 | .629 | | -3.105 | .004 |
| | Technological infrastructure | .412 | .136 | .290 | 3.036 | .004 |
| | Top management support | .429 | .123 | .360 | 3.483 | .001 |

a. Dependent Variable: Implementation of e-procurement

Based on the beta coefficient results, the equation of Multiple Linear Regression model was written as,

$Y = -1.952 + 0.412X_1$

Where;

Y = Implementation of e-procurement (Dependent variable)

$X_1$ = Technological Infrastructure

$X_2$ = Top management support

From the table, the results showed that technological infrastructure practices had regression coefficient B =0.412 which indicated that an increase in technological infrastructure by 1 unit was associated with an increase of 0.412 units of implementation of e-procurement. Technological infrastructure plays a key role in implementation of e-procurement without which integration of public procurement entities will not materialize. Availability of the required equipment influences not just the process of the strategy implementation but also the integrity and quality of information exchanged between purchaser and the supplier of goods and services. These findings are supported by Nasidai (2016) who established that technological infrastructure influence e-procurement implementation. Azanlerigu and Akay (2015) also noted that technological infrastructure plays a key role in adoption of e-procurement without which integration of public procurement entities will not materialize.

Top management support practices had B = 0.429 which indicated that a change in top management support by one unit was associated with an increase of 0.429 units of implementation of e-procurement. Top management support is critical to the success of an e-procurement implementation due to the fact that the executive management team is responsible for setting the vision and goals, bringing about collective commitment for change in process and organizational structures, and formulating the policies and strategies necessary to put an e-procurement initiative in place.

**Hypothesis Testing**

First, study hypothesis one ($H_{01}$) stated that technological infrastructure does not significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya. Multiple regression results indicated that technological infrastructure does significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya ($\beta$ = 0.412, P=0.004 at $p<0.01$). Hypothesis one was therefore rejected. The results indicated that a single improvement in technological infrastructure will lead to 0.412 unit improvement in implementation of e-procurement of County Government of Bungoma, Kenya.

Secondly, study hypothesis two ($H_{02}$) stated that top management support does not significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya. Multiple regression results indicated that top management support has significant influence on implementation of e-procurement of County Government of Bungoma, Kenya ($\beta$ = 0.429, P=0.001 at $p<0.01$). Hypothesis two was therefore rejected. The results indicated that a single improvement in top management support will lead to 0.429 unit

improvement in implementation of e-procurement of County Government of Bungoma, Kenya.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the study findings, it was concluded that the four factors have statistically significant influence on implementation of e-procurement of County Government of Bungoma, Kenya. Of these factors, Top management support had the highest statistically significant influence on implementation of e-procurement of County Government of Bungoma, Kenya, followed by legal framework, technological infrastructure and lastly staff competence.

The study concluded that technological infrastructure does significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya. Increase in the availability of technological infrastructure would results to increase in the implement of e-procurement. Technological infrastructure such as computer hardware and software compatibility as well as absolute security enhanced e-procurement process and improves user satisfaction.

The study further concluded that top management support does not significantly influence the implementation of e-procurement in County Government of Bungoma, Kenya. This implies that improvement in top management support and commitment would results to increase in implementation of e-procurement. Top management considered computer competencies and skills as prerequisite in e-procurement and thus they provide training and other resources. Top management also support various managerial policies, set goals, strategies and the organizational structure that favor implementation of e-procurement.

The study recommended that county governments should procure infrastructure such as high speed computers and internet services in order to facilitate e-procurement implementation. The organizations should also ensure that it integrates the e-procurement system to the financial management system in order to facilitate e-procurement implementation.

The study recommended county government should hire competent staffs and deploy them appropriately according to their skills and competence. The study recommended that county governments should train staff on the use of e-procurement tools in order to enhance the implementation of e-procurement. The institutions should also employ qualified staff and avail them with electronic procurement manual to guide on e-procurement processes and assist in the implementation of e procurement.

The County government top management should also establish an information and communication technology section with adequate resources so as to offer the required support during the implementation of e-procurement. The section should be made an integral part of the organization structure through effective communication structure.

### Areas for further Research

This study examined factors influencing the implementation of e-procurement in County Government of Bungoma, Kenya. The factors included technological infrastructure, top management support. The study recommends that future studies should focus on the other factors such as supplier compatibility so as to establish how they influence e-procurement implementation.

The study did not use any moderating variable, mediating variable or intervening variable. Therefore, the study recommended that future study should consider use either or all of them so as to establish whether stated factors strengthens the relationship between the factors and e-procurement implementation.

The study focused on factors influencing the implementation of e-procurement in County Government of Bungoma, Kenya, further study should examine influence of e-procurement implementation on procurement performance of same county or other counties in Kenya.

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