

The Effect of E-Procurement Practices on Effective Procurement in Public Hospitals: A Case of KISII Level 5 Hospital

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Abstract

The purpose for this research was to assess the effect of e-procurement on efficient procurement in public hospitals. The objectives of the study were to assess the extent to which e-procurement has improved the quality of goods in public hospitals, to determine the extent to which e-procurement has reduced price charged for goods purchased in public hospitals and to identify the extent to which e-procurement has ensured best value for money in public hospitals procurement. The study established that Kisii Level 5 hospital uses e-tendering, e-quotations and e-sourcing as the main e-procurement applications and that the greatest challenges faced when using e-market provider was inadequate funding, organization's inability to handle change management and lack of training of employees on how to use the system. The study concluded that public hospitals have adopted some of the e-procurement applications regardless of the challenges that accompany the adoption.

Key words : E-procurement, procurement, tender, hospital

1. Introduction

Public procurement is defined as the purchase of commodities and contracting of construction works and services if such acquisition is effected with resources from state budgets, local authority budgets, state foundation funds, domestic loans or foreign loans guaranteed by the state, foreign aid as well as revenue received from the economic activity of state. Public procurement thus means procurement by a procuring entity using public funds (World Bank, 1995).

Public procurement must be transacted with other considerations in mind, besides the economy. These considerations include accountability, non-discrimination among potential suppliers and respect for international obligations. It is worth noting that unlike private procurement, public procurement is a business process within a political system and has therefore significant consideration of integrity, accountability, national interest and effectiveness (Wittig, 1998). Before the introduction of Public Procurement and Disposal Act (2005), the government of Kenya through the Financial Regulations of 1970, gave the Ministry of finance the overall responsibility of regulating the procurement of goods, works and services (Mose, 2012). She further argues that the Ministry of finance communicated all procurement issues to government department through circulars. Later the government realized that this procurement system had several deficiencies that contributed to huge losses in public funds. The procurement system was noted to lack transparency, accountability and fair competition.

Besides, it was realised that the Procurement personnel were not adequately trained and there was also lack of professionalism amongst themselves, and there was no professional body to oversee and install discipline among procurement officers (Mose,2012). It was in view of all these shortcomings that the Kenya government in conjunction with other stakeholders like the International Trade Centre, World Bank and the Africa Development Bank, thought of looking for a way to eliminate the deficiencies by initiating the procurement reform process. As Mose (2012) notes, the reform process was meant to create a system that allowed proper delegation of authority, procurement threshold, planning and development of supplies manual. The primary focus was to address the issue of procurement laws, establish appropriate procurement Institutions and entities, and create adequate and timely monitoring and evaluation mechanism. This marked the birth of Public Procurement Regulation (2001) and later the Public Procurement and Disposal Act (2005).

Manual procurement system has been in use not only in the private sector but also in the government state corporations. Public procurement is an important function of government (Thai, 2001). Instead of satisfying requirements for goods, works, systems, and services in a timely manner (Vaidya, Sajeev and Callender, 2006), the Kenya procurement system had proved to be long, cumbersome and time consuming. This procurement system had several deficiencies that contributed to huge losses in public funds (Mose, 2012). It has also proved to be costly for both buyer and supplier or organizations, besides being regarded as a perpetrator of corruption. However, (Wittig, 2003; Callender & Schapper, 2003) that noted that a good procurement system has to meet the basic principles of good governance: transparency, accountability, and integrity. With these in mind, the government in conjunction with decided to introduce e-procurement in state corporations. A pilot plan was initiated and Kisii Level 5 Hospital was chosen as one of the pilot places. Therefore study aimed to establish whether e-procurement has achieved its intended objectives of making procurement more efficient and effective. The objectives of the study were to assess the extent of use of e-procurement in public hospitals, to identify the various traditional procurement problems that have been reduced by the introduction of e- tendering in public hospitals and to determine the extent to which the traditional procurement problems have been reduced through e-procurement.

2. Literature Review

Procurement activities can be grouped and defined in three different ways: indirect procurement, direct procurement and sourcing (Minahan and Degan, 2001) as quoted in Eadie et al (2007). They further argue that indirect procurement involves selecting, buying and management of supplies for the day to day running of the company while direct procurement involves buying goods and organizing activities to manufacture finished products. Sourcing can apply to both indirect and direct procurement and involves a four phase model (information, negotiation, settlement, and after-sales) (Kim and Shunk, 2003) as quoted in Eadie et al (2007). They note that tendering involves the first three stages of this model. Electronic procurement / tendering is not a strategy in itself but the use of electronic means to carry out the procurement / tendering process (Minahan and Degan, 2001) as quoted in Eadie (2007).

Thought the buying process has considerably changed with the introduction of the internet and e-procurement removing lost time and errors resulting from the exchange of paper and retyping of data (Egbu et al, 2003), most African countries seem to lag behind in embracing this technology. This would be attributed to either resistance to change or the cost implication (direct and indirect) needed to initiate the system. In Europe however, most countries have operationalized e-procurement.

2.1 Types of E-Procurement

Baily (2008) classifies e-procurement into the seven categories: the first is Web-based ERP (Enterprise Resource Planning). This deals with creating and approving purchasing requisitions, placing purchase orders and receiving goods and services by using a software system based on Internet technology. The second category is E-MRO (Maintenance, Repair and Operations) which deals with creating and approving purchasing requisitions, placing purchase orders and receiving non-product related MRO supplies. The third type is E-sourcing. This involves Identifying new suppliers for a specific category of purchasing requirements using Internet technology. The fourth type is E-tendering which involves sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology.

E-reverse auctioning is another type of e-procurement. This uses Internet technology to buy goods and services from a number of known or unknown suppliers. The sixth type is E-informing which involves gathering and distributing purchasing information both from and to internal and external parties using Internet technology. The last type of e-procurement, according to Baily (2008), is E-market sites. Here, buying communities can access preferred suppliers' products and services, add to shopping carts, create requisition, seek approval, receipt purchase orders and process electronic invoices with integration to suppliers' supply chains and buyers' financial systems.

2.2 Benefits of E-Procurement

According to Eadie et al (2007), An organisation which uses E-procurement has the following advantages: First, Price reduction in tendering: Empirical studies carried out Gebauer et al (1988) in the United States of America indicated that the two most important measures for the success of procurement processes are cost and time. In this method, there is no paperwork, postage fee and other costs associated with preparation and sending tender documents. It is also faster to send a document electronically as compared to the traditional method of sending tender documents through post office. It results to improved order tracking and tracing, for it is much easier to trace the orders and make necessary corrections in case an error is observed in the previous order.

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

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

Another benefit of e-procurement is improvement of communication: Eadie et al (2007) argues that e-procurement allows sections of electronic documentation to flow through the supply chain; it improves the speed of returns and subcontractor price visibility. He further notes that since it is easier to communicate requirements in a quicker more accessible manner, it will result in a better understanding of requirements and due compliance besides allowing clients to gauge the state of the market by seeing how much interest is shown in the tender. Hawking et al, (2004) as quoted in Eadie et al (2007) considered market intelligence and the decisions made on that intelligence as two separate drivers. They however state that since reliable procurement decisions cannot be made without market intelligence and each is reliant on the other for the purpose of this study these two are considered together as "Improved Market Intelligence and Enhanced Decision making". A reduced Operating and Inventory cost is also another benefit of e-procurement: This is from the fact that much if not all paperwork is eliminated. Postage costs are also not incurred, among other expenses associated with sending and receiving documents when sending them by post.

Other benefits are enhanced inventory management, increased accuracy of production capacity and negotiated unit cost reduction (Hawking et al, 2004) as quoted in Eadie (2007).

2.3 Perceived challenges with E-Procurement

Despite its benefits, e-procurement is also faced with some problems that hinder its adoption in various departments. Eadie (2007) identifies the following notable challenges: Company culture and upper management support: Davila et al (2003) points out that resistance to change, lack of a widely accepted solution and lack of leadership, which are cultural, are some of the biggest barriers to the introduction of e-procurement within the public sector. To counter this problem, Eadie (2007) points out that a cultural change needs to take place prior to adoption of an e-procurement system. People need to be appointed and backed with full senior management support in order to effect this change. Adequate sensitization on the system will greatly reduce the resistance to the change. As pointed out by Eadie (2007), it is the cultural change brought about by senior management support which can enable e-procurement to be successfully implemented. Another challenge is uncertainty as to the legal position of e-procurement. Some organizations doubt whether electronically sent documents can be recognized by a third party as valid or legal. For example, Wong and Sloan (2004) in their study quoted in Eadie et al (2007) showed that although ICT is recognized to have improved communication in construction, on the negative side it also showed that only 26% of respondents agreed that ICT was acceptable as admissible written proof during construction. Only 17% thought that it was acceptable as a written notice. The same results were also noted by Julia-Barcelo (1999). Lack of IT infrastructure, is also another challenge of e-procurement. This was evident in the research carried out by Wong and Sloan (2004) as quoted in Eadie et al (2007) who noted that most companies lacked the relevant technology to carry out e-procurement. The same sentiments are shared with Harrigan (2008) whose research found out that technological integration, data quality, system-to-system integration, and ICT/technical issues have been identified as major challenges for many organizations when implementing e-procurement (Harrigan,2008).

The fourth challenge is the cost implications of the system. Some organizations perceive the system is too expensive to implement. Budgeting and costs, change management, as well as need of training and resources Harrigan (2008). Therefore in their opinion, they would rather stick to their system. Furthermore, engaging suppliers in the process - especially smaller organizations - is also proving to be difficult given the level of investment expected in terms of providing catalogue information to buyers, and marketplaces using different technologies, platforms and business languages (OGC, 2002). As noted by Heywood (2002), sometimes e-Procurement results in large investments of time and money, without absolute certainty that it's full potential will be achieved every time. Besides, there is also lack of technical expertise. Most organizations lack the expertise to operate the system if initiated. In their view, embracing e-procurement technology implies employing the necessary manpower to operate it. Lack of e-procurement knowledge / skilled personnel is another barrier hindering smooth implementation of e-procurement. The older generation that has not kept up to the advances in IT related issues. This makes them rely heavily on traditional forms and means of procurement. In fact, this forms the majority of those against change, especially when the change requires anything more than the training they already have. Therefore, as e-Procurement includes new technologies and changes in traditional procurement approaches, the need to train staff in procurement practices and the use of e-Procurement tools are critical to the success of an e-Procurement initiative (World Bank, 2003).

The seventh challenge stated by Eadie (2007) is lack of a business relationship with suppliers capable of e-procurement. Hawking et al (2004) argues that lack of business relationships with suppliers showing the need for an e-procurement enabled supply chain as another barrier for the implementation of e-procurement. The eighth challenge is Security of transactions. Working on the internet has become risky due to hacking of information. This has made organizations fear using it. Banks have lost money. Data which is transmitted on the World Wide Web can be garbled, can reassemble wrongly at the other end, or can display only partially because of incompatible software (Jennings, 2001). There are also interoperability concerns: Providing procurement information over the internet produces interoperability concerns. This is due to the fact that software companies have sought to make their product unique. In doing so, they have endeavoured to stop migration of data between systems. Rankin (2006) further shows that compatibility, interfacing with other systems and stability, are technical issues which have become barriers to e-procurement implementation. Lastly, organizations are of the view that there is no business benefit realized.

A research by Egbu et al (2004) established that there is no significant business benefit realized by embracing e-procurement. Mose (2012) did a research on an assessment of the extent of compliance with public procurement and disposal act 2005 in level 5 hospitals in Kenya. This was a case study of Kisii level 5 hospital in Kisii County. The main objective of the study was to assess the extent of compliance with PPDA (2005) at Kisii Level 5 hospital. Her research established that those members of staff with responsibility of handling procurement matters had not been sensitized on PPDA (2005) and its regulations (2006). She further noted that the hospital had complied on areas of tendering which was done competitively, inspection and acceptance of goods, works and services; and appointment of committee members. This is evident when the hospital has got 4 standing committees represented. However, the research noted that the hospital had not complied in areas of procurement planning, lead-time pricing, meeting user specifications which might have been the reason for shortages, partial deliveries and stock outs resulting to not meeting PPDA (2005) objectives. The research recommended that Level 5 hospitals in Kenya should be advised to come up with a training policy for their staff, and sensitize their staff on Procurement matters.

To avoid the problems of stock-out, the research suggested that the procurement units and suppliers should work as partners to enhance their relationship and that quality should be the centre in all purchasing activities since “Meeting the user’s specification makes the work of inspection and acceptance committee easier, and reduces returned supplies and re-works of works and service which lengthens lead-time.” Mose (2012). The research further suggested the following: First, the price quoted and terms of payment should be clearly negotiated to avoid non-delivery and partial-deliveries which leads to stock-outs. Secondly, procurement plans should be prepared in time, consolidated in line with annual budget estimates, and presented to the Accounting Officer of the entity for approval before 1st July of any financial year since this will reduce under-stocking and over-stocking. Lastly, the cost sharing funds should also be projected and planned for accordingly.

3. Research Methodology

The study was conducted through a descriptive research design. The population of interest for the study consisted of all the heads of departments in all the pilot places. The sample population was all the 6 departmental heads of Kisii Level 5 hospital. This was because the Departmental heads are the ones involved in making requisitions for the departments they head and therefore are assumed to be conversant with the procurement procedures. This implies that they are in a position to answer the questions inquiring about e-procurement.

The research involved a census of all the 6 heads of departments of Kisii Level 5 hospital. The study adopted a census research design since the number of heads of department is small and hence it is assumed that each one of them will be easily accessible. Data were collected through self-administered questionnaire. A five point Likert scale type of questionnaire was used to test the level of agreement with the questions by the departmental heads. The self-administered questionnaire was given to all the 6 respondents by the researcher within a period of four days. After two days, the questionnaires were collected by the respondents. Data were tabulated, then analyzed by use of descriptive statistics. For descriptive statistics, the measures of central tendency (weighted mean) and measures of dispersion were used. Results were then summarized in tables, charts and graphs. Data analysis enables the researcher to make deductions as to the impact of e-procurement on efficient and effective procurement in public hospitals.

4. Results

4.1 Length of Service as the Head of the Department

Respondents were asked to indicate the duration for which they had worked as hospital workers. The results showed that 1 respondent had served as head of department for less than 2 years while 3 respondents had served as heads of department for duration between 2 and 4 years. It was also evident from the study that 6 respondents had served as heads of departments for duration between 5 and 7 years while 2 respondents had served as heads of department for over 7 years. This implies that majority of the respondents have adequate experience as heads of department and hence have adequate knowledge on matters pertaining to process of procurement.

4.2 Extent of Use of e-procurement Application at Kisii Level 5 Hospital

Respondents were required to indicate the type of e-procurement application that was available at the Kisii Level 5 hospital as at then. All the respondents were in agreement that there existed e-advertising at the hospital.

The study further indicated that 91.7% of the respondents stated that there was e-tendering and e-quotations while 83.3% supported the claim that the hospital practiced e-sourcing. However, the research noted that the hospital did not practice e-MRO, e-reverse auctioning and web-based enterprise resource planning as evident in their support by respondents at 0%, 8.3% and 8.3% respectively.

4.3 Challenges Encountered in Using E-Market Provider

The study sought to know the challenges encountered in using e-market provider. The results are presented in table 1 below. The greatest challenges faced by the respondents when using e-market provider was inadequate funding, organisation's inability to handle change management and lack of training of employees on how to use the system. These factors were rated at 2.83, 2.75 and 2.50 respectively on a five point Likert scale, implying that the employees encountered these challenges to a "little extent" tending to "moderate extent". Other notable challenges identified by the respondents include adoption of E-procurement at a slow pace, inadequate responding to queries by the system provider, suppliers not being ready to use this system and unfavourable payment when using the system both to the hospital and the supplier. These factors were rated at 2.42, 2.25, 2.17 and 2.17 respectively on a five point Likert scale. However, in the respondents' view, poor system design, low speed of system uploading and downloading and lack of confidentiality of the information sent did not pose any challenges to the respondents since they rated these factors at 1.50, 1.67 and 1.92 respectively on a five point Likert scale, implying "no extent". This means that inadequate funding, organisation's inability to handle change management and lack of training of employees on how to use the system, adoption of E-procurement at a slow pace, inadequate responding to queries by the system provider, suppliers not being ready to use this system and unfavourable payment when using the system both to the hospital and the supplier are the main challenges that respondents face when using e-market provider.

4.4 Solving Traditional Procurement Problems through E-Procurement

Respondents were asked to indicate the extent to which the traditional procurement problems had been reduced or solved through e-procurement. Some selected traditional procurement problems were provided on a Likert scale and the respondents were asked to rate them. Respondents cited lack of accountability, maximized economy and efficiency in Kisii Level 5 Hospital, reduced time used to source commodities and lower administration costs as the major traditional procurement problems which had been reduced by e-procurement. These problems were rated 4.25, 4.17, 4.17 and 4.08 on a five point Likert scale respectively, indicating that the problems had been reduced to "high extent". However, the respondents perceived that the problem of price of tendering had been reduced to "little extent" as evident in the weighted mean of 2.58 on a five point Likert scale.

4.5 Complaints Received from User Departments of E-Procurement

The study sought to establish the complaints received from user departments of e-procurement. The study revealed that the greatest complaints received from user departments of e-procurement were delayed supplies, services and works and inflated prices of goods, services and works which were cited by 75% and 58.3% of the respondents respectively. On the other hand, non-conformance of specification of goods, services and works and conflict of interest among Committee members was cited by 41.7%, 33.3%, 33.3% of the respondents respectively. However, in the respondent's view, lack of integrity of procurement staff was not cited as a major complaint since it was cited by 8.3% of the respondents. This shows that the greatest problems faced by users of e-procurement are delayed supplies, services and works and inflated prices of goods, services and works.

5. Discussions

The study established that public hospitals have embraced some aspects of e-procurement applications. Of importance is the fact that there were e-tendering, e-quotations and e-sourcing already in place at the hospitals. However, public hospitals have not incorporated e-MRO, e-reverse auctioning and web-based enterprise resource planning. The study also noted that the greatest challenges faced by the public hospitals when using e-market provider was inadequate funding, organisation's inability to handle change management and lack of training of employees on how to use the system. However, poor system design, low speed of system uploading and downloading and lack of confidentiality of the information sent did not pose any challenges to the public hospitals. It was also evident that lack of accountability, maximized economy and efficiency, reduced time used to source commodities and lower administration costs as the major traditional procurement problems which had been reduced by e-procurement.

6. Conclusion

The study established that public hospitals use e-tendering, e-quotations and e-sourcing as the main e-procurement applications. However, the research noted that the hospital has not put into practice the use of e-MRO, e-reverse auctioning and web-based enterprise resource planning. The study found out that the greatest challenges faced by the respondents when using e-market provider was inadequate funding, organisation's inability to handle change management, lack of training of employees on how to use the system, adoption of E-procurement at a slow pace, inadequate responding to queries by the system provider, suppliers not being ready to use this system and unfavourable payment when using the system both to the hospital and the supplier. Poor system design, low speed of system uploading and downloading and lack of confidentiality of the information sent did not pose any challenges to the respondents. It is also evident from the study that the greatest complaints received from user departments of e-procurement were delayed supplies, services and works, inflated prices of goods, services and works. Besides, non-conformance of specification of goods services and works and conflict of interest among committee members. The respondents cited lack of accountability, maximized economy and efficiency in Kisii Level 5 Hospital, reduced time used to source commodities and lower administration costs as the major traditional procurement problems which had been reduced by e-procurement. The problem of price of tendering had been reduced to "little extent".

5.3 Recommendations

As much as Kisii Level 5 hospital uses e-tendering and e-quotations and e-sourcing, it should also put into practice the use of e-MRO, e-reverse auctioning and web-based enterprise resource planning. This is because all these forms of e-procurement applications are interdependent. The hospital should also try to address the challenges faced by the departments namely inadequate funding, organisation's inability to handle change management, lack of training of employees on how to use the system, adoption of E-procurement at a slow pace, inadequate responding to queries by the system provider, suppliers not being ready to use this system and unfavourable payment when using the system both to the hospital and the supplier. Besides, the hospital should also advise suppliers to deliver supplies, services and works promptly, monitor closely inflated prices of goods, services and works. Besides, the hospital should ensure that goods, services and works that are substandard are not received.

5.4 Recommendation for Further Research

Further research should be undertaken to establish the effect of e-procurement on corruption at public hospitals in Kenya. A study also needs to be done to establish the effect of e-procurement on prompt delivery of supplies at the hospitals.

Table 1: Challenges Faced by Respondents in Using E-Market Provider

CHALLENGE	Very High Extent 5	High Extent 4	Moderate Extent 3	Little Extent 2	No Extent 1	Σf_i	$\Sigma f_i x_i$	$\frac{\Sigma f_i x_i}{\Sigma f_i}$
Inadequate funding	0	2	6	4	0	12	34	2.83
Organisation's inability to handle change management	0	1	7	4	0	12	33	2.75
Employees were not trained on how to use the system	0	0	6	6	0	12	30	2.50
Adoption of E-procurement in Kenya was slow, thus it was not favourable for the organisation	0	0	5	7	0	12	29	2.42
There was inadequate responding to queries by the system provider	0	0	3	9	0	12	27	2.25
Suppliers were not ready to use this system	0	0	3	8	1	12	26	2.17
Payment when using the system was not favourable for the hospital and the supplier	0	0	2	10	0	12	26	2.17
Lack of support from the hospital management	0	0	2	9	1	12	25	2.08
Requirements not clearly defined	0	0	0	9	0	12	25	2.08
The data was not adequately protected from unauthorised access	0	0	3	7	2	12	25	2.08
Lack of confidentiality of the information sent	0	0	0	11	1	12	23	1.92
System's speed of uploading and downloading was low	0	0	0	8	4	12	20	1.67
The system had poor design	0	0	1	4	7	12	18	1.50

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