

E-PROCUREMENT STRATEGIES AND SUPPLY CHAIN PERFORMANCE OF PRIVATE HOSPITALS IN NAIROBI, KENYA

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ABSTRACT: **Purpose:** The specific objectives of the study were; to establish the e-procurement strategies used by private hospitals in Nairobi, Kenya and to establish the relationship between e-procurement strategies and supply chain performance of private hospitals in Nairobi, Kenya. **Design/Research method:** The study was supported by a descriptive research design. The study targeted 34 private hospitals in Nairobi County. Data was collected by use of questionnaires. In total, 34 questionnaires were issued out to respondents. The collected data was analyzed using both descriptive and inferential statistics. **Finding:** The study established that the key e-procurement strategies were e-supplier selection (M=3.82), e-sourcing (M=3.81), e-tendering (M=3.78) and e-payment (M=3.75). The study concludes that e-procurement strategies have positive and significant relationship with performance. **Limitation:** The study was limited to e-procurement strategies and how they influenced performance. Future studies can extent the e-procurement on competitive positioning of the hospitals. **Implication:** The study recommends that the management team of all private hospitals in Kenya to invest in e-procurement strategies in order to improve on procurement performance. To policy makers including the ministry of health, the study recommends that proper policies and regulations should be formulated that support e-procurement in private hospitals.

Keywords: E-Procurement Strategies, Supply Chain Performance, Private Hospitals, Nairobi, Kenya.

1. INTRODUCTION

The rapid growth and advancement in technology has significantly influenced the way organizations carry out their operations. Through the internet, organizations today can cultivate long term and good working relationship with customers and the suppliers. The advancement in technology has ushered in new changes in the field of procurement (Weele, 2005). The rapid advancement in technology has enabled organizations to adopt e-procurement practices.

In Kenya, private hospitals have experienced changes in their operating environment as a result, inter alia, of intense international and local competition, from an enlightened customer base and demanding markets, as well as adoption of diverse and rapidly changing technologies. According to Mitra *et al.* (2000) one of the tools that firms can use to positively affect their operational performance is adoption of e-procurement. The study seeks to establish the correlation between the e-procurement strategies and supply chain performance.

Private hospitals have been differentiated from public hospitals entity by their capacity to take care of patients. Private hospitals are funded through revenue generated from provision of healthcare services, basically from insures and patient themselves. In the recent past, private hospitals have tremendously grown, due the absence of dependable and quality health care systems in the public healthcare sector (Kimani, 2004). In Kenya, National Hospital Insurance Fund has classified in categories A, B and C where by class A, are governments hospitals are the private and mission hospitals, category C are the private hospitals. The hospitals are further classified by NHIF according to inpatient and outpatient services. In Nairobi there are 53 private hospitals according to NHIF classification. (Kenya, Facts & figures, 2012) This study therefore is based on all private hospitals in Nairobi.

According to (Oduwo *et al.*, 2001) the Kenyan law specifies expressly on health care facility categories. This dictates which health care which health care facility is classified as hospitals, nursing home among others; this is based on the sophistication of features and medical equipment available in the health care facility. The classification assists in preventing the challenge of healthcare facility identification. The challenge of classification is sporadic due to the fact that numerous clinics change their trade names to nursing homes so that National Hospital Insurance Fund (NHIF) award them substantial amount.

1.1. Research Problem

According to [Burgas et al. \(2006\)](#) highlighted the importance of SCM but noted there is little research done on e-procurement strategies on supply chain performance. Any challenge experienced by any of the SC member's results on negative effect on performance of the whole chain due to the high costs incurred in the long run. Timely exchange of information in the SCM helps to perfect pace of the whole supply chain by lowering the rates of variations and shifts in inventory and customer demands ([Chopra and Meindl, 2010](#)).

Despite the fact that many hospitals have taken into account the advantages of implementing e-procurement practices, since best practices, methods, and techniques were initially implemented in the industrial settings, implementation of these practices in the health care organizations is problematic. Even firms with adequate internal processes have failed to facilitate international supply chain management ([Muturi and Wanyonyi., 2010](#)). Due to the high number of the biggest private hospitals in Kenya being based in Nairobi County and the high number of people they offer specialized services, there exists a research gap on e-procurement strategies adopted by them.

Globally, [Bordanaba-juste and Cambra-fierro \(2009\)](#) carried out a study on effect of supply chain partnering on performance. They found out that supply chain partnering is very vital in proving that organizational performance is enhanced by strategic collaboration in the whole supply chain. Other than that, strategic relationships between supplies chain partners and coordination facilitates performance in the organization. Locally, [Orukoh. \(2007\)](#) as per his case study asserted that a strong correlation amidst supply chain management practices and performance. [Ratanya \(2013\)](#) in a study revealed that a number of constraints to the implementation of e-procurement that are related to the high costs. The study sought answers to the extent of e-procurement implementation, barriers its implementation and how this implementation has impacted on supply chain integration. It was revealed that the firms share information among departments and centralization of procurement activities is also evident among them.

However, it is clear that a number of important e-procurement aspects have not been implemented by these firms. Five barriers to e-tendering implementation were revealed and they include lack of willingness from other stakeholders, getting users to accept the system, lack of internal integration of functions and resistance from suppliers. All these challenges require the organization to use resources in order to combat them through marketing strategies and creation of awareness through training. Finally, the study found that e-procurement implementation explains only 57% of supply chain integration ([Ratanya, 2013](#)). This study therefore recommended that large scale manufacturers in Nairobi should link their suppliers. Hence, comparative studies should be to determine similarities and differences.

[Rotich and Okello \(2015\)](#) sought to identify the link between procurement practices and performance. The study focused on the retail industry. Using descriptive research design, these study supermarkets have become more competitive, flexible and efficient with regard to procurement practices. The findings revealed that there has been growth in customer satisfaction and retention, improved quality, increased productivity, organization effectiveness, and improved customer's quality of life for the years 2009-2013.

[Nzuve \(2013\)](#) also investigated the implementation of e-procurement practices among private hospitals in Nairobi, Kenya. In his study, the researcher acknowledged that the role of purchasing in corporate success has changed considerably due to the advances in information technologies and information systems. The study found that e-procurement had been implemented to a moderate extent by the NHIF accredited hospitals. Seven factors that influence e-procurement implementation were identified through factor analysis. These include: risk perception, end user training, existing technology, top management support, supplier systems integration, implementation strategy and vendor support. Of these, risk perception had a negative relationship with e-procurement implementation.

Most firms have adopted this lean SCM. In addition, the results indicate that there exists an absolute correlation between lean SCM and operational performance. All the previous studies above indicate that a knowledge gap exists based on the fact that no single research has been carried out on the SCM practices and performance of private hospitals in Nairobi. It is against this back drop that this study sought to find out if there is a relationship between e-procurement strategies and supply chain performance among private hospitals in Nairobi County?

The main objective of this study was to examine the e-procurements strategies on supply chain performance among private hospitals in Nairobi.

The specific objectives of the study were:

- i. To establish the e-procurement strategies used by private hospitals in Nairobi, Kenya.

- ii. To establish the relationship between e-procurement strategies and supply chain performance of private hospitals in Nairobi, Kenya.

2. LITERATURE REVIEW

This section is set to present the literature review of the study. It examined various theories based on how e-procurement strategies can play a role in supply chains and their sustainability. Various studies related to the topic of study were also reviewed under the empirical review.

Several theories are adopted by the study in order to bring out the sustainability of supply chains and how e-procurement can play a role in it. To elaborate this, the study adopted the following theories: Resource Based View (RBV), Dynamical Systems theory and Contingency Theory of Management.

The Resource Based View (RBV) theory was developed by Barney and Wernerfelt in their analysis of heterogeneous firms. It asserts that the resources of an organization are key to ensuring that it performs well. These resources are what determine if an organization has an added advantage over the rest. As a result, exploiting surrounding opportunities using available resources in a new way is more efficient rather than acquiring new skills for each different opportunity. Allocating them efficiently helps an organization to achieve greater performance (Lynch *et al.*, 2000). Additionally, based on this theory, it can be seen that private hospitals will only be successful if they have the necessary resources that are equal to the standards in which they operate in. Supply chain management is key to ensuring that these resources are utilized optimally. It can also be argued that thanks to RBV theory, private hospitals are likely to find the use of e-procurement more efficient because it not only ensures that the resources are evenly distributed but also ensures their effective utilization.

Dynamic Capability Theory was first coined by Teece, Pisano and Shuen. The theory describes an organization's ability to deliberately organize its resources in an effort to improve performance. According to Tsai *et al.* (2012), dynamic capability refers to the ability of firms to effectively adapt and respond to changes in the environment. An organization should be able to effectively and timely react to changes in its environment. This requires the adoption of different strategies that will harness multiple capabilities of the organization and put them into use. As such, organizations should have the ability to respond to these changes in the most effective manner Tsai *et al.* (2012). The dynamic capability theory asserts that only organizations able to achieve this will actually be able to break even in this competitive world.

Technology Adoption Model/theory posits the behavior of information system is defined by its usage and it is largely linked with the behavioral motion of the intent, guided by user decision making process. The behavioral intent is guided by perceived ease of use and usefulness. This model explains the reasons why users adopt information technologies. Davis (1989) argues the theory of Technology Adoption Model (TAM) influences the technology users decisions on the use and importance and use of technology. Accordingly Venkatesh (2010) they stated that to consolidate every preceding research about usage and information technology acceptance and concluded that there is elastic perspective of usage and acceptance of information technology. Additionally there exists four Cardin factors that determine technology acceptance this include but not limited to enabling conditions , performance and social factors. The implementation of technology is dependent on management support (Chau, 1996).

2.1. E-procurement Strategy

E-procurement is the application of electronic devices and methods in all activities and processes of acquisition of goods and services in an organization (Peter *et al.*, 2008). E-procurement programs have been successfully implemented to handle many indirect/ MRO commodity. There are also opportunities for savings in the area of direct materials and those commodities. But the speed in these commodities can be high, with poor compliance to commodities purchasing contracts on many occasions (Peter *et al.*, 2008).

E-procurement is applied in all activities including the selection of suppliers all through to tendering and contract management. Several factors inform an organization to adopt e-procurement and these include the need to increase efficiency and reduction in costs. On the customer/user point of view, a procurement system that is successful is one with an increased level of efficiency and effectiveness (Johnson *et al.*, 2011). Through e-procurement, an organization is able to directly or indirectly buy the raw materials at a relatively lower cost. It also enhances and strengthens transparency and the level of competitive positioning of the firm (Kenneth and Bricu, 2012).

E-tendering Strategy: This is where organization advertises through e-tender notices or e-requests, by sending request for information, receiving bids and offers from suppliers, and informing suppliers on

the award of contracts through the use of internet based data interchange. Data exchanged through e-tendering is more concerned with product and services. The system allows the screening and selecting of suppliers. Currently organizations are practicing e-tendering as one of the mechanisms to cut costs. Through e-tendering the organization generates wealth through electronics business (Amit and Zott, 2001). The use of technology in conducting procurement process has brought substantial benefit to organizations which practice e-tendering (Neef, 2001). The procurement department needs to work in collaboration with other department and suppliers to achieve procurement strategies in the organization (Watts *et al.*, 1995). The e-purchasing practices are the fundamentals in formulation of the procurement strategies in terms of e-tenders (Narasimhan and Carter, 1998).

E-sourcing Strategy: It is the process of identifying new supplier to deliver goods or services in a specified category through electronic means. It is an internet based application which enables a collaborative technology in the full life-cycle of the procurement process between the buyer and supplier. The e-sourcing is one of the best e-purchasing practices that organizations are employing to reduce costs (Kock, 2005). Presently, e-sourcing applications offers two main functions which are; online request for quotations (RFQ), this whereby of identifying the needs, the buyer ask possible suppliers to send their quotation of the product or service which is then evaluated through the application. The second one is online auctions; this is whereby buyers are invited to bid for the contracts being offered. The lowest bidder is usually the one given the contract to supply needed goods or services. With today business environment which focus mostly on efficiency and customer satisfaction, e-sourcing has played a major role in business achieving its objective. The use of e-sourcing benefits in the following ways: Cost saving; sourcing enhances visibility on expenditures and economies of scale through bulk buying (De-Boer *et al.*, 2002; Evans and Wurster, 2001).

E-payment Strategy: Global economy has been successful courtesy of e-payment and has equal measure currently. E-payment has benefited customers basically because of its low cost and convenience. Moreover E-payment bridges the geographical distance between the seller and the buyer (Parker, 2003). The characteristic of e-payment to create business has facilitated to its uptake (Salnoske, 1997). It gives the reason for varied companies to adopt it in its transaction as a result of its benefits. According to Kalakota and Robinson (1999) numerous payments can be done concurrently courtesy of e-payments between the seller and the buyer. The benefits of e-payment is therefore characterized by its expenditure as well as cost saving. Additionally, epayment has proven to be a transparent means of making and receiving payments in a supply chain system. Supply chain management has been boosted by the use of computer network as well as adoption of information communication technology. The main focus of supply chain management is the management of organizations logistics through continual planning and co-ordination of activities. As a result of achieving supply management goal requirements of stakeholders are also adequately achieved subsequently. Van-der-Vorst *et al.* (2005) posits transparency in supply chain that is collectively integrated improves allocation efficiency of resources and subsequent improved production level that guarantees quality of goods and services. E-payments degenerated in supporting e-market places that improve effectiveness of supply management functions by substituting traditional manual procedures with automated electronic processes and expanding e-market place.

E-supplier Strategy: Supplier pre-qualification is one of the principle pillars of e-supplier selection, which has a direct influence in the decisions taken to affect the operational performance of an organization. The effects of poor supplier selection become apparent as an entity grows because it also comes to rely on outsourcing services for its core activities (Chan *et al.*, 2007). A number of enhancements in practices of selecting suppliers can bring about a downstream effect in the supply chain (Gosling *et al.*, 2010). This is also because of the increase in the number of suppliers eligible for selection including the international and regional ones due to the market globalization effect through web-based practices of procurement where customer's tastes and preferences keep changing and more transparency is a requirement. The success of e-procurement is depend on the depth and timing of customer involvement in the process, where proposed solutions are offered to them and a number of issues are resolved as timely as possible. Various options are also available where the enterprise can access a wide catalogue of suppliers to select from as they wish (Attaran and Attaran, 2002). The willingness of e-suppliers and the appropriateness of information flow are some of the factors that determine the success of the e-procurement initiative (Kaliannan *et al.*, 2009). This is because there are a number of fears towards the implementing of e-commerce practices by the supplier coming from their non-involvement in the process.

2.2. Supply Chain Performance

Performance is a qualitative and quantitative measure of how well an organization attains the set goals and objectives within a stated timeframe. Supply chain performance are key activities in the supply chain including availing products at the right time, real time delivery of the products and being responsive to the needs and wants of the customers. Supply chain performance results into numerous benefits to an organization including reduction in ordering and lead time, cost effectiveness and efficiency (Evans and Wurster, 2001).

Supply chain management includes various decisions taken by management of any firm to improve performance of the integrated supply chain (Lambert *et al.*, 1998). As organizations strive to be global leaders, much has to be implemented in their supply chain practices, Ngugi (2007), being a peak performer and innovative venture quality supply chain integration and customer relationship management through differentiated services need to be implemented.

3. RESEARCH METHODS

This section outlines the research design and the methodology employed in this study.

3.1. Research Design

The main aim of this study was to examine the e-procurement strategies on supply chain performance among private hospitals in Nairobi; this study adopted descriptive survey design. Descriptive survey research design collects data from every member of the population being studied rather than choosing a sample this study was carried through a census. According to Magutu, Adudaand Nyaoga, (2015); Magutu, Mbecheand Nyaoga, (2016); and Mose, NjihiaandMagutu, (2013) census is completely accurate with no element of probability and is exhaustive.

3.2. Target Population

The target population of the study was all private hospitals in Nairobi County totaling to 34 hospitals.

3.3. Data Collection Instruments and Procedure

Primary data was collected by using structured questionnaires that were administered to the respondents through drop and pick method. Questionnaires were used because many respondents could be reached within a short time and they are cost effective. The questionnaire had two parts; part A and part B. Part A contained demographic questions while part B had Likert scale questions.

3.4. Data Analysis and Presentation

The collected data was coded into SPSS and the findings were analyzed descriptively and inferentially. Descriptive included the use of means and standard deviations while inferential include use of regression. Frequency distribution tables were used as most appropriate technique in presenting and findings. In section B, of the questionnaire inferential analysis, entailed multivariate regression analysis, performed to assess the strength of the relationships between the specified variables. The multiple regression models took the following equations:

$$Y = C + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Y= Supply Chain performance

C= Constant term

$\beta_1 - \beta_5$ = Co-efficient

X_1 = E-tendering

X_2 = E-sourcing

X_3 = E-payment

X_4 = E-supplier selection

ϵ = Error term

4. RESULTS AND DISCUSSIONS

4.1. Introduction

This section details the analysis of the collected data. The chapter is divided into sections. In the first section (5.2), the researcher presents information on the response rate.

4.2. Response Rate

A total number of 34 questionnaires were prepared and issued to respondents who were staff from private hospitals in Nairobi County. From these questionnaires, 29 of them were dully filled by respondents and recollected by the researcher. This was equivalent to a response rate of 85.3%. This response rate was sufficient enough and concurred with (Burrell and G., 1979) who noted that for excellent presentation of the findings, the response rate should be over 70%.

4.3. Demographic Information of Respondents

To appreciate and clearly understand the respondents who participated in the study, the researcher sought to establish their demographic information. The first aspect of the demographic information assessed the gender distribution of respondents. The findings are shown in Table 1.

Table 1. Gender Distribution of the Respondents

	Frequency	Percentage
Male	16	55.2
Female	13	44.8
Total	29	100

Source: Research Data (2018)

From Table 1, 55.2% of the respondents were male while 44.8% were female. Thus, the study was representative of all the gender categories and therefore reliable information was sought.

The second aspect of the demographic information assessed the highest level of education of the respondents. The findings are shown in Table 2.

Table 2. Highest Level of Education

	Frequency	Percentage
Diploma	12	41.4
Bachelors' Degree	14	48.3
Masters	3	10.3
Total	29	100

Source: Research Data (2018)

Table 2 shows that majority of the respondents 48.3% had bachelor's degrees, 41.4% had diplomas while 10.3% had masters. This shows that respondents of the study were generally leant and thus could effectively read and interpret the questionnaires.

The researcher sought further to establish the number of years that respondents had worked in their organization. This was important because it could help the researcher to determine the level of experience of the respondents. Table 3 presents the findings of the analysis.

Table 3. Years of Experience of the Respondents

	Frequency	Percentage
Less than 1 year	3	10.3
1-5 years	10	34.5
5-8 years	9	31.0
Over 8 years	7	24.2
Total	29	100

Source: Research Data (2018)

Table 3 indicates that most of the respondents 34.5% had worked for 1-5 years, 31% for 5-8 years, 24.2% for over 8 years and 10.3% for less than 1 year. This shows that respondents of the study were generally knowledgeable on e-procurement strategies in their organizations and how they influenced performance.

4.4. E-Procurement Strategies

The first objective of the study sought to establish the e-procurement strategies used by private hospitals in Nairobi, Kenya. These e-procurement strategies identified by the researcher included e-sourcing, e-payment, e-supplier selection, and e-tendering. Table 4 presents the findings on e-sourcing as an e-procurement strategy.

Table 4. E-Sourcing Strategy

	Mean	S.D
The private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process.	4.07	1.18
The private hospitals has corporation online request for quotation reducing lead-time.	3.77	.854
The private hospitals has internet based for evaluation of suppliers	3.61	.633
The private hospitals has online platform where buyer and suppliers work together	3.80	.756
Overall Mean Score	3.81	0.855

Source: Research Data (2018)

From Table 4, the study established that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process with online platform where buyer and suppliers work together as shown by means of 4.07 and 3.80 respectively. The private hospitals has corporation online request for quotation reducing lead time besides internet based for evaluation of suppliers as shown by means of 3.77 and 0.854. The values of standard deviations on these statements are all below 1. This shows that respondents were of the similar opinion on e-sourcing strategy in their organizations. On average, respondents agreed ($M=3.81$, $SD=0.855$) on e-sourcing. This shows that private hospitals practiced e-sourcing as one of the e-procurement strategy. Kock (2005) indicated that e-sourcing is one of the best e-purchasing practices that organizations are employing to reduce costs.

The second e-procurement strategy was e-payment. The findings are indicated in Table 5.

Table 5. E-Payment Strategy

	Mean	S. D
The private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process.	4.05	.924
The private hospitals has corporation online request for quotation reducing lead-time.	3.68	1.10
The private hospitals has internet based for evaluation of suppliers	3.73	1.07
The private hospitals has online platform where buyer and suppliers work together	3.77	.917
Overall Mean score	3.75	1.00

Source: Research Data (2018)

Table 5 indicates that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process besides online platforms where buyer and suppliers work together as shown by means of 4.05 and 3.77. The studied private hospitals have internet based for evaluation of suppliers with corporation online request for quotation reducing lead time as shown by means of 3.73 and 3.68 respectively.

On average, respondents were in agreement ($M=3.75$, $SD=1.00$) that their private hospitals practiced e-payment. The finding agrees with Parker (2003) who indicated that E-payment has benefited customers basically because of its low cost and convenience. Moreover E-payment bridges the geographical distance between the seller and the buyer.

E-supplier selection was another e-procurement strategy identified by the researcher. The findings are documented in Table 6.

Table 6. E-Supplier Selection

	Mean	Std. Dev
The private hospitals selects its suppliers of various products and services online without human intervention	3.53	1.26
The private hospitals firm uses online data to price its goods improving procurement performance	3.91	.806
The private hospitals use an online system where supplier respond once when bidding	3.76	1.24
The private hospitals has online platform for a pool of qualified supplier for real time requests which improve operational performance	4.08	.909
Overall Mean score	3.82	1.05

Source: Research Data (2018)

The study established that the private hospitals has online platform for a pool of qualified supplier for real time requests which improve operational performance and these online system help supplier respond once when bidding with means of 4.08 and 3.91 respectively. The private hospitals use an online system where suppliers respond once when bidding with a mean of 3.76. Respondents slightly agreed on whether the private hospitals select its suppliers of various products and services online without human intervention as shown by a mean of 3.53. All these statements were supported by low values of standard deviations.

On overall, respondents agreed ($M=3.82$, $SD=1.05$) that their hospitals practiced e-supplier selection. Chan, et al, (2007) established that the effects of poor supplier selection become apparent as an entity grows because it also comes to rely on outsourcing services for its core activities. At the same time, a number of enhancements in practices of selecting suppliers can bring about a downstream effect in the supply chain.

The study further examined how e-tendering was applied as an e-procurement strategy. The findings are shown in Table 7.

Table 7. E-Tendering

	Mean	S.D
The private hospitals has online platform for a pool of qualified supplier for real time requests which improve operational performance	4.01	1.05
The private hospitals firm receives and evaluate offers from suppliers using an internet based program	3.63	1.20
The private hospitals use an online system where supplier respond once when bidding	3.81	.957
The private hospitals use 30 minutes to one hour during bidding process	3.70	.901
Overall Mean Score	3.78	1.02

Source: Research Data (2018)

From Table 7, the private hospitals have online platform for a pool of qualified supplier for real time requests, which improve operational performance with a mean of 4.01. The private hospitals also use an online system where suppliers respond once when bidding with a mean of 3.81. The private hospitals use 30 minutes to one hour during bidding process while at the same time, they receive and evaluate offers from suppliers using an internet based program as shown by means of 3.70 and 3.63 respectively. The values of standard deviations are relatively low.

The overall finding from Table 7 is that respondents agreed ($M=3.78$, $SD=1.02$) on e-tendering. This shows that the studied hospitals practiced e-tendering. [Amit and Zott \(2001\)](#) noted that through e-tendering the organization generates wealth through electronics business.

4.5. Supply Chain Performance

The dependent variable of the study was supply chain performance. The findings are shown in Table 8.

Table 8. Supply Chain Performance

Variable	Mean	S.D
There has been a reduction in lead time	4.15	1.09
The company has realized an improved product/service quality	3.79	1.16
There is a decrease in ordering cost	3.84	.965
The degree of responsiveness to customer demand has increased	3.99	1.37
Overall Mean Score	3.94	1.14

Source: Research Data (2018)

As shown in Table 8, there has been a reduction in lead-time, an increased degree of responsiveness to customer demand and a decrease in ordering cost with means of 4.15, 3.99 and 3.84 respectively. There has also been an improvement in product/service quality with a mean of 3.79. Thus, it can be inferred ($M=3.94$, $SD=1.14$) that the studied e-procurement strategies have influenced procurement performance of the hospitals under consideration.

4.6. Relationship between E-procurement Strategies and Supply Chain Performance

The second objective examined the relationship between e-procurement strategies and supply chain performance. The findings on the model summary are indicated in Table 9.

Table 9. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.832	.692	.685	1.93312

a. Predictors: (Constant), E-sourcing, E-payment, E-supplier selection, E-tendering

Source: Research Data (2018)

As indicated in Table 9, the value of R square is 0.692. This shows that 69.2% change in procurement performance among private hospitals is explained by their e-procurement strategies. Therefore, there are other factors (apart from e-procurement strategies) with an influence on procurement performance that future studies should focus on. The finding is in line with [Ratanya \(2013\)](#) who established that e-procurement implementation explains only 57% of supply chain integration among large scale manufacturing firms in Nairobi.

An Analysis of Variance (ANOVA) was conducted at 5% level of significance. The resultant value of F calculated is shown in Table 10

Table 10. Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	93.890	4	23.473	13.482	.000
Residual	41.789	24	1.741		
Total	135.679	28			

a. Dependent Variable: Performance

b. Predictors: (Constant), E-sourcing, E-payment, E-supplier selection, E-tendering

Source: Research Data (2018)

From the ANOVA findings, the value of F calculated is 13.482 while F critical (d.f. 4, 24) is 2.714. Therefore, the entire model was fit. The p value is 0.000 which is lower than 0.05, implying that at least one of the independent variables of the study is statistically significant. The beta coefficients with p values of respective variables of the study are indicated in Table 11.

Table 4. Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.120	1.357		3.036	.000
E-sourcing	.429	.113	.477	3.789	.000
E-Payment	.206	.074	.269	2.775	.000
E-supplier selection	.450	.119	.044	3.782	.000
E-tendering	.188	.090	.247	2.095	.039

a. Dependent Variable: Performance

Source: Research Data (2018)

The resultant equation becomes:

$$Y = 4.120 + 0.429X_1 + 0.206X_2 + 0.450X_3 + 0.188X_4$$

Where:

Y= Performance

X1= E-sourcing

X2= E-Payment

X3= E-supplier selection

X4= E-tendering

Thus, taking a significance level of 5% (0.05), the study documents that e-sourcing ($\beta=0.429$, $p=0.000<0.05$) has a direct and significant relationship with performance. E-payment ($\beta=0.206$, $p=0.000<0.05$) has a positive and significant relationship with performance. E-supplier selection

($\beta=0.450$, $p=0.000<0.05$) has a positive and significant relationship with performance. E-tendering ($\beta=0.188$, $p=0.039$) has a positive and significant relationship with performance. The overall finding therefore is that e-procurement strategies were positively related with performance of private hospitals.

4.7. Discussion

The study established that the key e-procurement strategies were e-supplier selection ($M=3.82$), e-sourcing ($M=3.81$), e-tendering ($M=3.78$) and e-payment ($M=3.75$). Thus, e-procurement was largely practiced in the studied hospitals. E-procurement according to Peter *et al.* (2008) is the electronic application of technology to select suppliers, evaluate tenders and make other relevant procurement decisions.

On e-sourcing, the study revealed that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process with online platform where buyer and suppliers work together. The finding is in line with Kock (2005) who indicated that e-sourcing is one of the best e-purchasing practices that organizations are employing to reduce costs. With regard to e-payment, the study established that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process besides online platforms where buyer and suppliers work together. The finding is in line with Evans and Wurster (2001) who argued that with today business environment which focus mostly on efficiency and customer satisfaction, e-sourcing has played a major role in business achieving its objective.

On e-supplier selection, the study revealed that the private hospitals has online platform for a pool of qualified supplier for real time requests which improve operational performance and these online system help supplier respond once when bidding. The private hospitals use an online system where suppliers respond once when bidding. (Amit and Zott, 2001) indicated that through e-tendering the organization generates wealth through electronics business. With regard to e-tendering, the study found out that the private hospitals have online platform for a pool of qualified supplier for real time requests which improve operational performance. According to Neef (2001), the use of technology in conducting procurement process has brought substantial benefit to organizations which practice e-tendering.

At 5% level of significance, the study documents that e-sourcing, ($\beta=0.429$, $p=0.000<0.05$) has a direct and significant relationship with performance. E-payment ($\beta=0.206$, $p=0.000<0.05$) has a positive and significant relationship with performance. E-supplier selection ($\beta=0.450$, $p=0.000<0.05$) has a positive and significant relationship with performance. E-tendering ($\beta=0.188$, $p=0.039$) has a positive and significant relationship with performance. The findings contradicts with Orukoh. (2007) who found out that lack of a strategic relationship with suppliers has adverse effect on performance.

5. CONCLUSION

The study concludes that the key e-procurement strategies were e-supplier selection, e-sourcing, e-tendering and e-payment. On e-sourcing, the study concludes that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process with online platform where buyer and suppliers work together. With regard to e-payment, the study concludes that the private hospitals use e-sourcing to reduce cost and improve efficiency in procurement process besides online platforms where buyer and suppliers work together. On e-supplier selection, the study concludes that the private hospitals has online platform for a pool of qualified supplier for real time requests which improve operational performance and these online system help supplier respond once when bidding. With regard to e-tendering, the study concludes that the private hospitals have online platform for a pool of qualified supplier for real time requests which improve operational performance. The private hospitals also use an online system where suppliers respond once when bidding. The study further concludes that e-sourcing has a direct and significant relationship with performance. E-payment has a positive and significant relationship with performance. E-supplier selection has a positive and significant relationship with performance. E-tendering (has a positive and significant relationship with performance. E-procurement strategies have positive and significant relationship with performance.

6. RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The study recommends to the management team of all private hospitals in Kenya to invest in e-procurement strategies in order to improve on procurement performance. The management team of all

private hospitals operating in Kenya should improve on their e-sourcing, e-payment, e-supplier selection and e-tendering in order to positively influence performance of their organizations.

To policy makers including the ministry of health, the study recommends that proper policies and regulations should be formulated that support e-procurement in private hospitals. This will positively influence performance of these organizations. Contextually, the current study was limited to private hospitals in Nairobi County. Methodologically, the study was limited to a descriptive design with collection of primary data using questionnaires. Conceptually, the study sought to determine the e-procurement strategies of these hospitals and how this influenced their performance.

The focus of the current study was on private hospitals, specifically those ones in Nairobi City County. Future studies should therefore be done focusing on other private hospitals in other counties in Kenya. Apart from private hospitals, future studies should be extended to public hospitals in Kenya across the 47 counties. The study was limited to e-procurement strategies and how they influenced performance. Future studies can extend the e-procurement on competitive positioning of the hospitals.

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