

**ELECTRONIC PROCUREMENT AND PROCUREMENT PERFORMANCE OF
PRIVATE HOSPITALS IN NAIROBI, KENYA**

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DECLARATION

This research project is my original work and has not been submitted for any award in this or any other University.

Signature **Date.....**

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D61/85663/2016

This research project has been submitted for examination with my approval as the university supervisor.

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DEDICATION

To my family members and all friends, I say thank you for the support to clear this project.

ACKNOWLEDGEMENT

I thank God for sufficient grace that saw me clear this project. To my supervisor, Mr. Michael K. Chirchir, I am so grateful.

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ABBREVIATIONS & ACRONYMS

CSOS Controlled Substance Order System

DRP Distribution Requirements Planning

E - P Electronic Procurement

IT Information Technology

NGO's Non-governmental organizations

NHIF National Hospital Insurance Fund

PPOA Public Procurement Oversight Authority

RFID Radio Frequency Identification System

ABSTRACT

Technology has emerged as the driving force for businesses. Every transaction is powered by technology so is procurement is currently embraced by businesses corporate firms as well as health facilities. The health sector in Kenya has been on the growing trajectory and the facilities have been developing their movement systems overtime. The adoption of E-Procurement practices contributes up to 30% costs of operations. The study aimed at determining a link between e-procurement and supply chain performance. Specifically, the focus of the study was on extent of implementation of e-procurement, a link between e-procurement and procurement performance and key issues faced in e-procurement implementation. The design adopted was descriptive. The study findings established that the E-Tendering was implemented at a very large extent among private hospitals in Nairobi County. Other respondents established that E-Catalogue was implemented at a large extent. The findings are consistent with the existing literature. Competent firms are adopting electronic tendering as a mechanism to increase their efficiency, reduce lead-time and reduce operational costs as well as satisfying their customers. More importantly, firms generate more wealth through proper implementation of electronic tendering systems. With regard to the relationship between E-Procurement and procurement performance, (R) was 0.782 which was a positive strong relationship. R^2 was 0.615 indicated that the model explained 62% of the variations or changes in procurement performance among private hospitals in Nairobi County. The study also established different challenges experienced in the implementation of E-Procurement among private hospitals in Nairobi County. Resistance to change by staff experienced at a very large extent while high cost of implementation and lack of supplier interest were challenges experienced at a large extent. The study findings also revealed that lack of performance measurement system and lack of top management support were challenges experienced at a small extent. The study findings were consistent with the existing literature. Cost implications are a reasonably considered as a challenge on E-Procurement implementation. The implementation through purchasing, installation and maintenance of various E-Procurement software applications are expensive to manage for many firms and therefore an impediment to their full uptake for improved systems on supply chains. The study recommends that private hospitals management in Nairobi County should consider implementing E-Procurement system in their respective organizations for the smooth running of the supply chain. This would be significant in promoting the efficiency in service delivery to clients. The study further recommended that management should focus on specialization of staff by empowering the employees on how to use E-Procurement in their day to day running of the organization. The resistant employees/staff should be trained enough to see the importance of E-Procurement in the promotion of procurement performance in the hospitals. The study also recommended that suppliers should adopt E-Procurement systems in their Business Models so as to remain competitive in their activities.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The establishment and application of procurement function in various organizations have been considered a significant aspect on determining organizational performance. Essentially, different firms across the globe are involved in procurement of goods and services for purposes of operations in their organizations. Electronic procurement has therefore emerged as key enabler in supply chain performance. Suppliers in different categories have embraced electronic procurement in bettering their position in the market through automation of supply chain processes (Handfield, Monczka, Grunipero & Patterson, 2011). Rao, Rangunathan & Rangunathan (2007) established that organizations have been compelled to adapt to electronic procurement systems and e-supply chain philosophy in order to enhance their competitive advantage. Automation of supply chain processes has different advantages that include increasing efficiency in operations, reducing lead-time, enhanced quality of product and services as well as reduced administrative costs during operations. However, different firms have different supply chain management techniques.

Historically, early users of information, systems were from the finance and accounting functions that began in 1970's. Different IT systems such as Distribution Requirement Planning (DRP), Material Requirement Planning (MRP), E-Sourcing, E-Catalogue, E-Tendering and E-Market sites were established to aid in procurement processes. These systems were utilized to help improve in planning, distribution and general efficient procurement processes this study will adopt different theories that include institutional theory and technology – organization-Environment theory. The context of the study will be the private hospitals in Nairobi County that utilize Electronic Procurement in their operations (Handfield et al., 2001).

1.1.1 Electronic Procurement

According to Croom and Brandon, (2004), Electronic Procurement entails the use of internet in communication techniques ICTs to conduct various procurement activities in organizations and business enterprises. There are different categories of Electronic Procurement that involves E-Market place; E-Catalogues, E-Reverse Auction, as well as E-Tendering. The E-Procurement solutions are integrated to safeguard procurement activities in an organization (Validya & Callender, 2004).

On the other hand, Electronic Commerce provides on day to day business transactions that are carried out through electronic medium. In this case, the internet is the main platform. Electronic procurement is classified into different groups that includes; E-MRO (Maintenance Repair and Operations), Electronic-Sourcing involves figuring out potential suppliers for specific purchasing needs or procurement through the internet, ERP (Enterprise Resource Planning). This is a software application that integrates different procurement activities through the internet such as purchasing requisitions placing and receiving orders among others. Electronic tendering deals with request for proposals from various suppliers and giving them feedback promptly through the worldwide web. E-Information as a form of Electronic Procurement is accustomed with accumulation of necessary procurement information and sharing out to different stakeholders via online systems (Baily et al., 2008).

Furthermore, there is Electronic Market-sites commonly known as E-Market sites that deals with the provision of market platform for buyers and sellers in terms of suppliers of goods and services meeting with consumers/end users online through requisitions, approvals and purchase orders done electronically for the benefit of all stakeholders, E-reverse auction is another platform that involves the internet to purchase goods and services from willing buyer willing seller but have a guarantee

of returning goods that are not up to standard or expectations based on terms and conditions (Baily et al., 2008).

1.1.2 Procurement Performance

According to Van Weele (2016), procurement performance increases efficiency and effectiveness in the entire purchasing function in an organization. Through performance, an organization is able to gauge its progress in terms of attainment of the established goals and objectives. Performance also enables an organization to establish the key weaknesses and strengths that it requires to capitalize on for attainment of set objectives and goals. Thus, procurement performance is one way through which an organization can effectively control the use of resources (Lardenoije, Van Raaij, & Van Weele, 2010). Efficiency and effectiveness are key goals guiding procurement performance efforts. Measuring performance of the procurement function in an organization result into reduction in costs and improvement in quality (Batenburg & Versendaal, 2009).

Enterprise Resource Planning (ERP) Systems have also been employed in procurement functions in different organizations that are centered on product based transactions over the internet to achieve the specified objectives. Electronic Data Interchange (EDI) as an internet based software application allows different functions within firm to share information through a network system and relays such information to the procurement department to order for their user needs thus enhancing growth and sustainability in organizations. Bello (2013) and Peterson (2005) argues that using online systems in ordering goods and services through the electronic commerce function allows quality and timely delivery of goods and services that allows continuity in service-delivery to satisfy customers. Through different electronic procurement platforms, firms increase their sales volumes and boost their income levels (Sanders, 2014).

1.1.3 Private Hospitals in Kenya

Hursh (2004) argues that a private hospital involves a health facility that accommodate patient that pay for their medical services by themselves or through health insurance facilities. It may be for profit making, missionary or non-governmental owned private hospital. In Kenya, private healthcare system has been growing over the years despite the challenges experienced in the sector. In 1990s, the government of Kenya realized the licensing and regulation of private healthcare providers and allowed more investors to exploit the opportunity by establishing new different private hospitals in the country.

The growth of private healthcare facilities in the country has greatly contributed of the Gross Domestic Product (G.D.P) of our country. The private hospitals accounts for 40% off the healthcare services in Kenya. This is a significant proportion for economic growth and by extension helps in increasing job opportunities for Kenya's either directly or indirectly. The private hospital sector in the county has an estimated value of USD 2.2 billion and therefore contributing up to 3% of countries GDP in general. In terms of efficient service delivery to privately owned hospitals are considered more in this regard. There are 64 private hospitals in Nairobi County. The future for private hospitals in Kenya is bright and medical tourism as the ultimate goal for the country's healthcare system is the way to go. Furthermore, the private hospitals play a significant role in preventing and treating chronic diseases across the county (Oduwo, Opondo, Kombe, Ondolo & Ogwidoand, 2011).

This study will consider the classification of private hospitals done by National Hospital Insurance Fund (NHIF) that categorized private facilities into three different segments based on bed capacity of the facility. The study therefore sought to determine electronic procurement practices and supply chain performance of private hospitals in Nairobi that credited by NHIF.

1.2 Research Problem

Procurement function is considered the most significant in organizational performance as well as supply chain performance. Procurement involves different firms or a specific firm through procurement department, purchasing goods and services at the right place, right time, right quality and right price for the user departments (Snider & Rendon, 2011). Electronic procurement is a major function in that enables organizations reduce their cost of operations, increase their levels of efficiency and reduce lead times at a significant proportion (Rankin, 2006).

The healthcare sector in Kenya, especially private hospitals have been on the growing trajectory. This is attributed to the continuous increase in demand for healthcare services from both Kenyan and foreign patients. Consequently, more and more private healthcare facilities have emerged to breach the gap that is left by public healthcare facilities and hospitals. As such, competition among private hospitals in Kenya has emerged and therefore technology has been embraced across the board in terms of providing efficient world-class health services to patients. Successful implementation of electronic procurement services results in setting up to 30% on cost of operations.

Globally, Batenburg (2007) examined electronic procurement adoption by the European Organizations. The study asserted that different countries have adopted different e-procurement practices in their facilities. The study findings further established that countries such as Germany and UK that have low cases of uncertainty were early implementers of electronic procurement in their healthcare systems while countries such as Spain and France were less reluctant to implement Electronic procurement in their healthcare systems.

Carabello (2001) studied chances of electronic procurement adoption reducing costs in healthcare sector in the US. He noted that implementation of E-Procurement is faced with the many challenges across the board and therefore recommended that significant strategies should be established within the healthcare sector to minimize such challenges. This study was however limited to developed nations and therefore leaving out a knowledge gap in terms of context that the same needs to be replicated in the developing nations especially Kenya.

Greunen (2010) assessed adoption of e-procurement systems that are regulated at the Eastern Cape Provision Administration. The study findings revealed that there exists a commendable benefit on the adoption of E-Procurement concept with the confirmation of government facilities locally. Korir (2009) looked at key issues arising in process of implementing technology in procurement practices of the public sector. From the study findings, it was seen that absences of political will, inadequate budgetary allocations, as well as poor I.T. infrastructure development were the main impediment to E-Procurement implementation.

Meso (2010) conducted a study on public-electronic procurement strategies in Kenyan technological, legal and governance challenges. From the findings of her study, she noted that electronic procurement was slowly being implemented; however the legal framework in Kenya does not substantially support its prompt development. The study failed to offer possible strategies to counter the existing challenges in the public procurement system in Kenya.

Moso (2012) carried out a study on the degree which public procurement regulations have been adhered to. The study established that the reform process in procurement activities was essential in creating harmony in procurement processes. The study further established that the procurement and supply chain manual was key in establishing proper procurement implementation.

From the above studies, none did not captured the essence of electronic procurement practices among private hospitals in a developing country such as Kenya. The following questions guided the study; what is the extent to which e-procurement practices have been implemented in private hospitals in Nairobi Kenya? What is the effect of electronic procurement on procurement performance among private hospitals in Nairobi Kenya? What are the challenges experienced in the implementation of electronic procurement among private hospitals in Nairobi Kenya?

1.3 Research Objectives

1.3.1 General Objective

To determine the effect of electronic procurement on procurement performance among private hospitals in Nairobi Kenya

1.3.2 Specific Objective

- i. To determine the extent to which e-procurement practices have been implemented among private hospitals in Nairobi Kenya.
- ii. To establish the relationship between e-procurement practices and procurement performance among private hospitals in Nairobi Kenya.
- iii. To determine the challenges experienced in the implementation of electronic procurement practices among private hospitals in Nairobi Kenya.

1.4 Value of the Study

The findings of the study are expected to be of great use by the private hospitals management teams in Nairobi. As such, it is expected that the managers of such facilities would implement the E-Procurement practices as and when it is required and expected so as to enhance their

procurement performance as well as organizational growth and sustainability in the healthcare sector.

To the future researchers, the findings of this study would be of great use for future researchers since they will use this study as a guide and point of reference material for their studies. This in turn would be significant to the world of academia where more literature would be added onto it in that respect.

To the policy makers and regulators, the study findings is expected to be utilized by the policy makers and law makers to establish progressive policies and laws that would necessitate the implementation of e-procurement in both public and private hospitals as a benchmark for best practices in any institution in Kenya and more importantly the healthcare sector in Kenya.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter begins with the theoretical foundation of the study, followed by E-electronic procurement practices, empirical literature review of the study and then challenges experienced in Electronic procurement implementation among the private hospitals in Nairobi Kenya.

2.2 Theoretical Literature Review

The existence of a theoretical framework established the basis for knowledge in the study and is expected to back up its relevance through the evidence deduced to that effect. This study will be guided by Electronic procurement theories that include institutional theory and the technology acceptance model theory.

2.2.1 Institutional Theory

The theory establishes how normal formations in institutions are integrated to operate different functions in a day to today basis. The theory confirms that institutions have different rules and regulations both at informal level and formal level that aid in their normal task execution. The theory asserts that institutions have norms and social procedures that set their standards of operation (Ashworth, Dacin & Thomson, 2009; Oliver et al., 2007).

This theory is significant to this study in the sense that it provides technical knowhow about institutions and how they function as well as what is required of them to achieve their ultimate goal. In a subsequent manner, organizations are established based on cultural cognitive, regulative and normative bases. In relation to such, Wei (2000) asserted that the theory is a necessity in enabling e-procurement implementation in organizations that may hinder the adaptation of IT enabled systems in institutions. This information relates to this study in a way that it depicts the

context of the study. Involving private hospitals which are key institutions in providing noble healthcare services to different groups of people in the Kenyan population.

2.2.2 Technology – Organization – Environment Theory

The theory highlights on the importance of utilizing technological advancement in the day to day functioning of organizations. Different software applications are indeed used in the implementation phase of different functions in the organization. The theory holds that implementation of Technological Innovation has three distinct aspects that includes environmental context, organizational context as well as technological context of a firm (Cox, 2010).

This theory recognizes that a coercive pressure from the external environment has a great influence on the way organizations operate. A normative pressure emerges through information sharing that has implications on decision-making process of a firm. This theory is relevant to this study in the sense that it recognizes existence of a relationship of the organization supply chain and the external environment where technology in terms of electronic procurement emerges from.

2.2.3 Technology Diffusion Theory

The theory was advanced by Rogers (1995). According to Rogers, diffusion of innovation is a process of communicating an innovation by use of appropriate channels over a given period of time. The communication in this case is special in that only new ideas are communicated. The pace and speed of the diffusion of these innovations is affected by among other things, the features of the environment that diffusion occurs (Rogers, 1995).

Decisions relating to non-adoption of an innovation result into rejection of the new idea available. According to Mustonen- Ollila and Lyytinen (2003), the diffusion of innovation best explain factors that facilitate employees to accept new ideas and technology in the work place. Makowsky

et al. (2013) used this theory to explain how pharmaceutical companies can use innovation for competitiveness. As a way of measuring and explain the rate of innovation adoption, Rogers recommended determination of perceived features of innovations that include relative advantage, compatibility, complexity, reliability and observability (Kaminski, 2011). These five features according to Rogers (1995) influence the diffusion of innovation in an organization. E-procurement is best implemented through technology which is best explained by this theory.

2.3 Electronic Procurement Practices

Electronic procurement is administered to various forms of e-procurement processes which are; Electronic Catalogue, Electronic Supplier Selection, Electronic Tendering and Electronic Sourcing Practices. With respect to Electronic Catalogue, the electronic catalogue is considered a critical form of e-procurement process and is established as electronic representations of information regarding products and services in a firm (Baron, Shaw & Bailey, 2000). E-Catalogue contains detailed information regarding description/contents of products and services due for sale in the market. Stakeholders in supply chains do customize the contents of electronic catalogues to satisfy their needs are required. Electronic catalogues further holds significant information such as vendor maintained catalogue, availability of stock for sale, approval processes, major infrastructure requirements, configuration tools for products, updates on prices, approved vendors and full control of product requirement (Matunga, Nyanamba & Okibo, 2013).

An E-tendering practice is ideal from procurement configuration of information among supply chain stakeholders. Organization utilize electronic tendering platforms to advertise e-tender notices, e-requests through provision of information request sheet, receiving bids as well as offers from vendors. The enablers of E- procurement include human resources, organizational design, information technology such as ERP systems, EDI and measurement. Furthermore, information

is easily conveyed to suppliers about award of tenders in an electronic medium known as Electronic Data Interchange. The system enhances the selection of suppliers after precise screening processes. Competent firms are adopting electronic tendering as a mechanism to increase their efficiency, reduce lead-time and reduce operational costs as well as satisfying their customers. More importantly, firms generate more wealth through proper implementation of electronic tendering systems (Nyangaresi, 2016).

With regard to Electronic supplier selection as a form of E-Procurement practice prequalification of suppliers is justified through such a system and helps in the long-term decision making process of a firm. The analogue supplier selection processes have been dogged with a number of errors that have contributed to cases of mistrust in the supply chain as such electronic supplier selection process has emerged as a remedy to such (Chan et al., 2007). The adoption of E-Procurement in general terms are consistent with acceptance from customers' point of view and help drive the processes. Further, there exist different alternatives of accessing process done to achieve the intended target (Birk et al., 2001). These different factors that determine the success of e-procurement implementation key among them is willingness of e-suppliers and free information flow in the system. This should be cultivated in any supply chain system to enhance its sustainability (Kaliannan & Awang, 2009).

E-Sourcing practice elaborates more about existence of supplier identification to deliver goods and services electronically. It is an internet based software application that allows buyers and supplier's application that allows buyers and suppliers to meet through online requests for quotations and evaluation process of the same. There is also online auction system on E-sourcing platforms that allows bid invitation for contracts and the lowest bidder in the system wins the contract or business opportunity at the end of the process. The business environment today is customer focus driven

and as such, E-Sourcing efficiency has played a critical role in organizations' achievement of their ultimate objectives in the long-run. Other benefits of E-sourcing include; Economies of scale through bulk purchases, visibility of expenditure, transparency of transactions and reduced lead-time, on goods and services (Murillo, 2001). Moreover, E-Sourcing helps firms reduce operational costs as well as guaranteed quality of product and services delivered to intended customers/end users (De Boer, Harink & Heijboer, 2002).

2.4 Empirical Literature Review

Different studies have been done by other researchers on use of technology to procure goods and services. Batenburg (2007) analyzed a link between usage of e-procurement in European entities. The objective of the study was to determine E-procurement adoption in European organizations. The findings of the study established that different countries have different ways of adopting the Electronic Procurement countries such as Germany and UK reported to have adopted electronic procurement at 60% while 40% of other European nations followed the same. The gap in this study is evident when the context of the study only included EU countries as opposed to other countries in African continent such as Kenya.

Greunen et al (2010) conducted a study on usage of e-procurement in South Africa. The findings of the study revealed that there was limited understanding of e-procurement among government institutions and as such there were no benefits accrued from them. The limitation to this study was that there was minimal legal framework that governs procurement systems through the internet. Sheng (2012) studied the effect internet based technologies on development of procurement strategy among Japanese firms. The study aimed at figuring out the effect of procurement strategy implementation. The study was a case study design. He established that there were more research

works on e-procurement that involved intergovernmental electronic framework thus a knowledge gap.

Carabello et al., (2001) conducted a study about electronic procurement and its effect on expense reduction in the health sector of the United States of America. The study objective was to determine how hospitals in the U.S. procurement supplies in their institutes. Also, the study was to establish if the hospitals in the US had implemented electronic procurement in the systems. A case study research design was adopted. The study noted that through implementation of electronic procurement were cases of cost reduction in the hospital expenses.

Kingori (2013) sought for a link between e-procurement and performance of the supply chain with a focus on Teachers Service Commission. The study aimed at establishing the level of electronic adoption at Teachers Service Commission as well as the challenges experienced in the process. The study employed descriptive research design. From the findings, electronic procurement led to the improved auditing process at TSC and it allowed staff as well as auditors to track orders in a supply chain system in a transparent manner. It was also established that electronic procurement accounted for 53.9% of supply chain performance in the same institution.

Orari (2011) conducted a study on the influence of electronic procurement on performance of retail industry in Kenya. Cross-sectional survey research design was employed and the main objective was to determine the influence of electronic procurement on the procurement performance of retail industry in Kenya. The study indicated that through electronic procurement, the supermarkets were able to tame wastage and reduce costs to increase their levels of efficiency in the supply chain. The study only focused on supermarkets within Nairobi County leaving out other supermarkets in other counties across the county hence a limitation of the study.

Awino (2011) carried out a study about the management of supply chains with emphasis on Kenyan manufacturing firms. The findings of the study established that the independent impact of core competencies, strategy implementing strategy and core capabilities was relatively weak as compared to their joint impact in the organizational performance. The study was only limited to the large manufacturing firms in Kenya as opposed to all the firms both a large and small thus a limitation in the study.

Omai (2013) studied the determinants of electronic procurement on supply chain management among the tea factories in Kisii County. The research employed a mixed research framework that involved both qualitative and quantitative survey of the factories in Kisii County. The findings of the study revealed that supply chain integration was a key factor in determining supply chain performance in such organizations (tea factories in Kisii County). The limitation of the study was that the study was concentrated on tea factories in Kisii County only leaving out other factories dealing with tea in other counties thus finding may not be representative other than factories in counties in Kenya

2.5 Challenges Experienced in Electronic Procurement Implementation

Previous studies conducted by other researchers established that implementation of E-procurement is always faced with a number of challenges key among them was lack of legal infrastructure systems security as well as resistance to change by employees on strategic initiatives. The identified challenges are linked to other underlying factors such as lack of technical knowhow among stakeholders in a supply chain system (Anne, Asu&Esmail, 2008).

Bell (2001) asserted that security concerns were a major barrier in implementing electronic procurement systems. This is attributed to the nature of the World Wide Web that is open for everyone at any given time. Other traditional challenges includes virus infections, worms Trojans

among other malware programmes in the internet. Issues of integrity and confidentiality are not guaranteed in the internet thus a challenge on effective Electronic Procurement implementation (Shwan, 2006).

Cost implications are a reasonably considered as a challenge on E-Procurement implementation. The implementation through purchasing, installation and maintenance of various E-Procurement software applications are expensive to manage for many firms and therefore an impediment to their full uptake for improved systems on supply chains (Dhillion, 2005).

Legal infrastructure challenges: The legal challenges on electronic procurement include Security Breaches, Enforceability of Contracts, Intellectual Properties Protection (IPP) and Global Trading on Internet. (Eddie et al., 2007) other barrier to e-procurement implementation involves different national legal frameworks on legal issues that are non-compatible, enforceability challenges, legal regulation weaknesses as well as inadequacies in laws governing modern procurement methods (Williams, 2006).

2.6 Conceptual Frame Work

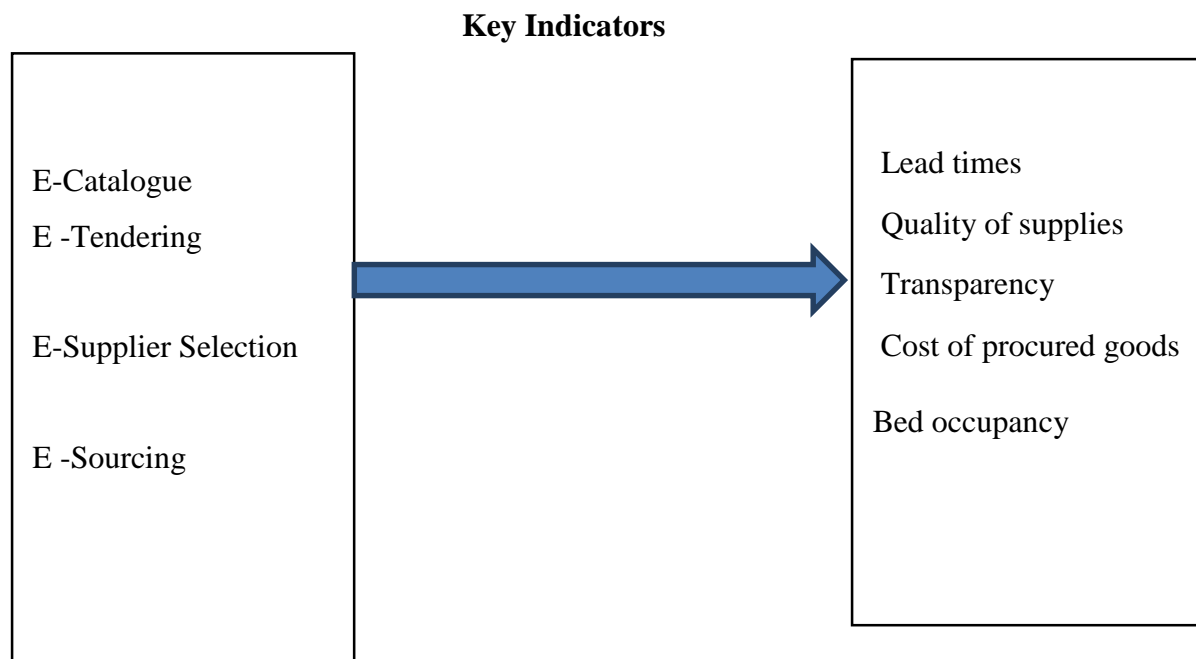
The independent variables in this study included; E-Catalogue, E-Tendering, E-Supplier Selection and E-Sourcing while the dependent variable is Supply Chain Performance.

Independent Variables

Dependent Variable

E-Procurement practices

Procurement Performance



Source: Researcher, (2018)

Figure 2.1: Conceptual Model

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The methodology that was utilized in the study is presented. It is therefore organized as follows. First, it presents the research design, and then population, sampling frame, sampling techniques as well as the techniques employed to gather and analyze findings.

3.2 Research Design

Descriptive research design was utilized in this study to analyze the study of objectives that mainly involves determining the relationship between electronic procurement practices and supplying chain performance among private hospitals in Nairobi County. This kind of research design has been utilized previously by other researchers in their studies such as Gilbreath and Karimi (2012) used the same design in his study about the influence of Human Resource Strategy of organizational performance of parastatals within Kenya. Oluoch (2003) used the same design in his research to determine the perceived attractiveness of forwarding and freight through Porter's Model.

3.3 Population of the Study

The study targeted private hospitals within Nairobi County. According to National Hospital Insurance Fund (NHIF) records 2018 there are 65 private and mission accredited hospitals in Nairobi County (Appendix II), as such forming the basis of a census was conducted in this study given that the defined population is significantly small.

3.4 Data Collection

Primary data was employed in the study through the use of semi-structured research questionnaire as tools for collecting such data. The order of the research questionnaire is expected to have four

parts such that Part 1 accommodated General Information about the respondent. Part II will contain questions regarding objective one of the study. That is the extent to which Electronic Procurement Practices have been implemented in private hospitals in Nairobi County. Part III of the research question accounted for questions based on the second objective of the study.

Lastly, Part IV of the research questionnaire involved questions about the third research objectives that are the extent to which various challenges are experienced in the implementation among private hospitals. The study targeted the managers of respective departments or their equivalent within their institutions in Nairobi County.

3.5 Data Analysis

A Statistical Package for Social Sciences (SPSS) Software Version 23 was utilized in the process. Part I of the research questionnaire was analyzed through descriptive statistics, Part II of the research questionnaire was about the extent to which Electronic Procurement Practices have been implemented in private hospitals in Nairobi County will be analyzed using descriptive statistics, Part III of the research questionnaire was about the relationship between Electronic Procurement Practices and Supply Chain Performance among private hospitals in Nairobi County was analyzed using regression analysis. Part IV of the research questionnaire that involves challenges experienced in implementing Electronic Procurement among private hospitals in Nairobi County was analyzed through descriptive statistics. The output of the study findings was presented through frequency distributions, tables showing mean scores, standard deviation and percentages for every variable in the study. Other findings were presented through charts and histograms and interpretations were done from them.

3.6 Summary of Data Collection and Data Analysis

Table 3.1 Summary of Data Collection

Objectives	Data to be Collected	Data Collection Tool	Data Analysis Tool
General Information (Part I)	Primary Data	Questionnaire	Descriptive Statistics
The extent to which E-Procurement Practices have been implemented among private hospitals in Nairobi	Primary Data	Questionnaire	Descriptive Analysis
The Relationship between E-Procurement practices and supply chain Performance among private hospitals in Nairobi	Primary Data	Questionnaire	Regression Analysis
Challenges experienced in implementing E-Procurement practices among private hospitals in Nairobi County.	Primary Data	Questionnaire	Descriptive Analysis

Source: Researcher, (2018)

The following regression model was used in the study.

$$P = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + e$$

P =Supply chain performance

a = The P Intercept, $b_1, b_2, b_3, b_4, b_5, b_6,$ and b_7 are the regression coefficient of variables; X_1, X_2, X_3 & X_4

X_1 = E-Catalogue, X_2 =E-Tendering, X_3 =E-Supplier Selection, X_4 =E-Sourcing respectively while

e = is the error term.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

The chapter details the analysis of the collected data, which was basically primary in nature.

4.1.1 Response Rate

The researcher issued 65 questionnaires to respondents in respective private hospitals in Nairobi County. 48 questionnaires were filled and returned for analysis. This accounted for 74% of the response rate. This was considered very well for the subsequent analysis which is in sync with Mugenda et al, (2003).

4.1.2 Age of the Respondents

Table 4.1 gives age distribution of participants in the study.

Table 4.1: Age of the Respondents

	Frequency	Percentage
18-25	6	12.5
26-35	22	45.8
36-45	15	31.3
above 45	5	10.4
Total	48	100.0

Source: Research Data (2018)

The findings on Table 4.1 indicates that majority 22 (45.8%) of the respondents were aged between 26 – 35 years, 15 (31.3%) were 36 – 45 years, 6 (12.5%) were 18 – 25 years while 5 (10.4%) were above 45 years, thus being mature enough to give reliable information sought by this study.

4.1.3 Work Experience

The years worked by those who participated in the study are indicated in Table 4.2.

Table 4.2: Work Experience

	Frequency	Valid Percent
0-2 years	9	18.8
3-5 years	25	52.1
6-10 years	13	27.1
Above 10 years	1	2.1
Total	48	100.0

Source: Research Data (2018)

The study findings on Table 4.2 indicates that majority 25 (52.1%) of the respondents had worked in their respective hospitals 3 – 5 years, 13 (27.1%) for 6 – 10 years, 9 (18.8%) for 0 – 2 years while only 1 (2.1% for above 10 years. This shows that the respondents had enough experience to give credible information sought by the study.

4.1.4 Level of Education

Table 4.3 reveals the levels of education of respondents.

Table 4.3: Level of Education

	Frequency	Percent
Diploma/certificate	9	19.1
Bachelor's degree	26	55.3
Master's degree	6	10.6
Doctoral degree	7	14.9
Total	48	100.0

Source: Research Data (2018).

From the study findings on Table 4.3 established that 26 (55.3%) of the respondents had attained the level of bachelor's degree, 9 (19.1%) of the respondents were diploma/certificate holders, 7 (14.9%) of the respondents had attained doctoral degree, 6 (10.6%) of the respondents had master's degree. This shows that the majority of the respondents were well educated to give reliable information sought by the study.

4.1.5 Participation in E-Procurement

The study sought to figure out if the private hospitals participated in E-Procurement implementation.

Table 4.4: Participation in E-Procurement

	Frequency	Percent
Yes	35	72.9
No	13	27.1
Total	48	100.0

Source: Research Data (2018)

The study findings on Table 4.4 reveals that majority 35 (72.9%) of the respondents reported that yes their respective private hospitals participated in E-procurement while 13 (27.2%) of the respondents reported that no their respective private hospitals in Nairobi County did not practice E-procurement.

4.2 Extent to which E-Procurement is implemented among Private Hospitals

The study sought to determine the extent to which E-procurement was implemented among private hospitals in Nairobi County. Table 4.5 gives the findings,

Table 4.5: Extent of E-Procurement Implementation

E-Procurement Practices	Mean	Std. Dev.
E- Tendering	4.21	0.798
E-Catalogue	3.69	1.075
E-Supplier Selection.	3.44	0.897
E-Sourcing	3.29	1.110

Source: Research Data (2018)

From the study findings on Table 4.5, it shows that E-Tendering was implemented to a large extent with a mean (M = 4.21; SD = 0.798). Other respondents reported that E-Catalogue was implemented at a large extent with a mean (M = 3.69; SD = 1.075). On the other hand, other respondents reported that E-Supplier Selection and E-Sourcing was implemented among private

hospitals at a moderate extent with a mean (M = 3.44; SD = 0.897) and (M = 3.29; SD = 1.110) respectively.

4.3 Relationship between E-Procurement Practices and Procurement Performance

Table 4.6 presents the findings of the p values and the beta coefficients that are used to determine significance.

Table 4.6: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.482	.529		8.469	.000
E- Catalogue (X ₁)	-.230	.078	-.384	-2.967	.005
E- Tendering (X ₂)	.239	.111	.296	2.155	.037
E- Supplier selection (X ₃)	.235	.094	.327	2.499	.016
E-Sourcing (X ₄)	-.031	.079	-.054	-.391	.698

a. Dependent Variable: Reduced costs in supply chain

The overall equation of the model on E-Procurement and its effects on procurement performance among private hospitals therefore becomes;

$$Y=4.482-0.230X_1+0.239X_2+0.235X_3-0.031X_4 + e$$

Where E- Catalogue (X₁); E- Tendering (X₂); E- Supplier selection (X₃), E-Sourcing (X₄) and Y= procurement performance

From Table 4.6, at 5% level of significance, E- catalogue ($\beta=-.230$, $p=0.005<0.05$) is inversely correlated with procurement performance among private hospitals. E- Tendering ($\beta=.239$, $p=0.037<0.05$) is directly related with procurement performance among private hospitals. E- Supplier selection ($\beta=.235$, $p=0.016<0.05$) had a positive and significant effect on procurement performance among private hospitals. All these variables have their respective t-values $t>1.96$ and $p<0.05$ which shows that they significantly influenced procurement performance among the

studied private hospitals. However, E-Sourcing ($\beta=-.031$, $p=0.698>0.05$) had a negative and insignificant effect on procurement performance among private hospitals.

The Model summary was used to present the coefficients correlation and determination R and R square. The findings are indicated in Table 4.7.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782 ^a	.615	.252	.557

a. Predictors: (Constant), E-Sourcing, E- Catalogue - E- Supplier selection, E- Tendering

b. Dependent Variable: Reduced costs in supply chain

From the findings of the study as indicated in Table 4.6, the coefficient revealed that the correlation coefficient (R) between the independent variable and dependent variables is 0.782 which was a positive strong relationship. Table 4.7 further indicates that 62% of variation in procurement performance among private hospitals is explained by the four independent variables, implying that the model was fairly good. The 38% unexplained variance is due to predictor variables that are not in the model.

The researcher carried out ANOVA and the interpretation of the findings was done at 5% level of significance. The findings are presented in Table 4.8.

Table 4.8: Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	6.144	4	1.536	4.053	.002 ^b
Residual	13.335	43	.310		
Total	19.479	47			

a. Dependent Variable: Reduced costs in supply chain

b. Predictors: (Constant), E-Sourcing, E- Catalogue - E- Supplier selection, E- Tendering

From Table 4.8, the value of $F_{\text{calculated}}$ is 4.053 while $F_{(4, 43)}$ is 2.5. Since $F_{\text{calculated}}$ is greater than F_{critical} , it can be inferred that the model was fit.

4.4 Challenges Experienced in the Implementation of Electronic Procurement Practices among Private Hospitals

The study sought to determine the challenges affecting E-procurement implementation among private hospitals. Table 4.9 shows the findings.

Table 4.9: Challenges in the Implementation of Electronic Procurement Practices

Challenges	Mean	Std. Dev.
Resistance to change by staff.	4.67	0.467
High cost of implementation.	4.08	0.942
Lack of supplier interest/support.	3.65	1.062
Audibility risk.	3.31	0.993
Poor systems integration.	3.25	0.729
Inadequate training levels.	3.19	1.024
Inadequate security and authentication.	3.10	0.722
Poor E-procurement implementation.	2.81	1.299
Non-supporting organization culture.	2.56	0.943
Lack of performance measurement system.	2.25	0.957
Lack of top management support.	2.04	0.582

Source: Research data (2018)

The findings of the study on Table 4.9 indicates that majority of the respondents reported that resistance to change by staff as a challenge to E-Procurement implementation was experienced at a very large extent among private hospitals in Nairobi County with a mean ($M = 4.67$; $SD = 0.467$). Other respondents reported that high cost of implementation and lack of supplier interest/support were challenges experienced at a large extent with a mean of ($M = 4.08$; $SD = 0.942$) and a mean of ($M = 3.65$; $SD = 1.062$) respectively.

Some respondents established that audibility risk, poor systems integration, inadequate training levels, inadequate security and authentication, poor e-procurement implementation and non-supporting organization culture were challenges experienced at a moderate extent with a mean of ($M = 3.31$; $ad = 0.993$), ($M = 3.25$; $SD = 0.729$), ($M = 3.19$; $SD = 1.024$), ($M = 3.10$; $SD = 0.722$), ($M = 2.81$; $SD = 1.299$) and ($M = 2.56$; $SD = 0.943$) respectively. Other respondents indicated that

lack of performance measurement system and lack of top management support were challenges experienced at a small extent with a mean ($M = 2.25$; $SD = 0.957$) and ($M = 2.04$; $SD = 0.582$) respectively.

4.5 Discussion

The study established that the E-Tendering was implemented at a very large extent among private hospitals in Nairobi County. Other respondents established that E-Catalogue was implemented at a large extent. The findings are consistent with the existing literature. Competent firms are adopting electronic tendering as a mechanism to increase their efficiency, reduce lead-time and reduce operational costs as well as satisfying their customers. More importantly, firms generate more wealth through proper implementation of electronic tendering systems (Amit & Zott, 2001).

However, the study findings also revealed that E-Sourcing was implemented at a moderate extent. The finding contradicts the existing literature. The business environment today is customer focus driven and as such, E-Sourcing efficiency has played a critical role in organizations' achievement of their ultimate objectives in the long-run. Other benefits of E-sourcing include; Economies of scale through bulk purchases, visibility of expenditure, transparency of transactions and reduced lead-time, on goods and services (Evans & Wurster, 2011). Moreover, E-Sourcing helps firms reduce operational costs as well as guaranteed quality of product and services delivered to intended customers/end users (De Boer, 2002).

With regard to the relationship between E-Procurement and procurement performance, the findings of the study as indicated in table 4.6. The value of R^2 of 0.615 indicated that the model explained 62% of the variations or changes in procurement performance among private hospitals in Nairobi County. This left out 38% as unexplained variables that were not covered in this study.

The findings are consistent with Technology – Organization – Environment Theory. The theory highlights on the importance of utilizing technological advancement in the day to day functioning of organizations. Different software applications are indeed used in the implementation phase of different functions in the organization. The theory holds that implementation of Technological Innovation has three distinct aspects that includes environmental context, organizational context as well as technological context of a firm. This theory recognizes that a coercive pressure from the external environment has a great influence on the way organizations operate. A normative pressure emerges through information sharing that have implications on decision-making process of a firm. This theory is relevant to this study in the sense that it recognizes existence of a relationship of the organization supply chain and the external environment where technology in terms of electronic procurement emerges from (Cox, 2010).

The study also established different challenges experienced in the implementation of E-Procurement among private hospitals in Nairobi County. Resistance to change by staff experienced at a very large extent while high cost of implementation and lack of supplier interest were challenges experienced at a large extent. The study findings also revealed that lack of performance measurement system and lack of top management support were challenges experienced at a small extent. The study findings were consistent with the existing literature. Cost implications are a reasonably considered as a challenge on E-Procurement implementation. The implementation through purchasing, installation and maintenance of various E-Procurement software applications are expensive to manage for many firms and therefore an impediment to their full uptake for improved systems on supply chains (Dhillion, 2005).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This chapter presents a summary of the key findings with conclusions and recommendations. The study objective was to determine the effect of E-Procurement on procurement performance among private hospitals in Nairobi County. The study established that the E-Tendering was implemented at a very large extent among private hospitals in Nairobi County. Other respondents established that E-Catalogue was implemented at a large extent. However, the study findings also revealed that E-Sourcing was implemented at a moderate extent. The study also established different challenges experienced in the implementation of E-Procurement among private hospitals in Nairobi County. Resistance to change by staff experienced at a very large extent while high cost of implementation and lack of supplier interest were challenges experienced at a large extent. The study findings also revealed that lack of performance measurement system and lack of top management support were challenges experienced at a small extent.

5.2 Conclusion

Even though the study determined that E-Tendering, E-Catalogue, E-Sourcing and E-Supplier selection to have had an effect in procurement performance, other respondents indicated that E-Supplier Selection and E-Sourcing were implemented at a moderate extent. With regard to challenges affecting E-Procurement implementation, the findings by respondents determined that resistance to change by staff affected the process at a very large extent while lack of top management support was the challenge that affected the process of E-Procurement implementation at a small extent.

5.3 Recommendations

The study recommends that private hospitals management in Nairobi County should consider implementing E-Procurement system in their respective organizations for the smooth running of the supply chain. This would be significant in promoting the efficiency in service delivery to clients.

The study further recommends that management should focus on specialization of staff by empowering the employees on how to use E-Procurement in their day to day running of the organization. The resistant employees/staff should be trained enough to see the importance of E-Procurement in the promotion of procurement performance in the hospitals. The study also recommends that suppliers to adopt E-Procurement systems in their Business Models so as to remain competitive in their activities.

The hospital management and other stakeholders should adopt to new technological innovations related to E-Procurement such as IFMIS Systems, EDI and ERP Systems in their business models. This will encourage the adoption and implementation of E-Procurement practices for the good of procurement performance in the hospitals.

5.4 Limitation of the Study

The study was successfully undertaken however, there were different challenges that were experienced. For instance, the respondents were very reluctant to participate in the study in that they were very reluctant to fill the questionnaires for fear of unknown.

Also, the respondents had very busy work schedules to that some were not able to fill in the questionnaires on the right time and as such causing delays in the process of data collection.

Furthermore, the study only focused on private hospitals in Nairobi County as opposed to all hospitals including public hospitals as a context of the study.

5.5 Suggestions for Further Study

The study confirmed that the implementation of E-Procurement have a big effect on procurement performance among private hospitals in Nairobi. Future researchers should consider conducting a similar study with respect to public hospitals within Nairobi County. The same can be replicated in other counties as well.

Also, the future studies can be done with respect to other public and private institutions such as banking industry, hospitality industry as well as manufacturing industry.

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APPENDICES

APPENDIX I: LIST OF NHIF ACCREDITED HOSPITALS IN NAIROBI COUNTY

1. ABRAR HEALTH SERVICES LTD
2. ANDALUS NURSING HOME
3. AVENUE HEALTHCARE LTD
4. BLESSED LOUIS PALAZZOLO HEALTH CENTER
5. CANA FAMILY CLINIC AND RESOURCE CENTRE
6. CARE HOSPITAL LIMITED
7. CHIROMO LANE MEDICAL CENTRE
8. COPTIC HOSPITAL
9. DIVINE WORD PARISH HEALTH CENTER
10. DORKCARE NURSING HOME LTD
11. EDELVALE TRUST JAMAA H\$M HOSPITAL
12. EDNAH MEDICAL CENTRE
13. EMMAUS INNERCORE NURSING HOME
14. FAMILY HEALTH OPTIONS
15. FREPALS NURSING HOME
16. GERTRUDES GARDEN CHILDREN'S HOSPITAL NBI
17. GIOVANNA E-SYLVIA MEDICAL CENTRE

18. GURU NANAK RAMGARHIA SIKH HOSPITAL
19. H.H. AGAKHAN HOSPITAL (NAIROBI)
20. HURUMA NURSING & MATERNITY HOME
21. IMARA HEALTH CARE CENTRE
22. JACARANDA MATERNITY HOSPITAL
23. KASARANI NURSING & MAT HOME
24. KAYOLE HOSPITAL
25. KENYATTA NATIONAL HOSPITAL (AMENITY WING)
26. LADNAN HOSPITAL LIMITED
27. LIONS SIGHT FIRST EYE HOSPITAL
28. MADINA HOSPITAL LIMITED
29. MARIA IMMACULATE HOSPITAL
30. MARIA MATERNITY & NURSING HOME
31. MARIAKANI COTTAGE HOSPITAL
32. MARIE STOPES KENYA LIMITED
33. MARURA NURSING HOME
34. MATER MISERICORDIAE HOSPITAL NAIROBI
35. MELCHIZEDEK HOSPITAL

36. MENELIK MEDICAL CENTER
37. METROPOLITAN HOSPITAL
38. MIDHILL MATERNITY & NURSING HOME
39. MKUNGA MATERNITY & NURSING HOME
40. MOTHER & CHILD HOSPITAL
41. MUTEITHANIA NURSING AND MATERNITY HOME
42. NAIROBI EQUATOR HOSPITAL
43. NAIROBI HOSPITAL NAIROBI
44. NAIROBI SOUTH MEDICAL CENTRE
45. NAIROBI WEST HOSPITAL
46. NAIROBI WOMEN'S HOSPITAL
47. NEEMA HOSPITAL
48. NGUMBA CENTER AND LABORATORY SERVICES
49. OLIVE LINK HEALTHCARE
50. PARKROAD NURSING HOME (NAIROBI)
51. RADIANT GROUP OF HOSPITALS
52. RUIAI FAMILY MEDICAL CENTRE
53. RUARAKA UHAI NEEMA HOSPITAL

54. S.S. LEAGUE M.P SHAH HOSPITAL NAIROBI
55. SAMARITAN MEDICAL SERVICES
56. SCION HEALTH CARE LTD
57. SOUTH 'B' HOSPITAL
58. ST. JOHN'S HOSPITAL LTD
59. ST.FRANCIS COMMUNITY HOSPITAL
60. ST.FRANCIS HEALTH SERVICES
61. TEXAS CANCER CENTRE
62. UMOJA HOSPITAL
63. UNITY MATERNITY AND NURSING HOME-UMOJA
64. UZIMA DISPENSARY AND MATERNITY
65. WEMA MATERNITY AND NURSING HOME

Source: <http://www.nhif.or.ke/healthinsurance/>downloaded on 22/7/2018

APPENDIX II: RESEARCH QUESTIONNAIRE

Introduction

This questionnaire has been designed for academic use only. It aims to establish the relationship between e-procurement and supply chain performance among private hospitals in Nairobi County.

Kindly note that the data you provide will be handled with utmost confidentiality and privacy.

Thank you for your consideration.

PART 1: General Information

Kindly tick (✓) where appropriate

1. Age (years)

18 – 25Years ()

26 – 35 Years ()

36 – 45 Years ()

Above 45 Years ()

2. For how long have you worked in the hospital?

0 – 2 Years ()

3 – 5 Years ()

6 – 10 Years ()

Above 10 years ()

3. What is your Job Title?

Senior Procurement Officer ()

Procurement Assistant ()

Procurement Clerk ()

Storekeeper ()

Others please specify

4. What is your highest level of education

High School or Equivalent ()

Diploma/Certificate ()

Bachelor’s Degree ()

Master’s Degree ()

Doctoral Degree ()

Professional Degree ()

Others please specify

5. Does your organization participate in e-procurement?

Yes () No ()

Part II: Implementation of E-Procurement practices among private hospitals in Nairobi County.

Kindly indicate the extent to which your organization has implemented each of the following e-procurement practices. Using a Likert Scaled of 1 – 5 where:-1 = No Extent, 2 = Small Extent, 3 = Moderate Extent; 4 = Large Extent; 5 = Very Large Extent

E-Procurement Practices	1	2	3	4	5
E-catalogue (Delivery of bills and related information using electronic catalogues.					
E- Tendering (Sending Requests for Information and Prices to Suppliers and Receiving the Responses of Suppliers using Internet.					
E-supplier selection– (Identifying New Suppliers Via Internet).					
E- Sourcing (Use virtual market place based on the internet where numerous companies execute economic transactions					

PART III: Procurement Performance among private hospitals in Nairobi County.

To what extent has, the supply chain performance been influenced through implementation e-procurement practices in the hospital. Please indicate in a scale of 1 – 5 where:

1 = No Extent, 2 = Small Extent, 3 = Moderate Extent; 4 = Large Extent; 5 = Very Large Extent

Procurement Measures of Performance	1	2	3	4	5
Reduced lead times					
Quality supplies					
Transparency					
Reduced costs in supply chains					

PART IV: Challenges facing the implementation of E-Procurement practices among private hospitals in Nairobi County

To what extent has, the hospital is faced with each of the following challenges in the implementation of E-Procurement practices: Please tick where appropriate on a scale of 1 – 5 where: 1 = No Extent, 2 = Small Extent, 3 = Moderate Extent; 4 = Large Extent; 5 = Very Large Extent

Challenges experienced in the Implementation of E-Procurement	1	2	3	4	5
Inadequate Training Levels					
Poor System Integration					
Lack Of Top Management Support					
Inadequate Security And Authentication					
Lack Of Performance Measurement Systems					
Poor E-Procurement Implementation Strategy					
Non-Supporting Organization Culture.					
Resistance To Change By Staff					
Lack Of Supplier Interest/Support					
High Cost Of Implementation					
Audibility Risks					