

**ASSESSING THE IMPLEMENTATION OF ELECTRONIC PROCUREMENT
(E-PROCUREMENT) PRACTICES AMONG PUBLIC HOSPITALS IN
NAIROBI COUNTY KENYA**

BY

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DECLARATION

Declaration by the Candidate

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DEDICATION

I dedicate this study to all public hospitals in Nairobi County, to my husband Joseph, my son Israel and my family who have given me full support.

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I wish to express my gratitude and appreciation to all those who guided me in one way or another in the development of this thesis.

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ABSTRACT

Background: In Kenya, Public procurement is considered to be very instrumental in the development of the Kenyan economy. E-procurement is one of the medium term objectives which were to be implemented by June 2007, however its adoption among state corporations has been alarmingly very slow and Kenya still considers ICT as a key pillar in the success of vision 2030 which aims at transforming the country into an industrialized nation by the year 2030.

Objectives: The broad objective was to assess the implementation of e-procurement practices among public hospitals in Nairobi County. It was guided by four specific objectives; to assess the extent of use, describe the challenges, benefits, and factors affecting implementation of e-procurement among public health hospitals in Nairobi County.

Methodology: The study employed a descriptive cross sectional research design and the study population consisted of the permanent staff working within the NHIF accredited public hospitals that provided both outpatient and inpatient services in Nairobi County. The study included all the staff working in Procurement, Finance, Clinical Service and Administration departments within the hospitals. Data was collected using a semi structured questionnaire.

Data analysis was then done using SPSS with the main analysis methods being frequencies, mean, standard deviation, factor analysis and multivariate linear regression. Factor Analysis which is a multivariate statistical procedure, was used to test how well the measured variables represent the number of constraints. Multiple regression analysis was used to estimate the relationship between a dependent variable and independent variable and bivariate linear regression was used to analyse the factors to establish their significance towards e-procurement implementation.

Results: The results shown that implementation of e-procurement was low. A total of 306 respondents were included in the study. Pumwani Maternity hospital (n=41, 38%) reported that it had adopted e-procurement moderately, while Mbagathi and Mama Lucy reported very low implementation (n=17, 17.7%) and (n=15, 14.7%) respectively. Pumwani was the only hospital that had adopted Integrated Financial Management Information System (IFMIS). 8 factors were identified to affect e-procurement implementation and they included: Perceived benefits, Attitude, Training, Acceptability and Management support. Through multivariate analysis, training was the only statistically significant factor. The highly ranked benefit was, improving the standardization and streamlining of procurement processes ($mean=4.10\pm0.92$), while the highest ranked challenge was, top management leadership and support ($mean=2.55\pm1.37$) Corruption, fraud, cartels, collusion and rigging was ranked the least of benefits

Conclusion: Implementation of e-procurement within public hospitals in Nairobi County is low, with Pumwani hospital being the only county hospital having adopted IFMIS. Though there were other factors identified, training was the greatest factor influencing implementation of e-procurement. Top management support was ranked the highest challenge affecting its implementation

Recommendations: Since training and top management support play a major role in adoption of e-procurement, focus on developing a training programme for staff and management should be initiated. Since some hospitals have not yet adopted IFMIS, studies should be carried regularly to identify the leading challenge at each phase of e-procurement implementation to hasten the process. It was suggested that since the present study focused on public hospitals in Nairobi County, future studies should consider expanding the scope to include other counties. Future studies should also consider expanding the scope to include the moderating variables like firm size and firm age.

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DEFINITIONS OF KEY TERMS

Electronic procurement system: Is a system which automates all activities in procurement process such as storing requests, approval management, authorization and interfacing with company financial system (De Boer, Harink, & Heijboer, 2002)

E-procurement: Is the use of internet based (integrated) information and communication technologies (ICTs) to carry out individual or all stages of the procurement process including search, sourcing, negotiation, ordering receipt, and post purchase review (Croom & Brandon-Jones, 2005)

Information Technology (IT): This is the acquisition, processing, storage, and dissemination of vocal, pictorial, textual, and numerical information by microelectronic based combination of computing and telecommunication (Adelman, 2000)

Supply chain: The network of activities and organizations that performs the functions of product development, procurement of materials from vendors, the movement of materials between facilities, the manufacturing of products, the distribution of finished goods to customers and after- sales support (Mabert & Venkataramanan, 1998)

Procurement: This is the process of finding and agreeing to terms, and acquiring goods, services, or works from an external source, often via tendering or competitive bidding. It is used to ensure the buyer receives goods and services, or works at the best possible price, when aspects such as quality, time and location are compared (Weele & Arjan, 2010).

Enterprise resource planning (ERP): ERP is software, which is designed for the purpose of business process management that allows a company to utilize a system of integrated applications. ERP is to manage most of the business processes as well as automating most of the back office functions related to technology, human resources and services (Wallace & Michael, 2001).

ABBREVIATIONS AND ACRONYMS

CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
EPS	Electronic procurement system
ERP	Electronic Resource Procurement
FBO	Faith Based Organizations
GDP	Gross Domestic Products
GNP	Gross National Product
HIS	Hospital Information system
ICT	Information and communication technologies
IFMIS	Integrated Financial Management Information System
IREC	Institutional Research and Ethics Committee
ISP	Internet Service Provider
IT	Information technology
KNH	Kenyatta National Hospital
TAM	Technology Acceptance Model
NASPO	National Association of State Procurement Officials
NHIF	National Health Insurance Fund
NIGP	National Institute of Government Purchasing
KHSSP	Kenya Health Sector Strategic Plan
PPDA	Public Procurement and Disposal Act
PPOA	Public Procurement Oversight Authority
RBV	Resource Based View
ROK	Republic of Kenya
SCM	Supply Chain Management

SME	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
U. K	United Kingdom
U.S. A	United States of America
VRIO	Value, Rareness, Imitability, & Organization

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Electronic procurement (E-procurement) is the application of Internet technology in material and service procurement. It involves the use of various forms of Information Technology (IT) to automate and streamline the procurement process, improving efficiency and transparency, thereby reducing the cost of operation within and between business parties (De Boer L., *et al.*, 2002). It is the acquisition of goods and services without the use of paper processes (Tatsis, *et al.*, 2006).

E-procurement has gained popularity especially with the advent of technology with rapid development of e-procurement being reported in early 2000 (Ahlstrom, 2010). It has been suggested that the public sector (that includes the public hospitals) is likely to benefit more from the use of electronic commerce for the purpose of sourcing, promotion of economic efficiency through cost reduction (Arnold & Essig, 2002), and enhancing inter-organizational coordination (Ho, Tai, Wu, & Jou, 2008). Another striking result realized by firms which have adopted e-procurement is that successful e-procurement implementation can improve long term performance by 67%, which means, most organizations see e-procurement as a long-term investment for their entities (Calipinar & Soysal, 2012).

The financial activities of government procurement manager's accounts for 10%-30% of GNP (Amemba, *et al.*, 2013; Callender & Mathews, 2000). In addition, studies reveal that state corporations usually spend up to 70% of their revenue/ operational budget on purchasing goods and services (Rahim, 2008).

More and more companies mostly in the developed economies are conscious of the needs to introduce Internet-based technologies such as e-procurement in their operations due to the benefits associated with it. These benefits include material cost reduction, purchasing time acceleration, lower administration costs, and simplicity due to process streamlining. (Subramaniam & Shaw, 2004) However, the situation is not the same in developing countries (Adebisi *et al.*, 2010) Implementation rate of e-procurement in many public procurement systems which include the public hospitals has been slow and many organizations tend to overstate the degree to which they are involved in e-procurement (MacManus, 2002). According to Mac Manus, many governments are proud to report they are engaged in “ecommerce.” For example, 67% of the government agencies responding to a February 2001 National Institute of Governmental Purchasing (NIGP) survey claimed to be using some form of electronic commerce. Among those that were not, 84% projected they would be within a short period of time (NIGP, 2001). Likewise, a 2001 survey of the states revealed that 70% (35 of 50) purported to have an automated centralized procurement system (National Association of State Procurement Officials (NASPO, 2001).

In Kenya, Public procurement is considered to be very instrumental in the development of the Kenyan economy. Public procurement has been on the increase since the year 2004 and 2014, where it accounted for 9% and 11% of the GDP, respectively (Kamotho, 2014; Malela, 2010; PPOA, 2007).

Reforms touching on the introduction of high speed and high capacity fibre optic cable which is meant to boost the efficiency of internet thus making e-procurement a reality were implemented (ROK, 2009). Similarly, the integrated financial management information system (IFMIS) was also introduced as a major instrument to bolster e-

procurement solution and to improve governance of Ministries and Departments (Miheso,2013).To this end, the government of Kenya considers ICT as a key pillar in the success of vision 2030 which aims at transforming the country into an industrialized nation by the year 2030. E-procurement being one of the medium term objectives which were to be implemented by June 2007, it's adoption among state corporations has been alarmingly very slow (Makau, 2014; Malela, 2010).

The Kenyan healthcare system can be split into three subsystems, being the Public Sector, Commercial Private Sector, and Faith Based Organisations (FBOs). The Public Sector is the largest in terms of the number of healthcare facilities, followed by the Commercial Private Sector and the FBOs. The health sector in Kenya has been growing rapidly in the recent past with the budget allocation to the health sector continuing to increase from 5.3% in 2004/05 to 7.3% in 2007/08 and 7.8% in 2012/13. However, this is still below the Abuja declaration (2001) which called for governments to increase funding and allocate 15% of the national budget to health (KHSSP, July 2012-June 2017) E-procurement is one of the ways of managing the budget allocations due to its many benefits.

Adoption of e-procurement in the health sector comes with many advantages. With e-procurement hospitals will be able to do away with problems such as paper shuffling, multiple product handling activities, excessive inventory carrying costs, lengthy order cycle times, data process quality and poorly developed links to suppliers (Mc Manus, 2002). Therefore, this study sought to assess the implementation of e-procurement practices among public hospitals in Nairobi County Kenya.

1.2 Problem Statement

Electronic procurement has many benefits that public hospitals in Kenya may benefit from (Calipinar & Soysal, 2012). However, although e-procurement implementation process was to be accomplished by June 2007, the process has been very slow. According to The Public Procurement and Asset Disposal Act- 2015, most of the procurement processes in the public sector (that includes public hospitals) are still manual with the internet only being used for e-mails and web browsing. These manual processes are costly, slow, inefficient and data storage and retrieval is poor (Malela, 2010).

These traditional procurement processes also permit infamous maverick buying practice which represents a situation where employees make unplanned purchases from non-preferred suppliers at a higher price (Rahim, 2008; Turban, *et al.*, 2008). In addition, procurement is traditionally a labour-intensive activity and, as such, managers spend considerable time on 'non value-add activities' (Rahim, 2008; Croom & Brandon, 2005; Roche, 2001). Adoption of e-procurement is thus riddled with challenges such as company culture and upper management support, resistance to change, lack of a widely accepted solution and lack of leadership, and cultural factors. (Eadie 2007; Davila *et al.*, 2003). These challenges need to be addressed to enhance chances of success.

Despite all of the efficiencies that can be realized through public e-procurement, the implementation of any e-government project is complicated because of the size and bureaucratic nature of government. A study by (Orina D., 2013) on readiness factors in Kenya's public sector in adaptation of e-procurement, established that the challenges faced were staff skills, resistance to change, lack of enthusiasm by staff. However, the majority of the respondents were from parastatals and only 5 respondents were from the

ministry. Therefore, there is need to establish whether these are the same challenges experienced within the public hospitals set up.

(Kamotho D. 2014) did a study on e- procurement and procurement performance among state corporations in Kenya. The study found out that state corporations have adopted various e-procurement procurement practices to enhance their procurement performance and the e-procurement practices adopted by state corporations have had a significant impact on improving their procurement performance. This research was done in the state corporations and there is still need to establish the situation in the he public hospitals.

A study done by Makau J. (2014) on challenges facing adaptation on e-procurement in the public sector was conducted in the water sewerage company. The study was guided by the 3 objectives; whether technology, public procurement regulations and employee's competence in information communication technology (ICT), and managerial commitment is a challenge on adoption of e procurement in public sector in Kenya. The study focused on the three objectives and hence there is need to carry further research to establish if there are additional factors affecting implementation of e-procurement within public hospitals in Kenya.

Furthermore, past studies conducted in various contexts have revealed a number of key factors that influence success of implementation of e-procurement (Deise *et al.*, 2000; Srivivasan 2004; & Issa *et al.*, 2008). However, it was noted that most of the studies had been carried out in developed countries hence there is need to carry out similar research in developing countries context. For instance, in a study carried out by Baternburg (2007) in Europe on the implementation of e-procurement showed that there are differences from one country to the other in regard to implementation of e-procurement.

A study carried out by Greunen *et al.*, (2010) examined the regulation on the e-procurement implementation in South Africa, analysis of the findings indicated that there is measurable importance in the supply chain management but this is not well understood within the government context.

The studies done, despite showing the e-procurement implementation in various public sectors, failed to offer an assessment of the same within the public hospital set up. Hence the current study will assess the e-procurement practices among public hospitals in Nairobi County, Kenya.

1.3 Justification of the Study

E-procurement being one of the medium term objectives which were to be implemented by June 2007, its adoption among state corporations has been alarmingly very slow (Makau, 2014; Malela, 2010). To this end, the government of Kenya considers ICT as a key pillar in the success of vision 2030 which aims at transforming the country into an industrialized nation by the year 2030. Therefore due to this aforementioned goal, there is need for further research in this field to establish the progress of implementation of e-procurement.

According to the 2009 census, Nairobi is the most populous city in East Africa, with an estimated population of 3 million with a majority of this population seeking services at the public hospitals since they are relatively affordable as compared to the private sector hospitals and Faith Based organizations (FBOs). To service this population within the hospitals, a lot of procurement has to be done. In addition, Nairobi county has the highest budget allocation among the 47 counties. Public corporations spend huge budgets on procurement and up to 60 percent of public expenditure goes to public procurement (Kipkorir, 2013; Makabira & Waiganjo, 2014). Hence there is need for further research

to assess the e-procurement practices among the public hospitals, leading to improved utilization of the money allocated.

In addition, the findings will help identify the challenges that are affecting the implementation hence come up with ways to resolve or manage them. It will be useful for the policy makers and institutions to note the challenges affecting implementation of e-procurement with a view to improve associated processes, thus achieving related benefits.

Further, since there many benefits achieved through e-procurement, the research will inform the benefits achieved by use of e-procurement, hence will work towards enjoying more benefits.

The study documented the extent of e-procurement adaptation among public hospitals in Nairobi Kenya and identified various challenges and benefits experienced by adoption of e-procurement. Thus, the study is expected to be of significance to public hospitals in Kenya since it will contribute towards development of more robust strategies towards full implementation of e-procurement. It will be useful for the policy makers and institutions to note the challenges affecting implementation of e-procurement with a view to improve associated processes, thus achieving related benefits.

1.4 Study Objectives

1.4.1 Broad objective

The broad objective of the study was to assess the implementation of e-procurement practices among public hospitals in Nairobi County, Kenya.

1.4.2 Specific objectives

The specific objectives of the study were to:

1. Assess the extent of use of e-procurement among public health hospitals in Nairobi, Kenya.
2. Identify the factors affecting the implementation of e-procurement among public health hospitals in Nairobi, Kenya
3. Determine the benefits being achieved by use of e-procurement among public health hospitals in Nairobi, Kenya.
4. Identify the challenges of implementing e-procurement among public health hospitals in Nairobi Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Electronic Procurement

Min and Galle (2003) defines e-procurement as incorporating all purchasing activities such as purchaser request, authorization, ordering, delivery and payment by utilizing electronic means such as internet, web technology and e-commerce. Electronic procurement System (EPS) is a system which automates all activities in procurement process such as storing requests, approval management, authorization and interfacing with company financial system.

There are three types of e-procurement: ERP which includes requesting and approval of purchasing process by utilizing internet technology; e-tendering which is the request of information and price from suppliers and receiving feedback electronically and e-sourcing which is the discovering and accessing new suppliers through internet and web technology (De Boer, Harink, & Heijboer, 2002). For firms, e-procurement means the integration of technological tools into purchasing activities taking place within supply chains while performing their operations. In other words, e-procurement is a deriving benefit attained from technological enhancements rather than using traditional a paper based method in procurement operations (Min & Galle, 2003).

E-procurement has a far greater potential for cost savings and business improvement than online retailing or enterprise resource planning systems, and will permanently and fundamentally reform the way we do business in the future (Neef, 2001).

In addition, e-procurement is strongly related to concepts such as logistics, supply chain management (SCM) as well as e-commerce. Although some definitions are suggested to distinguish between these concepts, the problems faced are similar. They all require

financial transportation, legal, and communication infrastructure (Ohmae, 2000). If a country is weak in one or some of these infrastructures, then e-procurement activities are designed to fail.

The advent of the Internet as a business systems platform has been a catalyst for major changes in the operation and status of organizational procurement. Information Technologies have changed the way organizations and governments operate (Mose *et al.*, 2013) According to Shale (2014) with the continuous advancement in technology and the transformation of business dynamics the world has seen an easy accessibility to reliable electronic support services available worldwide with an equal demand in almost all sectors.

Government departments display distinctive characteristics compared to private organisations. The government procurement system administers money that belongs to the people and the procured goods and services are intended to serve the public (Cavinato and Kauffman, 2000). The variety and the number of purchased products are generally greater in the government sector.

In addition, policy makers have a major bearing on procurement practices adopted in government departments, and the pattern of engagement with service providers is usually very different from that prevailing in the private organisations (Lian and Laing, 2004). In Kenya, reforms touching on the introduction of high speed and high capacity fibre optic cable which is meant to boost the efficiency of internet thus making e-procurement a reality were implemented (ROK,2009). Similarly, the integrated financial management information system (IFMIS) was also introduced as a major instrument to bolster e-procurement solution and to improve governance of Ministries and Departments (Miheso, 2013). However, although e-procurement implementation

process was to be accomplished by June 2007, the process has been very slow. According to The Public Procurement and Asset Disposal Act- 2015, most of the procurement processes in the public sector (that includes public hospitals) are still manual. These manual processes are costly, slow, inefficient and data storage and retrieval is poor (Malela, 2010).

Government departments display distinctive characteristics compared to private organisations. The government procurement system administers money that belongs 'to all' and the procured goods and services are intended to serve the public (Cavinato and Kauffman, 2000). The variety and the number of purchased products are generally greater in the government sector. Policy makers have a major bearing on procurement practices adopted in government departments, and the pattern of engagement with service providers is usually very different from that prevailing in the private organisations (Lian and Laing, 2004). In addition, the number of suppliers in the governmental purchasing system tends to be very large, and the unified procurement plan for all governmental agencies and the information exchange among the government organisations are not a normal practice in the private sector (Panayiotou *et al.*, 2004).

India has not made much progress in implementing e-governance and in adopting e-procurement in government organisations. Exploring the reasons for the slow adoption is therefore very important. Researchers, worldwide, are engaged in studying the factors that influence the adoption of e-procurement in government sectors (Davila *et al.*, 2003; Chu *et al.*, 2004; Panayiotou *et al.*, 2004; Arslan *et al.*, 2006; Croom and Brandon-Jones, 2007; Badri and Alshare, 2008). Interestingly, although the studies on e-procurement carried out for different countries have addressed similar issues their

findings are markedly different reflecting the dependence of the factors on the unique environment prevailing in each country. For example, a factor, organisation infrastructure, considered very important for USA (Davila *et al.*, 2003) is not included in the list of important factors for Taiwan (Chu *et al.*, 2004). Similarly, effective management policy is considered highly important for Hong Kong (Gunasekarana and Ngai, 2008) in contrast to end-user satisfaction considered highly important for Taiwan (Chu *et al.*, 2004). Furthermore, a factor, IT skill of the employees, considered important in Greece (Panayiotou *et al.*, 2004) does not appear in the list of important factors for UK (Croom and Brandon-Jones, 2007). It is therefore considered necessary to make a study on identifying factors that influence e-procurement adoption in government departments in India. Government departments display distinctive characteristics compared to private organisations. The government procurement system administers money that belongs 'to all' and the procured goods and services are intended to serve the public (Cavinato and Kauffman, 2000). The variety and the number of purchased products are generally greater in the government sector. Policy makers have a major bearing on procurement practices adopted in government departments, and the pattern of engagement with service providers is usually very different from that prevailing in the private organisations (Lian and Laing, 2004). In addition, the number of suppliers in the governmental purchasing system tends to be very large, and the unified procurement plan for all governmental agencies and the information exchange among the government organisations are not a normal practice in the private sector (Panayiotou *et al.*, 2004).

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Globally different countries have adopted e-procurement with a significance difference, Batenburg (2007) analysed a link between usage of e-procurement in European entities with an objective of determining e-procurement adaptation in European Countries. The findings of the study established that different countries have different ways of adopting e-procurement. Countries such as Germany and UK reported to have adopted e-procurement 60% while 40% of other European nations followed the same.

Carabello *et al.*, (2001) conducted a study about e-procurement and its effect on expense in health sector of the Unites States of America. The objective of the study to determine how hospitals in the U.S.A procured their supplies, and to establish if the hospitals in

the U.S.A has implemented e-procurement in their systems. The study noted that through implementation of e-procurement, there were cases of cost reduction in the hospitals expenses.

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 benefit accrued from them. (Kamotho D. 2014) did a study on e- procurement and procurement performance among state corporations in Kenya The study found out that state corporations have adopted various e-procurement procurement practices to enhance their procurement performance and the e-procurement practices adopted by state corporations have had a significant impact on improving their procurement performance.

Another study by (Orina, 2013) on readiness factors in Kenya's public sector in adaptation of e-procurement, established that the challenges faced were staff skills, resistance to change, lack of enthusiasm by staff. However, the majority of the respondents were from parastatals and only 5 respondents were from the ministry.

Interestingly, although the studies on e-procurement carried out for different countries in different set ups have addressed similar issues, their findings are markedly different reflecting the dependence of the factors on the unique environment prevailing in each country. For example a factor such as organisation infrastructure is considered very important for USA (Davila *et al.*, 2003) however it is not included in Taiwan list of important factors (Chu *et al.*, 2004). Similarly, effective management policy is considered highly important for Hong Kong (Gunasekarana and Ngai, 2008) in contrast to end-user satisfaction considered highly important for Taiwan (Chu *et al.*, 2004). Furthermore, IT skill of the employees considered important in Greece (Panayiotou *et*

al., 2004) does not appear in the list of important factors for UK (Croom and Brandon-Jones, 2007). It is therefore considered necessary to explore e-procurement in different set ups and the reasons for the slow adoption.

2.2 Theoretical Foundations of E-procurement Adoption and Implementation

Several theories and models have been developed to explain technology adaptation and implementation. In this literature, resource based view theory and technology adoption model will be used to explain the adaptation and implementation of e-procurement.

2.2.1 Resource Based View Theory

The resource based view (RBV) theory views the firm as a bundle of resources and capabilities which give the company a competitive advantage and performance. It states that uniquely combining a set of complementary and specialized resources and capabilities may lead to value creation. A firm's resources and capabilities are valuable if they reduce the firm's costs or increase its revenues compared to what would have been the case if the firm did not possess those resources.

(Rantakari, 2010) defines (RBV) theory as where the outsourcing decision is based on the client company's abilities to invest in internal capabilities and thus sustain competitive advantage. According to (Lacity & Will, 2008) resources that are possessed by a firm are the primary determinants of its performance, and may contribute to a sustainable competitive advantage of the firm.

(Grant, 1991) classifies resources into tangible, intangible, and personnel-based resources. Tangible resources include the financial capital and the physical assets of the firm such as plant, equipment, and stocks of raw materials. Intangible resources encompass assets such as reputation, brand image, and product quality. Personnel-based resources include technical know-how and other knowledge assets including dimensions

such as organizational culture, employee training and loyalty. The resource based view of a firm was applied to understand how the superior IT resources of organization render the cost and value of IT innovations different from competitors information systems, skills and knowledge of employees and organizational culture and trust (Bharadwaj, 2000).

Barney and others point out that understanding the causal relationship between the sources of advantage and successful strategies can be very difficult in practice (Barney *et al.*,1991) Thus, a great deal of managerial effort must be invested in identifying, understanding and classifying core competencies. In addition, management must invest in organisational learning to develop, nurture and maintain key resources and competencies.

VRIO analysis is an analytical technique brilliant for the evaluation of company's resources and thus the competitive advantage. VRIO is an acronym from the initials of the names of evaluation: Value, Rareness, Imitability and Organization. The VRIO analysis was developed by Jay B. Barney as a way of evaluating the resources of an organization (Barney, 1995).

(Rantakari, 2010) acknowledge that a company that possesses VRIO and exploits its capabilities, will certainly achieve sustainable competitive advantage and above average performance.

According to Barney, the key managerial tasks are:

1. Identify the firms potential key resources
2. Evaluate whether these resources fulfil the following:

- Value- How expensive is the resource and how easy it is to obtain on the market e.g. purchase, lease, rent, etc.
 - Rareness- How rare or limited is the resource
 - Imitability- How difficult is it to imitate the resource
 - Organization- Is the resource supported by any existing arrangements and can the organization use it properly.
3. Develop, nurture and protect resources that pass these evaluations.

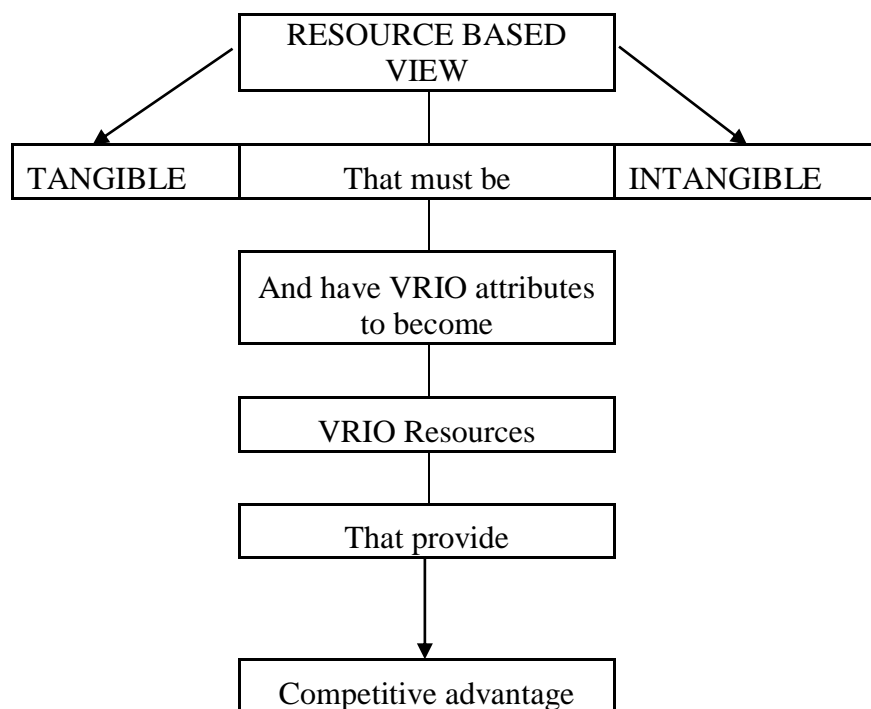


Figure 1: Resource Based View Theory

2.2.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) introduced by (Davis, 1989) is an adaptation of the Theory of Reasoned Action (TRA) specifically tailored for modelling user acceptance of IS. Theory of Reasoned Action (TRA) was developed explain behaviour

based on the individuals' expectations of behavioural outcomes (Fishbein & Ajzen, 1977).

The theory postulates that perceived usefulness entails how users feel in the sense that intended innovations contributed to making work more effective thereby improving on results, while ease of use as viewed by the employee assesses the efforts made in order to use the new system (Chutter, 2009).

The Technology Acceptance Model theory has been used for decades to guide studies aimed at explaining information technology and technology (ICT) usage behaviour (Bagozzi, 2007). The theory delves on analysing the drivers of potential users to approve or refuse to use the system and predicts user's reaction when using the system. Under TAM, the emphasis is on how much a user views the system to improve the desired work output and how much the system is easy to use.

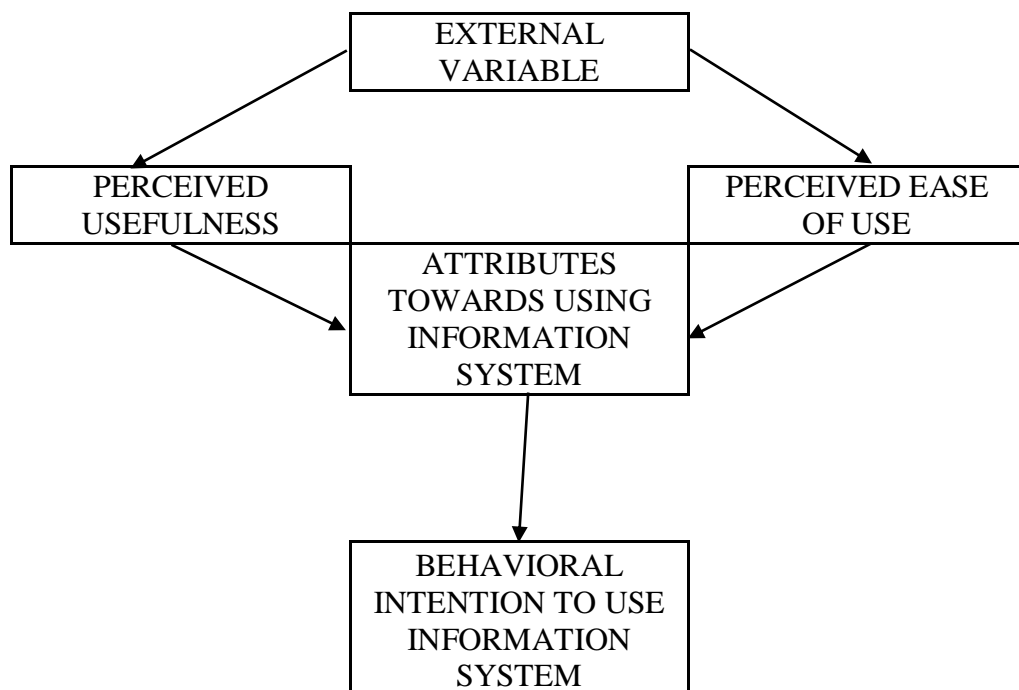


Figure 2: Technology Acceptance Theory

2.3 Advantages of E-procurement

Given the scale and significance of procurement expenditure and the impact of reducing the cost of procurement, it is not surprising that over the past decade there has been an increasing focus on the cost of procurement within both private and public sector organizations. This focus has resulted in the identification of innovative and alternative procurement mechanisms which will provide real business benefits (Fernandes & Vieira, 2015). E-procurement will result to substantial improved potential compared with paper-based procurement systems(Puschmann & Alt, 2005).

The advantages achieved by use of e-procurement are related to Technology Acceptance Model. The model influence the advantages achieved because the model postulates that the perceived usefulness which entails how users feel (I.e. the sense that intended innovations contribute to making work more effective) are achieved by the employee (Chutter, 2009).

In addition, the resource based view (RBV) theory which views the firm as a bundle of resources will be of advantage if the company gains a competitive advantage and performance over other companies.

E-procurement benefits fall into two categories namely direct cost reduction and indirect benefits. Direct cost reduction which is achieved by firstly increasing efficiency in procurement process. Process efficiency is defined as less employee time spending on searching, authorizing, approval and ordering; secondly, direct cost reduction is achieved by enabling reduction of the number of staff who process each order by automatic validation of pre-approved budget for each person and each department; and thirdly, by decreasing printing cost and paper cost of order forms and invoices (Narendira Kumar & Srinivasan, 2013).

Indirect benefits of e-procurement such as decreasing cycle between order and delivery and enabling greater flexibility for supplier selection according to the best value (Kumar & Srinivasan, 2013). Quality, flexibility, cost efficiency and speed in procurement processes can be improved by utilizing new technologies such as internet and World Wide Web (Gebauer & Segev, 2001).

According to (Angeles & Nath, 2007) e-procurement has the following benefits: Reduction in cost and procurement cycle time. More effective budget control by limiting the expenditures and enhanced reporting. Minimizing ordering and administrative errors. Enabling originator to concentrate on strategic aspect of purchasing and decrease the product price. Enhanced information management, Better payment process (if it is integrated with e-procurement).

Other benefits include cost savings, improved contract compliance, time savings, reduced administration costs, enhanced market data, improved responsiveness to changes in customer demand, improved collaboration of the supply chain, reduced operating and inventory costs, On-Line negotiated cost reduction, increased accuracy of production capacity and enhanced “Skill sets” and standardized strategies. (Forrester, (2001 – 2003; Minahan & Degan 2001).

However, though many benefits have been mentioned, the studies have not ranked the benefits in any way. Davila *et al.*, (2003) was one of the first to rank six drivers in their study of U.S e-procurement. These, arranged in rank order with the most important first were; purchasing transaction costs, purchasing order fulfilment time, increased number of suppliers, purchasing cycle time, price paid for goods decrease and headcount to support purchase transactions.

E-procurement systems allow more efficient integration of supply chains and provide better organization and tracking of transaction records for easier data acquisition. This leads to enhanced competitiveness and lowered cost (Ogot *et al.*, 2009). Transactions can be standardized and all bids for products and services can be tracked more easily, allowing hospitals to use such knowledge to obtain better pricing.

2.4 Factors Influencing Implementation of E-procurement

A rich literature exists on various models that explain organizational decisions of e-procurement systems and their organizational performance. In this study two models have been used to explain the factors that would influence implementation of e-procurement. Technology acceptance model explains that the employees are more drawn to use the system if it is able to meet the perceived usefulness by making work more effective. Resource Based View theory which views the e-procurement system as part of the resources the company has, will be a drive factor to adopt e-procurement if it's able to give the company a competitive advantage over other companies. Acceptance of e-procurement systems by employees working in the state corporations is important to ensure improved organizational effectiveness (Subramaniam & Shaw, 2004).

According to Croom & Johnston (2003), it's essential that internal system users adhere to compliance for electronic procurement to produce cost and efficiency benefits, and as such, internal customer satisfaction ought to be a major issue in the creation, adoption, and setting up of such a system. This implies that the extent of compliance with e-procurement is substantially controlled by the overall attitude of the county in general to either the procedure of digital redesign or the inclination toward reaping the supposed gains in electronic procurement (Soeters, *et al.*, 2014).

According (Somers & Nelson, 2001), senior management support, vendor support, user training, and user involvement are some of the factors affecting implementation of IT system. Senior management support is generally affected in 2 ways: a) Willingness to provide the necessary resources to the implementation of an IT application, and b) a strong role played at resolving disputes result from the introduction of the IT system. When employees are given a clear signal from their senior management about the importance of the IT application to succeed and also receive considerable support in terms of necessary training and required changes necessary for business process, their willingness to accept that IT are increased. Staff not embracing change, staff lacking passion for the job, lack of relevant knowledge on e- procurement and existing policies on procurement, impact on how ready the public entities are on e- procurement implementation (Orina, 2013).

Trust is one of issues affecting adaptation and implementation of e-procurement. Trust is reliance on a partner and involves vulnerability and uncertainty on the part of the trustee. In other words, the level of trust a party poses in another can be weakened by risk and uncertainty. A great deal of activities in electronic commerce system relies greatly on trust. Usually, the relationship between buyer and supplier is a mix of mutual dependency and suspicion. This means the level of trust a party possesses in another can be weakened by risk and uncertainty. Business buyers perform directly based on their own level of risk perception (Schoenherr & Tummala, 2007).

There is also the issue of end-user training on e-procurement. As e-procurement includes new technologies and changes in conventional procurement approaches, the need to train staff on e- procurement practices and the use of e-procurement tools are critical to the success of an e-procurement initiative. End users can realize the immediate benefits

of e-procurement system once they understand the operational functionalities. This means that training should be given a high priority, alongside the need for organizations to identify the skills required by all those engaged in procurement (Rahim, 2008).

Early supplier/supply chain partner's involvement is another factor affecting adaptation of e-procurement. It is important to demonstrate the proposed solution to the supply chain partners and discuss any necessary changes, issues, and concerns such as various options in developing and maintaining supplier catalogues (Vaidya *et al.*, 2003). Providing opportunities for supply chain partners to offer their feedback will allow them opportunity to monitor areas for improvement and adjust their internal practices accordingly.

2.5 Challenges of E- Procurement Adoption and Implementation

While various governments are encouraging public sector agencies to adopt e-procurement, its implementation does not appear to have been smooth and the rate of e-procurement implementation has been being low (Vaidya, Sajeev, & Callender, 2006). A few general inhibitors (e.g. sector independent) have been identified by a range of authors (Deise *et al.*, 2000; Srivivasan, 2004; & Issa *et al.*, 2008) these inhibitors include the security implications for an organization transacting over the internet, the lack of interoperability with existing solutions (e.g. Enterprise resource planning) and the unwillingness of suppliers to embrace this aspect of e-commerce.

Through flawed public procurement processes, large sums of taxpayer's money have been lost in Kenya in the past. The main reasons being low personal ethical standards by concerned parties and organizational culture and the environment (Kangogo & Kiptoo, 2013).In addition, security breaches, cultural mismatch, non-participation by

key suppliers, regulatory difficulties have led to loss of money (Trkman and McCormack, 2010).

Alongside these general inhibitors, many specific inhibitors have been identified which relate to a specific sector. For example, Panayiotou *et al.*, (2004) has noted that the inhibiting factors affecting the adoption of e-procurement in the Greek public sector includes the complexity of goods and services procured and the need for transparency in procurement. The challenges posed by public policy and the regulatory and legal constraints faced by public sector organizations.

Another example is Hawking *et al.*, (2004) who noted in their research of small and medium enterprises (SMEs) in Australia that one of the main inhibitors was the absence of a single e- procurement solution, which led to a lack of procurement standardization (e.g. several procurement standards exist for the categorization of goods and services), a lack of supplier adoption and therefore expensive e-procurement solutions.

2.6 Summary of Literature Review and Research Gap.

Two theories are the basis of this research and they include: Technology Acceptance Model and Resource Based View. There's been an increment in the importance of e-procurement in the recent past, within both private and public sectors.

Nonetheless, in spite of the recognized benefits and the need to implement the same, there has been little research done within the public hospitals in Kenya to clearly outline, the extent, benefits, challenges and factors that affect adaptation of e-procurement.

For instance, though there have been several researches mentioned in the literature on adaptation of e-procurement e.g. research carried out on readiness factors in Kenya's public sector in adaptation of e-procurement (Orina D., 2013), and e-procurement and procurement performance among state corporations in Kenya. (Kamotho D., 2014), the

findings cannot be used to conclude the situation in Public hospital set up hence need for this study.

In addition, although the studies on e-procurement has been carried out in different countries in different set ups have addressed similar issues, their findings are markedly different reflecting the dependence of the factors on the unique environment prevailing in each country.

And as such, the ranking in different set ups may vary due to social and cultural dynamics and it is therefore considered necessary to explore e-procurement in different set ups to assess the implementation of e-procurement.

2.6 Conceptual Framework

2.6.1 Review of the variables

Extent of e-procurement implementation:

Implementation of e-procurement involves using advanced communication technologies such as email and the Internet. Having an online presence creates important new methods of procurement for public procurement entities. Procuring entities have the role to create e-procurement platforms in which stakeholders in the procurement department can sign in (Henriksen *et al.*, 2005). ICT consists of a combination of hardware and software technologies. Hardware components are important for knowledge. Some of the hardware requirements include personal computers or work stations to facilitate the access to knowledge, servers for high traffic for the organization to be in the network, open architecture for interoperability in distributed media, mass media rich in application that need integrated digital network of services and high speed optic fibre to offer access to public network email.

Factors affecting implementation: Employees must understand how to use ICT and how it will change the way they do business. This obstacle is more prominent for advanced ICT such as e-commerce, procure-to-pay IFMIS and ERP software than for basic ICT such as phone lines. A response from one of the managers in a study carried out by Macmanus, (2002) indicated that, lack of competences, need of training and absence of motivation in many public procurement officers, are some of the main reasons for which any new projects, new tools like e-Procurement, IFMIS or any change are hardly implemented and hence the need to improve the already existing bureaucratic standards in public institutions.

Benefits of implementation: At the international level public procurement rules depend on the country's legal setting and on purchase players (Government, public agency among others). International agreements on public tendering and procurement aim to regulate goods, services and trade opportunities between public procurement and private organizations across different countries. In Kenya, the processes of procurement are controlled by Public Procurement Oversight Authority (PPOA). The PPOA is mandated with the responsibility of Ensuring that procurement procedures established under the Act are complied with, Monitoring the procurement system and reporting on its overall functioning, Initiating public procurement policy, Assisting in the implementation and operation of the public procurement system by:- preparing and distributing manuals and standard tender documents, providing advice and assistance to procuring entities and develop, promote and support training and professional development of staff involved in procurement contends (Andersen,V., 2004).

Challenges of implementation: Like any other technological change, e procurement brings change in an organization that requires organizational managers to adopt change

management strategies towards making the transformation process success procurement action plan. One way in which managers in organizations can reveal commitment to change is to have change management team structures that identifies who was doing the change management work (Yildirim, Soner., 2000).

Most major e procurement initiatives are driven by top management. It's not unusual for a Chief Executive Officers (CEO) to be directly involved in the early stages of the process. One often unexpected demand of implementing an e procurement strategy is the requirement for new management techniques and specialized skills among the organization's management team. Managerial commitment towards e procurement implementation has also been discussed by scholars concerning the style of leadership adopted by many managers. Almost all managers of African organizations, perhaps because of societal norms and expectations emphasize bureaucratic practices with total reliance on rules and regulations that workers obey without questioning or offering constructive criticism (Alpar P., & Olbrich S., 2005).

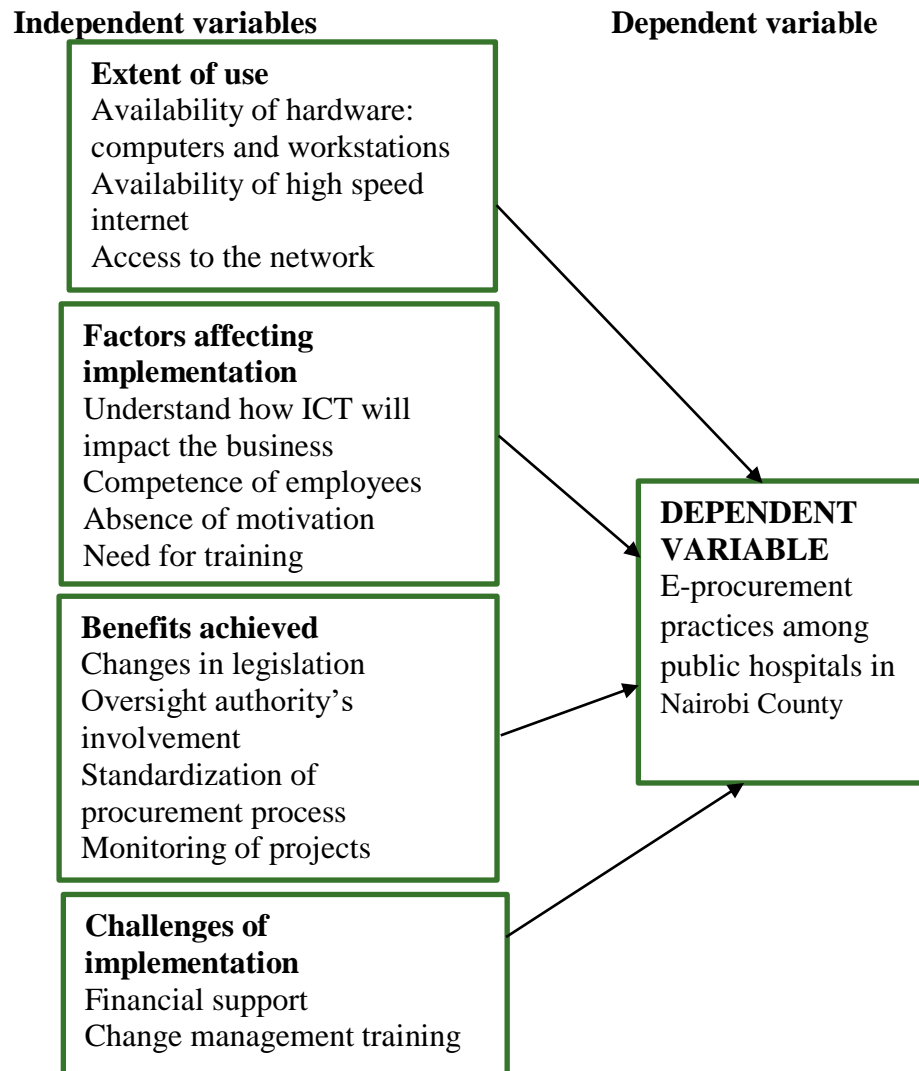


Figure 3: Conceptual Framework
Source (Researcher, 2019).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives an outline of research methods that were followed in the study. It provides information on the participants, that is, the criteria for inclusion in the study, who the participants were and how they were sampled. The researcher describes the research design that was chosen for the purpose of this study and the reasons for this choice. The instrument that was used for data collection is also described and the procedures that were followed to carry out this study are included. The researcher also discusses the methods used to analyse the data, and lastly, the ethical issues that were followed in the process are also discussed.

3.2 Study Area

The study was conducted in three hospitals within Nairobi County in Kenya. Nairobi County is one of the 47 counties of Kenya. It is the smallest county yet the most populous of the counties. According to the 2009 census, Nairobi is the most populous city in East Africa, with an estimated population of 3 million. Due to this reason Nairobi county has the highest budget allocation among the 47 counties. The majority of this population seeks services at the public hospitals since they are relatively affordable as compared to the private sector hospitals. A lot of procurement process happens to service this population.

For this study, the three major public hospitals within the Nairobi County were selected. The selection was based on the accredited hospitals with the National Health Insurance Fund (NHIF) in Nairobi County that provided both the inpatient and outpatient services.

The hospitals that fell under this category were: Mama Lucy Kibaki Hospital, Mbagathi Hospital and Pumwani Maternity Hospital.

Mama Lucy Kibaki Hospital and Mbagathi Hospital provide various inpatient and outpatient services while Pumwani Maternity Centre provide mainly inpatient and outpatient maternity service in Nairobi.

Mama Lucy Kibaki Hospital is located in the east part of Nairobi in Embakasi Division, while Mbagathi Hospital is located in Dagoretti District in Nairobi County and Pumwani Maternity hospital is located in Pumwani in Nairobi County.

Mbagathi Hospital is the main public hospital in Nairobi County with a bed capacity of 250 beds while Mama Lucy Kibaki Hospital has a 124-bed capacity while on the other hand, Pumwani Maternity Hospital is main specialist maternity centre in Nairobi with a bed capacity of 354 beds and located on the east of Nairobi City.

The study was done in Nairobi County because it is the most populous county with the majority of the population accessing the public hospitals due to their relatively affordable services. To service this population within the hospitals, a lot of procurement has to be done. Nairobi county also has the highest budget allocation as compared to the other counties and hence was appropriate for the study.

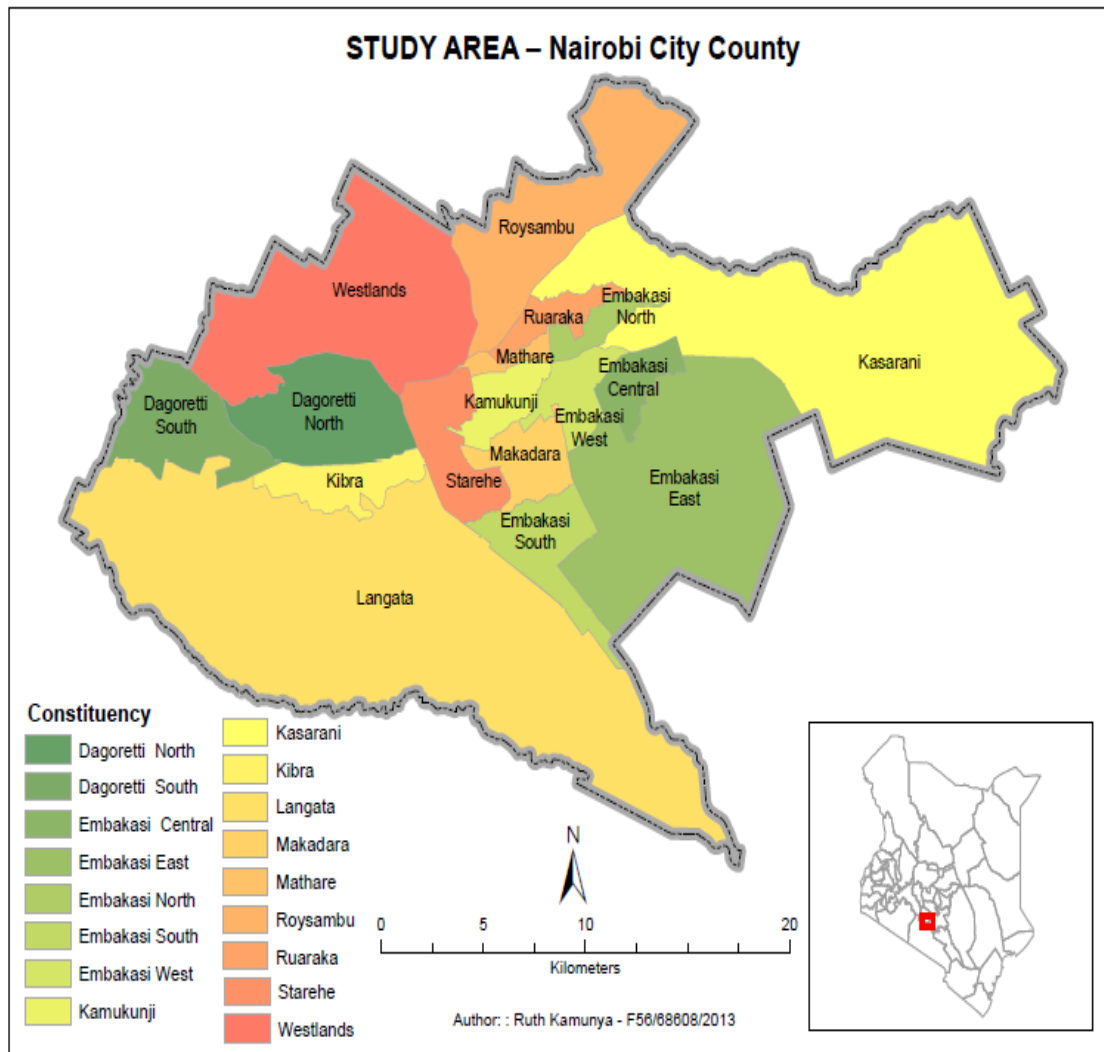


Figure 4: A map of Nairobi showing the study area

3.3 Study Population

The target population was all the permanent staff dealing with procurement within the inpatient and outpatient hospital setting in the following departments: Procurement, Finance, Clinical service, and Administration departments. All the permanent staff in Procurement and Finance (76 and 19 respondents respectively) were included in the study. Clinical services (72 respondents) included all the doctors heading various departments in the hospital and the shift leaders, while the Administration (139 respondents) involved all the heads of departments in all departments in the hospitals and their deputy heads.

3.4 Research Design

The research design constitutes the blue print for the collection, measurement and analysis of the data, (Kothari, 2004). The study adopted a descriptive cross sectional study design. This quantitative research study design helped identify and study different phenomena concerning e-procurement in public hospitals in Nairobi County. Descriptive research helped collect sufficient data about the prevailing conditions or situations for the purpose of description and interpretation (Salaria, 2012).

3.5 Sample Size Determination

Sampling is the process by which a relatively small number of individuals, objects or events is selected in order to find out something about the entire population from which it was selected (Kothari, 2004).

Stratified sampling method was used to determine the sample size. Data was obtained from the hospital administration on all the permanent staff working in following departments within the three selected public hospitals in Nairobi County: Procurement, Finance, Clinical services and Administration. These departments were actively involved in procurement and hence suitable for the study.

All the staff were included in the study and distribution within the hospitals per departments included all the permanent staff working in procurement and finance. Clinical services included all the doctors heading various departments in the hospitals and the shift leaders, while the Administration involved all the heads of departments and deputy heads within the three selected hospitals in Nairobi County.

The total study population was 306 and their distribution in each hospital was as follows:

Table 1: Study Population Distribution per Hospital and Department

Departments	Number Sampled (n)			Total
	Mbagathi	Pumwani	Mama Lucy	
	Hospital	Maternity	Kibaki	
Procurement	26	25	25	76
Finance	8	6	5	19
Clinical Services	34	23	15	72
Administration	57	31	51	139
TOTAL	138	128	118	306

3.5.1 Inclusion criteria

The study included participants who were on permanent employment by the hospital and had finished their probation time. The participants included staff from the Procurement, Finance, Clinical services and Administration departments due to their better understanding of the hospital processes.

3.6 Data Collection Methods

Data was collected at one point in time between 1st June and 30th June 2017 at the three hospitals, i.e. Mama Lucy Kibaki Hospital, Mbagathi Hospital and Pumwani Maternity Hospital. A self-administered questionnaire with both closed and open ended questions was used to collect data from the participants. The questionnaires were filled by the participants at their place of work.

3.7 Data Collection Tools

A self-administered semi-structured questionnaire with three sections and 20-items was used to collect data from the participants. The first section of the questionnaire constituted the socio demographic characteristics of respondent, while the second part consisted of questions on implementation status of the e-procurement system, followed

by challenges of e-procurement implementation and factors affecting e-procurement and finally perceived benefits of e-procurement implementation.

3.8 Data Analysis

Descriptive statistics was used to analyse the discreet data by deriving the central tendency of data in question (mean), measuring the amount of variation or dispersion of a set of values (SD) and number of times data value occurs (Frequencies)

Factor Analysis which is a multivariate statistical procedure, was used to test how well the measured variables represent the number of constraints. Factor analysis was used to analyse the 17 statements on factors affecting implementation of e-procurement. Eight factors were derived from the analysis.

Multiple regression analysis was used to estimate the relationship between a dependent variable and independent variable.

Bivariate linear regression- Used to analyse the 8 factors to establish their significance towards e-procurement implementation.

The questionnaires were checked for completeness, and consistency of data was also established. The data was cleaned, coded before being fed into the SPSS for analysis.

3.9 Test for and Reliability of Research Instruments

3.9.1 Pilot Test

Mugenda & Mugenda (1999) defines validity as the accuracy and meaningfulness of the inferences which are based on the research results. The questionnaire was piloted to determine its validity. Five employees from Kiambu County Hospital procurement department were given the questionnaire to fill. Test retest method was used to attest the reliability of the instrument (Chen, 1999). The pilot test aided the researcher in clearing

any ambiguities and in ensuring that the questions posed measured what they were intended to measure.

3.10 Ethical Considerations

Ethical clearance to conduct the study was sought from IREC (Moi University College of Health Sciences Institutional Research and Ethics Committee) Ref No.: IREC/2016/48. Permission to conduct the study was also sought from the Nairobi county, hospital management and Medical Superintendents of the three hospitals. Written informed consent was obtained from the participants after explaining to them the study implications, purpose and the voluntary nature of participation in the study. Participant's names were omitted from the filled questionnaires to maintain their confidentiality and anonymity.

CHAPTER FOUR

RESULTS

4.1 Introduction

The main objective of this study was to assess the implementation of e-procurement practices among public hospitals in Nairobi County Kenya. All the respondents totalling to 306 were included in the study. Various analysis methods were applied to analyse the data collected and they included descriptive statistics for the discrete data, which was used to derive the central tendency of data in question, measure the amount of variation or dispersion of a set of values, and number of times data value occurs. Factor analysis which is a multivariate statistical procedure that is used to test how well the measured variables represent the number of constraints was also used to analyse the 17 statements on factors affecting implementation of e-procurement. Multiple regression analysis was used to estimate the relationship between a dependent variable independent variable and bivariate linear regression was used to analyse the 8 factors to establish their significance towards e-procurement implementation. A Statistical Package for Social Sciences software was employed.

4.2 Response Rate

The study was conducted in three health facilities in Nairobi County – Mama Lucy Kibaki Hospital, Pumwani Maternity Hospital and Mbagathi Hospital. A total of 102 (33.3%), 108 (35.3%) and 96 (31.4%) were included in the study respectively. The response rate of 100%.

Table 2: Response Rate by Health Facility

Health Facility	Number of Respondents	Response Rate (%)	Cum. (%)
Mama Lucy Kibaki Hospital	102	33.3	33.3
Pumwani Maternity Hospital	108	35.3	68.6
Mbagathi Hospital	96	31.4	100
Total	306	100	

Department	Mbagathi Hospital	Pumwani Maternity Hospital	Mama Lucy Kibaki Hospital	Total
	n (%)	n (%)	n (%)	N (%)
Procurement	15 (14.71)	38 (35.19)	23 (23.96)	76 (24.84)
Finance	4 (3.92)	8 (7.41)	7 (7.29)	19 (6.21)
Clinical Services	32 (31.37)	17 (15.74)	23 (23.96)	72 (23.53)
Administration	51 (50)	45 (41.67)	43 (44.79)	139 (45.42)
Total	102 (100)	108(100)	96(100)	306 (100)

4.3 Characteristics of the Respondents

A total of 141 (46.1%) of the respondents were male while 165 (53.9%) were female. Majority of the respondents (n=139, 45.4%) worked in clinical services within the hospital, followed by procurement department (n=76, 24.8%), then administration (n=72, 23.5%) while those working in the finance department were the least represented (n=19, 6.2%). The average age of the respondents was 32.27 years with a standard deviation of 7.18 years (Youngest= 19 years; Oldest=51 years). Majority of the respondents had worked for an average of 4 years. Fifty-two percent of the respondents had college education while only 43.3% had university education.

Table 3: Characteristics of respondents stratified by gender

Variables				
Age of respondents	Number of Obs 263			
	Obs	Mean	Std .Dev.	95% Conf. Interval
Male	124	32.21	7.6	30.87 33.55
Female	139	32.19	6.7	31.06 33.31
Combined	263	32.2	7.11	31.33 33.06
Diff		0.22		(-1.711) 1.76
Age of respondents per hospital	Hospital	Mean	Std. Dev	95% Conf. Interval
	Mama Lucy Kibaki Hospital	31.5	0.75	30.09 33.04
	Pumwani Maternity Hospital	32.2	0.77	30.72 33.73
	Mbagathi Hospital	32.8	0.76	31.30 34.30
Health Facility				
	Mama Lucy	Pumwani Maternity	Mbagathi	
Male (n%)	54 (52.9)	47 (43.5)	40 (41.7)	
Female (n%)	48 (47.1)	61 (56.5)	108 (58.3)	
Total (N%)	102 (100)	108 (100)	96 (100)	
Department	Finance	Procurement	Administration	Clinical Services
Male (n%)	12	31	37	61
Female (n%)	7	45	35	78
Total (N%)	19	76	72	139
Education				
	College (Diploma)	Undergraduate	Postgraduate	Secondary
Male (n%)	75 (46.9)	61 (46.9)	4 (28.6)	1 (50)
Female (n%)	85 (53.1)	69 (53.1)	10 (71.4)	1 (50)
Total (N%)	160 (100)	130 (100)	14 (100)	2 (100)
	Mama Lucy	Pumwani Maternity	Mbagathi	Total
College (Diploma)	67 (65.7)	46 (42.6)	47 (49.0)	160 (52.3)
Undergraduate	33 (32.4)	54 (50)	43 (44.8)	130 (42.5)
Postgraduate	1 (1)	7 (6.5)	6 (6.3)	14 (4.6)
Secondary	1 (1)	1 (0.9)	0 (0.0)	306 (100)

4.4 Extent of Implementation of E-procurement in Hospitals in Nairobi County

According to 23.9% of the respondents, hospitals within Nairobi County have adopted information technology and e-procurement. Table 5 highlights that there was a significant difference in the adoption of e-procurement among public hospitals in Nairobi County. Most of the respondents (n=41, 38%) from Pumwani Maternity hospital reported that the hospital had adopted e-procurement moderately while 17.7% and 14.7% of respondents from Mama Lucy Kibaki Hospital and Mbagathi Hospital reported very low adoption of e-procurement in their hospital respectively. Pumwani hospital was the only hospital that had adopted Integrated Financial Management Information System (IFMIS).

Similarly, Pumwani Maternity hospital also had a high proportion of its staff having undergone the Integrated Information Communication and Technologies (ICT) training. Approximately 15%, 7.3% and 5.9% of respondents in Pumwani Maternity, Mama Lucy Kibaki Hospital, Mbagathi Hospital had undergone ICT training respectively. However, there was no significant difference between the hospitals on ICT training.

Table 4: E-procurement Implementation

Variables	N (%)			Total	p-value (χ^2)
	Mama Lucy	Pumwani Hospital	Mbagathi Hospital		
ICT Training					
YES	6 (5.9)	16 (14.8)	7 (7.3)	29 (9.5)	0.059
NO	96 (94.1)	92 (85.2)	89 (92.7)	277 (90.5)	
Total	102	108	96	306	
Adoption of E-procurement					
YES	15 (14.7)	41 (38.0)	17 (17.7)	73 (23.9)	0.000
NO	87 (85.3)	67 (62.0)	79 (82.3)	233 (76.1)	
Total	102	108	96	308	

Table 5: Rating of the Extent of Implementation of E-procurement

Variables	Mama Lucy	Pumwani	Mbagathi	Total	p-value (X^2)
	n (%)	n (%)	n (%)	N (%)	
Rating					
Very Low	57 (55.9)	30 (27.8)	55 (57.3)	142 (46.4)	0.000
Low	21 (20.6)	26 (24.1)	15 (15.6)	62 (20.3)	
Moderate	17 (16.7)	43 (39.8)	21 (21.9)	81 (26.5)	
High	7 (6.9)	9 (8.3)	5 (5.2)	21 (6.9)	
Total	102 (100)	108 (100)	96 (100)	308 (100)	

4.4.1 Overall Rating of E-procurement Implementation

Overall, most of the respondents in all the hospitals rated the extent of development and implementation of very low except in Pumwani Maternity Hospital where majority (39.8%) rated the implementation as moderate. On average, only 6.9% of the respondents rated the extent of implementation of e-procurement as high with none rating it as very high. There was a significant difference in the rating of the extent of implementation of e-procurement in public hospitals in Nairobi County (Table 6).

4.5 Factors Affecting implementation of e-procurement

A confirmatory factor analysis (CFA) was used to analyse 17 statements used to measure the factors affecting implementation of e-procurement in public hospitals in Nairobi County. The statements were answered based on a Likert scale (1 to 5). Eight factors – perceived benefits of e-procurement, adaptability of e-procurement, attitude towards e-procurement, acceptability, leadership and management, training, perception of risk, and cost of implementation were generated from the factor analysis.

Table 6. Factors with Eigen value affecting e-procurement in Nairobi County

Factor	Eingen value	Difference	Proportion	Cumulative	Uniqueness
Perceived benefits	4.29257	2.74752	0.57	0.57	0.3748
Adaptability	1.54505	0.4536	0.2052	0.7752	0.3392
Attitude	1.09145	0.41652	0.1449	0.9201	0.4389
Acceptability	0.67493	0.12637	0.0896	1.0097	0.5084
Management	0.54856	0.2493	0.0728	1.0826	0.5113
Training	0.29926	0.08077	0.0397	1.1223	0.4678
Risk Perception	0.21849	0.02854	0.029	1.1513	0.6347
Cost	0.18995	0.11283	0.0252	1.1766	0.3926

Table 7: Factors affecting e-procurement in Nairobi County

Factor	Attributes	Mean	S.d.
Perceived benefits	E-procurement offers better efficiency and cost savings than traditional paper based procurement	3.63	1.26
	E-procurement infrastructure is easily compatible with existing technologies already in use in the organization	3.44	1.13
Adaptability	E-procurement is easy to adopt and implement and does not disrupt	3.18	1.17
	The systems are simple to train users on and to operate i.e. not complex	3.15	1.19
	Adoption of e-procurement does not negativity impact on existing corporate culture	3.19	1.12
	Existing vendors can facilitate parallel running of existing and e-procurement systems for trials	2.95	1.14
Attitude	Staff do not fear that implementation of e-procurement might injure inter-personal relations	2.93	1.41
	There is no fear of loss of jobs due to adoption and full implementation of e-procurement.	2.90	1.41
Acceptability	Staff in my organization are receptive to new technological innovations	3.17	1.61
	There are dominant systems in use in the industry which facilities can easily integrate	2.96	1.12
Management	There is top management support to technological innovations	2.97	1.14
	The hospital has adequate information technology infrastructure for all staff involved in purchasing	2.72	1.12
Training	Employees in my organization are highly trained in the use of information systems	2.67	1.17
	There is a continuous training and awareness creation on new technologies among top management and staff	2.77	1.24
Risk Perception	E-procurement is prone to risk and can significantly disrupt operations	2.92	1.18
	E-procurement limits the organizations to suppliers within the network hence leading to high opportunity costs	2.87	1.26
Cost	Adoption of e-procurement is costly venture that requires enormous amounts of capital	2.94	1.40

In the univariate analysis of the factors against the adoption of e-procurement, all the identified factors were statistically significant except for adaptability of e-procurement, perception of risk and cost of implementation of e-procurement. However, on the multivariate linear regression where all the factors were included in the regression model, training was the only statistically significant factors affecting the adoption and implementation of e-procurement in public hospitals in Nairobi County (Table 8).

Table 8: Results of the Univariate and Multivariate Linear Regression

	Univariate Linear Regression		Multivariate Linear Regression	
	Unadjusted Coef. (95% CI)	p-value	Adjusted Coef. (95% CI)	p-value
Perceived benefits	-0.041 (-0.076, -0.006)	0.022*	-0.006 (-0.049, 0.037)	0.795
Adaptability	-0.035 (-0.071, 0.001)	0.054	0.013 (-0.029, 0.055)	0.542
Attitude	-0.062 (-0.097, -0.027)	0.001*	-0.032 (-0.071, 0.008)	0.115
Acceptability	-0.068 (-0.010, -0.033)	0.000*	-0.022 (-0.065, 0.020)	0.301
Management	-0.070 (-0.106, -0.035)	0.000*	-0.032 (-0.074, 0.010)	0.132
Training	-0.090 (-0.125, -0.054)	0.000*	-0.063 (-0.104, -0.022)	0.003*
Risk Perception	-0.031 (-0.070, 0.008)	0.116	-0.025 (-0.066, 0.016)	0.238
Costs	-0.007 (-0.052, 0.038)	0.766	0.025 (-0.022, 0.072)	0.297
Constant			1.76 (1.716, 1.807)	0.000

4.6 Benefits of E-procurement

The benefits of e-procurement that were ranked highly by the respondents include improving the standardization and streamlining of procurement processes ($mean=4.10\pm0.92$), effective monitoring of projects and tenders ($mean=4.03\pm1.09$), providing a quick reference for auditing and reducing the procurement lead time ($mean=4.01\pm1.04$).

The benefit of e-procurement of reducing corruption and fraud, cartels, collusion and rigging was ranked the least of the benefits ($mean=3.58\pm1.24$).

Table 9: Benefits of e-procurement among public hospitals in Nairobi County

Benefits	N	Min	Max	Mean	Std. Dev.
Improves standardization and streamlining of procurement processes	306	1	5	4.10	0.92
Effective monitoring of projects and tenders	306	1	5	4.03	1.09
Provides quicker reference and audit trail	306	1	5	4.01	1.04
Reduced procurement time / Lead time	306	1	5	4.00	1.19
Increase of visibility of all financial activities related to procurement of goods and services	306	1	5	3.92	1.09
Improved cooperation between buyers and vendors	306	1	5	3.87	1.12
Improved transparency and accountability	306	1	5	3.87	1.07
Enhance competition leading to improved quality	306	1	5	3.80	1.14
Create stiff competition among vendors leading to lower prices	306	1	5	3.70	1.14
Reduced disputes among the stakeholders	306	1	5	3.66	1.10
Curtail risk of fraud and other errors like double payments created through manual purchasing environment	306	1	5	3.65	1.15
Online bidding reduces cartels, collusion and rigging	306	1	5	3.62	1.27
E-procurement reduces corruption and fraud	306	1	5	3.58	1.24

4.7 Challenges of Adoption and Implementation of E-procurement

Top management leadership and support for the e-procurement project implementation, availability of high-speed internet from a reliable internet service providers (ISPs), availability of technical and administrative skills among the procurement staff, and having were cited as the four top factors that have affected the extent of adoption of e-procurement in public hospitals in Nairobi County (See Table 6).

Other factors that may be a challenge in implementation of e-procurement include poor ICT system, lack of appropriate documents to carry out the procurement process, lack of integration with major suppliers, lack of funds to facilitate complete implementation of e- procurement, end users having not been trained on use of e-procurement systems.

Table 10: Challenges of e-procurement implementation

Statement regarding e-procurement implementation	n	Min	Max	Mean	Std. Dev.
Top management leadership and support for the e-procurement project implementation	306	1	5	2.55	1.37
A high-speed internet connected computers with a reliable internet service providers (ISPs)	306	1	5	2.47	1.34
Procurement staff have the necessary skills and know how to implement e-procurement	306	1	5	2.44	1.41
Electronic procurement policy / manual within the organization to guide the process	306	1	5	2.24	1.34
An established information and communication technology department to support the e-procurement system	306	1	5	2.18	1.16
Various online documents e.g. requisitions, RFQs and tender forms etc.	306	1	5	2.16	1.25
Major suppliers have been involved in efforts towards integration of procurement systems	306	1	5	2.15	1.27
Sufficient funds have been set aside for the complete implementation of e-procurement	306	1	5	1.98	1.23
End-users have been trained on utilization of e-procurement systems	306	1	5	1.97	1.22
The hospital has acquired all the necessary hardware and software to facilitate e-procurement	306	1	5	1.92	1.18

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter presents the summary of the findings, conclusions and recommendations based on the data analysed in the previous chapter. Some limitations and recommendations for further research have also been identified.

5.2 Summary

The focus of this study was to assess the implementation of e-procurement practices among public hospitals in Nairobi Kenya. It was guided by 4 specific objectives which were: to assess the extent of use of e-procurement, identify the factors affecting implementation, determine the benefits being achieved and identify the challenges experienced in implementation of e-procurement.

Two models were used in this study to explain the behavioural, cultural and factors that affect acceptance or rejection of technology by people. These theories included Technology acceptance model and Resource based view theory.

Technology acceptance model postulates that the employees are more drawn to use the system if it is able to meet the perceived usefulness by making work more effective. Resource Based View theory, (which views the e-procurement system as part of the resources the company has), explains that adaptation and implementation of e-procurement will be a drive factor to if it's able to give the company a competitive advantage over other companies.

For standardization of the selected hospitals, the study was done within the public hospitals that had been NHIF accredited and were offering both inpatient and outpatient services within Nairobi County. The hospitals that fell under the criteria were Pumwani Maternity hospital, Mama Lucy Kibaki Hospital and Bagathi Hospital. A total of

respondents, 102 (33.3%), 108 (35.3%) and 96 (31.4%) were from Mama Lucy Kibaki, Pumwani Maternity and Mbagathi hospital respectively.

The study was carried out in the hospitals within the four selected departments i.e. procurement, finance, clinical services and administrative departments. These departments were suitable for the study because they were actively involved in procurement process within the hospital.

All the respondents from the said departments in the three hospitals were included in the study. Majority of the respondents (45.4%) were from administration followed by procurement department (24.8%), then clinical services (23.5%) while those working in the finance team were the least (6.2%).

5.3 Extent of Use of E-Procurement among Public Health Hospitals in Nairobi, Kenya

One of the objectives of the study was to determine the extent of e- procurement adaptation among Public hospitals in Nairobi County. The findings from the study uncovered that adaptation of information technology and e-procurement within Nairobi County is low. The adaptation of e-procurement within the public hospitals was at 23.9%.

The study further established that adoption of e-procurement occurred with a significant difference within the hospitals. Pumwani Maternity hospital had adopted e-procurement moderately (n=41, 38%) while (n=17, 17%) and (n=15, 14.7%) respondents from Mama Lucy Kibaki Hospital and Mbagathi Hospital had very low adaptation of e-procurement in their hospitals respectively. Pumwani hospital was also the only hospital that had adopted Integrated Financial Management Information System (IFMIS).

These findings reveal that the adaptation of e-procurement in the public sector is slow as compared to the private sectors. According to a research study done by Amin (2012) on e-procurement and organizational performance in commercial state corporations in Kenya. The study established that many of public sector organizations in Kenya have partially implemented e-procurement especially when buying goods and services. Another study done by Mose (2012) on the impact of electronic procurement on the operations of Kenya Commercial Bank (KCB). The study established that e-procurement had been implemented in the bank. This study was done in the banking industry which is deemed to have the financial ability to raise funds for capital investments like adopting and implementing e-procurement fully.

Mose, Njihia, & Magutu, (2013) conducted a study on the critical success factors and challenges in e-procurement adoption among large scale manufacturers in Nairobi Kenya. The study concluded that most of the large scale manufacturing firms have adopted e-procurement.

The variance in implementation of e-procurement between the public sector and private sector could be due to the strategy used in implementation of e-procurement and the extensive training done in the private sector.

5.4 Factors Affecting Implementation of E-Procurement among Public Hospitals in Nairobi County

From the study, factors that affect implementation were identified through factor confirmatory analysis. Seventeen statements that had been included in the questionnaire to identify possible factors that affect implementation of e-procurement (Refer to table 6), were summarized to 8 factors. These factors included: perceived benefits,

adaptability, attitude, acceptability, and support from management, training, risk perception and cost.

These factors have also been identified by other scholars. According (Somers & Nelson, 2001), senior management support, vendor support, user training, and user involvement are some of the factors affecting implementation of IT system.

Univariate and Multivariate analysis was done to establish the factors that affect adaptation and implementation of e-procurement. When a univariate analysis was done on all the eight factors, all the factors were statistically significant in adaptability of e-procurement except; perception of risk and cost of implementation of e-procurement.

A further multivariate linear regression analysis was done on the 8 factors and training was the only statistically significant factor affecting the adoption and implementation of e-procurement.

Findings show that training is very key in the successful implementation of e-procurement. This is further noted from the results findings which shown that although 99% of the respondents had college education and above, the implementation of e-procurement remained low. This implies that employment of educated staff will not lead to automatic adaptation of e-procurement.

Similarly, Pumwani Maternity hospital (which had the highest proportion reporting to having adopted e-procurement), also had a high proportion of its staff having undergone the Integrated Communications and Technologies (ICT) training and adopted Integrated Financial Management Information System (IFMIS).

Previous research by various scholars support that training is key in successful implementation of e-procurement. Orina (2013) did her study on how ready the public sector in Kenya is on e-procurement, and established that lack of staff embracing

change, staff lacking passion for the job, lack of relevant knowledge on e-procurement, and existing policies on procurement impacted on how ready the public entities were on e-procurement. The awareness and realization can be achieved through training. According to (Rahim, 2008) training should be given a high priority, alongside the need for organizations to identify the skills required by all those engaged in procurement.

5.5 Benefits Being Achieved by Use of E-Procurement among Public Health Hospitals in Nairobi County

There are many benefits that can be achieved by use of e-procurement, however ranking of the benefits may vary.

From the study, the benefits that were ranked highly by respondents included: 1. Improving standardization and streamlining of procurement process ($mean=4.10\pm 0.92$). The other factors realized through the study included: 2. effective monitoring of projects and tenders ($mean=4.03\pm 1.09$), 3. Providing a quick reference for auditing and 4. Reducing procurement lead time ($mean=4.01\pm 1.04$).

Corruption, fraud, cartels, collusion and rigging was ranked the least of benefits.

Both the literature (Angeles & Nath, 2007; Ogot et al., 2009; Panayiotou, 2004) and result findings agree that, a firm's resources and capabilities are important in implementation of e-procurement. However these resources are valuable if they reduce the firm's costs or increase its revenue. This can be achieved if the users are made to realize the immediate benefits of e-procurement systems.

5.6 Challenges of implementing e-procurement among public health hospitals in Nairobi, Kenya

Top leadership and support for the e-procurement project implementation, 2 availability of high speed internet from a reliable internet service provider (ISP's) 3. Availability of technical and administrative skills among procurement staff were listed as the top challenges in implementation and adaptation of e-procurement among public hospitals in Nairobi County.

Other factors that were realized to be a challenge in implementation of e- procurement included. Poor ICT system, lack appropriate documents to carry the procurement process, lack of integration with major suppliers, lack of funds to facilitate complete implementation of e- procurement and end users having not been trained on use of e-procurement systems. These aforementioned findings are supported by the literature (Deise et al., 2000; Srivivasan, 2004; Issa et al., 2008).

Interestingly, although the studies on e-procurement carried out for different countries in different set ups have addressed similar factors, their findings are markedly different reflecting the dependence of the factors on the unique environment prevailing in each country.

For instance, Kamotho (2014) identified the challenges that public entities face when adopting and implementing e-procurement in state corporations in Kenya were ranked as follows: Auditability risks in accounting, Lack of top management support, Poor System Integration, Resistance to change by staff, Poor Communication Mechanisms, Poor e-Procurement Implementation Strategy, and Low training levels.

Further, a factor such as organisation infrastructure is considered very important for USA (Davila et al., 2003), however it is not included in Taiwan list of important factors

(Chu et al., 2004). Similarly, effective management policy is considered highly important for Hong Kong (Gunasekarana and Ngai, 2008) in contrast to end-user satisfaction considered highly important for Taiwan (Chu et al., 2004).

Therefore this points to a need for explore e-procurement in different set ups to assess the implementation of e-procurement.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

From the above findings the following conclusions were made. E-procurement has been implemented to varying extents by the public hospitals. The aggregate implementation level for all public hospitals is low indicating that public hospitals still use the traditional procurement methods to a great extent. Pumwani hospital was the only hospital having adopted Integrated Financial management Information System (IFMIS). It was also concluded that the greatest driver to e-procurement implementation in public hospitals was training. The greatest challenge realized was lack of top management support. The greatest ranked benefit was improving the standardization and streamlining of procurement processes. Corruption, fraud, cartels, collusion and rigging was ranked the least of benefits.

6.2 Recommendations

Public hospitals should seek ways to enhance e-procurement adaptation. Further since training is a key driver in adaptation and implementation of e-procurement, the public hospitals should facilitate empirical studies to understand the different ways training can be used in e-procurement adaptation. Lack of top management support being one of the major impediments mentioned towards e-procurement adaptation, focus on developing a training programme for staff and management should be initiated.

The present study focused on public hospitals in Nairobi County, future studies should consider expanding the scope to include other hospitals in other counties. Future studies should also consider expanding the scope to include the moderating variables like hospital size and age.

6.3 Limitations

Due to limited availability of funds, the study was done in Nairobi County. Future studies should include other counties and consider expanding the topic to include other medium sized and small hospitals.

6.4 Suggestions for Further Research

Future studies should consider expanding the topic to include other medium sized and small hospitals and include moderating variables like hospital size and age. A study should be carried out on how to develop a training programme for staff on e-procurement implementation.

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APPENDICES

Appendix I: Research Participant Consent Form

Dear Participant,

I am conducting a study on “*Implications of e-procurement practices among public hospitals in Nairobi, Kenya*”. I kindly request you to participate in the study by filling this questionnaire.

Participation is on voluntary basis and will not result in any physical or psychological harm. To maintain anonymity and confidentiality of gathered information, your names will not be included in the questionnaire.

Participants are required to fill the questionnaire without any external influence.

For any further information or need to report any concern, kindly contact me on **+254 724 171 086**.

Thank you.

Signature of Researcher: _____ **Date** _____

Signature of Research Assistant:

_____ **Date:** _____

Signature of Participant:

_____ **Date:** _____

Appendix II: Questionnaire

SECTION 1: BACKGROUND INFORMATION

1. Health Facility:
2. Which Division/Department / Section do you work?
 - a) Finance
 - b) Procurement
 - c) Clinical Services
 - d) Administration
3. What is your gender?
 - a) Male
 - b) Female
4. What is your current age?
5. What is your highest level of education?
 - a) College
 - b) Undergraduate
 - c) Postgraduate degree
 - d) Other (Please specify) _____
6. What is your position at the hospital?
7. How long have you worked at the hospital?.....
8. Have you ever attended Information Communication and Technology (ICT) training?
 - a) Yes
 - b) No

SECTION 2: IMPLEMENTATION OF E-PROCUREMENT

9. Would you say that your hospital has adopted e-procurement (use IT to aid purchasing?)
 - a) Yes
 - b) No

10. If **YES**, what benefits have accrued from adaptation of e-procurement?

.....

- If **NO**, state the reasons as to why your organization has not adopted e-procurement?

.....

11. Please give the strength of your agreement with the following statements about e-procurement implementation in your organization? Use a scale of 1-5 where **1 is Strongly Disagree and 5 is Strongly Agree.**

Challenges of e- procurement implementation	1	2	3	4	5
The hospital has acquired all necessary hardware and software to facilitate e-procurement					
Procurement staff have the necessary skills and know how to implement e-procurement					
Sufficient funds have been set aside for complete implementation of e-procurement					
Major suppliers have been involved in efforts towards integration of procurement systems					
End users have been trained on utilization of e-procurement systems					
Electronic procurement policy/manual within the organization to guide the process					
An established Information and Communication Technology Department to support the e-procurement system					
A high-speed internet connected computers with a reliable Internet Service Provider (ISP)					
Various online documents e.g. requisitions, RFQs and Tender forms etc.					
Top management leadership and support for the e-procurement project implementation					

12. How would you rate the extent to which e-procurement has been developed and implemented in your organization?

- a) Very low
b) Low
c) Moderate
d) High
e) Very high

SECTION 3: FACTORS AFFECTING E-PROCUREMENT

13. To what extent do you agree with the following statements regarding e-procurement implementation? Use a scale of 1-5 where **1 is Strongly Disagree and 5 is Strongly Agree.**

	1	2	3	4	5
E-procurement offers better efficiency and cost savings than traditional paper based procurement					
E-procurement infrastructure is easily compatible with existing technologies already in use in the organization					
Adoption of E-procurement does not negatively impact on existing corporate culture					
E-procurement is easy to adopt and implement and does not disrupt					

E-procurement is prone to risk and can significantly disrupt operations					
E-procurement limits the organizations to suppliers within the network hence leading to high opportunity costs					
Adoption of e-procurement is costly venture that requires enormous amounts of capital					
Employees in my organization are highly trained in the use of information systems					
There is a continuous training and awareness creation on new technologies among top management and staff					
Staff in my organization are receptive to new technological innovations					
There is top management support to technological innovations					
The hospital has adequate information technology infrastructure for all staff involved in purchasing					
There are dominant systems in use in the industry which facilities can easily integrate					
Existing vendors can facilitate parallel running of existing and e-procurement systems for trials					
The systems are simple to train users on and to operate i.e. not complex					
Staff do not fear that implementation of e-procurement might injure inter-personal relations					
There is no fear of loss of jobs due to adoption and full implementation of e-procurement.					

14. The following are some of the benefits that could accrue from the use of e-procurement as opposed to traditional procurement process. Indicate the extent to which you agree/disagree with them. {Tick (√) the appropriate column} (1) Strongly disagree (2) Disagree (3) Moderately agree (4) Agree (5) Strongly agree

Perceived Benefits	1	2	3	4	5
E-procurement reduces corruption and fraud					
Reduced procurement time / Lead time					
Effective monitoring of projects and tenders					
Improved cooperation between buyers and vendors					
Create stiff competition among vendors leading to lower prices					
Improved transparency and accountability					
Provides quicker reference and audit trail					
Enhance competition leading to improved quality					
Reduced disputes among the stakeholders					
Online bidding reduces cartels, collusion and rigging.					
Improves standardization and streamlining of procurement processes					
Increase of visibility of all financial activities related to procurement of goods and services;					

Curtail risk of fraud and other errors like double payments created through manual purchasing environment					
Others (Specify)					

15. Please highlight key factors that you believe influence the level of implementation of e-procurement in the hospital sector in general?

.....

16. What are the greatest challenges faced by your organization in its quest to adopt and implement e-procurement?

.....

Appendix III: Request for Permission Letter

15 March 2017

To,
Medical Superintendent,
Nairobi, Kenya.

Dear Sir/ Madam,

RE: PERMISSION TO CONDUCT A STUDY ON “IMPLICATIONS OF ELECTRONIC PROCUREMENT (E-PROCUREMENT) PRACTICES AMONG PUBLIC HOSPITALS IN NAIROBI, KENYA”

I am writing seeking permission to collect data among the Hospital staff for my Master Thesis on “**Implications of e-procurement practices in public hospitals in Nairobi County, Kenya.**”

The objectives of the study are to:

1. To assess the extent of use of e-procurement among public health hospitals in Nairobi, Kenya
2. To determine the challenges of implementing e-procurement among public health hospitals in Nairobi Kenya
3. To determine the benefits being achieved by use of e-procurement among public health hospitals in Nairobi, Kenya

The study has received the prerequisite ethical approval from the Institutional Research and Ethics Committee (IREC) of Moi University (*REF No. IREC/2016/48; Approval Number: 0001823*).

I will be assisted by two Research Assistants (*Samwel Maina ID No. 24946760 and Clifford Oyoo ID No. 29326791*) to collect data between 20th March and 20th April 2017.

Attached with this permission letter is the approved research proposal, informed consent forms, data collection tool and ethical approval.

Your Sincerely,

Philomena Njeri Thomas
Student, Master of Public Health
Moi University
Tel: 0780 40 01 53

Appendix IV: Formal Ethical Approval



MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

Reference: IREC/2016/48
Approval Number: 0001823

Ms. Philomena Njeri Thomas,
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET-KENYA.

Dear Ms. Njeri,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled: -

"Implications of E-Procurement Practices among Public Hospitals in Nairobi, Kenya".

Your proposal has been granted a Formal Approval Number: **FAN: IREC 1823** on 2nd February, 2017. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 1st February, 2018. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc	CEO	-	MTRH	Dean	-	SOP	Dean	-	SOM
	Principal	-	CHS	Dean	-	SON	Dean	-	SOD



MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

2nd February, 2017



Appendix V: Permission Letter - Mama Lucy Kibaki Hospital

**REPUBLIC OF KENYA
MINISTRY OF HEALTH
NAIROBI CITY COUNTY**

**MAMA LUCY KIBAKI HOSPITAL-EMBAKASI
P.O. Box 1278-00515
NAIROBI**

Telephone: Nairobi
020 - 2297000

E-mail:
medsupnedh@yahoo.com

When replying please quote

OUR REF: MLKH/ADM/RES/1/4/()

DATE: 2nd June, 2017

Cliff Oyoh Omollo
P. O. Box 6839 - 00300
NAIROBI.

RE: PROVISIONAL STUDY PERMISSION

TITLE: "IMPLICATION OF E-PROCUREMENT PRACTICES AT MAMA LUCY KIBAKI HOSPITAL"

Following the Research Committee Meeting held on 5th May, 2017 permission to carry out research at MLKH has been granted subject to provision of the following:-

- o Payment of research fees (***Kshs.4,000/=***)

Send soft copies of the above documents to mlkhresearch@gmail.com

**DR. MUSA MOHAMMED
MEDICAL SUPERINTENDENT**

Appendix V: Permission Letter - Mbagathi Hospital**NAIROBI CITY COUNTY**

Tel: 2724712, 2725791, 0721 311 808
Email: mdhnaairobi@yahoo.co.uk



Mbagathi Hospital
P.O. Box 20725- 00202
Nairobi

COUNTY HEALTH SERVICES

12th May 2017

Philomena Njeri
Moi University


RE: RESEARCH AUTHORIZATION

This is in reference to your application for authority to carry out a research on "*Implications of electronic procurement practices in Mbagathi hospital*"

I am pleased to inform you that your request to undertake the research in the hospital has been granted.

On completion of the research you are expected to submit one hard copy and one soft copy of the research report / thesis to this office.

Kindly adhere to the timeline.

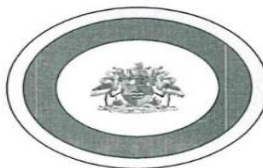

Dr. D. Kimutai
Chairman- Research Committee
Mbagathi Hospital



Appendix V: Permission Letter - Pumwani Maternity Hospital

NAIROBI CITY COUNTY

Telephone: 020 344194
Web: www.nairobi.go.ke



City Hall
P. O. Box 30075 - 00100
Nairobi
Kenya

COUNTY HEALTH SERVICES:
PUMWANI MATERNITY HOSPITAL

PMH/DMOH/75/0245/2017

23RD MAY 2017

TO:
Ms. PHILOMENA NJERI THOMAS
MOI UNIVERSITY
SCHOOL OF PUBLIC HEALTH
KENYA.

RE: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the research entitled "**Implication of E-Procurement Practices among Public Hospital in Nairobi, Kenya**" has been approved.

You are expected to pay Kshs. 6000/- only.

You are hereby allowed to collect data. We look forward to receiving a summary of the research findings upon completion of the study.

Yours sincerely,

DR. L.O. KUMBA
MEDICAL SUPERINTENDENT