# IMPLEMENTATION OF E-PROCUREMENT PRACTICES AMONG PRIVATE HOSPITALS IN NAIROBI, KENYA

**BY**

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## DECLARATION

I declare that this research project is my original work and has not been submitted for any degree qualification of this or any other university.

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

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## DEDICATION

This study is dedicated to all the private hospitals in Nairobi County, to my children Lincoln and Sydney and beloved husband Johnstone.

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I acknowledge the power of God, the maker, and the provider of knowledge for enabling me to complete my studies in the right spirit.

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## ABSTRACT

The role of purchasing in corporate success has changed considerably due to the advances in information technologies and information systems. Eprocurement has thus gained strategic visibility in its role in enhancing inter-functional and inter-organizational relationships and has emerged as the driving force behind several supply chain practices. This study sought to examine factors influencing eprocurement implementation among private hospitals in Kenya. It was guided by three specific objectives: to examine the extent of e-procurement implementation, establish the factors influencing implementation of e-procurement and to find out the relationship between the identified factors and e-procurement implementation among private healthcare service providers in Nairobi, Kenya. The study employed a descriptive research design. The population consisted of all the 58 private health care service providers accredited by the National Hospital Insurance Fund. Since the population was relatively small, a census was done. Primary data was collected from procurement/finance personnel using a semi-structured questionnaire. Data analysis was done using SPSS with the main analysis tools being frequencies, mean and standard deviation, factor analysis and multivariate linear regression. The study found that e-procurement had been implemented to a moderate extent by the NHIF accredited hospitals. Seven factors that influence eprocurement implementation were identified through factor analysis. These include: risk perception, end user training, existing technology, top management support, supplier systems integration, implementation strategy and vendor support. Four out of the seven variables were found to have statistically significant relationships with eprocurement implementation. These include: Risk perception which had a negative relationship with eprocurement implementation, Existing Technology, Top management support and implementation strategy all of which had positive relationships. An examination of the joint relationship confirmed these findings and established that the seven variables jointly account for 66.3% of the variability in eprocurement implementation. It was recommended that private hospitals should seek ways to enhance greater collaboration within the industry and with suppliers so as to hasten the pace of implementation of eprocurement. Further, since risk perception is a key driver, hospital associations, the private sector, the government and other stakeholder should facilitate empirical studies to be conducted to dispel any myths and to help private hospitals better understand the genuine risks as well as the cost benefit tradeoffs involved in adoption and implementation of eprocurement. It was suggested that since the present study focused only on private hospitals accredited by NHIF, future studies should consider expanding the scope by including public hospitals. Future studies should also consider expanding the topic to include moderating variables like firm size and firm age.

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## LIST OF ABBREVIATIONS/ACRONYMS

AKUH :Aga Khan University Hospital

ERP: Enterprise Resource Planning

FBOs: Faith Based Organizations

NGOs: Non-Governmental Organizations

NWH: Nairobi Women's Hospital

ICT: Information and Communications Technology

WHO: World Health Organizations

KNH: Kenyatta National Hospitals

EPS: Electronic procurement system

SMEs Small and Medium Enterprises

SPSS: Statistical Package for Social Science

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

The role of purchasing in corporate success has changed considerably due to the advances in information technologies (IT) and information systems (IS). Web-based information systems enable several purchasing related activities to be managed electronically. Internet purchasing, which is business-to-business (B2B) at online marketplaces, and reverse auctions provide possibilities for e-procurement applications. This has enabled purchasing to shift its focus from day-to-day activities to strategic tasks, which can help organizations attain success in the face of turbulent environment.

The changing role of purchasing coincides with the growing acceptance of supply chain management. A supply chain refers to "the network of facilities activities and organizations that performs the functions of product development, procurement of material 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).

Supply chain represents all activities associated with the transformation and flow of goods and services from the sources of raw materials to end users (Ballou et al. 2000). Consecutively, supply chain management is "the integration of key business processes from end user through original suppliers that provides products, services and information that add value for customers and other stakeholders (Cooper et al. 1997). Before the introduction of supply chain management, the focus was on firm-level performance.

Over the years, as organizations have aggressively pursued cost cutting initiatives, through organizational efficiencies they have begun to reach the point of diminishing marginal returns within their organization's own boundaries. Consequently, inter-organizational relationships have gained attention as they provide potential of great opportunities (Cavinato 1992). Interest in identifying inter-organizational processes that impact on firm level and supply chain level performance has grown (Cooper et al. 1997, Lambert et al. 1998, Mabert & Venkataramanan 1998).

In this context, e procurement has gained strategic visibility in its role in enhancing inter-functional and inter-organizational relationships (Ellram & Carr 1994) and has emerged as the driving force behind several supply chain practices. Today, e procurement is heavily involved in strategic sourcing, which can be defined as engagement in critical purchasing activities that span across organizational boundaries (Anderson & Katz 1998).

### 1.1.1 E-procurement

Confusion exists among academicians, practitioners as well as consultants in defining the term e-Procurement (Vaidya, Yu, Soar & Turner, 2003). While the terms "e-Procurement" and "e-Purchasing" have been used interchangeably in many realms in an attempt to prove their involvement in the e-Commerce revolution (MacManus, 2002), the term "purchasing" has a narrower scope. e-Procurement refers to 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, 2004).

While there are various forms of e-Procurement that concentrate on one or many stages of the procurement process such as e-Tendering, e-Marketplace, e-Auction/Reverse Auction, and e-Catalogue/Purchasing, e-Procurement can be viewed more broadly as an end-to-end solution that integrates and streamlines many procurement processes throughout the organization. Although the term "end-to-end e-Procurement" is popular, industry and academic analysts indicate that this ideal model is rarely achieved (DOIR, 2001) and e-Procurement implementation generally involve a mixture of different models (S&A, 2003). While e-Commerce is simply a business transaction conducted electronically, e-Procurement is the automation of procurement processes via electronic systems, especially the Internet.

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. In a more detailed explanation, e-procurement gains the advantage of E-Commerce to determine potential supply alternatives, to purchase goods and services, to transfer the prices of these goods and services and to interact with suppliers (Min & Galle, 2003).

It has been noted that development adoption and implementation of e-Procurement has not been as easy as some of the solution providers have suggested, nor has it necessarily brought the anticipated benefits. Nevertheless, engaging suppliers in the process - especially small organizations is difficult given the massive investment expected in terms of providing catalogue information to buyers, and marketplaces using different technologies, platforms and business languages (OGC, 2002).

Difficulties in implementation stem from the tension between the urge to Buy Local policies designed to promote a local economy, and the efficiencies to be achieved through volume purchasing from large suppliers (AGV, 2003). Implementation rate of e procurement in many private as well public procurement systems has been slow and many organizations tend to overstate the degree to which they are involved in e-Procurement (MacManus, 2002). Despite the benefits that can be achieved from a successful e-Procurement adoption and implementation there has been reports of failures of e-Procurement initiatives in a number of organizations in developed world like in the USA and the UK; the results are even worse in the developing countries (Heywood, 2002).

This is due to the fact that e-Procurement result in large investments of time and money, without absolute certainty that its full potential will be achieved every time. Such success and failure stories imply that there is a need for a better understanding of factors that influence adoption and implementation of e procurement in the private health care sector. Tonkin (2003, p. 13) provides a succinct summary of this sector's relationship with e-Procurement: However "The private health care sector cannot afford to uncritically follow the e-procurement fads and fashions, it can, however, form a strong base of self knowledge, confidence and with an eye to the future become an innovator in this field.

Organizations can often commit millions of shillings to develop their e-procurement programme. Thus an organization must take into account several key considerations before launching an e-procurement system. This is especially true for those who are focusing on operational management in a lean (cost/time sensitive) environment.

According to Neef (2001), some of the major reasons for this growth include significant process savings from automation, compliance, and purchasing advantage as well as reduced costs that organizations can experience by conducting transactions electronically. Although these are the basic benefits associated with generic e-commerce strategies, a majority of these B2B transactions have focused on the purchase of indirect materials (especially office products, disposable medical equipment, and travel services). However, other types of supply chain-related purchases, including maintenance, repair, and operating and replacement parts, and direct material purchases, are becoming more important operational management considerations in e-procurement services.

### 1.1.2 Factors Influencing E-procurement Implementation

Among the most important factors influencing success of e-procurement implementation is end-user training and uptake. As technology alone does not ensure successful adoption, the success of any Organizational e-Procurement initiative depends on users and buyers making use of the new process and system. The solution must attract end users to view e-Procurement as the preferred and most versatile means through which to purchase goods and services (KPMG, 2001). The success of the project also depends on communication to the users (Birks, Bond, & Radford, 2001). According to the CGEC (2002), the two major obstacles to increasing support among users are their level of technological awareness and acceptance, and their willingness to change long established internal business processes to embrace new methods. As the implementation process develops, periodic user satisfaction surveys may identify the possible need for additional training (OSD, 2001).

E-Procurement implementation success is also closely related to early supplier/supply chain partner's involvement. 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 (Birks et al., 2001). 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. This is because many supply chain partners may be unwilling to conduct business electronically with other agencies due to insufficient information about the benefits to be gained; they might see e-Procurement as a means by which a particular actor in the supply chain will simply attempt to force down prices (ECOM, 2002).

Top management support is also a crucial factor that influences success of e-procurement implementation. There is little doubt that senior management leadership is critical to the success of an e-Procurement implementation (AGV, 2003). The top management team (steering committee) must involve the project manager, any consultants working with the committee, and agency staff to develop an implementation strategy (ECOM, 2002). In this regard, considerable attention and support need to be provided by senior management to ensure that the procurement reform has been well understood in the agency (S&A, 2003). Furthermore, the executive management team is responsible for setting the vision and goals, bringing about collective commitment for change in process and organizational structures, and formulating the policies and strategies necessary to put an e-Procurement initiative in place (WB, 2003).

E-Procurement initiatives only deliver the planned benefits if the users and buyers make changes to the way they work, which requires championing the project and senior

management sponsorship. Specifically important, but also challenging, is ensuring "Buy In" (Birks et al., 2001). Birks et al. (2001) suggest that the business case processes for e-Procurement should include identifying drivers, understanding the starting point, benefits, approaches, affordability, risks, and benefit realization. To ensure achievement of the e-Procurement objectives, the implementation project should proceed, as far as possible, in alignment with the business processes.

### 1.1.2 E-procurement Implementation in Health Service Sector

The healthcare and allied health industry is increasingly looking for innovative techniques and creative management solutions to handle manufacturing/supplier processes in a competitive manner. Strategic leveraging of e-procurement and Enterprise Resource Planning (ERP) has become a major target for such productivity gains, if properly integrated into existing systems. Alan D. Smith (2004). In 2001, North America occupied 66% of the ERP market, Europe took 22%, and the whole of Asia was 9% (Roche, 2001). As more and more organizations strive to gain a competitive advantage, e-procurement and ERP adoption and implementation are the strategies of choice. Some organizations have experienced great success ranging from huge declines in inventory, breakthrough reductions in working capital, plentiful feedback on customer wants and needs, and the ability to view and manage the inner workings of suppliers, alliances, and customers (Smith *et al*., 2005).

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 and process quality issues and poorly developed links to suppliers. This can be achieved through development of an Hospital Information Systems (HIS), which has the following sub software's customized to carry out specialized functions such as Automated Dispensing System (ADS)2 of drugs , Unit Dose Dispensing System (UDDS) Pharmacy Information System (PIS), Materials Management Information Systems (MMIS) among others.

The above systems are said to help in efficiently managing purchasing activities which include tasks such as check prescription, search for supplier, give out of stock warning and effectiveness of the activities should be improved. Another striking result realized by forms which have adopted e procurement is that successful e-procurement implementation can improve long term organizational performance, by 67% which means, most organizations see e-procurement as a long term investment for their entities (Hatice Calipinar *et al.*, 2012).

The B2B (business-to-business) medical e-commerce and information industry that routinely leverages e-procurement techniques allows for interesting and mutually beneficial relationships between manufacturers and distributors supplying the domestic and international healthcare provider community. Automatic identification techniques and strategies have greatly influenced these beneficial relationships. In terms of the pharmaceuticals industry, e-procurement typically allows for automated drug-inventory control, drug replenishment alerts, online purchase of drugs and related medical supplies, and reporting of existing stock levels in a clinic and/or hospital setting.

### 1.1.3 Private Hospitals in Kenya

Private healthcare system in Kenya has grown tremendously over the last two decades due to various reasons, among them lack of adequate and quality public healthcare services and introduction of user fees. This growth can also be associated with the health sector reforms undertaken in the 1980s and 1990s when the government relaxed the licensing and regulation of private healthcare providers and also relaxed the prohibition of public sector personnel from working in private practice (Hursh-Cesar et al, 1994). The reform measures implemented by the government called for greater involvement of the private sector in the economy (Muthaka et al., 2004).

The private healthcare sector comprises the activities of agents who are largely outside the control of government. This includes individuals who privately own health facilities and seek to make profit in the healthcare sector, clinics and hospitals owned by private employers and those operated by religious missions and other non-governmental organizations (NGO's). These agents play a significant role in provision of health services in Kenya. The impression in many countries is that private healthcare is expanding and this has made many countries to adopt a pluralistic health system (Muthaka et al., 2004). The rising number of private healthcare providers has led to intense competition for patients as well as doctors. A number of private hospitals have now started investing heavily on new technologies and expansion of existing facilities to cater for the growing demand of quality health by the middle income earners (Business Daily, 2013).

For example, Aga Khan University (http://hospitals.aku.edu/nairobi/Pages/home.aspx), has automated the procurement process associated with its pharmaceuticals, medical/surgical supplies, office supplies and capital equipment, and generates reporting and analysis tools to help its customers optimize product pricing and utilization. In addition, (AKU) employs more than 1,000 physician organizations, representing approximately 7,000 medical doctors, and offers a complete line of pharmaceuticals, medical supplies, capital equipment and office supplies through the corporate website to leverage on e-procurement activities

Arguments in the literature indicate that there is little evidence on the relative quality and efficiency of private healthcare provision in Kenya. However, private healthcare facilities charge fees that are considerably higher than those charged in government facilities. Therefore, Kenyans living in areas predominantly served by the private sector may be paying more for healthcare, other things remaining constant. However, there are limited incentives to encourage those private providers operating in underserved areas, and the laws regulating this sector seem to be a burden to the provider. The upshot of all this has been fragmentation, poor coordination, concentration of health facilities in urban areas and intense competition for staff and patients (IEA, 1998).

Private healthcare providers in Kenya have been classified variously. Many studies on private healthcare providers have cited the existence of confusing arrays of terminologies over their classification (Oduwo et al, 2001; Kumaranayake, 1998; Hursh-Cesar et al, 1994). For instance, some health facilities identify themselves as hospitals whereas others with similar features identify themselves as clinics or nursing homes, although the law stipulates what should be hospitals, nursing homes, and clinics. Terminologies used

to define the facilities are important as they dictate the regulatory mechanism to be applied for a particular type. Therefore, confusion arises when different facilities with similar features are regulated differently. However, the present study will adopt the classification used by the National Hospital Insurance Fund (NHIF) which classifies private healthcare facilities into three groups based on bed capacity. The population of interest in this study is thus made up of all private and mission hospitals which are accredited by NHIF in Nairobi.

## 1.2 Problem Statement

Despite numerous benefits that can be obtained from adoption and implementation of e-procurement, there have been reports of failures of e-Procurement initiatives in a number of organizations in developed world like in the USA and the UK; the results are even worse in the developing countries (Heywood, 2002). Implementation rate of e procurement in many private as well public procurement systems has been slow and many organizations tend to overstate the degree to which they are involved in e-Procurement (MacManus, 2002). E-procurement involves large investments of time and money and without absolute certainty that its full potential will be achieved every time, there is need to understand the factors that influence its successful implementation.

The Health sector in Kenya has been growing rapidly in the recent past. The industry has almost doubled to Sh91.4 billion as per last year's Economic Survey data from Sh51.4 billion in 2005. The growth in the economy has also led to more and more people entering the middle income bracket. This has in turn led to greater demand for quality and affordable health care. Consequently, many new hospitals have come up and existing ones have invested billions of shillings to expand their facilities. Hospitals are thus facing

intense competition among each other both for patients and qualified staff and these calls for greater efficiency in all operations so as to gain competitive edge. The need for new ways to providing more efficient health care services, have resulted in the increased use of the ICT applications over the past decade (WHO, 2009). An increasing number of hospitals are beginning to evaluate the potential benefits of adopting e-procurement. According to United Nations Conference on Trade and Development (2003), background paper on development and issues on e-commerce and information and communications technologies, it was reported that successful e-procurement implementation in purchasing of goods and services in firms results in savings up to 30 % and reduction in transaction costs up to 25%.

A number of studies have been carried out into the use or applicability of e-procurement in the health service sector. Some of the studies include Sheng (2000) studies the impact of internet based technologies on the procurement strategy among Japanese firms. He found that while e-procurement had been the subject of a various studies, most of the studies focused on the development of inter-organizational electronic networks. This indicates a gap in knowledge and as such there is need for more holistic studies that covers all aspects of e-procurement. Carabello (2001) studied how e-procurement can reduce expenses in the hospital sector in the US. He found that there was evidence of cost reduction attributable to implementation of e-procurement. He however noted that several hindrances faced the successful implementation of e-procurement and recommended that proper strategies be put in place before such costly undertakings. This study however posses a gap in knowledge since it was undertaken in a developed country hence there is need to conduct similar studies in a developing country context. Korir (2009) examined

the challenges facing the implementation of E-Procurement in the Public Sector among selected Government Ministries in Kenya. He found that poor IT infrastructure, inadequate budgets and absence of political will were the main challenges. However, this study was based on the public sector and thus there is need to conduct a study based on the private sector. Additionally, no similar study has been done based on private hospitals in a developing country like Kenya. Hence, this study seeks to answer the question: what factors influence the adoption and implementation of e-procurement among private hospitals in Nairobi, Kenya?

## 1.3 Research Objectives

The research objectives of this study were to:

i. Examine the extent of e-procurement implementation among private healthcare service providers in Nairobi, Kenya.
ii. Establish the factors influencing implementation of e-procurement among private healthcare service providers in Nairobi, Kenya.
iii. Find out the relationship between the identified factors and implementation of e-procurement among private healthcare service providers in Nairobi, Kenya.

## 1.4 Value of the Study

The study is expected to be of significance to private hospitals in Kenya since it will contribute towards development of more robust strategies towards full implementation of e-procurement.

It will also be beneficial to the Government and Policy makers as it will inform decisions on policy regarding e-procurement and integration of private sector and government procurement systems.

The study will benefit the academia as it contributes to the ongoing debate on e-procurement and adduces empirical evidence based on the private health sector in a developing country. The study will also identify areas for further study.

# CHAPTER TWO:
# LITERATURE REVIEW

## 2.0 Introduction

This chapter presents the past studies as well as theories related to e-procurement. The purpose of the study is to examine factors influencing implementation of e-procurement practices in private hospitals in Nairobi Kenya. The chapter is organized as follows. First it presents the concept of e-procurement, followed by a review of literature on e-procurement adoption and implementation. This is followed by merits and demerits of e-procurement adoption and finally challenges of adoption of e-procurement.

## 2.1 E-procurement

Business –to-business e-commerce – the area that encompasses electronic buying and selling transactions between organizations and in which e-procurement is a central function – has become central to doing business effectively. It is true, electronic procurement may seem less glamorous and, in many ways, more difficult to initiate, than online retailing. But, in fact, 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, 2010).

David (2009) 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-procurements: 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. 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. In a more detailed explanation, e-procurement gains the advantage of E-Commerce to determine potential supply alternatives, to purchase goods and services, to transfer the prices of these goods and services and to interact with suppliers (Min & Galle, 2003).

Given the scale and significance of procurement expenditure and the "bottom line" 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 to organisations. E-procurement is central to this and the potential benefits which may be obtainable from the introduction of e-procurement have generated a significant amount of debate within published research (Hawking et al, 2004; Croom & Johnston, 2003).

## 2.2 Theoretical Foundations of E-Procurement Adoption and Implementation

Adoption and implementation of e-procurement is influenced by several factors. A number of theories and Models have been developed to explain technology adoption and implementation. Some of these theories and models include: Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Adoption Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and Innovation Diffusion Theory (IDT). According to TRA, an individual's behavior (e.g. acceptance of e-procurement system) is directly influenced by behavioral intention which in turn is affected by that individual's attitude towards that behavior and subjective norm (AGV, 2003). Attitude towards behavior is defined as "an individual's positive or negative feelings associated with performing the target behavior" (Ajzen, 1975). Subjective norm refers to an individual's perception of the significant others' expectations about whether the behavior should be performed.

In the IT domain, Davis et al. (1989) supported the validity of TRA in predicting computer technology acceptance (behavior) through behavior intentions. TPB is an extension of the TRA with the inclusion of another determinant of behavior, perceived behavioral control (Davis et al., 1989). Perceived behavioral control refers to the individual's perception of ease or difficulty of performing the behavior of interest. In the context of IT usage, it refers to perceptions of internal constraints (e.g. self efficacy) and external constraints (e.g. facilitating conditions) on behavior (Taylor et al., 1995).

According to TAM, perceived ease of use and perceived usefulness are the two most important factors in explaining acceptance of information technologies by individuals (Davis, 1989). TAM2 (an updated version of TAM) recognizes that, in addition, to

perceived ease of use and perceived usefulness, subjective norms is also an important factor affecting adoption decisions of individuals. Many scholars have applied these models in explaining various types of business IT applications and e-commerce applications. However, analysis of empirical research with TAM is not totally conclusive. Venkatesh et al. (2003) consolidated all the prior studies on acceptance and usage in information technology and produced a holistic view of individual acceptance and usage behavior pertaining to information systems and proposed a new framework called UTAUT which identifies four factors that are significant determinants of user acceptance: performance expectancy, effort expectancy, social influence and facilitating conditions.

In addition to these three frameworks, the IT implementation literature (Ang et al., 1995; Bingi et al., 1999; and Taylor et al., 1995) also identified four key factors: senior management support, vendor support, user training, and user involvement. Senior management support is generally reflected in two 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.

Innovation Diffusion Theory (IDT) draws primarily on the comprehensive work of Rogers (1995) in the information systems area identify five characteristics of an innovation which influence a potential adopter's perceptions of accepting that innovation. These are: relative advantage, compatibility, complexity, observability, and trialability.

The acceptance of innovations has also been examined in relation to the promotion of consumer-oriented products in the marketing literature. A synthesis of the leading works (e.g. Ram (1985), Bagozzi and Lee, 1999; and Sheth and Ram, 1987) in this discipline indicates that three factors facilitate consumer acceptance of innovative applications: compatibility of the innovation with the existing work habit of consumers, compatibility of the innovation with the belief structure of consumers, and perceived low risks posed by the innovation for the consumers. Acceptance of an innovation increases as the risk perceived to be associated with the new product decreases.

## 2.3 Factors Influencing E-procurement Implementation

Research into the uptake and application of e-procurement has focused on a number of themes, as identified by Schoenherr & Tummala (2007) who noted that early research into e-procurement focused on EDI (Ramasehan, 1997), the automation of formerly manual to automated processes (Putland et al, 1999) and the impact on the business environment (Croom, 2003). The importance of procurement in the cost of an organisation was researched by Kaufman (1999) who concluded that "procurement is more significant than sales in terms of its influence on company figures. The impact of procurement on the "bottom line" was also noted by Kalakota & Robinson (2001) who concluded that "more capital is spent on the purchase of materials and services to support the business's operations than on all other expense items".

A number of factors inform the intention to adopt and full implementation of e-procurement. First there are Buyer-Supplier's Integration factors. Confidentiality of data must be maintained, as data must not be visible to eavesdropper. It is also important that

communicating parties are able to authenticate the identity of the other party, and know when data integrity of the other party has been compromised. In addition, once an exchange is complete, it must be possible to prove that a transaction has taken place.

The second issue is trust. Moorman et al… (2008) defined trust as 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. According to Ashish & Ravi (2009), trust is defined as a binding force in most buyer-supplier transaction. A great deal of activities in electronic commerce system relies greatly on in trust. Relationship between buyer and supplier is a mix of mutual dependency and suspicion. In other words, the level of trust a party possesses in another can be weakened by risk and uncertainty. Business buyers perform differently based on their own level of risk perception (Chan & Lee, 2002).

The other issue informing e-procurement adoption is risk perception. According to Chan & Lee (2002), business players perform differently based on their own level of risk perception on E-procurement or their own trust on their supplier. Lack of previous experience or relationship with internet based supplier may increase the risk perception in buyer's mind. If a buyer trusts the competence of its supplier and trust their intention (for mutual benefits of both parties and not for getting unfair advantages over one another), then the buyer can lower the risk perception of suppliers and the transaction cost substantially. This ultimately will affect their intention of E-procurement implementation and the acceptance level.

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 the 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 (Whicher, 2006).).

E-Procurement implementation success is closely related to early supplier/supply chain partner's involvement. 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 (Birks et al., 2001). 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 (ECOM, 2002).

Also critical to e-procurement is top management support. There is little doubt that senior management leadership is critical to the success of an e-Procurement implementation (AGV, 2003). The top management team (steering committee) must involve the project manager, any consultants working with the committee, and agency staff to develop an implementation strategy (ECOM, 2002). In this regard, considerable attention and support need to be provided by senior management to ensure that the procurement reform has been well understood in the agency (S&A, 2003).

Successful implementation of e-procurement calls for proper strategy implementation. Insufficient strategy implementation and not inadequate strategy formulation have been acknowledged by numerous studies, scholars and practitioners as the main causes of frequent failure of strategies. The creation of documented and executable strategies prior to the deployment of the e-Procurement solution is an important CSF (Neef, 2001). This notion is further supported by the OSD Report (2001) findings that as the procurement strategy is intended to provide savings enabled by the technology, e-Procurement should be procurement-driven as well as technology-driven.

## 2.4 Benefits of E-procurement

With the advent of internet, most of the organizations adopt techniques to streamline their indirect material supply chain; implementing e-procurement will result to substantial improved potential compared with paper-based procurement systems (Thomas puschmann and Rainer alt 2005). Aberdeen et al 2001 cited at (Thomas puschmann and Rainer alt 2005) believes that by implementing e-procurement, operational process will be decentralized whereas strategic procurement process will be centralized which results in higher supply chain transparency.

David Caffey (2009) contended that e-procurement benefits falls into two categories: 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 enables to reduce number of staff which 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.

Indirect benefits of e-procurement such as decreasing cycle time between order and delivery and enabling greater flexibility for supplier selection according to the best value. Kalakota and Robinson (2000) cited at (David Caffey 2009) concluded that e-procurement is being considered as a strategic issue due to its great saving and cost reduction. Quality, flexibility, cost efficiency and speed in procurement processes can be improved by utilizing new technologies such as internet and World Wide Web (Gebauer & Segav 2001). According to David Caffey (2009) e-procurement enables buyers to spend more time on value-added activities by reducing his/her administrative tasks such as ordering and resolving difference between delivery and orders.

Turban et al (2000) cited at (David, 2009) listed the benefits of e-procurement as follows: 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, Decreasing the product price, Enhanced information management, Better payment process (if it is integrated with e-procurement). The main purpose of implementing e-procurement is to expedite the operational procurement process by bypassing purchasing department by permitting and entrusting more strategically task to requester. In e-procurement, the requester is able to search and select the product in approved electronic catalogs reducing inventory and staff time by implementing e-procurement will result to reduce the purchasing cycle time and cost (David, 2009).

One of the important advantages of e-procurement is to reduce workload of purchasing company by decentralizing the operational procurement process (Thomas Puschmann and Rainer, 2005). In traditional procurement processes many authorization stages were involved, these stages were reducing the speed and efficiency of procurement cycle by placing objection on request. To achieve faster and more convenient procurement process number of authorization stages should be decreased Atkinson 2001 cited at (Jason R. Eaton 2003) announced that e-procurement advantages are precise and on time business intelligence, on time payment, better cash flow management, reduced administration cost and reduced overhead cost.

## 2.5 Challenges of E-procurement Adoption and Implementation

Given the issues and weaknesses with traditional procurement, it is surprising to find that the transition to electronic procurement (in its various forms) has not taken place en masse. This reluctance, by many organisations across all sectors, to migrate to e-procurement, is simply not a matter of cost or technology but a complex array of inhibitors which have been examined in a number of published academic research articles.

A number of general inhibitors (e.g. sector independent) have been identified by a range of authors (e.g. Deise, 2000; Srivivasan 2004; and 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.

Alongside these general inhibitors a number of 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/services procured, the need for transparency in procurement, the challenges posed by public policy and the regulatory and legal constraints faced by public sector organisations.

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. a number of procurement standards exist for the categorization of goods and services including UNSPSC and CPV), a lack of supplier adoption and therefore expensive e-procurement solutions.

## 2.6 Summary and Research Gap

E-procurement has been gaining prominence over the recent past among both academic and industry practitioners. However, despite the known merits of e-procurement adoption, there has been slow uptake and some early adopters have reported failures in their bid to implement e-procurement. Adoption of e-procurement is thus riddled with challenges that need to be addressed to enhance chances of success. Past studies conducted in various contexts have revealed a number of key factors that influence success of implementation of e-procurement. Some of these factors include: buyer-supplier integration factors, trust, perceived risk, top management support and end-user training. The study is anchored on a number of theories and concepts which include: Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology

Adoption Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and Innovation Diffusion Theory (IDT). However, it was noted that most of the studies had been carried out in a developed countries hence there is need to carry out similar research based on a developing country context. Additionally, no study has been conducted based on private hospitals in Kenya.

# CHAPTER THREE:
# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter presents the methodology used in the study. It is organized as follows: first it presents the research design, then the population, sampling frame, sampling techniques, the data collection instrument, data collection procedures, pilot test and finally data processing and analysis.

## 3.2 Research Design

The study used the descriptive research design. This research design was most appropriate since the objective of the study was to establish the factors influencing the adoption and implementation of e-procurement among private hospitals in Nairobi. This research design has been used successfully by several past studies including Karimi (2012) who studied the relationship between Human Resource Strategy and firm performance among parastatals in Kenya. Oluoch (2003) also used a similar research design successfully in his study on the perceived attractiveness of the freight and forwarding industry using Porter's modified model.

## 3.3 Population of the Study

The unit of study was the hospital. Thus the population of this study was made up of 58 private and mission hospitals accredited by the National Hospital Insurance Fund (NHIF). For purposes of the present study, a census was carried out since the population defined was relatively small.

## 3.4 Data Collection

Primary data was used in the study. A semi-structured questionnaire was used to collect data. This was appropriate because it allows a participant to provide feedback that is slightly more expansive than a simple close-ended question, but that is much easier to quantify than a completely open-ended response (Cooper, 2009). The questionnaire will contain both open-ended and close-ended questions. The questionnaires was administered to the respondents at their place of work. Since the research is being conducted in various locations across Nairobi, the researcher will use a team of research assistants to distribute the questionnaires to the various respondents. Follow-up was done through telephone calls and site visits to ensure the respondents have filled the questions after the agreed time.

### 3.4.1 Pilot Test

The questionnaire was subjected to a pilot test before final administration to the respondents. A convenient sample of five (5) respondents was selected and given the questionnaire to fill in the presence of the researcher. The results were used to check for face validity of the instrument and to refine the instrument for clarity. The pilot test aided the researcher in clearing any ambiguities and in ensuring that the questions posed measure what it is intended to measure.

## 3.5 Data Analysis

Upon receipt of the questionnaires, they were coded and examined for completeness. Those with too many missing entries were discarded. They were then be fed into the Statistical Package for Social Sciences (SPSS). Factor analysis will be used to identify the underlying factors. This will be done using principal component analysis with

VARIMAX rotation. Similar analysis technique was used by Awino and Kariuki (2012) in their study entitled "Firm strategy, Business Environment and the Relationship Between Firm Level Factors and Performance". Letting (2011) also used factor analysis with VARIMAX rotation in his study on the relationship between corporate governance and firm performance among listed firms at the Nairobi Securities exchange. Descriptive statistics was used to summarize the results for each of the main variables. These included mean, mode and standard deviation. While measures of central tendency show points of consensus, standard deviation shows the degree of variability of responses. Aggregate means of the items under each factor were then computed for each respondent to establish a composite index. The resulting factors were used as independent variables and level of adoption and use of e-procurement was the dependent variable. Using the same data collected, simple linear regression analysis was applied to determine the joint relationships between the factors (identified through factor analysis) and the dependent variable. The regression equation was as follows:

$$Y = a + b_i X_i;$$

Where Y = Dependent variable; $X_i$= Independent variables; a = Constant; b = Coefficient

# CHAPTER FOUR:
# DATA ANALYSIS, INTERPRETATION AND DISCUSSIONS

## 4.1 Introduction

This chapter presents the data analysis results, as well as interpretation and discussion of findings. The overall objective of this study was to examine the extent of e-procurement implementation and establish the factors influencing implementation of e-procurement among private healthcare service providers in Nairobi, Kenya. Data analysis was done using frequencies, factor analysis, correlation and regression as the primary tools of analysis. Results are presented in tables and charts.

## 4.2 Response Rate

The study targeted all the 58 NHIF accredited hospitals. The table below presents the response rate.

**Table 4.1: Response rate**

| | Targeted (count) | Received (count) | Response rate |
|---|---|---|---|
| Respondents | 58 | 48 | 83% |

Source: Research data (2013)

From the table above, 48 out of the 58 hospitals responded to the questionnaire representing an 83% response rate. This response rate was considered high enough and representative (Letting, 2011).

## 4.3 Background Information

### 4.3.1 Gender

The respondents were asked to indicate their gender. The table below presents the responses.

**Table 4.2: Distribution of respondents by gender**

| | Frequency | Percent |
|---|---|---|
| Male | 28 | 58.3 |
| Female | 20 | 41.7 |
| **Total** | **48** | **100.0** |

Source: Research data (2013)

From the table above, majority (58.3%) of the respondents were male while only 41.7% were female. This suggests a near equal distribution of respondents by gender.

### 4.3.2 Education Level

The study sought to establish the highest level of education of the respondents. The respondents were asked to indicate their highest levels of education. The table below presents the responses obtained.

**Table 4.3: Distribution of respondents by education level**

| | Frequency | Percent |
|---|---|---|
| College diploma | 8 | 16.7 |
| Undergraduate degree | 26 | 54.2 |
| Postgraduate degree | 14 | 29.2 |
| **Total** | **48** | **100.0** |

Source: Research data (2013)

From the table 4.3 above, majority (54.2%) of the respondents had undergraduate degrees while 29.2% had postgraduate degrees. Only 16.7% had college diplomas. These findings indicate that the respondents were highly educated and thus could easily respond to the questions posed informatively.

### 4.3.3 Position

The study also sought to find out the positions held by the various respondents. The respondents were asked to indicate their position and the responses were as shown in the table below.

**Table 4.4: Distribution of respondents by position**

| | Frequency | Percent |
|---|---|---|
| Head of finance | 12 | 25.0 |
| Head of procurement | 24 | 50.0 |
| Procurement operations staff | 10 | 20.8 |
| Other | 2 | 4.2 |
| **Total** | **48** | **100.0** |

Source: Research data (2013)

From the table above, majority (50%) of the respondents were heads of procurement department, 25% were heads of finance department and 20.8% were procurement operations staff. It was noted that small hospitals had not separated procurement from the finance function hence finance managers had to respond to the questionnaires. This therefore indicates that the questionnaires were responded to by the most informed persons in the organization regarding procurement.

## 4.4 E-procurement Implementation

The study sought to establish the extent of eprocurement implementation. The respondents were asked to rate their levels of agreement with various statements which were used as indicators of eprocurement on a scale of 1 – 5. The mean ratings were computed and ranked as displayed in the table below.

**Table 4.5: Extent of E-procurement Implementation**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| End users have been trained on utilization of e-procurement systems | 48 | 1.00 | 5.00 | 3.0625 | 1.07992 |
| Procurement staff have the necessary skills and know-how to implement e-procurement | 48 | 1.00 | 5.00 | 2.9375 | 1.19228 |
| Major suppliers have been involved in efforts towards integration of procurement systems | 48 | 1.00 | 5.00 | 2.8333 | 1.11724 |
| Sufficient funds have been set aside for complete implementation of e-procurement | 48 | 1.00 | 5.00 | 2.8125 | .95997 |
| The hospital has acquired all necessary hardware and software to facilitate e-procurement | 48 | 1.00 | 5.00 | 2.7708 | .99444 |
| Valid N (listwise) | 48 | | | | |

Source: Research data (2013)

From the table above, all the eprocurement implementation indicators were rated between 2.51 and 3.5 indicating that e-procurement had been implemented to a moderate extent by the hospitals. Specifically, the highest rated aspect was end user training (mean, 3.06). This was followed by procurement staff have the skills and know-how to implement eprocurement (mean, 2.9). Additionally the following aspects were rated as applying to a moderate extent: major suppliers have been involved in efforts towards integration of procurement systems (mean, 2.8), Sufficient funds have been set aside for complete implementation of e-procurement (mean, 2.8), and the least rated was the hospital has acquired all necessary hardware and software to facilitate e-procurement (mean, 2.8).

These findings thus indicate that e-procurement has been implemented to a moderate extent by the NHIF accredited hospitals.

### 4.6 Factors Affecting Implementation of E-Procurement

The study sought to find out the factors that influence e-procurement implementation. The respondents were asked to rate their levels of agreement with 33 items which were indicators of the factors influencing eprocurement, on a scale of 1 – 5 where 1 was strongly disagree and 5 was strongly agree. The 33 items were subjected to factor analysis with varimax rotation and the results obtained were as shown in the table below.

**Table 4.7: Factor loadings and univariate descriptives of identified factors**

| | Factor loadings | Underlying factor | Mean | Std. Deviation |
|---|---|---|---|---|
| Adoption of e-procurement is a costly venture that requires enormous amounts of capital | .863 | Risk Perception | 3.3542 | 1.02084 |
| E-procurement is prone to risk and can significantly disrupt operations | .859 | | 3.3333 | 1.09803 |
| E-procurement limits the organizations to suppliers within the network hence leading to high opportunity costs | .911 | | 3.2500 | .97849 |
| E-procurement infrastructure are easily compatible with existing technologies already in use in the organization | .931 | | 3.1458 | .94508 |
| E-procurement offers better efficiency and cost savings than traditional paper based procurement | .926 | | 3.1250 | 1.08422 |
| E-procurement is easy to adopt and implement and does not disruptive | .864 | | 3.1250 | .91384 |
| Adoption of E-procurement does not negatively impact on existing corporate culture | .829 | | 3.0625 | 1.07992 |
| There is no fear of loss of jobs due to adoption and full implementation of e-procurement | .791 | End user training | 3.0833 | 1.10768 |
| Staff in my organization are receptive to new technological innovations | .747 | | 3.0625 | .97645 |
| Staff do not fear that implementation of e-procurement might injure inter-personal relations | .846 | | 2.8958 | 1.11545 |
| There is continuous training and awareness creation on new technologies among top management and staff | .763 | | 2.7917 | .87418 |

| | Factor loadings | Underlying factor | Mean | Std. Deviation |
|---|---|---|---|---|
| Employees in my organization are highly trained in the use of information systems | .817 | | 2.6250 | .95928 |
| There is great use of internet for internal and external communications in the hospital | .920 | Existing Technology | 3.4792 | 1.30449 |
| There is reliable internet and intranet within the organization | .921 | | 3.4583 | 1.14777 |
| The hospital has adequate information technology infrastructure for all staff involved in purchasing | .936 | | 3.4167 | 1.08830 |
| There is top management support to technological innovations | .838 | Top management support | 3.0833 | .94155 |
| The organization devotes sufficient funds towards implementation of e-procurement | .874 | | 2.9583 | .89819 |
| Suppliers are willing to invest in necessary infrastructure and communication facilities to facilitate e-procurement | .827 | Supplier Systems Integration | 2.5208 | .92229 |
| There hospital maintains very close long term relationships with its major suppliers | .707 | | 2.4375 | .76926 |
| Suppliers of our organization are highly technologically informed and have embraced technology in most of their operations | .795 | | 2.4375 | .89695 |
| The hospital has very many small suppliers who supply on a transactional basis | .756 | | 2.3750 | .81541 |
| Integration of our organization's systems with those of suppliers is easily achievable | .693 | | 2.3542 | .78522 |
| Suppliers in the industry have the necessary infrastructure to support e-procurement | .920 | | 2.3333 | .85883 |
| The organization and its major suppliers have high levels of trust for each other | .923 | | 2.3125 | .85443 |
| Adoption and full implementation of e-procurement is in line with the organization's mission and vision | .823 | Implementation Strategy | 3.9583 | .87418 |
| The organization is headed towards greater utilization of technology in all its operations | .888 | | 3.7708 | .83129 |
| E-procurement adoption and implementation is part of our long-term organizational goals and strategy | .685 | | 3.5625 | .84818 |
| The systems are simple to train users on and to operate i.e. not complex | .683 | Vendor Support | 2.4167 | .96389 |
| Existing vendors can facilitate parallel running of existing and e-procurement systems for trials | .775 | | 2.2917 | .82406 |
| There are dominant systems in use in the industry which facilitates easy integration | .771 | | 2.1458 | .58308 |

| | Factor loadings | Underlying factor | Mean | Std. Deviation |
|---|---|---|---|---|
| There is low level of risk involved in the use of integrated systems of procurement | .752 | | 1.9583 | .77070 |
| System vendors are very supportive and have efficient customer care | .788 | | 1.9583 | .68287 |
| There is a team tasked with fast-tracking adoption and implementation of e-procurement | .889 | *Variable dropped since it had only 1 item* | 3.3125 | .71923 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Source: Research data (2013)

From the table above, factor analysis identified 7 (seven) underlying variables. The first variable identified was risk perception measured by 7 items with means lying between 3.0 and 3.4. This indicates that perception of risk of adoption of eprocurement was moderate among the private hospitals. The second factor identified was end user training which had 5 items with a mean ranging between 2.6 and 3.1. This also indicates that End User Training had been undertaken to a moderate extent among the private hospitals. The third variable identified was Existing Technologies with 3 items with means ranging between 3.4 and 3.5. This indicates that the hospitals had moderate technological readiness for the implementation of eprocurement. The fourth variable was Top Management Support measured by two items with means 2.96 and 3.08 indicating that Top Management Support towards implementation of e-procurement was average. The fifth variable identified was Supplier Systems Integration represented by 7 items with means ranging between 2.31 and 2.52. The low mean ratings show that there are major challenges in Integration of Hospital systems with those of suppliers. The sixth variable identified was implementation strategy represented by 3 items with mean ratings ranging from 3.56 and 3.96. This suggests that eprocurement is highly placed as a strategic

objective. Finally, Vendor Support was identified as one of the underlying variables represented by 5 items with mean ratings between 1.95 and 2.5 indicating that the hospitals faced challenges with respect to support from the vendor on the implementation of eprocurement systems. These findings are consistent with those of Neef (2001) who identified supplier integration factors, top management support as well as proper implementation strategies as key factors informing successful implementation.

## 4.7 Relationship between the identified factors and eprocurement implementation

The study sought to establish the joint relationship between the factors identified from factor analysis with eprocurement implementation. A multivariate linear regression equation was fitted to the data with the identified factors as the independent variables and eprocurement implementation as the dependent variable. The results were as shown in the tables below.

The table below shows the coefficients estimates.

**Table 4.9: Coefficients Estimates**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | .734 | .886 | | .829 | .412 |
| | Risk Perception | -.470 | .099 | -.450 | -4.758 | .000 |
| | End User Training | -.228 | .111 | -.197 | -1.058 | .146 |
| | Existing Technology | .295 | .081 | .349 | 3.634 | .001 |
| | Top Management Support | .479 | .112 | .433 | 4.299 | .000 |
| | Supplier Systems Integration | .024 | .135 | .018 | .178 | .859 |
| | Implementation Strategy | .502 | .142 | .348 | 3.543 | .001 |
| | Vendor Support | -.015 | .153 | -.009 | -.096 | .924 |

**Source: Research data (2013)**

From table 4.9 above, the equation obtained was as follows:

EI = .734 + -.470*RP - .228 EUT + .295* ET +.479*TMS +.024*SSI + .502*IS - .015* VS

Where EI = Eprocurement Implementation
RP = Risk Perception
EUT = End User Training
ET = Existing Technology
TMS = Top Management Support
SSI = Supplier Systems Integration
IS = Implementation Strategy
VS = Vendor Support

From table 4.9 above, Risk perception has a negative but statistically significant relationship with eprocurement (β = -0.47; p = .000 < .05). Existing technology ((β = .295), top management support (β = .479) and implementation strategy (β = .502) had positive and statistically significant relationships with eprocurement implementation (p < .05). The other variables namely, end user training, supplier systems integration and vendor support had no statistically significant relationship with eprocurement implementation (p > .05).

**Table 4.10: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .814 | .663 | .604 | .59277 |

**Source: Research data (2013)**

From table 4.10 above, the coefficient of determination was found to be .663 indicating that the factors account for 66.3% of the variability in eprocurement implementation.

This represents a fairly good fit since an R-square of .7 is generally accepted as the threshold for a good fit.

**Table 4.11: ANOVA**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 27.612 | 7 | 3.945 | 11.226 | .000 |
| | Residual | 14.055 | 40 | .351 | | |
| | Total | 41.667 | 47 | | | |

Source: Research data (2013)

From the table above, the F-statistic is 11.226 and p-value = .000. This indicates that the model is statistically significant and that the identified factors have a statistically significant relationship with eprocurement implementation.

# CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter presents summary of findings, conclusions and recommendations. It is organized as follows: first it presents the summary of findings organized as per research objectives, then the conclusions drawn from those findings and finally both policy recommendations and suggestions for further study.

## 5.2 Summary of Findings

The study sought to examine the extent of e-procurement implementation and establish the factors influencing implementation of e-procurement among private healthcare service providers in Nairobi. Regarding eprocurement implementation, the study found that e-procurement had been implemented to a moderate extent by the NHIF accredited

hospitals. Seven factors that influence eprocurement implementation were identified through factor analysis. These include: risk perception, end user training, existing technology, top management support, supplier systems integration, implementation strategy and vendor support. Four out of the seven variables were found to have statistically significant relationships with eprocurement implementation. These include: Risk perception which had a negative relationship with eprocurement implementation, Existing Technology, Top management support and implementation strategy all of which had positive relationships. End User Training, Supplier systems integration and Vendor Support had no statistically significant relationships with eprocurement implementation. An examination of the joint relationship confirmed these findings and established that the seven variables jointly account for 66.3% of the variability in eprocurement implementation.

## 5.3 Conclusions

From the above findings the following conclusions were made. Eprocurement has been implemented to varying extents by the private hospitals. The aggregate implementation level for all the private hospitals is moderate indicating that private hospitals still use the traditional procurement methods to a great extent. It was also concluded that the greatest drivers of e-procurement implementation among the private hospitals are: Risk perception which had a negative relationship with eprocurement implementation, as well as Existing Technology, Top management support and implementation strategy all of which had positive relationships.

## 5.4 Recommendations

From the above conclusions, the following recommendations were arrived at: First, the private hospitals should seek ways to enhance greater collaboration within the industry and with suppliers so as to hasten the pace of implementation of eprocurement. Second, since risk perception is a key driver, hospital associations, the private sector, the government and other stakeholder should facilitate empirical studies to be conducted to dispel any myths and to help private hospitals better understand the genuine risks as well as the cost benefit tradeoffs involved in adoption and implementation of eprocurement.

### 5.4.2 Limitations and Suggestions for Further Research

Since the study focused only on private hospitals accredited by NHIF, future studies can consider expanding the scope by including public hospitals.

Future studies should also consider expanding the topic to include moderating variables like firm size and firm age.

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## Appendix I: Questionnaire

## QUESTIONNAIRE

This questionnaire is meant to collect information on the factors influencing adoption and implementation of e-procurement among private hospitals in Nairobi, Kenya. This information is being sought solely for academic purposes and will be treated with strict confidence. Kindly answer the questions by writing a brief statement or ticking the boxes provided as will be applicable.

### Section 1: Background Information

1. Which Division/Department/Section do you head……
2. What is your gender?
   Male [ ] Female [ ]

3. What is your highest level of education?
   a. Secondary [ ]
   b. College Diploma [ ]
   c. Undergraduate degree [ ]
   d. Postgraduate degree [ ]
   e. Other (please specify ) _____

4. What is your position at the hospital? ……

### Section 2: Implementation of e-Procurement

5. Would you say that your hospital has adopted e-procurement (use of IT to aid purchasing)?
   Yes [ ] No [ ]
   If Yes, what benefits have accrued from adoption of e-procurement?

……
…

……
…

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

……

……

6. Please give the strength of your agreement with the following statements about e-procurement implementation in your organization?

| | 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 | | | | | |

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

Very low [1] Low [2] Moderate [3] High [4] Very high [5]

**Section 3: Factors Affecting E-Procurement Implementation**

8. 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

| **Factors** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| E-procurement offers better efficiency and cost savings than traditional paper based procurement | | | | | |
| E-procurement infrastructure are 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 disruptive | | | | | |
| 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 a costly venture that requires enormous amounts of capital | | | | | |
| Employees in my organization are highly trained in the use of information systems | | | | | |
| There is 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 is reliable internet and intranet within the organization | | | | | |
| There is great use of internet for internal and external communications in the hospital | | | | | |
| The organization devotes sufficient funds towards implementation of e-procurement | | | | | |
| Suppliers in the industry have the necessary infrastructure to support e-procurement | | | | | |
| There hospital maintains very close long term relationships with its major suppliers | | | | | |
| The hospital has very many small suppliers who supply on a transactional basis | | | | | |
| The organization and its major suppliers have high levels of trust for each other | | | | | |
| Suppliers are willing to invest in necessary infrastructure and communication facilities to facilitate e-procurement | | | | | |
| Suppliers of our organization are highly technologically informed and have embraced technology in most of their operations | | | | | |
| Integration of our organization's systems with those of suppliers is easily achievable | | | | | |
| E-procurement adoption and implementation is part of our long-term organizational goals and strategy | | | | | |
| There is a team tasked with fast-tracking adoption and implementation of e-procurement | | | | | |
| The organization is headed towards greater utilization of technology in all its operations | | | | | |
| Adoption and full implementation of e-procurement is in line with the organization's mission and vision | | | | | |
| There is low level of risk involved in the use of integrated systems of procurement | | | | | |
| System vendors are very supportive and have efficient customer care | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| There are dominant systems in use in the industry which facilitates easy integration | | | | | |
| 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 | | | | | |

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

……
……

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

……
……

## Appendix 2: List of NHIF Accredited Hospitals

| Hospital | Postal Address | Beds | Dealing Branch | Cat. |
|---|---|---|---|---|
| Avenue Healthcare Ltd | 45280 NAIROBI | 60 | WESTLANDS | C |
| Blessed Louis Palazzolo Health Center | 656 NAIROBI | 24 | WESTLANDS | B |
| Chiromo Lane Medical Centre | 73749 NAIROBI | 15 | WESTLANDS | C |
| City Nursing Home Nairobi | 14591 NAIROBI | 20 | NAIROBI | C |
| Coptic Church Nursing | 21570 NAIROBI | 37 | NAIROBI | C |
| Divine Word Parish Health Center | 304 NAIROBI | 32 | NAIROBI | B |
| Dorkcare Nursing Home Ltd | 33541 NAIROBI | 15 | EASTLEIGH OFFICE | C |
| Edelvale Trust Jamaa H Hospital | 17153 NAIROBI | 46 | BURUBURU | C |
| Ediana Nursing Home | 56270 NAIROBI | 15 | RUARAKA | C |
| Emmaus Innercore Nursing Home | 78123 NAIROBI | 16 | BURUBURU | C |
| Family Health Options | 30581 NAIROBI | 20 | IND. AREA | C |
| Gertrudes Garden Children's Hospital Nbi | 42325 NAIROBI | 72 | WESTLANDS | C |
| Guru Nanak Ramgarhia Sikh Hospital | 33071 NAIROBI | 85 | WESTLANDS | C |
| H.H. Agakhan Hospital (Nairobi) | 30270 NAIROBI | 165 | WESTLANDS | C |
| Huruma Nursing & Maternity Home | 72934 NAIROBI | 26 | RUARAKA | B |
| Kamiti Hospital | 40061 NAIROBI | 195 | WESTLANDS | A |
| Kasarani Nursing & Mat. Home | 31524 NAIROBI | 60 | RUARAKA | C |
| Kayole Hospital | 67617 NAIROBI | 40 | BURUBURU | C |
| Kenyatta National Hospital (Amenity Wing | 20723 NAIROBI | 225 | NAIROBI | C |
| Kenyatta National Hospital (General Ward | 20723 NAIROBI | 1804 | NAIROBI | A |
| Kilimanjaro Nursing & Maternity Home | 43920 NAIROBI | 26 | NAIROBI | C |
| Lions Sight First Eye Hospital | 66576 NAIROBI | 52 | WESTLANDS | C |
| Madina Hospital Limited | 78370 NAIROBI | 18 | EASTLEIGH OFFICE | C |
| Maria Immaculate Hospital | 57216 NAIROBI | 28 | WESTLANDS | C |
| Maria Mat. & Nursing Home | 34736 NAIROBI | 20 | BURUBURU | B |

| | | | | |
|---|---|---|---|---|
| Mariakani Cottage Hospital | 12535 NAIROBI | 21 | IND. AREA | C |
| Marie Stopes Kenya Limited | 59328 NAIROBI | 19 | EASTLEIGH OFFICE | C |
| Marura Nursing Home | 75520 NAIROBI | 13 | RUARAKA | B |
| Masaba Hospital | 53648 NAIROBI | 156 | NAIROBI | C |
| Matasia Health Clinic | 185 KISERIAN | 23 | NAIROBI | C |
| Mater Misericordiae Hospital Nairobi | 30325 NAIROBI | 135 | IND. AREA | C |
| Mathare Mental Hospital (General Ward) | 40663 NAIROBI | 1138 | RUARAKA | A |
| Mbagathi District Hospital | 20725 NAIROBI | 250 | NAIROBI | A |
| Melchizedek Hospital | 20085 NAIROBI | 19 | NAIROBI | C |
| Menelik Medical Center | 55164 NAIROBI | 13 | NAIROBI | C |
| Metropolitan Hospital | 33080 NAIROBI | 35 | BURUBURU | C |
| Midhill Maternity & Nursing Home | 21138 NAIROBI | 28 | NAIROBI | C |
| Mother & Child Hospital | 12658 NAIROBI | 23 | EASTLEIGH OFFICE | C |
| Nairobi Equator Hospital | 44995 NAIROBI | 40 | IND. AREA | C |
| Nairobi Hospital Nairobi | 30026 NAIROBI | 220 | NAIROBI | C |
| Nairobi South Medical Centre | 74079 NAIROBI | 15 | IND. AREA | C |
| Nairobi West Hospital | 43375 NAIROBI | 66 | IND. AREA | C |
| Nairobi Women's Hospital | 10552 NAIROBI | 50 | NAIROBI | C |
| National Spinal Injury Hospital | 20906 NAIROBI | 30 | NAIROBI | A |
| Ngumba Center And Laboratory Services | 412 RUARAKA | 12 | RUARAKA | C |
| Olive Tree Hospital | 19739 NAIROBI | 16 | IND. AREA | C |
| Parkroad Nursing Home (Nairobi) | 19850 NAIROBI | 57 | RUARAKA | C |
| Pumwani Hospital Management Board | 30108 NAIROBI | 350 | EASTLEIGH OFFICE | A |
| Radent Hospital | 48234 NAIROBI | 20 | WESTLANDS | C |
| S.S. League M.P Shah Hospital Nairobi | 14497 NAIROBI | 108 | WESTLANDS | C |
| Samaritan Medical Services | 212 DANDORA | 32 | RUARAKA | C |
| South 'B' Hospital | 49255 NAIROBI | 12 | IND. AREA | C |
| St. Annes Maternity Home - | 54337 NAIROBI | 13 | IND. AREA | C |

| | | | | |
|---|---|---|---|---|
| Nairobi | | | | |
| St. John's Hospital Ltd | 51754 NAIROBI | 17 | RUARAKA | C |
| St.Francis Community Hospital | 62676 NAIROBI | 100 | RUARAKA | C |
| Umoja Hospital | 76480 NAIROBI | 13 | BURUBURU | C |
| University Of Nairobi Health Services | 30194 NAIROBI | 12 | NAIROBI | C |
| Uzima Dispensary And Maternity | 68280 NAIROBI | 11 | RUARAKA | B |

**Source**: http://www.nhif.or.ke/healthinsurance/