

**E-PROCUREMENT PRACTICES AND OPERATIONAL  
PERFORMANCE OF PHARMACEUTICAL MANUFACTURING  
FIRMS IN NAIROBI**

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## DECLARATION

I declare that this is my original work and has not been presented for a degree in any other university.

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Date .....

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This project has been submitted for examination with my approval as the University Supervisor:

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Date .....

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## **DEDICATION**

I dedicate this project to my family for unfailing encouragement and love. To my dear father, Sylvester and to my loving mother Janet, who were a constant source of encouragement for me to strive on to the completion of this project.

## **ACKNOWLEDGEMENT**

I wish to thank most sincerely all those whose contributions have made this project a success. To my supervisor Mr. Chirchir for his assistance and advice all through making this project a success. To my wonderful family for their support both morally and financially. Most of all I thank God for the gift of wisdom and strength to complete this project.

I feel indebted to pharmacy and poisons Board, the management of Nairobi pharmaceutical manufacturing firms and all other people who in one way or another played a part in my entire MBA process.

To my workmates, thanks for holding forth for me the many times I was away pursuing this noble course. To all of you may the Almighty God bless you abundantly.

## ABSTRACT

E-business has become part of life in the current business world, as almost all form of large entities are applying it in conducting their trade for procurement and other processes. With – procurement systems in place, more efficiency will be experienced as goods and services in the supply chains can be easily tracked for data recording and retrieval. With a robust procurement system the operational performance will gain, lower production costs and overall efficiency and effectiveness hence increased competitive advantage. The main objective of the study is to evaluate the practice of e-procurement and the operational performance in pharmaceutical manufacturing firms within Nairobi. The specific objectives of this research are; to determine which e-procurement practices are employed by pharmaceutical manufacturing firms in Nairobi and establish the relationship between e-procurement practices and the operational performance of pharmaceutical manufacturing firms in Nairobi. The study used descriptive cross sectional survey design. The population of the study was 50 pharmaceutical firms operating in Nairobi. The study used primary data that were collected through self-administered questionnaires. The data was analyzed using descriptive statistics. The regression analysis was used to assess e-procurements practices and operational performance. The findings of the study were that E-planning practice enabled the pharmaceutical manufacturing firms to flag the drugs that are needed at a particular point and time and the distribution of the same drugs in different warehouses. It also helps the companies to controls the production of products whose expiry dates are closely monitored and the buyer and suppliers have a means that they can use to access information on the performance of the drugs they buy from the firm. E-supplier selection enabled the manufacturing firms to come up with a pool of qualified suppliers for real time requests, selection of suppliers for various products and services online without human intervention and online data in pricing of goods. E-tendering enables the firms track orders and rectify mistakes that are realized in past orders, enable staff to do other duties as a result of spending minimal time in procurement. E-procurement was found to have enabled the pharmaceutical manufacturing firms improve their operational performance though cost reduction, decreased transaction cost, improved order processing, reduced material lead time, decreased cost of delivery, improved product/service quality and increased order placement. The regression analysis established that E-planning, E-supplier selection, E-tendering and E-sourcing influences operational performance of pharmaceutical Manufacturing firms in Nairobi. It is recommended by this study that entities should invest more in e-procurement so as to experience optimal benefits from it such as widening the scope of suppliers. Limitation of the study was on confidentiality and this caused difficulties in obtaining all the required responses and consequently led to reluctance of participating in the data collection process by some respondents.

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## ABBREVIATION AND ACRONYMS

<b>ARIPO</b>	-	African Regional Industrial Property Organization
<b>B2B</b>	-	Business-to-Business
<b>COMESA</b>	-	Common Market for Eastern and Southern Africa
<b>EDI</b>	-	Electronic Data Interchange
<b>EPZ</b>	-	Export Processing Zone
<b>ERP</b>	-	Enterprise Resource Planning
<b>EU</b>	-	European Union
<b>IT</b>	-	Information and Technology
<b>KEMSA</b>	-	Kenya Medical Suppliers Agency
<b>KNBS</b>	-	Kenya National Bureau of Statistics
<b>MEDS</b>	-	Mission based Medical Supply Facility
<b>MNCs</b>	-	Multi-National Corporations
<b>MoH</b>	-	Ministry of Health
<b>RFPs</b>	-	Request for Prices
<b>RFQs</b>	-	Requests for Quotes
<b>SMEs</b>	-	Small and Medium-sized Enterprises
<b>UK</b>	-	United Kingdom
<b>US</b>	-	United States
<b>USA</b>	-	United States of America
<b>NHS</b>	-	National Health Service
<b>RL</b>	-	Reverse Logistics
<b>B2E</b>	-	Barriers to Efficiency

## CHAPTER ONE: INTRODUCTION

### 1.1 Background of the Study

Most firms have made it key to ensure that their procurement functions are getting better over the last ten years. This is because the function has proven to be a strategic unit for many organizations because huge costs can be cut down through prudent procurement hence increase in profitability, (Percy & Giunipero, 2008). Since a number of costs can be cut down through procurement procedures, the association of low costs with procurement has induces the pharmaceutical industry to embrace e-procurement. The costs that can be lowered by e-procurement generally target contract compliance through unit pricing and reduced transactional costs. While organizations work towards this goal, they at the same time pay little attention to quality, overall cost and productivity which result in extremely low gain in the name of cutting down on , (Talluri, et al. 2010). E-procurement can also bring about better management of suppliers and strategic sourcing, and while within the four pillars, e-procurement could bring down cost, more effectiveness is realized when it is guided by proper management of suppliers and strategic sourcing (Percy & Giunipero, 2008).

The study was be guided by two theories; the technology-organization-environment theory and institutional theory. The institutional theory recognizes the blending of institutional actors within a setting of mixed rules; informal and formal. It goes on to suggest that in order justify actions of the actors, the entity's actors should be the drivers of the actions of the entity. E-procurement is therefore an initiation of actors and is conceptualized by them in the course of looking for efficiency and effectiveness, (Oliver, et al. 2007).

The technology–organization–environment theory by Tornatzky and Fleischer (1990) on the other hand elaborate the application of technological innovations. They identify the nature of

the firm using three aspects which influence the application of technological discoveries by the entity. Such innovations include e-procurement to improve its operational performance; including ability to improve on efficiency and transparency, hence cuts down on almost all operational costs between business parties. (Cox, 2010).

In Kenya, pharmaceutical manufacturing firms have experienced changes in their operating environment as a result, inter alia, of intense international and local competition, from an enlightened customer base and demanding markets, as well as adoption of diverse and rapidly changing technologies. The operational cost, despite the adoption of modern manufacturing technologies, has been ballooning and this necessitates adoption of all necessary strategies to manage the same and serve the customer best. Operational management of these organizations therefore becomes important. According to Mitra., Lakha and Abdulla (2000) one of the tools that firms can use to positively affect their operational performance is adoption of e-procurement. The study then sought to establish the correlation between the operational performance of the firm and the implementation of e-procurement.

### **1.1.1 E-Procurement practices**

E-procurement has varying definitions, but its general one is that it's the application of Information Technology in the undertaking of, majorly purchasing of goods and services, (Wu et al., 2007). This system is IT based which comes at the completion of the supply transaction (Presutti, 2010). Therefore, e-procurement is a form of trading that utilizes the Internet platform such ERP and electronic data interchange. This advantages brought by this system has earned it popularity as it is associated with a reduction in transaction turn-around time, cost cutting and increase (Bof & Previtali, 2010). The various categorization of e-procurement include; brokerage, e-auction, purchase process management and electronic

integration among others. Due to the need for integration of business processes across enterprises, this process has been branded as a glue that sticks supply chains as one, (Child, et al, 1998). This integration realizes efficiency and effectiveness of process in enterprises.

The characteristics of an e-procurement system are buyer and supplier with presence of a medium which is a web based application software, and businesses that takes up this kind of platform are bound to experience a cut in their costs, efficiency in processes, paperless processes and a drastic cut in costs (Giunipero, et al, 2008). Since procurement is an international practice that is cross border, e-procurement immensely assists in breaking trade impediments, does away with costs such as agency fee and ultimately increases profits in supply chains (Talluri, et al 2010).

### **1.1.2 Operational Performance**

The sum total of all an entity's routine processes and activities, and the undertaking of this activities can range from financial to being non-financial. Kalpan and Norton, (2001) came up with a performance measure framework which gives organizations, a balanced view of performance; under four perspectives; financial, customer, growth, and internal processes. By shifting towards innovation in technology and application of electronic procurement, benefits in an entities performance alongside making the organization more competitive and profitable (Koh, et al, 2006).

Going by Ogot et al, (2009), it is essential to have a strong procurement system that is automated, interlinked and seamless in operation, as this will realize increase in aggressiveness and cut on costs for the enterprise. Additionally, the ease of following up services and goods, their bids and ensure sufficient information is acquire for better pricing

procedures. E-procurement is also advantageous because it reduces product development turn-around time and this is because it tremendously improves information sharing.

### **1.1.3 Pharmaceutical Manufacturing Firms in Nairobi**

The pharmaceutical industry in Nairobi comprises three categories of namely distributors, retailers and the producers which play a critical role in supporting the health sector of the country to a tune of 4,557 health centers all over the country. Within the COMESA, Kenya is the highest producer of pharmaceutical commodities serving approximately a half of the region, (EPZ, 2010). According to Global UNIDO, (2010), 9,000 pharmaceutical commodities have been authorized for distribution in Kenya, and this are categorized into OTC distributions, those dispensed by pharmacy technologists and those specifically dispensed on prescription by pharmacists. Most of the licensed pharmaceutical companies are categorized either local or multinationals, subsidiaries or joint ventures, according to the licensing procedures by the Ministry of Health. A large percentage of them are located in Nairobi and provide employment to 2,000 people and about 65% of engage in direct production, (KNBS, and ICF Macro, 2010). In the country, this pharmaceutical enterprise continue to increase in number, carrying out processing, packaging and distribution activities in bulk, including international procurement. They currently number 23 firms. The firm's compound and package medicines, repacks (EPZ, 2010).

Of the supply agencies in Kenya, KEMSA, which is an integral arm of the Ministry of Health is the majority national pharmaceutical distributor as it supplies both private and public health institutions. Even though KEMSA is the majority supplier of vital medical tools and drugs through policy, it doesn't exclusively do this to public facilities because it faces stiff

competition from other market players such as MEDS and other private suppliers (KNBS, and ICF Macro, 2010). The distribution of drugs in Nairobi is through pre-categorized channels. Managed by registered practitioners, the registered number of wholesaler and retailer pharmaceuticals is 700 and 1,300 (WHO, 2010).

## **1.2 Research Problem**

E-business has become an integral practice of life for many enterprises in the world today as many of them practice at least one form of it, such as e-sourcing. The significance of it is to ensure efficiencies in operations by replacing or improving trading activities with e-business (Essig, et al. 2014). The study, based on the background above, seeks to establish the impact e-procurement has in the pharmaceutical entities processes performance in Nairobi (Gilbert, 2010). A number of companies were adopting this platform without a full understanding the impact of the underlying model, the technology involved, the financial outlay required and the complexities of getting the correct information from the clients and how it blends with the EPR model. (Presutti, 2008).

Locally, Athman (2012) researched on the effect of Government Regulations on Supply Chain Performance of Oil Marketing companies in Kenya and found that unlike in the private sector, stringent procurement policies are adopted by government agencies and this slows down the speed of procuring services in the government sector. Kingori (2013) researched on the effect of e-procurement on supply chain performance at Teachers Service Commission. The researcher established that, e-procurement helps in improving auditing process and also enables staff and auditors to verify and track the movement of orders through the system as well as that e-procurement can be used any time of the day. Nzuve (2013) undertook a research to examine the extent of e-procurement implementation and establish the factors

influencing implementation of e-procurement among private healthcare service providers in Nairobi.

Using the KRA e-platform application background, Abala (2014) sought to establish factors that impact the usage of in KRAs activities. The study established that it was a difficult task creating acceptance of this concept among the staff, senior management staff and stakeholders because they developed lack of confidence in it, feared making errors with it and there was general inadequacy of pioneers who would take the lead in implementing it.

From the above studies, it is evident that while an attempt has been made to look at the effect of e-procurement on various facets of the organization including performance, the pharmaceutical industry has received little attention. The level of collaboration required in the drug industry cannot be compared with any other industry and more so in the developing countries. Consequently, this gap leads to the following research question; what is the relationship between E-procurement practices and operational performance of pharmaceutical manufacturing firms in Nairobi?

### **1.3 Research Objective**

The main objective of the study was to examine the e-procurements practice and operational performance of pharmaceutical manufacturing firms in Nairobi.

#### **1.3.1 Specific Objectives**

1. To establish the e-procurement practices employed by pharmaceutical manufacturing firms in Nairobi.
2. To establish the relationship between e-procurement practices and the operational performance of pharmaceutical manufacturing firms in Nairobi.



#### **1.4 Value of the Study**

By understanding the impact of e-procurement practice and operational performance, it will enable policy makers, Government, Regulatory bodies and other users to model policies and programs that significantly enhance sustainability and growth of pharmaceutical companies while at the same time support, encourage, and promote the establishment of appropriate policies to guide the firms. The outcome of this research and recommendations there-upon will assist pharmaceutical firm's stakeholders to fully understand how they can effectively manage their procurement function as a source of competitiveness. The managers will benefit with source of material in developing and harnessing their procurement function as a source of competitiveness in the present day evolving and dynamic business environment. The research provides background information to other researchers and scholars who may want to carry out further research in this area and will add value in understanding the nexus between technology–organization–environment and the institutional theories. Further, the study is expected to better inform other researchers on the operations of pharmaceutical industry in Kenya.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

Despite the huge number of studies done on e-procurement in the pharmaceutical industry, a very limited research has been to this effect in the developing countries, especially in Nairobi. This study therefore endeavors to fill this apparent research gap by investigating e-procurement technologies being used, usage level, relationship of e-procurement and operational performance in pharmaceutical manufacturing sector within the context of developing countries.

### **2.2 Theoretical Literature Review**

This study will be guided by the e-procurement theories, namely institutional theory and the technology acceptance model theory.

#### **2.2.1 Institutional Theory**

This theory appreciates that within the framework of formal and informal rules, institutional actors should be present in an environment. The proponents of this theory allude that the actions of an organization are driven and justified by it. Through norms and social procedures, there should be a rational account for an entity's actions by the very actors who undertake them in order to make the (Dacin, Oliver *et al.*, 2007). Subsequently, entities are built upon three bases; regulative, normative and cultural-cognitive elements.

It is stated in Wei, et al (2008) that going by this theory, so as to fully understand how to implement e-procurement, a number of forces driving institutions may influence the adoption of Information Technology based systems. This forces include normative, mimetic and coercive. Pressures coming from copying what competitors do are what are called mimetic,

as firms tend to adopt the successes of other similar one (Cox, 2010). This reduces a number of costs that an entity is likely to incur when faced with (Barua, et al, 2009).

### **2.2.2 Technology–Organization–Environment Theory**

Tornatzky and Fleischer (1990) elaborate the implementation of this technology and innovations by identifying three ways which could influence the decision by firms practice it. This are; organizational context, the technological context and environmental context (Cox, 2010). This theory further suggests that coercive pressures from other similar organizations always tend to always vary, hence this are forces that arise from the environment in which a firm operates in. Normative pressures are as a results of the sharing information which to some large extend influence the decisions taken by organizations

## **2.3 Forms of E-procurement practices**

The three forms of e-procurements, according to Koorn *et al.* (2011), include buyer, seller and intermediaries' e-procurement. E-procurement can be seen as an end-to-end process that tries to assimilate and streamline the process of purchasing across the organization, despite having a number of sub-processes which focus of the different stages of procurement.

### **2.3.1 E-Planning practice**

ERP is a controlling and material planning system that is exclusively internal web-based. E-planning is the gathering and distribution of data for both internal and external users, tracking the progress of goods, accepting goods that meet the specifications and payment of goods using internet based program. Documentation is core to the planning role and they have to meet standards in terms of confidentiality, authenticity and for future reference. More recently companies are using electronic documents such as e-mails, use of website and technical device for e-documentation. The e-tools such as intranet, optical scanners, e-forms

submission are used to improve efficiency in their service delivery and achieve their goals (Gil-García and Martínez-Moyano, 2007; Irani, 2007). New technology has given rise to new ways of conducting business and improving operational performance. The use of technology has led to increased performance, efficiency and improved service (Contini and Lanzara, 2009). Currently organizations are digitizing their systems.

The e-planning has enabled the tracing of all procurement documents online increasing transparency and accountability. This has led to new ways and modes of production in the procurement department generating new work practices (Burris, 1998; Freeman and Louca, 2001; Webster, 2002). The e-planning practice faces challenges especially in terms of document management. At a technical level, document processing include, capturing information, storage of information and ability to retrieve and manipulate information content. The e-documentation involve major segment of information database with different functions. An effective should meet the needs of management, the workers and clients of the organization. A good e-documentation management system should involve, indexing, retrieval and ease access of the document. Electronic system should allow different version of the documents (Bannan, 1997).

### **2.3.2 E-Supplier Selection practice**

Supplier pre-qualification is one of the principle pillars of e-supplier selection, which has a direct influence in the decisions taken to affect the operational performance of an organization. The effects of poor supplier selection become apparent as an entity grows because it also comes to rely on outsourcing services for its core activities. (Chan, et al, 2007). A number of enhancements in practices of selecting suppliers can bring about a downstream effect in the supply chain. (Scott et al., 2014). This is also because of the

increase in the number of suppliers eligible for selection including the international and regional ones due to the market globalization effect through web-based practices of procurement where customer's tastes and preferences keep changing and more transparency is a requirement.

The success of e-procurement is depend on the depth and timing of customer involvement in the process, where proposed solutions are offered to them and a number of issues are resolved as timely as possible. Various options are also available where the enterprise can access a wide catalogue of suppliers to select from as they wish (Birks et al., 2001). The willingness of e-suppliers and the appropriateness of information flow are some of the factors that determine the success of the e-procurement initiative (Kaliannan *et al.*, 2009). This is because there are a number of fears towards the implementing of e-commerce practices by the supplier coming from their non-involvement in the process.

### **2.3.3 E –Tendering Practice**

This is where organization advertises through e-tender notices or e-requests, by sending request for information, receiving bids and offers from suppliers, and informing suppliers on the award of contracts through the use of internet based data interchange. Data exchanged through e-tendering is more concerned with product and services. The system allows the screening and selecting of suppliers. Currently organizations are practicing e-tendering as one of the mechanisms to cut costs. Through e-tendering the organization generates wealth through electronics business (Amit and Zott, 2001).

The use of technology in conducting procurement process has brought substantial benefit to organizations which practice e-tendering (Neef, 2001). The procurement department needs to work in collaboration with other department and suppliers to achieve procurement strategies

in the organization (Watts, 1995). The e-purchasing practices are the fundamentals in formulation of the procurement strategies in terms of e-tenders (Narasimhan and Carter, 1998). There is need for procurement department to align e-purchasing practices with the departmental strategies. The use of e-tendering in the purchasing process has several advantages. The screening and selection of qualified suppliers is automated reducing the lead time, price, improving flexibility, quality among others.

#### **2.3.4 E-Sourcing Practices**

It is the process of identifying new supplier to deliver goods or services in a specified category through electronic means. It is an internet based application which enables a collaborative technology in the full life-cycle of the procurement process between the buyer and supplier. The e-sourcing is one of the best e-purchasing practices that organizations are employing to reduce costs (Kock, 2005). Presently, e-sourcing applications offers two main functions which are; online request for quotations (RFQ), this whereby of identifying the needs, the buyer ask possible suppliers to send their quotation of the product or service which is then evaluated through the application. The second one is online auctions; this is whereby buyers are invited to bid for the contracts being offered. The lowest bidder is usually the one given the contract to supply needed goods or services.

With today business environment which focus mostly on efficiency and customer satisfaction, e-sourcing has played a major role in business achieving its objective. The use of e-sourcing benefits in the following ways: Cost saving; sourcing enhances visibility on expenditures and economies of scale through bulk buying (Evans and Wurster, 2001; De Boer, 2002). The organization can save money through the implementation of e-sourcing practices in the procurement department. Reduce sourcing cycle time; e- sourcing has

tremendously reduces the time take from identifying the supplier, negotiation and contract signing. As survey by SAP found out that organization that has adopted use of e-sourcing applications their cycle time reduced between 30% and 75%.

#### **2.4 Operational Performance**

According to weele (2006,) how effective and efficient the procurement process is determines the performance of the purchasing process. An organization is inclined to assess its performance based on its set goals, the areas it needs to improve on before it decides to put in processes that improves its performance.

Relying on a set of indicators of five impact dimensions, Gardenal (2013) identified an e-procurement evaluation framework for an organizations' performance. This dimensions that e-procurement realizes the most benefits to the organization including transparency, dematerialization, efficiency, competitiveness and effectiveness.

#### **2.5 E-Procurement Practices and the Operational Performance**

E-procurement increases transparency by through usage of the online system which allows accessibility to pre-qualification documents by suppliers and the publishing of section outcomes (Gardenal, 2013). This systems enhances the intensity and levels of interactions between the suppliers and the organization, which in the end realizes timeliness in responses and delivery of orders, as it maintains an open system of relaying exchanging information with potential suppliers Epiqtech (2012. This effects have been confirmed through (Davilla, 2003). It is vital to evaluate the nature of products and services on offer as this will have a major impact on the methods to be used to sell and buy in technology terms. (Presutti, 2003).

## 2.6 Empirical Literature Review

Table 2.4.1 below summarized some of the studies and literature related to E-Procurement and Pharmaceutical/Healthcare supply chains.

<b>Author(s)</b>	<b>Focus of the Study</b>	<b>Research Findings</b>	<b>Gap (s)</b>
Smith and Correa (2005)	Value-added benefits of technology; e-procurement and e-commerce related to the health care industry	Concluded that incredible opportunities exist on the supply chain for e-business strategies to both eliminate costs and acquire strategic initiatives.	Explored the healthcare sector in its entirety but missed to narrow down on pharmaceutical firms especially in Kenya.
Walker and Harland (2008)	E-Procurement in the United Nations: influences, issues and impact.	The study found out that e-procurement is being used in the UN for transactions of routine, non-strategic purchases.	The study didn't look on the aspect of pharmaceutical firms.
Cullen and Taylor (2009)	Critical success factors for B2B e-commerce use within UK National Health Service (NHS) pharmaceutical supply chain.	The study established that there are five composite factors that are perceived by users to influence successful e-commerce use. "System quality," "information quality," "management and use," "world wide web – assurance and empathy," and "trust" are proposed as potential critical success factors.	It is important to apply same study in Africa and especially in Nairobi pharmaceutical firms.
Bhakoo and Chan (2011)	Collaborative implementation of e-business processes within the health-care supply chain; the Monash pharmacy.	The study identifies the lack of consistency and poor data quality as well as the global nature of suppliers as key issues in the e-business implementation in the healthcare supply chain.	The same study is required to assess implementation of e-procurement in Kenyan pharmaceutical firms.



Nzuve (2013)	The study to examine the extent of e-procurement implementation and establish the factors influencing implementation of e-procurement among private healthcare service providers in Nairobi.	She concluded that e-procurement has been implemented to a moderate extent by the NHIF accredited hospitals.	The study focused most on the private healthcare providers, therefore there is need for study to establish the extent of its application in pharmaceutical firms.
Abala (2014)	Researched on the factors influencing e-procurement usage application at Kenya Revenue Authority.	Findings were that was some difficulty selling the e-procurement concept internally to organizational stakeholders such as senior management and end-users, a lack of confidence, a fear of making errors, lack of technology and innovation champions within the organizations which has inhibited full acceptance of process.	From the studies, it is evident that while an attempt has been made to look at the effect of e-procurement on various facets of the organization including performance, the pharmaceutical industry has received little attention. The level of collaboration required in the drug industry cannot be compared with any other industry and more so in the developing countries.

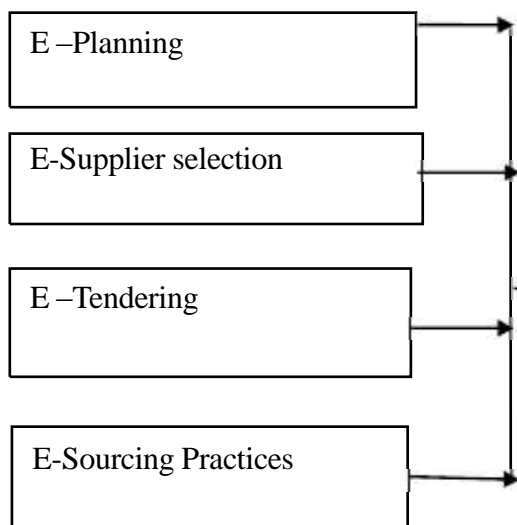
Source: Researcher, (2016)

## 2.7 Conceptual Model

The study adopted a research tool that is diagrammatic to help in the assessment and understanding of the situation of analysis and to communicate it in a way that is clear. The Model is elaborated by the interconnections between the blocks to show the expected outcomes of the study.

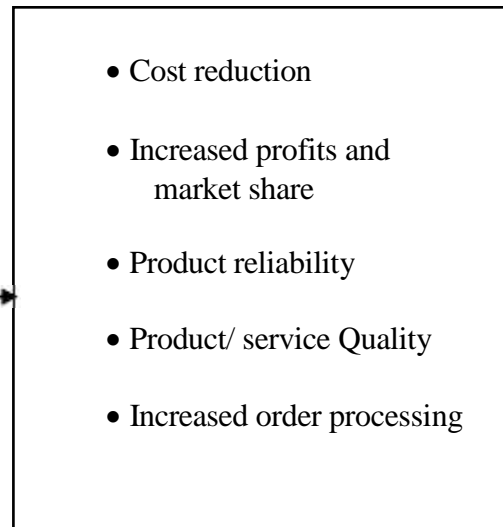
### Independent Variables

#### E-Procurement Practices



### Dependent Variables

#### Operational Performance



Source: Researcher, (2016)

H<sub>0</sub> : E-procurement practices has no effect on firm operational performance.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter describes the steps, procedures and approaches that was followed in executing this study. It discusses the research design, target population, sampling design and sample size, data collection procedures and instrument, determination of reliability and validity as well as data analysis techniques.

### **3.2 Research Design**

The study adopted descriptive cross sectional survey design. Tanur (1982) asserts that a survey is a means of collecting information about a large group of elements referred to as population. A survey has three characteristics: to produce quantitative descriptions of some aspects of the study population in which case it is concerned either with relationships between variables, or with projecting findings descriptively to a predefined population; data collection was done by asking people structured and predefined questions and data was collected from a fraction of the target population (Pinsonneault & Kraemer, 1992).

### **3.3 Population**

According to Pharmacy and Poisons Board Website, there were 50 pharmaceutical manufacturing firms operating in Nairobi hence the population of the study consisted of the 50 pharmaceutical manufacturing firms operating in Nairobi (appendix II). Since the population was not too large a census was survey was undertaken.

### **3.4 Data Collection**

The study used primary data. The questionnaire was the data collection instrument of choice as it was easy to formulate and administer and also provides a relatively simple and straightforward

approach to the study of attitudes, values, beliefs and motives (Robson, 2002). The questionnaire had both open and closed ended questions designed to elicit specific responses for qualitative and quantitative analysis. It adopted a Likert scale format whereby 5 represented a strong positive response and 1 the weak response. It contained three sections or questions. Section one was used to ascertain the use adoption of various e-procurement practices and was linked to objective one. Section two helped in linking the adoption of e-procurement practices to the operational performance of the pharmaceutical manufacturing firms and answered objective two.

The questionnaire was administered through “drop and pick later” method to the pharmaceutical firms supply chain manager or the equivalent where applicable. There was a follow-up to ensure that questionnaires were collected on time and assistance to the respondents having difficulty in completing the questionnaires was offered. Follow-up calls were made to ensure that the questionnaires were dully filled within a reasonable period of time.

### **3.5 Data Analysis**

In analyzing the data gathered, the author employed descriptive statistics. Percentages, mean and standard deviation were regressed and explained. Through the analyses, the study aimed to meet it main objectives, and the outcomes were presented using tables. The popularity of the performance was explained by their means and the variations in the same performances were explained by standard deviations.

The regression model used is represented in the form;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \alpha$$

Where            Y            =            Operational performance

$\beta_i$             =            ( i = 0 – 4 ) = Regression coefficient

- X<sub>1</sub> = E-Planning
- X<sub>2</sub> = E- Supplier Selection
- x<sub>3</sub> = E-Tendering
- x<sub>4</sub> = E-Sourcing
- α = Error term

**Table 3.1 : Summary of Data Collection and Data Analysis**

<b>Objective</b>	<b>Questionnaire Section</b>	<b>Analysis</b>
Firm Profile	Sec 1	Descriptive Statistics
Obj 1: 1.To establish the e-procurement practices employed by pharmaceutical manufacturing firms in Nairobi.	Sec 2	Descriptive Statistics
Obj 2 2.To establish the relationship between e-procurement practices and the operational performance of pharmaceutical manufacturing firms in Nairobi.	Sec 3	Correlation and Regression Analysis

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

The objective of the study was to determine the correlation between e-procurement practices and the resultant performance of pharmaceutical companies in Nairobi. Analyses of data, the findings and discussions of the same are presented in this chapter. The results were explained using frequency diagrams, means, standard deviations and percentages.

#### 4.2 Response Rate

Out of a total of 50 administered questionnaires, 39 questionnaires were completed and collected or returned. This response represented a 78% response rate which was regarded as sufficient, going by Mugenda, et al (2003).

#### 4.3 Demographic Information

The demographic information considered in the study was respondent's length of service, level of education and number of employees of firms.

**Table 4.1 : Length of Continuous Service**

Category	Item	Frequency	Percentage	Cumulative
Length of continuous service	Less than 5 years	5	12.8	12.8
	5-10 years	21	53.8	66.6
	Over 10 years	13	33.4	100.0

**Source: Research Data (2016)**

The results show that 53.8% of the respondents have worked in the pharmaceutical manufacturing firms for a period between 5-10 years and 33.4% of the respondents indicated that they have worked in the firms for over 10 years. In addition, 12.8% of the respondents have worked in the firms for less than five years. The results indicate that majority of the respondents have worked in the pharmaceutical manufacturing firms for a long time and therefore they understand the importance of e-procurement practices in the sector.

**Table 4.2: Level of education**

Category	Item	Frequency	Percentage	Cumulative
Level of education	Post graduate level	9	23.1	23.1
	University	18	46.2	69.3
	Tertiary College	7	17.9	87.2
	Secondary	5	12.8	100

**Source: Research Data (2016)**

The results on the level of education indicate that 46.2% of the respondents have attained university education as their highest level; 23.1% of the respondents indicated that they had attained post graduate; 17.9% of the respondents said that they have attained tertiary college while 12.8% of the respondents said that secondary education was their highest level attained. The results indicate that majority of the respondents have attained university level of education and therefore they have knowledge on the e-procurement practices and operational performance.

**Table 4.3: Number of employees**

Category	Item	Frequency	Percentage	Cumulative
Number of employees	Less than 200	11	28.2	28.2
	200 – 399	19	48.7	76.9
	Above 400	9	23.1	100.0

**Source: Research Data (2016)**

The results on the number of employees show that 48.7% of the pharmaceutical manufacturing firms have employed between 200 and 399 employees; 28.2% of the firms have less than 200 employees while another 23.1% of the firms has above 400 employees. The results indicate that the number of employees in the firms varies and this can be attributed to the size of the firms and the duration it has been in existence.

#### **4.4 E-procurement Practices**

Section 4.4 of this study sought to establish the practice of e-procurement had been adopted by the pharmaceutical production enterprises. It was also requested from the respondents that they reveal, in a “five point Likert scale”, the degree to which they agree that e-procurement affected the performance of their organization. This scale ranged from (1) for “strong disagree” to (5) for “strongly agree”. The scores of respondents’ low level of practice usage represent a variable which had a mean score of below 3.0 while the scores of above 3.0 represent respondents’ agreement with the usage of marketing practice.



**Table 4.4: E-procurement Practices Ranking**

<b>E-procurement Practices</b>	<b>Mean</b>	<b>Rank</b>
E-sourcing	3.85	1
E-tendering	3.80	2
E-supplier selection	3.75	3
E-planning	3.74	4

**Source: Research Data (2016)**

The results show that all the four e-procurement practices were important for the pharmaceutical manufacturing firms as the means are greater than 3, e-sourcing practice with a mean of 3.85 was the most important followed by e-tendering with a mean score of 3.80 then e-supplier selection with a mean of 3.75 while e-planning with a mean of 3.74 was the least important to the firms.

This is in line with the findings where for each response, a mean of 3 and above means the most preferred performance measure and a standard deviation which was less than 1 indicated a variation which was low.

#### 4.4.1 E-Planning

E-planning assists the manufacturing firms to trace all procurement documents thus increasing transparency and accountability.

**Table 4.5: E-Planning**

E-Planning	Mean	Std. Deviation
The pharmaceutical manufacturing firm has a system that flags the drugs that are needed at a particular point time and the distribution of the same drugs in the different warehouses	3.974	.7490
The pharmaceutical manufacturing firm trains its staff and develop their capacity and skills on e-administration	3.727	.7981
The pharmaceutical manufacturing firm controls the production of products whose expiry date of the existing ones are almost lapsing	3.683	.9068
The pharmaceutical manufacturing firm has electronic based platform where buyers and suppliers exchange and access information on the performance of the drugs they buy from the firm	3.564	.6963
Overall mean	3.74	

**Source: Research Data (2016)**

The result indicates that respondent were in agreement that pharmaceutical manufacturing firm has a system that flags the drugs that are needed at a particular point time and the distribution of the same drugs in the different warehouses (M=3.974); trains its staff and develop their capacity and skills on e-administration (M=3.727); controls the production of products whose expiry date of the existing ones are almost lapsing (M=3.683) and that it has electronic based platform where buyers and suppliers exchange and access information on the performance of the drugs they buy from the firm (M=3.564). The results show that e-planning enables the manufacturing firms to control distribution of its products through communication with buyers and suppliers thus enabling them monitor the movement of products in the market.

### 4.3.2 E-Supplier Selection

The success of e-procurement process in a pharmaceutical manufacturing firms is highly positively correlated to the early supplier selection, hence determines the performance of an organization.

**Table 4.6: E-Supplier Selection**

<b>E-Supplier Selection</b>	<b>Mean</b>	<b>Std. Deviation</b>
The pharmaceutical manufacturing firm has online platform for a pool of qualified supplier for real time requests which improve operational performance	4.106	1.053
The pharmaceutical manufacturing firm use an online system where supplier respond once when bidding	3.825	.841
The pharmaceutical manufacturing firm selects its suppliers of various products and services online without human intervention	3.649	.855
The pharmaceutical manufacturing firm uses online data to price its goods improving procurement performance	3.438	.866
Overall mean	3.75	

**Source: Research Data (2016)**

The results on e-selection usage was that the firms has an online platform for a pool of qualified supplier for real time requests (M=4.106); uses an online system where supplier respond once when bidding (M=3.825). The results further indicate that the firms selects its suppliers of various products and services online without human intervention (M=3.649) and that it uses online data to price its goods improving procurement performance (M=3.438). The results show that the pharmaceutical manufacturing firms have a data base that has qualified suppliers that is selected online without human intervention when making requests. At the same time online data pricing mechanism enable the firms to compete effectively in the market as they price their products competitively.

### 4.3.3 E-Tendering

The respondents were asked to indicate the extent to which they use the practice of undertaking all the procurement activities online. The results were presented in Table 4.4.

**Table 4.7: E-Tendering**

<b>E-Tendering</b>	<b>Mean</b>	<b>Std. Deviation</b>
It helps in tracking and tracing of orders for necessary amendments whenever errors are established in the previous orders	3.925	.913
Allows staff more time to focus on the issues relating to procurement strategy	3.854	.956
The pharmaceutical manufacturing firm minimize the materials procurement time.	3.829	.857
The pharmaceutical manufacturing firm experiences lesser bidding time.	3.791	.802
The pharmaceutical firm has all its procurement activities overseen centrally, where all documents have a common repository and can be accessed by other offices whenever required.	3.738	1.026
E-procurement enables pharmaceutical manufacturing firm to buy goods from pre-qualified suppliers.	3.692	.964
Overall mean	3.80	

**Source: Research Data (2016)**

The results show that e-tendering enables pharmaceutical manufacturing firm track and trace orders and make the required amendments whenever errors are established in the previous order (M=3.925); enable the staff to focus more of issues related to procurement strategy (M=3.854) and enable the firms use minimal time to source materials (M=3.829). The respondents further noted that pharmaceutical manufacturing firm uses less time during bidding process (M=3.791); has all its procurement activities overseen centrally and that all other offices can access this documents whenever they require them (M=3.738) and that e-procurement enables pharmaceutical manufacturing firm to buy goods from pre-qualified suppliers (M=3.692). Most of the respondents corroborated the statements regarding the role of e-procurements, as indicated

by the low standard deviation. The results indicate that e-procurement practice enables the firms to track and trace orders, enable staff to do other duties as a result of spending minimal time in procurement, ensures that the firm receive goods within a short period of time due to faster procurement and response and a centralized department that oversee all procurement activities.

#### 4.3.4 E-Sourcing Practice

E-sourcing is important to the pharmaceutical manufacturing firms as it enables them to identify new supplier to deliver goods or services in a specified category. The results were presented in

Table 4.8

**Table 4.8: E-Sourcing Practice**

<b>E-Sourcing Practice</b>	<b>Mean</b>	<b>Std. Deviation</b>
The pharmaceutical manufacturing firm has corporation online request for quotation reducing lead time	3.972	.926
The pharmaceutical manufacturing firm use e-sourcing to reduce cost and improve efficiency in procurement process	3.949	.860
The pharmaceutical manufacturing firm uses e-sourcing to reduce production cost	3.871	.814
The pharmaceutical manufacturing firm has internet based for evaluation of suppliers	3.627	.903
Overall mean	3.85	

**Source: Research Data (2016)**

The results indicate that e-sourcing enable the pharmaceutical manufacturing firm request for quotation reducing lead time (M=3.972); reduce cost and improve efficiency in procurement process (M=3.949); reduce production cost (M=3.871) and uses internet based for evaluation of suppliers (M=3.627). The results show that e-sourcing enables the firms to request for quotations online thus reducing evaluation time, lead time and cost therefore improving efficiency in procurement process.

#### 4.4 Operational Performance

The study established that there is a correlation between the operational performance of the pharmaceutical manufacturing firms and the application of e-procurement practices that ensures the firm organizes its interactions with crucial suppliers on timely basis.

**Table 4.9: Operational Performance**

Operational Performance	Mean	Std. Deviation
Reduced cost of operations	4.525	.736
There is a decrease in transaction cost	4.305	.821
Improved order processing	4.250	.906
Reduction in lead time of material	4.161	.723
Decrease in cost of delivery	3.827	.696
Improved product/service quality	3.714	.714
Improved product reliability	3.611	.802
Increased order placement	3.472	.973
Overall mean	3.98	

**Source: Research Data (2016)**

The results show that e-procurement practices result in cost reduction (M=4.525); decrease in transaction cost (M=4.305); improve order processing (M=4.25); reduce lead time of material (M=4.161) and decrease cost of delivery (3.827). The respondents further noted that e-procurement improve product/service quality (M=3.714); improve product reliability (M=3.611) and that it increases order placement. The results imply that e-procurement enables the firms to decrease costs, improve order processing which result in decreased time it takes to source materials.

#### 4.5 Relationship between E-Procurement Practices and Operational Performance

The correlation between e-procurement and operational performance of pharmaceutical manufacturing firms in Nairobi was tested by using linear regression analysis, based on the regression model presented. The following show the model summary, ANOVA and coefficients of regression.

**Table 4.10: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	Z	P-value
	B	Std. Error	Beta		
1 (Constant)	1.543	1.033		1.494	.004
E-planning (X <sub>1</sub> )	.371	.118	.293	1.144	.003
E-supplier selection (X <sub>2</sub> )	.421	.107	.327	1.935	.001
E-tendering (X <sub>3</sub> )	.406	.126	.316	1.222	.002
E-sourcing (X <sub>4</sub> )	.296	.123	.231	1.407	.000

a. Dependent Variable: Operational Performance

From the data, the generated table was

$$Y = 1.543 + 0.371 X_1 + 0.421 X_2 + 0.406 X_3 + 0.296 X_4$$

The regression results in table 4.10 established that holding E-planning, E-supplier selection, E-tendering and E-sourcing constant, operational performance would be at 1.543; a unit increase in E-planning would lead an increase in operational performance by 0.371; a unit increase in E-supplier selection would lead to an increase operational performance by 0.421; a unit increase in E-tendering would lead to increase in operational performance by 0.406; and a unit increase in E-sourcing would lead to an increase in operational performance by 0.296.

E-sourcing had a 0.000 level of significance and 5% and 95% significance level. The significance level of supplier selection was 0.001 that for e-tendering was at 0.002, e-planning had a significance of 0.003, and hence the most significant factor was e-sourcing. Since all the factors had their significance levels below the critical one; ( $p < 0.05$ ), this is an indication that all them are significant to the e-procurement process.

**Table 4.11: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.708 <sup>a</sup>	.625	.583	.3283

a. Predictors: (Constant), e-planning, e-supplier selection, e-tendering and e-sourcing

Table 4.11 indicates that the coefficient of determination is by the variation in independent variables. R square is 0.625 which implies that variance in operational performance can be explained by e-planning, e-supplier selection, e-tendering and e-sourcing. Adjusted R squared is coefficient determination which indicates how well the variations in the independent variables explain those in the dependent variable. From the value of adjusted R squared in table 4.11, the study established that all that variables in our model explain 58.3% of variations in operational performance of the pharmaceutical manufacturing firms. This therefore means that other practices not studied in the model contribute 41.8% of operational performance of the pharmaceutical manufacturing firms.



**Table 4.12: ANOVA Results**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.788	4	.947	3.026	.001 <sup>a</sup>
Residual	40.69	34	.313		
Total	44.478	38			

Critical value =1.997

From table 4.12, the study revealed that the regression model had a significance level of 0.01%, hence that the data collected was a sufficient representation of the population hence the conclusions made from them represented conclusions that would have been made on the population parameters as the value of significance was less than 5%. F (3.026) statistic is the regression mean divided by the residue mean .the significant value shown by 0.001 is smaller than estimated value of 0.05 which implies that the data was significant for making conclusion that is the predictors variable.

The regression analysis indicates that the significant P-value of F statistics is less than 0.05 at 0.001. This implies that the independent variables (e-planning, e-supplier selection, e-tendering and e-sourcing) actually explain operational Performance, therefore the model is significant.

#### **4.6 Discussions of Findings**

E-procurement is gaining popularity in today's world of competitive business. Thus, for both private and public entities, services based on technology is paramount to their operations. It is therefore essential for entities to provide solutions to the clients that are cost effective and provides better customer satisfaction through innovative processes. Thus in order for the pharmaceutical manufacturing firms to increase their competitiveness they ought to adopt E-procurement practices.

E-planning practice was found to have been implemented by the pharmaceutical manufacturing firms and it enables them to flag the drugs that are needed at a particular point time and the distribution of the same drugs in the different warehouses, controls the production of products whose expiry date of the existing ones are almost lapsing and that buyers and suppliers have a means that they can use to exchange and access information on the performance of the drugs they buy from the firm. These findings were found to be consistent with Webster (2002) findings that e-planning has enabled the tracing of all procurement documents online increasing transparency and accountability. This has led to new ways and modes of production in the procurement department generating new work practices.

A number of entities have not been able to come up with strategies that are good for the assimilation of and implementation of e-procurement process management through the desired technologies. It is therefore important to consider technological advancement before one can implement ways thought to be able to improve the operational performance of an organization. E-supplier selection was found to have enabled manufacturing firms to come up with a pool of qualified supplier for real time requests, selection of suppliers for various products and services online without human intervention and online data in pricing of goods. The findings were in line with Kaliannan *et al.*, (2009) that the success of an e-Procurement initiative is determined by suppliers readiness.

The use of technology in conducting procurement process has brought substantial benefit to organizations which practice e-tendering. The study establishes that e-tendering resulted in the firms tracking and tracing orders and make necessary corrections in case an error is observed in the previous order, enable staff to do other duties as a result of spending minimal time in procurement, ensures that the firm receive goods within a short period of time due to faster

procurement and response and a centralized department that oversee all procurement activities. This was consistent with Amit and Zott (2001) findings that through e-tendering the organization generates wealth through electronics business. The use of technology in conducting procurement process has brought substantial benefit to organizations which practice e-tendering. The procurement department needs to work in collaboration with other department and suppliers to achieve procurement strategies in the organization. With today business environment which focus mostly on efficiency and customer satisfaction, e-sourcing has played a major role in business achieving its objective. The study found out that e-sourcing enables the firms to request for quotations online thus reducing evaluation time, lead time and cost therefore improving efficiency in procurement process. This was found to be consistent with De Boer (2012) findings that organization can save money through the implementation of e-sourcing practices in the procurement department. Reduce sourcing cycle time; e-sourcing has tremendously reduces the time take from identifying the supplier, negotiation and contract signing.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION, LIMITATIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This section covers the summary of findings, conclusion, limitations and recommendations in line with the topic of study which is to establish the e-procurement practices and operational performance of pharmaceutical manufacturing firms in Nairobi.

#### **5.2 Summary of Findings**

E-procurement and the use of computers in procurement is gaining grounds and becoming more popular in today's business. Modern business state that for any business firm to succeed they must embrace and incorporate information technology into day-to-day running of the enterprise. The study established that e-procurement practices were being used by the pharmaceutical manufacturing firms as it enables them to have competitive edge over firms that have not adopted the use of technology. E-planning was found to have enabled the pharmaceutical manufacturing firms to flag the drugs that are needed at a particular point time and the distribution of the same drugs in the different warehouses. It also helps the companies to controls the production of products whose expiry date of the existing ones are almost lapsing and that buyer and suppliers have a means that they can use to exchange and access information on the performance of the drugs they buy from the firm.

The business world is moving very fast that it is important that even manufacturing firms need to change with the changing times. E-supplier selection is important for the firms in order to ensure that the suppliers selected are reliable and delivers quality goods and this was found to have been the case in the pharmaceutical manufacturing firms as they were able to come up with a pool of

qualified supplier for real time requests, selection of suppliers for various products and services online without human intervention and online data in pricing of goods. E-tendering enables the firms to undertake its procurement activities through the internet and this was found to have been utilized by the firms as they are able to track and trace orders and make necessary corrections in case an error is observed in the previous order, enable staff to do other duties as a result of spending minimal time in procurement. E-procurement also ensures that the firms receive goods within a short period of time due to faster procurement and response and a centralized department that oversee all procurement activities.

With today business environment which focus mostly on efficiency and customer satisfaction, e-sourcing has played a major role in business achieving its objective. The study found out that e-sourcing enables the firms to request for quotations online thus reducing evaluation time, lead time and cost therefore improving efficiency in procurement process. Private and public sector organizations have been experiencing challenges on their procurement performance but organizations which have enhanced their performance through embracing e-procurement strategy have been able to supersede others in terms of accountability and transparency. E-procurement in was found to have enabled the pharmaceutical manufacturing firms improve their operational performance though cost reduction, decreased transaction cost, improved order processing, reduced material lead time, decreased cost of delivery, improved product/service quality and increased order placement.

### **5.3 Conclusion**

E-procurement has a significant relationship with operational performance for service and manufacturing firms. This proposition comes as a result of penetration of information technology in all aspects of life to the effect that today everything tends to rotate around use of technology.

Also to note is that competition compels one to devise means to beat others and technology is the way to go. The study concludes that procurement practices influences operational performance of pharmaceutical manufacturing firms. E-planning is important to the pharmaceutical manufacturing firms as it enables them to flag the drugs that are needed at a particular point time and the distribution of the same drugs in the different warehouses. E-supplier selection is important for the firms as it enables the firms to come up with a pool of qualified supplier for real time requests, selection of suppliers for various products and services online without human intervention and online data in pricing of goods. E-supplier selection is important for the firms in order to ensure that the suppliers selected are reliable and delivers quality goods and this was found to have been the case in the manufacturing firms as they were able to come up with a pool of qualified supplier for real time requests, selection of suppliers for various products and services online without human intervention and online data in pricing of goods.

#### **5.4 Recommendations for Policy and Practice**

Based on the establishment of factors affecting use of e-procurement in firms, the researcher came up with the following recommendations; individual firms should optimize benefits of e-procurement by increasing the proportion of expenditure on e-procurement by widening the scope of supplier sourcing thereby justifying use of e-procurement, firms need to increase the e-procurement capability in terms of information technology expertise and information technology infrastructure injecting regular upgrading of information technology system and management of firm to expand the use of e-procurement by incorporating most of e-procurement processes as well as all e-procurement models. The researcher recommends that firms to expand e-procurement models put in use by firms in order to optimize the benefits of e-procurement.

The study recommends that the company should implement e-procurement systems that enhance better operational performance through improved order processing. This is by ensuring customer satisfaction, reduction in lead times and waste reduction. In order to achieve this, the companies should ensure use of electronic order processing, implementation of a system that enhances waste reduction, implementation of a system that enhance timely placement of order and also use of a system that will allow faster order processing.

The study has confirmed that procurement practices are very significant in enhancing the operational performance of pharmaceutical manufacturing firms. It is therefore important that all firms employ the optimum procurement practices to enhance performance, competitiveness and improve their effectiveness in their manufacturing.

### **5.5 Limitations of the Study and Suggestions for Further Research**

There were limitations about the objectivity of data gathered from the questionnaires. Although this study took all the precautionary steps to reduce the possibility of response bias and applied the procedural remedies, there was still some bias in the responses generated from the survey.

Confidentiality was a major obstruction in gathering information relating to e-procurement practices and operational performance. This caused difficulties in obtaining all the required responses and consequently led to reluctance of participating in the study for some of the respondents. The researcher had to inform the respondents in advance that the purpose of the research was meant for academic purpose only and not for other investigations although the same was stipulated on the questionnaire.

The study was undertaken on e-procurement practices and operational performance of pharmaceutical manufacturing firms in Nairobi. The study recommends that a further study should be carried out to establish the effect of e-procurement practices on operational performance in other sectors of the economy. A further study should be carried out to establish the challenges when adopting e-procurement practices in firms.



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**APPENDIX I: RESEARCH QUESTIONNAIRE**

Please give answers in the spaces provided and tick (√) in the box that matches your response to the questions where applicable.

**Part A: Demographic Information**

1. Length of continuous service with the pharmaceuticals manufacturing firm?

- a) Less than five years                    [    ]
- b) 5-10 years                                [    ]
- c) Over 10 years                            [    ]

2. What is your highest level of education qualification?

- a) Post graduate level                    [    ]    b) University                                [    ]
- c) Tertiary College                        [    ]    d) Secondary                                [    ]

3. How many employees does your company have?

- a) Less than 200                            [    ]
- b) 200 – 399                                [    ]
- c) Above 400                                [    ]

**Part B: E-procurement Practices**

4. Please indicate the extent to which the following E-Procurement practices has been adopted by your organization?

Where **1 – Not at all; 2 -Disagree; 3 - Moderate extent; 4 - Agree; 5 - Strongly Agree**

<b>E-Planning</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The pharmaceutical manufacturing firm has a system that flags the drugs that are needed at a particular point time and the distribution of the same drugs in					

the different warehouses					
The pharmaceutical manufacturing firm has electronic based platform where buyers and suppliers exchange and access information on the performance of the drugs they buy from the firm					
The pharmaceutical manufacturing firm controls the production of products whose expiry date of the existing ones are almost lapsing					
The pharmaceutical manufacturing firm trains its staff and develop their capacity and skills on e-administration					
<b>E-Supplier Selection</b>					
The pharmaceutical manufacturing firm selects its suppliers of various products and services online without human intervention					
The pharmaceutical manufacturing firm uses online data to price its goods improving procurement performance					
The pharmaceutical manufacturing firm use an online system where supplier respond once when bidding					
The pharmaceutical manufacturing firm has online platform for a pool of qualified supplier for real time requests which improve operational performance					
<b>E-Tendering</b>					
The pharmaceutical manufacturing firm has online platform for a pool of qualified supplier for real time requests which improve operational performance					
The pharmaceutical manufacturing firm receives and evaluate offers from suppliers using an internet based program					
The pharmaceutical manufacturing firm use an online system where supplier respond once when bidding					
The pharmaceutical manufacturing firm use 30 minutes to one hour during bidding process					
<b>E-sourcing Practices</b>					
The pharmaceutical manufacturing firm use e-sourcing to reduce cost and improve efficiency in procurement process.					
The pharmaceutical manufacturing firm has corporation online request for quotation reducing lead time.					
The pharmaceutical manufacturing firm has internet based for evaluation of suppliers					
The pharmaceutical manufacturing firm has online platform where buyer and suppliers work together					

**Part C: Operational Performance**

5. Indicate the extent to which the following operational performance measures have changed positively in your organization as a result of adopting of e-procurement.

Where, **1 – Not at all; 2 –Small extent; 3 - Moderate extent; 4 – Large extent; 5 – Very large extent**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Cost reduction					
Reduction in lead time of material					
Decrease in cost of delivery					
Increased order placement					
Improved order processing					
Improved product reliability					
Improved product/service quality					
There is a decrease in transaction cost					
There has been increased standardized					

**THANK YOU SO MUCH FOR YOUR TIME**

**APPENDIX II: LIST OF PHARMACEUTICALS MANUFACTURING FIRMS IN  
NAIROBI**

- 1) Mentholatum
- 2) Synermed Pharmaceuticals ltd.
- 3) Simba Pharmaceutical ltd.
- 4) UCB Pharma
- 5) Prisma
- 6) Adcock Ingram
- 7) Servier international
- 8) Reckit and Benkiser
- 9) Dafra Pharma
- 10) Almirall Prodesfama
- 11) Mepha Pharma
- 12) Medrich
- 13) Denkpharma
- 14) Menarini
- 15) Bristo-Myers Squibb(BMS)
- 16) Hoffman La Roche
- 17) Novartis
- 18) GlaxoSmithkline
- 19) Pfizer Laboratories
- 20) Harley's Limited
- 21) Philips Pharmaceutical ltd.
- 22) Kulal International
- 23) AstraZeneca
- 24) Sanofi Aventis
- 25) Safoni – Pastuer
- 26) Galaxy Pharmaceuticals ltd.
- 27) Surgilinks ltd.
- 28) Glenmark Pharmaceuticals Kenya ltd.
- 29) Surgipharm ltd.
- 30) Merck Sharp & Dohme(MSD)
- 31) Bayer East Africa Ltd.
- 32) Europa Healthcare Ltd.
- 33) Sun Pharmaceuticals Ltd.
- 34) Alkem Pharmaceuticals Ltd.
- 35) Intas Pharmaceuticals Ltd.
- 36) Janssen Cilag Pharmaceutical
- 37) Abbott Laboratories
- 38) Eli Lilly & Company



- 39) Wyeth
- 40) Boehringer Ingelheim
- 41) Takeda Pharmaceutical
- 42) Teva Pharmaceutical
- 43) Novo Nordisk
- 44) Ranbaxy Laboratories
- 45) IPCA Laboratories
- 46) Johnson and Johnson
- 47) Torrent Pharmaceuticals
- 48) Cipla Pharmaceuticals
- 49) Wessex Pharmaceuticals
- 50) Aura Laboratories

**Source: Pharmacy and Poisons Board Website as at 2nd September (2016)**