SUPPLY CHAIN MANAGEMENT PRACTICES AND SERVICE QUALITY AMONG PUBLIC HOSPITALS IN NAIROBI COUNTY, KENYA

PAUL OGUYA ODHIAMBO

A Research Project Submitted to the School of Business in Partial Fulfillment of the Requirements for the award of the Master of Business Administration of the University of Nairobi

October, 2014

DECLARATION

This research project is my original work and has not been subjected for research and examination of any other institution of higher learning.

Signature _____   Date_____

Paul Oguya Odhiambo

Reg. No. D61/63378/2011

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

Signature _____   Date _____

Tom Kongere

Lecturer,

School of Business,

University of Nairobi.

DEDICATION

This research project is dedicated to my wife Annette Wattanga, my father Tobias Odhiambo, my mother Joyce Onyango, my sister Susan Odhiambo, my brother Joab Onyango and my mother-in-law Roselyne Adino who have always stood by me and dealt with all of my absence from many family occasions with a smile.

ACKNOWLEDGEMENT

ABSTRACT

Supply chain management in the public health sector has received increasing attention in recent years as both a priority and a challenge for many countries as healthcare institutions find themselves with increasing number of products, programs and patients to manage. SCM practices involve a set of activities undertaken in an organization to promote effective management of its supply chain. The objective of the study was to explore the SCM practices among public hospitals in Nairobi County, the impact of these on service quality among public hospitals in Nairobi County and the challenges that public hospitals encounter in implementation of SCM practices. Among the areas reviewed include: supply chain management practices, impact of supply chain management on service quality and challenges of supply chain management and service quality delivery. Conceptual framework was also covered. The study adopted a case study descriptive design. The researcher conducted a census on all the seven (7) public hospitals in Nairobi County. The study used primary data collected through a structured questionnaire. Data collected was analyzed using descriptive and regression analysis. Research found that SCM practices implemented to a large extent were; after procurement service, specifications and specifications and the practice to be fully implemented was relationship with suppliers. The research established a positive correlation between service quality and SCM practices namely; relationship with suppliers, compatibility, standards and specifications, delivery and after procurement services. The present study used only public hospitals in Nairobi county, future studies should consider expanding their scope to include private hospitals. Further studies related to the health sector can be conducted especially comparative studies between public, private and military health service sectors.

ACRONYMS AND ABBREVIATIONS

H&HN   Hospital and Health Networks

KEMSA   Kenya Medical Supplies Association

KNH   Kenyatta National Hospital

MOMS   Ministry of Medical Services

MOH   Ministry of Health

MIT   Massachusetts Institute of Technology

P&G   Procter and Gamble

SCM   Supply Chain Management

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Supply chain management in the public health sector has received increasing attention in recent years as both a priority and a challenge for many countries as healthcare institutions find themselves with increasing number of products, programs and patients to manage. Stakeholders in the healthcare supply chain can be divided into three major groups: producers, purchasers, and providers. The role of producers is to manufacture medical products such as surgical supplies, medical devices and pharmaceuticals. Purchasers include distributors, wholesalers and Group Purchase Organizations (GPOs). Distributors and wholesalers hold inventory for producers to facilitate delivery of products. GPOs sign purchasing contracts with producers in order to achieve economies of scale by aggregating the volume of member providers. Healthcare providers represent those at the end of the supply chain with the function to serve patients and include, among others, hospitals, integrated delivery networks (IDNs), physicians, clinics, nursing homes and pharmacies (Burns, 2002).

The global healthcare industry is one of the world's largest and fastest growing industries, comprising various sectors: medical equipment supplies, pharmaceuticals, healthcare services, biotechnology and alternative medicine sectors. With extreme pricing pressures on today's healthcare expense providers, delivering high-quality medical care while reducing costs is a top strategic priority. To achieve this objective, healthcare service providers' efforts have been focused primarily on eliminating waste in clinical operations. While these are valid and important ways to reduce healthcare costs, one area that consumes nearly one-third (Nachtmann & Pohl, 2009) of all

hospital operating budgets often remains overlooked is the healthcare supply chain. When it comes to expenses, supplies are second only to labor, with millions of products moving along the supply chain every day through manufacturers, distributors, Group Purchase Organizations (GPOs) and healthcare providers to patients.

1.1.1 Supply Chain Management

Mentzer, Flint, & Hult, (2001), defines supply chain management as the systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole

SCM practices involve a set of activities undertaken in an organization to promote effective management of its supply chain (Koh, Demirbag, Bayraktar, Tatoglu, & Zaim, 2007). Such activities include: demand forecasting, resource allocation, production planning and scheduling, inventory management, and customer delivery, customer relationship management (CRM), supplier relationship management.

Supply chain management is the management of information, processes, goods and funds from the earliest supplier to the ultimate customer, including disposal. Services have become increasingly important as the driving force in the economy. However, there has been little research to date on services supply chains. (Ellram, Tate & Billington, 2007). It is believed that service businesses can benefit by applying some best practices from manufacturing to their processes. However, the inherent differences in services create a need for supply chain management tools specific to the services sector.

Supply Chain Management (SCM) concepts have been implemented successfully in the service industry like retail, financial services, transportation services, courier service and logistics providers. The classical example in retail industry is Wal-Mart. It has provided better service to its customer by integrating SCM to the entire operations. P&G also implemented the SCM concept which has provided the company competitive advantage in the market. In general, SCM offers huge benefits to the service industry. This will enable the firm to achieve greater customer satisfaction and loyalty (Lee & Billington, 1995).

1.1.2 Service Quality

Service quality can be viewed as the difference between customer expectations and perceptions; expectation means service provider performance during deliverance of services whereas perception is measurement of delivery by the service provider (Parasuraman et al., 1985, 1988). According to Asubonteng et al. (1996, p-24), Service quality can be defined as "the difference between customers' expectations for service performance prior to the service encounter and their perceptions of the service received". Gefen (2002) adds that it is a comparison made by the customers between the quality of services they want to receive and what they actually received from the service provider. Measuring service quality is one of the most important activities to improve perceived service quality, make a difference, gain competitive advantage, and sustain profit levels of the hospitals. As a result, the measurement of service quality deserves special attention (Baki, Basfirinci, Ilker Murat, & Cilingir, 2009).

Brady and Cronin, (2001) suggested a new model by combining four models. They improved SERVQUAL (Parasuraman, et al., 1988) by specifying what needed to be reliable, responsive, empathic, assured and tangible. Brady and Cronin adopted

service quality perception based on evaluation by customer in three dimensions namely: Interaction Quality (i.e., functional quality), Physical Environment Quality, Outcome Quality (i.e., technical quality) (Gronroos, 1984; Rust & Oliver, 1994). In addition, they accept multilevel service quality perceptions and multidimensional (Dabholkar, Thorp, & Rentz, 1996).

Service quality has three primary level dimensions in this conceptualization such as interaction, environment and outcome with three sub dimensions for each one: Interaction (Attitude − Behavior − Expertise), Environment (Ambient Conditions − Design − Social Factors), and Outcome (Waiting Time − Tangibles − Valence. A new model conceptualized by this hierarchical model and SERVQUAL factors specified into sub dimensions. Brady and Cronin have improved service quality framework and solved the stalemate in this theory. It defines service quality perception and a clear form of service quality measurement. In SERVQUAL measurement, service outcomes were not clearly considered, but Brady & Cronin's model seems to fill this void (Pollack, 2009).

Some researchers work on the hierarchical model found its reliability and applicability in various services. Like all the measurements, hierarchical model has difference in factors and importance of sub dimensions in regards to services such as Health care (Chahal & Kumari, 2010; Dagger, Sweeney, & Johnson, 2007), Sport (Ko, 2000), Mobile health (Akter, D'Ambra, & Ray, 2010), hairdresser (barber) and phone service subscribers (Pollack, 2009). This model will able firms to recognize problems in primary stage of their delivered services - Interaction Quality, Physical Environment Quality, and Outcome Quality - (Pollack, 2009). It can help managers find customer needs and service weaknesses simultaneously in order to enhance service quality perception and service experiences of customer via high quality of

service. This model shows better understanding about customer perception of service quality until today.

1.1.3 Service Quality and Supply Chain Management

Service quality in health care is currently at the forefront of professional, political, and managerial attention, primarily because it is being seen as a means for achieving increased patronage, competitive advantage, and long-term profitability (Brown and Swartz 1989; Headley and Miller 1993) and ultimately as an approach to achieving better health outcomes for consumers (Dagger and Sweeney, 2006; Marshall, Hays, and Mazel, 1996; O'Connor, Shewchuk, and Carney, 1994). Against this background, service quality has become an important corporate strategy for health care organizations.

Several authors developed and tested service quality models for different applications: Frost and Kumar (2000) researched on internal service quality measurement, Zhu et al., (2002) I.T based service delivery, Santos (2003) E–service quality model. Based on their researches there seem to be no agreement on the measurement side (attributes) of service quality; their researches propose different attributes for different applications.

In a comprehensive review on service quality models presented that majority of the studies in the field of service quality to date are dominated with the work of Parasuraman et al. (1985, 1988). Some of the attributes of service quality proposed by various researchers are as follows: Seth et al. (2005); Beinstock et al. (1997); Sinha and Babu (1998) studies focused on distribution and conceptualized physical distribution service quality (PDSQ) comprising of three factors namely: timeliness, availability and condition, and the latter on measurement and improvement of service

quality from factory to distribution network.

Mentzer et al. (1999, 2001) study was focused on logistics and they identified nine potential components of logistics service quality (LSQ) as personnel contact quality, order release quantities, information quality, ordering procedures, order accuracy, order condition, order quantity, order discrepancy handling and timeliness. Pery and Sohal, (1999) study identified quick response performance of Australian industries and identified "delivery time" as the most important factor for competitiveness. Stanley and Wisner (2002) study focused on purchasing aspect of service quality, they attempted the issue of identifying the dimensions of service quality for purchasing and internal transactions based on empirical study of purchasing executives of different manufacturing and service organizations.

1.1.4 Kenya Public Health Sector

The Kenyan health sector comprises the public sector which is made up of the Ministry of Health and parastatals organizations, and the private sector, which includes private for-profit, Non Governmental Organizations, and Faith Based Organizations facilities (RoK, 2010).

Kenya's public health care sector has a network of over 4,700 health facilities countrywide, with the public facilities making 51%, consisting of the following levels; national referral hospitals, provincial general hospitals, district hospitals, health centers and dispensaries (RoK 2011). National referral hospitals are at the apex of the pyramidal and h the health care system, providing sophisticated diagnostic, therapeutic, and rehabilitative services. The two national referral hospitals are Kenyatta National Hospital in Nairobi and Moi Referral and Teaching Hospital in

Eldoret.

Provincial hospitals act as referral hospitals to their district hospitals. The provincial level acts as an intermediary between the national central level and the districts. They oversee the implementation of health policy at the district level, maintain quality standards, and coordinate and control all district health activities (RoK, 2001). District hospitals concentrate on the delivery of health care services and generate their own expenditure plans and budget requirements based on guidelines from headquarters through the provinces. The network of health centers provides many of the ambulatory health services. Health centers generally offer preventive and curative services, mostly adapted to local needs. Dispensaries are meant to be the system's first line of contact with patients, but in some areas, health centers or even hospitals are effectively the first points of contact. Dispensaries provide wider coverage for preventive health measures, which is a primary goal of the health policy. The government health service is supplemented by privately owned and operated hospitals and clinics and faith-based organizations" hospitals and clinics, which together provide between 30 and 40 percent of the hospital beds in Kenya (RoK, 2010). According to the National Hospital Insurance Fund (2013 index), there are 7 public hospitals in Nairobi County (appendix I). The 7 hospitals are categorized as A (Government hospitals).

1.1.5 Medical Supply Chain

Kenya medical supply agency (KEMSA) is a specialized Government medical logistics provider for ministry of Health supported health facilities and programmes in Kenya. KEMSA was established as a state corporation under Cap 446, through the

Kenya medical supplies Agency order 2000 (Legal Notice No. 17 of 11th Feb, 2000). It plays the role of procuring, storing and distributing health commodities for the public health sector. KEMSA is a semi-autonomous public sector institution under MOMS with supply management responsibilities that include sourcing, purchasing, and distributing pharmaceuticals and health supplies on behalf of GOK. The overall aim of the state run drug distribution system is to make them accessible and affordable to Kenyan users of public health services (Johnson, Hazemba, Kimeu, Kirika & Thuo, 2008).

1.1.6 Public Hospitals in Nairobi County

Public hospitals are Government operated hospitals. Hospitals are open systems strongly influenced by the environment in which they operate (McKee and Healy 2002a). They interact with the surrounding environment to secure the resources needed for survival, adaptation and growth. Their policies and activities are constantly influenced by external factors related to the population they serve, patterns of prevailing diseases, public expectations, changes in the hospital system and healthcare system, and the broader socio-economic and political environment.

Hospitals represent the largest cost component of national healthcare expenditures, and both medical and non-medical supplies account for one of the largest costs to hospitals (OECD 2011). Hospitals continue to adopt expensive technology and customized drugs, their costs will likely continue to escalate. Hospital supply chains must be resilient and flexible to accommodate both global and regional market constraints, as well as government regulations; because they are critical to delivering healthcare services and achieving desired patient outcomes.

1.2 Statement of the Problem

Even though many public health organizations have recognized the importance of supply chain management practices, the application of methods, techniques and best practices that is well developed in the industrial sector is still a major problem.

Shah, Goldstein, Unger & Henry (2008) used a field approach of study to examine how a particular health care supply chain was able to increase performance by decreasing service time and increasing service quality in a decentralized network of health care providers. They concluded that the use of lean principles can guide process improvement efforts and the emphasis relational based coordination allowed the organizations to dramatically improve the supply chain performance.

Hong, Kim & Dobrzykowski (2012) proposed a research model which defines the relationships between drivers of healthcare supply chain management, healthcare supply chain policies and strategy, healthcare supply chain practices, and healthcare supply chain outcomes. Their study discussed drivers of healthcare supply chain management in Korean context in terms of their strategic focus on healthcare supply chain processes and healthcare cost performance.

Al-Saa'da et al. (2013) research on the effect of supply chain dimensions on service quality in Jordanian private hospitals was limited to private hospitals operating in Jordan, thereby not including governmental or military hospitals in Jordan.

Locally Nzioka (2010) studied the practice of supply chain management in public healthcare sector in Kenya: the case of Kenya Medical Supplies Agency. Kazi (2012), studied Supply Chain Management Practices and Performance at Kenya Medical Supplies Agency found that effective SCM impact positively on the operational performance at KEMSA, his study also established evidence for an

operational competence construct, mediating the relationship between SCM and the several dimensions of operational performance. This operational competence is influenced by SCM. Hassan (2012) studied Supply chain management practices and their impact on performance among humanitarian organizations in Kenya. Mwilu (2013), in his study on Supply chain management practices and Performance among public research institutions found that the public research institutions had adopted some SCM best practices to a great extent and some to a moderate extent which left gaps in the adoption of SCM practices, he also noted strong positive relationships in logistics, lean suppliers and information technology have with firm performance among the publicly funded research institutions. These researches focused on SCM practices and performance and were limited in scope as they covered a single public health institution hence there is need to widen the scope while the later was on public research institutions. However, none of these studies have sought to demonstrate the link between supply chain management practices and service quality in public hospitals.

A synthesis of literature review indicated that the shortcoming of previous studies on SCM relates to their focus on general forms of SCM that are applicable across different type of organizations. To address this limitation, the specific requirement of service organizations urge future researchers to focus on the specific form of SCM which is service SCM practices (Boon-itt and Pongpanarat, 2011). As evidenced in the above studies there is no known study that has focused on addressing this gap. This research aimed to explore the SCM practices in public hospitals in Nairobi County, the impact of these on quality of service in public hospitals in Nairobi County and the challenges that public hospitals encounter in implementation of SCM practices. The research sought to answer the questions: What are the SCM practices in

public hospitals? What is the impact of these SCM practices on service quality in public hospitals? What are the challenges of SCM practices in public hospitals?

1.3 Research Objectives

The research general objective was to establish the impact of supply chain management practices on service quality among public hospitals in Nairobi County. The research had the following specific objectives:

i. To establish the supply chain management practices among public hospitals in Nairobi County.

ii. To determine the impact of supply chain management practices on service quality dimensions among public hospitals in Nairobi County.

iii. To determine the challenges of implementation of supply chain management among public hospitals in Nairobi County.

1.4 Value of the Study

The findings of the research will be significant to the management and board of the Public Hospitals in Nairobi County in their efforts to address the shortcomings in quality service delivery and a guide to improve the quality of healthcare service.

The research will provide a basis upon which academicians and scholars would explore more into the field of supply chain management practices in the health sector in so far as it influences quality of service. It would also provide useful insights to health practitioners and managers. The research will provide useful information to government and non-governmental organizations in designing and implementation of policies for establishing effective supply chain management practices in public healthcare service organizations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The purpose of this section was to provide a critical evaluation of the available research evidence about supply chain management practices and how they impact on service quality in public hospitals in Nairobi County, Kenya. It covered various studies conducted by other researchers on supply chain management practices and service quality. Among the areas reviewed include: supply chain management practices, health supply chain, service quality in supply chain and challenges of supply chain management. The chapter also covers the conceptual framework of this study.

2.2 Supply Chain Management

The Global Supply Chain Forum defines SCM as "the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customers and other stakeholders" (Lambert, 2008; Chan & Qi, 2003, p.7). The concept Supply Chain Management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption (Hines, 2004).

2.3 Supply Chain Management Practices

SCM practices involve a set of activities undertaken in an organization to promote effective management of its supply chain (Koh et al., 2007). The short-term objectives of SCM are to enhance productivity, reduce inventory and lead time. The long-term objectives of SCM are to increase market share and integration of supply chain (Koh et al., 2007). SCM practices can be defined in various ways. Donlon (1996) coined

SCM practices as practices that include supplier partnership, outsourcing, cycle-time compression, continuous process flow and information technology sharing. Li et al. (2005) defined SCM practices as the set of activities that organizations undertake to promote effective management of the supply chain. Otto and Kotzab (2003) termed SCM practice as a special form of strategic partnership between retailers and suppliers.

Alvarodo and Kotzab (2001) viewed SCM practices in terms of reducing duplication effects by focusing on core competencies and using inter-organizational standards such as activity-based costing or electronic data interchange, and eliminating unnecessary inventory level by postponing customizations towards the end of the supply chain. Koh et al. (2007) categorized SCM practices from the following aspects: close partnership with suppliers, close partnership with customers, just-in-time supply, strategic planning supply chain benchmarking, few suppliers, holding safety stock and sub-contracting, e-procurement, outsourcing and many suppliers.

Ellram, Tate and Billington (2007) identified seven theoretical processes of service supply chains which include information flow, capacity and skills management, demand management, customer relationship management, supplier relationship management, service delivery management and cash flow. In general, SCM practices are categorized into demand management, customer relationship management, supplier relationship management, capacity and resource management, service performance, information and technology management, service supply chain finance, and order process management (Chong, Chan, Ooi & Sim, 2010).

Baltacioglu, Ada, Kaplan, Yurt & Kaplan, (2007) ascertains that effective supply chain management practices will reduce costs, boost revenues, increase customer satisfaction, assurance and improve service delivery. Boon-itt and Pongpanarat (2011) adapted the seven service SCM practices from Ellram et al. (2004) which are demand management, customer relationship management, supplier relationship management, capacity and resource management, service performance management, information and technology management, order process management. Based on the detailed analysis, there are five main dimensions of SCM practices widely acknowledged by the researchers as well as suitable to be applied in healthcare industry. These five service SCM practices are information & technology management, customer relationship management, supplier relationship management, demand management, and capacity and resource management. For the purpose of this study, the SCM practices in healthcare industry are conceptualized as a multidimensional construct comprising of the five dimensions.

Porter (1985) debated that an organization's strengths can be mapped to two categories which are cost advantage and differentiation. Applying the organization's strengths will result in cost leadership, differentiation and focus. These are the results which will be relevant for public healthcare organization. The differentiator of a public healthcare organization is to provide affordable healthcare to all citizens. The focus is the well-being and quality of life for patients. Good supply chain practices will result in cost leadership due to optimal contracting and supplier relationship management. Supplier relationship management is defined as a process where both customers and suppliers maintain long-term close relationship as partners. The five key components include coordination, cooperation, commitment, information sharing

and feedback (Baltacioglu et al., 2007).

Baltacioglu et al. (2007) defined Customer relationship management as maintaining and developing long-term customer relationships by developing information continuously and understanding what customers want. A number of researchers identified interactive management, understanding customer expectations, empowerment and personification as ways of effectively implementing CRM.

Dufour and Maisonnas, (1997) affirmed that interactive management which is a component of CRM comprises all actions designed to transform the prospective client into an active and effective customer. This can be in form of attitude of staff to patient in the hospital. A cordial and humane attitude will definitely make a patient become an effective one. Patient feedback and suggestion can be used by the hospital for better performance. Power, (1998) and cited by Evans and Laskin, (1994) identified understanding customer expectations which stressed the importance of identifying the customers' desires and supplying to those customers products and services that meet their expectations through interaction with the patients

Evans and Laskin, (1994); Herzberg, (2003) noted that empowerment which refers to the process a firm adopts to encourage and reward employees who exercise initiative, make valuable, creative contributions and do whatever is possible to help customers solve their problems. Evans and Laskin, (1994) added that partnerships are created when suppliers work closely with customers and add desired services to their traditional product and service offering. Payne (1994) put partnering as the extreme end of his loyalty scale and regarded it as an important step that usually leads to the

development of a close and durable relationship between supplier and customer. Wilson (1995) considered partner selection as the first step in the CRM process.

Schubert, (2003) concluded that personalization which refers to the extent to which a firm assigns one business representative to each customer and develops or prepares specific products for specific customers. It is about selecting or filtering information for a company by using information about the customer profile. According to Baltacioglu et al. (2007) demand management is the process of managing and balancing customer demand by keeping updated demand information.

Another aspect of SCM practice is information technology and the deployment of e-business which are closely linked to the co-ordination and integration of operational processes. Many studies have advocated the important role information technology plays in supply chain practices (Breen & Crawford, 2005; Harland & Caldwell, 2007) and it will be of no surprise therefore that many studies on health care supply chains focus on the role of e-business technologies across hospital supply chains (Siau et al., 2002).

SAP (2003, January) defines "Supplier Relationship Management to include both business practices and software and is part of the information flow component of supply chain management (SCM). SRM practices create a common frame of reference to enable effective communication between an enterprise and suppliers who may use quite different business practices and terminology. As a result, SRM increases the efficiency of processes associated with acquiring goods and services, managing inventory, and processing materials."

According to Herzlinger (2006), and Porter and Teisberg (2004), health care is considered to be different from most other industries due to the high level of regulation, the high proportion of governmental investment, the associated low pressure in respect of effectiveness and efficiency of state-subsidized health care organizations and the lack of orientation towards customer benefit. As a consequence of that, the health care sector shows a relatively underdeveloped information system structure (Parente, 2000). However, in order to provide optimal health service delivery there is a long-standing practice of including information beyond the traditional boundaries of a single health care organization (Scott, 2002). Furthermore, there is an imminent obligation for cooperation in order to comply with the requirement of both, internal (doctors, pharmacists, nurses) and external stakeholders (patients, governmental agencies, suppliers). Baltacioglu et al. (2007) defined Capacity and resource management as management of capacity and resources of service that are organized effectively and operated efficiently at optimal level.

2.4 Supply Chain Management and Service Quality in Public Hospitals

The effects of supply chain management on health care service quality, has to do with quality from an administrative point of view, medical service quality can be measured from a professionally medical perspective, or from the recipient of such services, the patient, or from an administrative perspective, which is the focus of this study. The service quality of health care services rendered from an administrative perspective primarily has to do making use of available resources and the ability to attract new ones to cover the required needs of exceptional service, which provides the right service at the right time at a reasonable cost. Supply chain management (SCM) deals

with the management processes of flows of goods, information and funds among supply chain partners in order to satisfy consumer needs in an efficient way (Chopra & Meindl 2007).

Providing quality of health care service at a reasonable cost and rationalizing resources should never be at the expense of a quality performance, which requires efficiency at both the planning and executing phases, personal and professional competency and finally an internally structured philosophy to deal with external parties (Ayers. 2010). More accurately, the search for more resources requires the development of public relations with the health sector as a whole. This personal relation requirement is evident in the vague and complicated administrative organizations. The health system, in general, is vague and complicated, requiring tremendous effort for the promotion of administrative quality. This demonstrates the great importance of supply chain management and its role in ensuring the quality of medical services. Omar et al (2010) also stated that supply chain management includes the management of product, information, and financial flow from the source of supplies to the manufacture and assembly of the product right to the delivering of the final product to consumers.

A public health supply chain is a network of interconnected organizations or actors that ensures the availability of health commodities to the people who need them. Organizations in the supply chain often include departments of ministries of health (procurement, planning, drug regulatory board, human resources, and health programs); central medical stores; donors; non-governmental organizations (NGOs); regions and districts; health facilities; teams of community health workers; and

private sector partners, such as third-party logistics providers, drug manufacturers, distributors, and private service providers (McCutcheon & Stuart, 2000).

The supply chain management practices are viewed to be related to supply chain responsiveness which will increase supply chain competitive advantage and then lead to organizational performance (Sukati, Hamid, Baharun & Huam, 2011). The effective supply chain management practices will reduce costs, boost revenues, increase customer satisfaction, and also improve service delivery (Baltacioglu, Ada, Kaplan, Yurt & Kaplan, 2007).

The healthcare supply chain is composed of three major players at various stages, namely, producers, purchasers, and healthcare providers. Producers include pharmaceutical companies, medical surgical products companies, device manufacturers, and manufacturers of capital equipment and information systems. Purchasers include grouped purchasing organizations (GPOs), pharmaceutical wholesalers, medical surgical distributors, independent contracted distributors, and product representatives from manufacturers. Providers include hospitals, systems of hospitals, integrated delivery networks (IDNs), and alternate site facilities (Toba et al, 2008).

Many different stakeholders are involved in health care supply chain practices. Therefore, the application of supply chain management practices in a health care setting is almost by definition related to organizational aspects like building relationships, allocating authorities and responsibilities, and organizing interface processes. Different studies have highlighted the importance of organizational processes when applying supply chain management practices. Moreover, recent studies reveal that elements like organizational culture, the absence of strong

leadership and mandating authority, as well as power and interest relationships between stakeholders might severely hinder the integration and co-ordination of processes along the health care supply chain (McCutcheon & Stuart, 2000).

2.5 Challenges for Supply Chain Management and Service Quality Delivery

Health institutions encounter many challenges accompanied with new requirements, namely; customer dissatisfaction, increasing cost of the health services, competition and reducing the reimbursement for services. All of these factors force the health organizations to adopt a system that can meet these requirements, dealing with the continuous changes, technology changes, increase in the health services costing, increase in competitive position and gaining customers' satisfaction (Ali et al, 2012).

Meyer and Meyer (2006) in a round table discussion at MIT center for Transport and Logistics pointed out a few important constraints in healthcare supply chain as: high cost of healthcare, wasteful behaviours, and complex regulations and requirements. They suggested solutions focused on making supply chain more demand driven, increasing collaboration between involved parties, increasing visibility of practices and inventory and better standard implementation.

According to H & HN research, December 2011, the key supply chain challenges are: the underutilization of supply chain data standards results in significant inefficiencies across the entire supply chain continuum; lack of representation at the top executive level to recognize its strategic importance within the organization; supply chain silos as many organizations still operate disparate supply chains serving individual

departments and service lines, inhibiting an organization's ability to coordinate purchases and limiting its ability to understand total supply chain costs; and clinician resistance to change as physicians and other clinicians like choices and autonomy and are often loyal to particular products and brands.

Irfan and Ijaz, (2011) identified the service quality challenges to include: government funding, lack of government interest in development of new healthcare projects in rural areas and overburdened public hospitals due to rapid growth in population and people trends to move from rural areas to major cities. Their research results showed that doctors, nurses and supporting staff are not taking pain to attend the patient or to provide individual care to the patients, take care of cleanliness, and sterilization of equipments, lack of feedback mechanism showed a low commitment level towards their responsibilities in public hospitals.

Hassan (2012) identified the following SCM challenges, namely: poor infrastructure, bulky materials to be transported, poor planning special materials to be transported, poor order request form filling and late arrival of order request form. This study will focus on the on nine SCM challenges namely: poor infrastructure, poor order request form filling, loyalty to certain products by prescribers or clinicians, lack of financial resources, late arrival of order request form, uncertainty in terms of supplies, lack of qualified personnel, uncertainty in terms of demand and lack of proper planning.

Among the major challenges facing the public hospitals are stock outs and expired drugs occur at all levels in the public systems including distribution outlets, district stores, and hospitals MOH, (2009b) particularly in the public system in rural

communities (Elliot, 2008). The causes, as suggested by previous studies and during recent interviews with stakeholders are related to lack of funding MOH,(2009c) and limited control of drug quality and pricing Elliot, (2008) such as counterfeiting Wendo, (2008), mark ups Elliot (2008): expired drugs Tebajjukira,(2009) and lack of transparency and regulation concerning price MOH, (2009b; Kiapi, (2008;). Problems also constitute leakages including commissions and pilferage Kaheru, (2009) and lack of coordination with the private sector in procurement MOH, (2009c); forecasting Izama, (2009), problems of unsolicited drug donations, parallel production and lack of overview of available stocks MOH, (2008b). While some of the above are closely linked with logistic problems, specific challenges with the drug supply chain are pointed out including: Lack of efficient funding and ordering processes means it can take six months to complete tendering process, lack of competent staff (MOH, 2009b; Kimera, 2008; All Africa, 2009; Okuonzi, 2009) and poor coordination between store manager and medical clinicians.

2.6 Summary of Literature Review

The research concludes that SCM practices that are suitable to public healthcare, namely information and technology management, demand management, customer relationship management, supplier relationship management, capacity and resource management to be included in the research framework.

2.7 Conceptual Framework

Based on the above literature review, the following conceptual framework can be drawn.

Independent variables

SCM Practices Dimensions

Dependent variable

Service Quality Dimensions

Relationship with suppliers

Compatibility

Specifications and standards

Delivery

After procurement service

Responsiveness Trust Safety Reliability Assurance
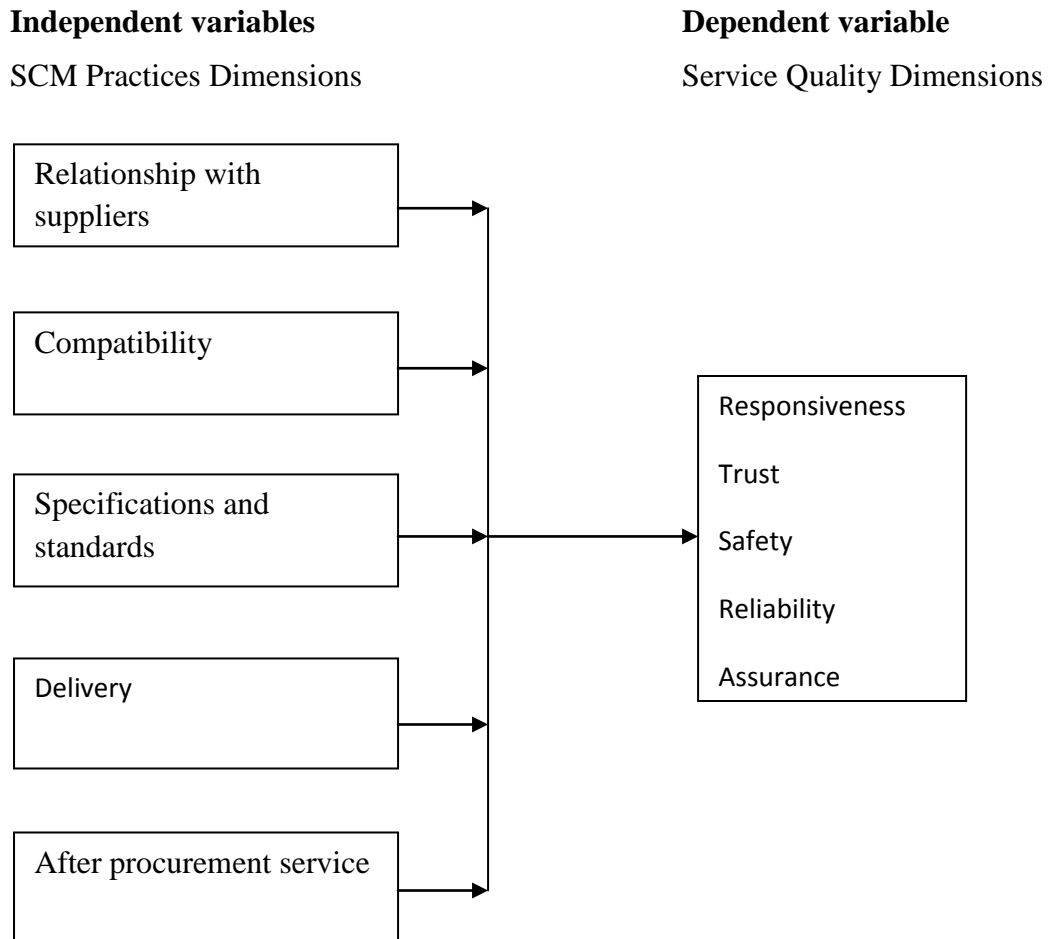
Source: Author (2014)

Figure 1: Conceptual Framework

The study framework defines the relationships between supply chain management dimensions specific to healthcare (relationship with suppliers, compatibility, specifications and standards, delivery and after-sales service) on the quality of health services' dimensions among public hospitals in Nairobi County from the perspective of procurement officers or equivalents and doctors or equivalents.

The independent variables are the supply chain management dimensions which include:

   i) Relationship with suppliers: the relationship of supply chain managers (or equivalents) in hospitals with the companies that supply products to the

hospital.

ii) Specifications and standards: specifications set by the supply officers as conditions for the supply in the tender.

iii) Delivery: indicates to delivery dates between the supply officer at the hospital and the company that supply medical equipment and supplies. Delivery represents financial or contractual arrangements amongst physicians, hospitals, and patients (Dobrzykowski et al, 2012).

iv) After procurement service: follow-up maintenance and service and supply parts and needs by suppliers to the hospital after the sale.

v) Compatibility: Compatibility in strategic objectives and cultural values of business partners facilitates supply chain capabilities (Rajesh and Matanda, 2012). Compatibility is the appropriateness of medical equipment and supplies to the specifications and standards that have been agreed upon between the supply administrator in the hospital and the company that supplied such equipment and supplies.

Dependent Variable (Quality of Health Services): the delivery of health care services and it's continuous improvements to meet the needs of patients, through work completion by highly skilled staff members dedicated to high quality service (Shaikh, 2005). The dimensions of health service quality are represented through:

i. Responsiveness: suppliers speed and accuracy in response to client requests (hospital). Responsiveness has high validity and reliability in measuring the quality of services in health care sector. (Kazemzadeh, Jahantigh, Rafie, & Maleki, 2011).

ii. Trust: The degree of reliability enjoyed by the supplier from the viewpoint of supply officers at the hospital. Trust is conveyed through faith, reliance, belief,

or confidence in the supply partner (Spekman, Jr, & Myhr, 1998).

iii.   Safety: Service provided to be free from uncertainty, risk and doubt to a certain degree. By increasing the complexity of health care, the demand for improving patient safety and monitoring the quality of services has become a critical issue (Manias, 2010).

iv.   Reliability: examines the ability of the service provider to perform services right the first time and keep service promises (Smith, Smith & Clarke 2007).

v.   Assurance: knowledge and courtesy of employees and their ability to convey trust and confidence (Smith et al. 2007; Kay & Pawitra 2001).

The service quality includes two dimensions; the first dimension deals with procedures and specific systems which are established to provide the service, while the second is a personal and concerned with the interaction among workers and their attitudes and behaviors with customers (Abu-Kharmeh, 2012).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter discussed the methodologies that were used in gathering the data, analyzing the data and reporting the results. Here the researcher aimed at explaining the methods and tools used to collect and analyze data to get proper information related to the impact and challenges of supply chain management practices on services quality among public hospitals in Nairobi County.

3.2 Research Design

The study adopted a case study descriptive design. According to Donald and Pamela (2006), descriptive research a descriptive study deals with the what, how and who of a phenomenon which is the concern for this study. The study specifically tried to ascertain the SCM practices among public hospitals in Nairobi County and sought to show their relationships to service quality. The study identified the challenges faced in the adoption of SCM practices. Descriptive survey was considered appropriate for the study since it helped the researcher to describe the phenomenon under study in its current state and its characteristics from a larger number of respondents at lower cost within a short period of time.

3.3 Sample Design

The unity of study was the hospital. The researcher conducted a census on all the seven (7) public hospitals in Nairobi County (See appendix I). Judgmental sampling was used to select the respondents as they were more conversant with these practices and gave accurate and objective information.

According to Mugenda and Mugenda (2003), a sample of between 10%-30% is

considered adequate for generalization of the findings to the whole population if the sample is well chosen. Following the high level of homogeneity among the target population, the study selected 20% of the sample size which is within the acceptable ranges according to Mugenda and Mugenda (2003). The sampling frames comprised the section of the employees from the seven Public Hospitals in Nairobi County. A representative sample of 40 (20%) of the population were be selected using stratified sampling technique from their respective Finance and Supply chain management departments (or equivalents). Sekaran and Bougie, (2010) cited a sample size larger than 30 and less than 500 are suitable for most researches. Simple random sampling was used to select employees that participated in the study. The sample is distributed as shown in Table 1 below:

Table 1: Sample Size

Population category	Population	Sample proportion	Sample Size
Kenyatta National Hospital (General ward)	87	20%	17
Kamiti Hospital	10	20%	02
Pumwani Maternity Mgt. Board	24	20%	05
Mbagathi District Hospital	15	20%	03
Mathare Mental Hospital (General ward)	28	20%	06
Mama Lucy Kibaki Hospital	12	20%	02
National Spinal Injury Hospital	23	20%	05
Total	199		40

Source: Author (2014).

3.4 Data Collection

The study used primary data collected through a structured questionnaire which was be divided in parts A, B, C and D. Part A obtained the demographic profile. Part B collected data on SCM dimensions. Part C collected data on effects of SCM practice on service quality dimensions and part D entailed the SCM practices and service

quality delivery challenges in public hospitals in Nairobi County.

The questionnaire is a fast way of obtaining data as compared to other instruments (Mugenda & Mugenda, 2003). The questionnaires will be administered by the drop-off and pick-up later method. A five point non-comparative Likert scale will be used for the closed ended questions As it is simple to construct, and is easy for the respondents to read, understand and respond appropriately to the statements put across.

3.5 Data Analysis

Data collected was analyzed using descriptive and regression analysis. Objectives (i) and (iii) were analyzed using descriptive design to document the SCM Practices at the public hospitals and the challenges faced in implementing the SCM Practices. Regression analysis will be used for objective (ii) established the extent to which the five independent variables, relationship with suppliers, compatibility, specifications and standards, delivery and after procurement service. A regression analysis was conducted on the model shown below:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + e$$

Where:

Y is Service Quality

a is the Y intercept when x is zero

b_1, b_2, b_3, b_4 and b_5 are regression weights attached to the variables;

X_1 = Relationship with suppliers; X_2 = Compatibility; X_3 = Specifications and standards; X_4 = Delivery; X_5 = After procurement service; e = error term

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents research findings, analysis of the data and interpretation of the data collected from the respondents. It also presents findings and the discussion about supply chain management practices and service quality among public hospitals in Nairobi County, Kenya. The data was collected and reports were produced in form of tables and figures and qualitative analysis done in prose.

4.2 Response rate

A total of 40 questionnaires were administered, out of which 33 were completely filled and returned. This gave a response rate of 82.5%. According to Mugenda and Mugenda (2003) the statistically significant response rate for analysis should be at least 50%.

Table 4.1: Response rate

Completed	33	82.5%
Not Completed	7	17.5%
Total	**40**	**100%**

Source: Research data (2014)

4.3 General Information

4.3.1 Years Employed in Public Hospitals in Nairobi County

The table 4.2 below illustrates the number of years the respondents have been employed in the public hospitals.

Table 4.2: Years Employed in Public Hospitals

Age	Frequency	Percent
1 – 5 years	6	18.2%
6 – 10 years	13	39.4%
11 – 15 years	8	24.2%
Over 15 years	6	18.2%
Total	**33**	**100.0%**

Source: Research data (2014)

From table 4.2 above, 81.8% of respondents had well over six years work experience

meaning they were competent to answer the questions.

4.3.2 Gender of the Respondents

Table 4.3: Gender of the Respondents

Gender	Frequency	Percent
Male	19	56.3
Female	14	43.7
Total	**33**	**100.0%**

Source: Research data (2014)

The table 4.3 illustrates the gender of the respondents interviewed. From the findings,

56.3% were male while 43.7% were female implying imbalanced gender distribution

supply chain managers (or equivalents) among public hospitals in Nairobi county.

4.3.3 Respondents' Level of Education

Table 4.4: Respondents' Level of Education

Level of Education	Frequency	Percent
College/University Diploma level	7	21.2%
Bachelors Degree	14	42.4%
Masters Degree	10	30.3%
PhD Degree	2	6.1%
Total	**33**	**100.0%**

Source: Research data (2014)

From table 4.4 above, the respondents were well conversant with the issues relating to

supply chain management practices.

4.3.4 Respondents Management Level

Table 4.5: Respondents management Level

Age	Frequency	Percent
Low Level Management	9	27.3%
Middle Level Management	13	45.4%
Top Level Management	11	33.3%
Total	**33**	**100.0%**

Source: Research data (2014)

The respondents were asked the management level they fell under. From the findings, majority of them 45.4% were in the middle level management, 33.3% were in the top level management while 27.3% were in the low level of management.

4.4 Extent of Supply Chain Management Practices Implementation

The research sought to establish the various supply chain management practices that had been implemented among the public hospitals in Nairobi County. The respondents were asked to rate the extent in which they were in agreement with various statements on a scale of 1 – 5, where 1 was to a very small extent and 5 to a very large extent.

Table 4.6: Supply Chain Management Practices

Supply Chain Management Practices	Mean	S. Dev
After procurement service	4.6873	1.1189
Specifications and standards	3.9616	0.3827
Compatibility	3.6134	0.3184
Delivery	2.5342	0.4517
Relationship with Suppliers	1.1454	0.2341

Source: Research data (2014)

From the findings on table 4.6 above, the following SCM practices have been implemented to a large extent, namely; after procurement service (mean 4.6873), specifications and standards (mean 3.9616) and compatibility (mean 3.6134).

Delivery (mean 2.5342) had been implemented to a moderate extent and relationship with suppliers (mean 1.1454) had been implemented to a small extent.

4.5 Impact of Supply Chain Management Practices on Service Quality Dimensions

The respondents were asked to rate impact of SCM Practices on Service Quality Dimensions. The respondents were asked to rate their level of agreement with various statements on a scale of $1 - 5$, where 1 was to a very small extent and 5 was to a very large extent. The findings are illustrated below.

4.5.1 Relationship with suppliers

The respondents were asked to rate impact of relationship with suppliers on service quality dimensions

Table 4.7: Relationship with suppliers

Relationship with suppliers:	Mean	S. Dev
Trust	4.5134	1.1456
Responsiveness	3.8862	0.8932
Assurance	3.5354	0.8692
Reliability	2.9179	0.7129
Safety	2.3914	0.6641

Source: Research data (2014)

From table 4.7 above, the study established that relationship with suppliers' impacted to a large extent on the following service quality dimensions; trust (mean 4.5134), responsiveness (mean 3.8862) and assurance (mean 3.5354). On reliability, it had a moderate extent of impact (mean 2.9179) and to a small extent on safety (mean 2.3914).

4.5.2 Compatibility of Information and Technology

The respondents were asked to rate impact on compatibility of information and technology on service quality dimensions. The findings are distributed in table 4.8.

Table 4.8: Compatibility of Information and Technology

Compatibility of Information and Technology	Mean	S. Dev
Trust	4.6817	1.2451
Responsiveness	4.3153	0.8932
Safety	3.7913	0.7354
Reliability	2.9630	0.5548
Assurance	2.1547	0.4782

Source: Research data (2014)

From table 4.8 above, the study established that compatibility of information and technology impacted to large extent the following service quality dimensions: trust (mean 4.6817), responsiveness (mean 4.3153) and safety (mean 3.7913). Reliability (mean 2.9630) it had a moderate extent of impact and assurance (mean 2.1547) to a small extent.

4.5.3 Standards and specifications

The respondents were asked to rate impact of standards and specifications on service quality dimensions. The findings are illustrated in table 4.9 below.

Table 4.9: Standards and specifications

Standards and specifications:	Mean	S. Dev
Assurance	4.5239	1.3634
Safety	4.4751	1.0038
Reliability	3.9861	0.9841
Trust	3.7416	0.9742
Responsiveness	1.2385	0.4189

Source: Research data (2014)

From table 4.9 above, the study established that standards and specifications impacted to large extent the following service quality dimensions: assurance (mean 4.5239),

safety (mean 4.4751), reliability (mean 3.9861) and trust (mean 2.9630). On responsiveness (mean 1.2385) it had a small extent of impact.

4.5.4 Delivery

The respondents were asked to rate impact of SCM practices on delivery. The findings are illustrated in table 4.10 below.

Table 4.10: Delivery

Delivery	Mean	S. Dev
Assurance	4.6129	4.6129
Safety	4.5236	1.1244
Trust	3.6013	0.7655
Responsiveness	3.3491	0.6751
Reliability	2.3185	0.4538

Source: Research data (2014)

From table 4.10 above, the study established that delivery impacted to large extent the following service quality dimensions: assurance (mean 4.6129), safety (mean 4.5236), and trust (mean 3.6013). Delivery impacted to a moderate extent on responsiveness (mean 3.3491), and to a small extent on reliability (mean 2.3185).

4.5.5 After procurement service

The respondents were asked to rate impact of SCM practices on after procurement service. The findings are illustrated in table 4.11 below.

Table 4.11: After procurement service

After procurement service	Mean	S. Dev
Reliability	4.5387	1.0938
Assurance	4.3834	0.9713
Responsiveness	4.1908	0.9413
Safety	3.4168	0.7643
Trust	2.2537	0.4355

Source: Research data (2014)

From table 4.11 above, the study established that delivery impacted to large extent the following service quality dimensions: reliability (mean 4.5387), assurance (mean 4.3834), and responsiveness (mean 4.1908). Delivery impacted to a moderate extent on safety (mean 3.4168), and to a small extent on trust (mean 2.2537).

4.6 Regression Analysis

The researcher carried out a multiple regression analysis to test the influence of the independent variables on the dependent variable. The findings are shown in the table 4.12 below.

Table 4.12: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	4.587	.286		16.038	.003
Relationship with suppliers	-4.682	.511	.312	-9.162	.001
Compatibility	2.137	.213	.685	10.032	.002
Specifications and standards	.639	.198	.463	3.227	.047
Delivery	3.671	.506	.879	7.255	.032
After procurement service	2.167	.458	513	4.731	.031

Source: Research data (2014)

From table 4.12 above, the resulting regression equation was as follows:

$Y = 4.587 - 4.682X_1 + 2.137X_2 + 0.639X_3 + 3.671X_4 + 2.167X_5 + e$

Where Y= Service Quality; X_1 = Relationship with suppliers; X_2 = Compatibility;

X_3 = Specifications and standards; X_4 = Delivery; X_5 = After procurement service

The regression equation above has established that taking all factors into account constant at zero, service quality will have an autonomous value of 4.587. The findings presented also show that taking all other independent variables at zero, a unit increase

in the relationship with suppliers would lead to a 4.682 decrease in the service quality among public hospitals in Nairobi County. A unit increase in compatibility would lead to a 2.137 increase in the service quality among public hospitals in Nairobi County. A unit increase in specifications and standards would lead to a 0.639 increase in service quality among public hospitals in Nairobi County. A unit increase in delivery would lead to a 3.671 unit increase in service quality among public hospitals in Nairobi County. All the variables were significant as the P-values were less than 0.05.

Table 4.13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798	.636	.612	0.1235

a. Predictors: (Constant), Relationship with suppliers, Compatibility, Specifications and standards, Delivery and After-sales service

From the findings the R-Square which is the coefficient of determination is a commonly used statistic to evaluate model fitness. The adjusted R^2, is also called the coefficient of multiple determination, is the percentage of the variation in the dependent variable explained uniquely or jointly by the independent variables. 61.2% of the variations in service quality can be attributed to the combined effect of the predictor variables. This means that 38.8% of the changes in the changes can be attributed to other factors.

Table 4.14: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	23.498	5	4.699	7.779	.031[b]
Residual	16.312	27	.604		
Total	39.801	32			

Source: Research data (2014)

The P-value of 0.031 indicates that the regression relationship is significant in predicting how the five independent variables (relationship with suppliers, compatibility, specifications and standards, delivery and after procurement service) influence service quality among public hospitals in Nairobi County. The F critical at 5% level of significance is 2.57. Since F calculated is 7.779 is greater than the F critical (value = 2.57) thus showing that the model is significant.

4.8 Challenges Faced in the Implementation of SCM

The respondents were asked to which they concur with the statements concerning the Challenges faced in the implementation of SCM.

Table 4.15: Challenges Faced in the Implementation of SCM

	Mean	**S. Dev**
Loyalty to certain products by prescribers	4.6351	1.3796
Uncertainty in terms of supplies	4.5614	1.2457
Lack of proper planning	4.4167	1.1094
Lack of financial resources	4.0128	0.9943
Stock outs	3.2139	0.8562
Late arrival of order request form	2.4915	0.4768
Lack of qualified personnel	2.2905	0.4566
Uncertainty in terms of demand	1.3452	0.4257
Poor order request form filling	1.1654	0.4413

Source: Research data (2014)

From table 4.16 above, majority of the respondents agreed that the following challenges namely; loyalty to certain products by prescribers; uncertainty in terms of supplies; lack of proper planning and lack of financial resources were challenges facing the implementation of SCM. The study further established that majority of the respondents were undecided on whether stock outs was a major challenge facing the implementation of SCM. The study also established that majority of the respondents disagreed that lack of qualified personnel was a challenge facing the implementation of SCM. Majority of those interviewed disagreed that late arrival of order request

form and, lack of qualified personnel were major challenges facing the implementation of SCM. The study further established that poor order request form filling and uncertainty in demand were not major challenges facing the implementation of SCM as a majority of respondents strongly disagreed with the statements.

CHAPTER FIVE: SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study sought to explore the SCM practices among public hospitals in Nairobi County, the impact of these practices on quality of service in public hospitals in Nairobi County and the challenges that public hospitals encounter in implementation of SCM practices. The objectives of the research were: To establish the supply chain management practices in public hospitals in Nairobi County; To determine the impact of supply chain management practices on service quality dimensions among public hospitals in Nairobi County; To determine the challenges of supply chain management among at Public Hospitals in Nairobi County. This chapter gives the discussion of findings, conclusions, recommendations and suggestions for further research.

5.2 Summary of Findings and Discussions

The following were the major findings from data analysis: On SCM practices namely; after procurement service, specifications and specifications and compatibility were implemented by a majority to a large extent. Real time delivery was practiced by a majority to a moderate extent. Regarding relationship with suppliers it was found out that a majority implemented it to a small extent.

Regarding the relationship between SCM practices and service quality, three variables out of the five analysed among the public hospitals in Nairobi County namely delivery, compatibility and after procurement service had strong statistically significant relationship with service quality. The remaining two variables namely

relationship with suppliers and specifications and standards had weak statistical significant relationship with service quality.

Finally, the challenges faced by the public hospitals in Nairobi County in implementing SCM practices are: loyalty to certain products by prescribers, uncertainty in terms of supplies, lack of proper planning, and lack of financial resources. Stock-outs, late arrival of order request form, lack of qualified personnel, uncertainty in terms of demand and poor order request form filling were challenges to a small extent.

5.3 Conclusions

From the research findings, SCM practices implemented to a large extent were; after procurement service, specifications and specifications and the practice to be fully implemented was relationship with suppliers.

The research established a positive correlation between service quality and SCM practices namely; relationship with suppliers, compatibility, standards and specifications, delivery and after procurement services. This reveals the viability of all variables in the research. In regression analysis, it was established that 61.2% of the variations in service quality was attributed to the combined effect of predictor variables; thus the model is significant.

Finally, the study conclude that the major challenges faced by public hospitals in Nairobi County were; loyalty to certain products by prescribers, uncertainty in terms of supplies, lack of proper planning, and lack of financial resources.

5.4 Recommendations

Based on the study results, some recommendations can be proposed by the study; Firstly, public hospitals need to focus on SCM practices in order to improve service quality. Secondly, supply chain officers' need to contribute significantly to increase the service quality of health provided to different beneficiaries. Thirdly, hospital management should focus building strong relationship with suppliers in accordance with specific guidelines

5.5 Limitations of the Study

The respondents being busy professionals, it was very hard to convince them to take part in the questionnaires and some actually declined taking part in the study. The findings of this study and application thereof are limited to Public Hospitals in Nairobi. It is therefore important to note that the findings of this study can only be used for comparative purposes.

5.6 Suggestions for Further Study

The present study used only public hospitals in Nairobi county, future studies should consider expanding their scope to include private hospitals.

Further studies related to the health sector can be conducted especially comparative studies between public, private and military health service sectors.

REFERENCES

Abu-kharmeh, S. (2012). Evaluating the quality of healthcare services in the Hashemite of kingdom of Jordan. *International Journal of Business and Management*, *7*(4), 195-205

Asubonteng, P., McCleary, K.J. & Swan, J.E. (1996). SERVQUAL revisited: a critical review of service quality. Journal of Services Marketing, Vol. 10, No. 6, pp. 62-81.

Acharyulu, G. V. R. K., & Shekhar, B. R. (2012). Role of value chain strategy in healthcare supply chain management: An empirical study in India. *International Journal of Management, 29*(1), 91-97.

Adcroft, A., & Willis, R. (2005). The (un)intended outcome of public sector performance measurement. *International Journal of Public Sector Management, 18*(5), 386-400.

Akter, S., D'Ambra, J., & Ray, P. (2010). Service quality of mHealth platforms: development andvalidation of a hierarchical model using PLS. Electron Markets.

Al-Saa'da, J.L., Abu Taleb Y.D., Al Abdalla, M.E., Rasmi Abd Alraheem Al-Mahasneh, Nabil Awni Nimer & Ghazi A. Al-Weshah. (2013). Supply Chain Management and Its Effect on Health Care Service Quality: Quantitative Evidence from Jordanian Private Hospitals. Vol. 4, No. 2;

Alvarado, U. Y., & Kotzab, H. (2001). Supply chain management: The integration of logistics in marketing *Industrial Marketing Management, 30*, 183-198.

Baltacioglu, T., Ada, E., Kaplan, M. D., Yurt, O., & Kaplan, Y. C. (2007). A new framework for service supply chains. *The Service Industries Journal, 27*(2), 105-124.

Baki, B., Basfirinci, C.S., Ilker Murat, A.R., & Cilingir, Z. (2009) "An application of integrating SERVQUAL and Kano's model into QFD for logistics services: A case study from Turkey"

Beinstock, C. C., Mentzer, J. T. and Bird, M. M., (1997), Measuring physical distribution service quality, Journal of academy of marketing science, 25(1), pp 31-44.

Boon-itt, S., & Pongpanarat, C. (2011). Measuring service supply chain management processes: The application of the Q-sort technique. *International Journal of Innovation, Management and Technology, 2*(3), 217-221.

Boon-itt, S., & Wong, C. Y. (2011). The moderating effects of technological and demand uncertainties on the relationship between supply chain integration and customer delivery performance. *International Journal of Physical Distribution & Logistics Management, 41*(3), 253-276.

Brady, J. T., & Cronin, J. J. (2001). Some new thoughts on conceptualizing perceived service quality: A hierarchial approach. Journal of Marketing, 65(3), 34-49.

Breen, L., & Crawford, H. (2005). "Improving the pharmaceutical supply chain: assessing the reality of e-quality through e-commerce application in hospital pharmacy", International Journal of Quality & Reliability Management, Vol. 22 No. 6, pp. 572-590.

Brown, S.W., Swartz, t. (1989), "A gap analysis of professional service quality", *Journal of Marketing*, Vol. 53, No. 2, pp. 92-98.

Burns, L.R. (2002). The Healthcare Value Chain: Producers, Purchasers, and Providers. Jossey Bass. San Francisco. CA.

Chahal, H., & Kumari, N. (2010). Development of multidimensional scale for healthcare service quality(HCSQ) in Indian context. Journal of Indian Business

Research, 2(4), 230-255.

Chan, F., & Qi, H.J. (2003). An innovative performance measurement methodfor supply chain management. Supply Chain Management: An International Journal, 8 (3), 209 - 223.

Chong, A. Y. L., Chan, F. T. S., Ooi, K. B., & Sim, J. J. (2010). Can Malaysian firms improve organizational/innovation performance via SCM? *Industrial Management & Data Systems, 111*(3), 410-431.

Chopra, S., & Meindl, P. (2007). Supply Chain Management: Strategy, Planning and Operation. Pearson Education, New Jersey.

Dabholkar, P. A., Thorp, D. I., & Rentz, J. O. (1996). A Measure of Service Quality for Retail Stores: ScaleDevelopment and Validation. Journal of the Academy of Marketing Science, 24, 3-16.

Dobrzykowski, D., Nathen, T., & Vonderembse, M. (2012). Integrating the decentralized healthcare delivery supply chain. POMS 21st Annual Conference. Vancouver, Canada.

Dagger, T. S., Sweeney, J. C., & Johnson, L. W. (2007). A Hierarchical Model of Health Service Quality.Scale Development and Investigation of an Integrated Model. Journal of Service Research, 10(2),123-142.

Dagger, T. S., & Sweeney, J. C. (2006). "The Effect of Service Evaluations on Behavioral Intentions and Quality-of-Life," Journal of Service Research, 9 (1), 2-19.

Donlon, J.P. (1996). Maximizing value in the supply chain. Chief Executive, 117, 54-63.

Ellram, L. M., Tate, W. L., & Billington, C. (2007). Services supply management: The next frontier for improved organizational performance. *California*

Management Review, 49(4), 44-65.

Elliot, C. (2008). Private Sector Mapping Uganda, Mission Report, Uganda, The Medicines Transparency Alliance (MeTA), December.

Frost, F. A., & Kumar, M. (2000). "INTSERVQUAL – an internal adaptation of the GAP model in a large service organisation", Journal of Services Marketing, Vol. 14 Issue: 5, pp.358 – 377

Gbadeyan, R. A. (2010): Customer Relationship Management and Hospital Service Quality in Nigeria. African Research Review. An International Multi Disciplinary Journal, Ethiopia.4(2); 168 – 184.

Gefen, D. (2002). "Customer Loyalty in E-Commerce", Journal of the Association for Information Systems, Vol. 3, No. 1:27-51.

German Association for Medical Technology. (2007, February). Elektronisches Beschaffungswesen im Gesundheitsmarkt vor dem Durchbruch, (Online). Available:
http://www.bvmed.de/themen/ECommerce/pressemitteilung/BVMedUmfrage_E lektronisches_Beschaffungswesen_im_Gesundheitsmarkt_vor_dem_Durch bruch.html.

Gronroos, C. (1984). A service Quality model and its marketing implications. European Journal of Marketing, 18(4), 36-44.

Harland, C.M., & Caldwell, N.D. (2007). "Barriers to supply chain information integration: SMEs adrift of e-lands", Journal of Operations Management, Vol. 26 No. 6, pp. 1234-54

Hassan, A. M. (2012). Supply Chain Management Practices Among Humanitarian Organisations in Kenya. Unpublished

Headley, D. E., & Miller, S. J. (1993), "Measuring Service Quality and Its

Relationship to Future Consumer Behavior," Marketing Health Services, 13 (4), 32-42.

Hines, T. (2004). Supply chain strategies: Customer driven and customer focused. Oxford: Elsevier.

Hong, P., Kim, S., & Dobrzykowski, D. (2012). Healthcare supply chain for competitive advantage: the case for Korea. *5TH Annual Symposium and Workshop in Global Supply Chains*, March 8-10, 2012, Tokyo, Japan.

Irfan, S.M and Ijaz, A (2011). Comparison of service quality between private and public hospitals: Empirical evidences from Pakistan Journal of Quality and Technology Management.

Johnson, M., Hazemba, O., Kimeu, J., Kirika, R. & Thuo, M., (2008). Assessment of Kenya Medical Supplies Agency April 2008. MSH/SPS Regional Office, Nairobi

Kay, C. & Pawitra, T. A. (2001). Integrating SERVQUAL and Kano's Model Into QFD for Service Excellence Development. *Managing Service Quality*, 11(6), 418-430.

Kazi, S.K. (2012). Supply Chain Management Practices and Performance at Kenya Medical Supplies Agency. Unpublished University of Nairobi

Kazemzadeh, R., Jahantigh, F., Rafie, S., & Maleki, N. (2011). Designing a conceptual model for qualitymeasurement in supply chain of health care services. *3rd International Conference on Advanced Management Science*, IACSIT Press, Singapore.

Ko, Y. J. (2000). A multidimensional and hierarchical model of service quality in the participant sportindustry. Ohio State University.

Koh, S. C. L., Demirbag, M., Bayraktar, E., Tatoglu, E., & Zaim, S. (2007). The

impact of supply chain management practices on performance of SMEs. *Industrial Management & Data Systems, 107*(1), 103-124.

Lambert, D.M. (2004). The eight essential supply chain management processes. Supply Chain Management Review, 8 (6), 18 - 26.

Lee, H.L., & Billington, C. (1995), 'The evolution of supply chain management models and practices at Hewlett Packard', Interface, Vol. 25, no.5, pp.42–63.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *The International Journal of Management Science, 34*, 107-124.

Manias, E. (2010). Medication communication: a concept analysis. *Journal of Advanced Nursing*, *66*(4), 933–943.
   http://dx.doi.org/10.1111/j.1365-2648.2009.05225.x

Marshall, G. N., Hays, R. D., & Mazel, R. (1996), "Health Status and Satisfaction with Health Care: Results from the Medical Outcomes Study" Journal of Consulting and Clinical Psychology, 64 (2), 380-290.

McKee, M., & Healy, J. (2002). "Hospitals in changing Europe". (*European Observatory on Health Care System series).*

Mentzer, J.T., Flint, D.J. & Kent, J.L. (1999), "Developing a logistics service quality scale", Journal of Business Logistics, Vol. 20 No. 1, pp. 9-32.

Mentzer, J.T., Flint, D.J. & Hult, G.T. (2001), "Logistics service quality as a segment-customized process", Journal of Marketing, Vol. 65, pp. 82-104.

MOH (2009b), National Pharmaceutical Sector Strategic Plan (NPSSP) 2000/10-20013/14, Draft, September Ministry of Health, Government of Uganda. 44

MOH (2009c), National Health Policy. Reducing poverty through promoting people's health, May, Ministry of Health, Government of Uganda.

Mugenda, O., & Mugenda, A. (2003). *Research Methods: Qualitative and Quantitative Approaches.* Nairobi. Africa Center for Technology Studies.

Mwilu, J.M. (2013). Supply Chain Management Practices and Performance among Public Research Institutions in Kenya. Unpublished University of Nairobi

Nachtman, H. and Pohl, E.A. (2009), "The State of Healthcare Logistics: Cost and Quality improvement Opportunities," Center for innovation in Healthcare Logistics, University of Arkansas.

National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Medical Services (MOMS) [Kenya], Ministry of Public Health and Sanitation (MOPHS) [Kenya], Kenya National Bureau of Statistics (KNBS) [Kenya], ICF Macro. 2011. Kenya Service Provision Assessment Survey 2010. Nairobi, Kenya: National Coordinating Agency for Population and Development, Ministry of Medical Services, Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics, and ICF Macro.

Nix, N. (2001), "Customer service in supply chain management context", in Mentzer, J.T. (Ed.).

OECD (2011), Health at a Glance 2011: OECD Indicators, OECD Publishing.http://dx.doi.org/10.1787/health_glance-2011-en

O'Connor, S. J., Shewchuk, R. M., & Carney L. W.(1994), "The Great Gap: Physicians' Perceptions of Patient Service Quality Expectations Fall Short of Reality," Journal of Health Care Marketing, 14 (2), 32-39.

Omar, R. Ramayah, T., Lo, M., Sang, T., & Siron, R. (2010). Information sharing, information quality and usage of information technology (IT) tools in Malaysian organizations. African Journal of Business Management, 4(12), 486-499.

Otto, A., & Kotzab, H. (2003). Does supply chain management really pay? Six perspectives to measure the performance of managing a supply chain. European Journal of Operational Research 144, 306-320.

Parasuraman, A., Zeithml, V.A. and Berry, L.L. (1985), "A conceptual model of service quality and its implications for future research", Journal of Marketing, Vol. 49, pp. 41-50.

Parasuraman, A., Zeithml, V.A. and Berry, L.L. (1988), "SERVQUAL: a multiple – item scale for measuring consumer perceptions of service quality", Journal of Retailing, Vol. 64, pp. 2-40.

Parasuraman, A., Zeithml, V.A. and Berry, L.L. (1991), "Refinement and reassessment of the servqual scale", Journal of Retailing, Vol. 67 No. 4, pp. 420-50.

Parente, S. T., Beyond the Hype - A Taxonomy of e-Health Business Models, Health Affairs, vol. 19, no. 6, pp. 89-102, 2000.

Pery, M. and Sohal, A. (1999), "Improving service quality within the supply chain: an Australianstudy", Total Quality Management, Vol. 10 Nos 4/5, pp. 673-9.

Pollack, B. L. (2009). Linking the hierarchical service quality model to customer satisfaction and loyalty.[Research paper]. Journal of Services Marketing, 23(1), 42-50.

Porter, M.E and Teisberg, E. O. (2004). Redefining Competition in Health Care, Harvard Business Review, vol. 82, no. 6, pp. 64-76,

Porter, M.E. (1985). Competitive Advantage.New York: Free Press

Herzlinger, R. E. (2006). Why Innovation in Health Care is so Hard, Harvard Business Review, vol. 84, no. 5, pp. 58-66,

Rajesh, R., & Matanda, M. (2012). Effects of inter-organizational compatibility on supply chain capabilities: Exploring the mediating role of inter-organizational information systems (IOIS) integration, Industrial Marketing Management. Retrieved4Jan.2013,from

http://www.sciencedirect.com/science/article/pii/S0019850112001629

Republic of Kenya, (2001). *Delivery of Health Services*, Report and Recommendations. Nairobi: Government Printer.

Republic of Kenya, (2011). *Kenya Demographics Profile*. Nairobi: Government Printer.

Republic of Kenya, (2001). "Health Management Information Systems, Report for the 1996 to 1999 Period." *Ministry of Health, Republic of Kenya, Nairobi.*

Ross, D. (2008). *The Intimate Supply Chain: Leveraging the Supply Chain to Manage the Customer Experience*.

Rust, R. T., & Oliver, R. L. (1994). Service Quality: Insights and manegerial implications from the frontierin Service Quality: New directions in theory and practice (pp. 1-19): Sage Publication.

New York: Taylor & Francis Group, USA. http://dx.doi.org/10.1201/9781420064988

SAP. (2003, January). What is Supplier Relationship Management? (Online) Available:

http://searchsap.techtarget.com/sDefinition/0,,sid21_gci871756,00.html.

Santos, J. (2003). "E-service quality: a model of virtual service quality dimensions", Managing Service Quality, Vol. 13 No. 3, pp. 233-46.

Sekaran, U & Bougie, R. (2010). *Business Research Methods.* 5th Edition. Wiley India

Seth, N., Deshmukh, S. G. and Vrat, P., (2005), Service quality models: a review, International journal of quality & reliability management, 22(9), pp 913-949.

Siau, K., Southard, P.B., & Hong, S. (2002), "E-healthcare strategies and implementation," International Journal of Healthcare Technology and Management, Vol. 4 Nos 1/2 . Pp.118-131.

Sinha, R.K. and Babu, A. S., (1998), Quality of customer service in supply chain system: a diagnostic study, International journal of quality and reliability management, 15(8/9), pp 844-859.

Scott, W. R. (2002) Organizations - Rational, Natural, and Open Systems, 5 ed., Upper Saddle River: Prentice Hall,

Shah, R., Goldstein, S., Unger, B., & Henry, T. (2008). Explaining Anomalous High Performance in a Health Care Supply Chain. *Decision Science*, *39*(4), 759-788. http://dx.doi.org/10.1111/j.1540-5915.2008.00211.x

Shaikh, B. (2005). Quality of Health Care: An absolute for Patient Satisfaction. *Journal of View Point*, *55*(11), 495-525.

Smith, G., Smith, A. & Clarke, A. (2007). Evaluating Service Quality in Universities: A Service Department Perspective. *Quality Assurance in Education*, 15(3), 334-351.

Spekman, R., Jr, J., & Myhr, N. (1998). An empirical investigation into supply chain management: A perspective on partnerships. *International journal of physical distribution and logistics*, *28*(8), 630-650. http://dx.doi.org/10.1108/09600039810247542

Stanley, L. L. and Wisner, J.D., (2002), The determinants of service quality: issues for purchasing, European journal of purchasing and supply management, 8, pp 97-

109.

Supply Chain Management, Sage, New York, NY, pp. 358-9.

Tebajjukira, M. (2009), Uganda: Drug Firms in Court Over Faka Raw Materials, ,AllAfrica.com:Kampala(http://allafrica.com/stories/200909140910.html).16th March 2013

Wendo, C. (2008), Uganda: Fake Malaria Drugs On Sale, 16th May, AllAfrica.com: Kampala (http://allafrica.com/stories/200909140910.html). 6th march 2013.

Wang, W.-C., Lin, C.-H., & Chu, Y. - C. (2011). Types of competitive advantage and analysis. International Journal of Business and Management, 6(5), 100-104.

Zhu, F.X., Wymer, W.J. and Chen, I. (2002), "IT-based services and service quality in consumerbanking", International Journal of Service Industry Management, Vol. 13 No. 1, pp. 69-90.

Websites:

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

APPENDICES

Appendix I: Questionnaire

Introduction

This questionnaire has been designed for the sole purpose of collecting data on the impact of Supply Chain Management Practices on Service Quality in Public Hospitals in Nairobi County, Kenya. The data collected will be treated with a very high degree of confidentiality and it is meant for academic purposes only.

Part A: Demographic Profile

1. What is your Department?_____

2. How many years have you been employed in public hospitals in Nairobi County?

    (*Please tick where appropriate*)

    1 – 5 years   ☐   6 – 10 years ☐   11 – 15 years   ☐

    Over 15 years   ☐

3.   Gender (*Please tick where appropriate*)

    Male   ☐   Female   ☐

4. Education level (*Please tick where appropriate)*

    College/University Diploma level ☐   Bachelors Degree ☐

    Masters Degree   ☐   PhD Degree   ☐

    Others *Specify*……………………………………………….

5.   Please indicate the category you fall under.

    Management level: Top ☐   Middle ☐   Low ☐

6. Age Bracket (*Please tick where appropriate*)

Less than 25 ☐   26 – 34 ☐   35 – 44 ☐

45 – 54 ☐   More than 55 ☐

Part B: Supply Chain Management Practices

Please rate to what extent the following Supply Chain Management Practices are practiced in your organization. The scale below will be applicable:

1 = To a very small extent, 2 = Small extent, 3 = moderate extent, 4 = Large extent
5 = very large extent.

	1	2	3	4	5
The following are supply chain management dimensions :					
Clear specifications and standards leads to right medical equipments and supplies acquisition.					
Compatibility					
Delivery is timely					
Good working relationship with Suppliers					
After procurement service					

Part C: Impact of Supply Chain Management Dimensions on Service Quality Dimensions

Please rate the impact of SCM Practices dimensions on Service Quality Dimensions. The scale below will be applicable:

1 = to a very small extent, 2 = Small extent, 3 = moderate extent, 4 = Large extent   5 = very large extent.

	1	2	3	4	5
Relationship with suppliers:					
Responsiveness					
Trust					
Safety					
Reliability					
Assurance					
Compatibility of information and technology					
Responsiveness					
Trust					
Safety					
Reliability					

Assurance					
Standards and specifications:					
Responsiveness					
Trust					
Safety					
Reliability					
Assurance					
Delivery:					
Responsiveness					
Trust					
Safety					
Reliability					
Assurance					
After procurement service:					
Responsiveness					
Trust					
Safety					
Reliability					
Assurance					

Part D: Challenges Faced in the Implementation of SCM

Please indicate the extent to which you concur with the following statements concerning the Challenges faced your organization the implementation of SCM.

Use the scale of: 1= strongly disagree 2= Disagree 3= Undecided 4= Agree 5= strongly agree

	1	2	3	4	5
Supply chain management challenges faced:					
Lack of proper planning					
Stock outs					
Lack of financial resources					
Lack of qualified personnel					
Poor order request form filling					
Uncertainty in terms of demand					
Uncertainty in terms of supplies					
Late arrival of order request form					
Loyalty to certain products by prescribers					

 Any other. Please state

....
....
....

Appendix II: Public Hospitals in Nairobi County:

1. KAMITI HOSPITAL

2. KENYATTA NATIONAL HOSPITAL (GENERAL WARD)

3. MAMA LUCY KIBAKI HOSPITAL

4. MATHARE MENTAL HOSPITAL (GENERAL WARD)

5. MBAGATHI DISTRICT HOSPITAL

6. NATIONAL SPINAL INJURY HOSPITAL

7. PUMWANI HOSPITAL MANAGEMENT BOARD

Source: NHIF, 2013 accreditation Index