INFLUENCE OF LOGISTICS MANAGEMENT ON CUSTOMER SATISFACTION AMONG PUBLIC SECTOR MEDICAL SUPPLIERS IN KISUMU COUNTY, KENYA

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Abstract: **Public Health facilities in Kisumu County have for a long time endured a lot of challenges. Lack of sufficient budgetary allocations to meet their operational requirements, erratic and unpredictable supply chains, lack of proper storage facilities and insufficient trained human resource to handle supply chain activities are among the myriad of challenges being faced by these institutions. The ripple effect of all these on the consumer is that the customer has lost confidence in seeking services in these hospitals when in need of service. Many a time, upon visiting a public hospital, one is expected to buy prescribed drugs and other medical consumables because the said facilities have not received their consignment from KEMSA. The latter, in most cases will hold on to orders because of unpaid deliveries. The purpose of this study was therefore to determine the influence of logistics practices on customer satisfaction among public health facilities in Kisumu County. The objectives of the study are to examine the extent to which product storage affects customer satisfaction in public health facilities, to establish whether transportation influences customer satisfaction, to determine whether distribution influences customer in public health facilities and to establish influence of inventory on customer satisfaction in public health facilities within Kisumu County. This study is founded on three theories namely; Game theory, Theory of Constraints and Resource Based View theory. A descriptive research design was adopted for this study. A target population of fifteen public health facilities of level four and level five will be used since they operate under some degree of autonomy which allows them to manage their logistics functions. The unit of observation was seventy-one respondents working in pharmacy, procurement and stores departments. Purposive sampling method was used. Primary data was collected using structured questionnaires. This data was analyzed using percentages and tables. SPSS was used to analyze this data. The study therefore recommends that for organizations to be more competitive so as to cope with more highly dynamic environments there is need to be keener in to enhancing their logistic factors. To achieve a competitive advantage in a dynamic business environment, the study recommends that firms should streamline with all parties in logistic matters in order to improve customer satisfaction. In growing technological advances and the emergence of the global information organization there is need to embrace technology. Logistics on customer satisfaction was studied in terms of product storage management, transport management, distribution management and inventory management and their influence. The study has made a number of important contributions. The findings of the study resulted in an understanding that among the logistics product storage management, transport management, distribution management and inventory management have no influence on customer satisfaction.**

Keywords: **Product Storage Management, Transportation management Product distribution management, Inventory management, Customer Satisfaction.**

1. INTRODUCTION

Background of the Study

According to Ellram and Cooper (2011), logistics management is concerned with the flow of goods. It includes movement and storage of raw materials, work in progress, inventory and finished goods from the point of origin to point of consumption. According to Cooper (1997), for an organization to achieve superior performance, it has to be an integrated partner within a supply chain context. Cohen and Rousell (2005) state that business processes that need to be integrated such as manufacturing, procurement, selling, logistics and the delivery of real-time seamless information to all supply chain partners, is aimed at better serving customers and consumers while enhancing performance of individual supply chain members.

Several countries in the world are faced with Health related challenges. This challenges range from poor and inadequate health facilities, lack of drugs and other medical supplies, poor distribution networks and strategies among others. According to Msimangira (2010), healthcare organizations throughout the world are trying to improve on operational inefficiencies and cut on costs without affecting patient care. According to Benny (2010), the global medical industry expenses are estimated to be over $4.5 trillion. With countries working hard to achieve MDG goals numbers 4, 5 and 6 which are: to reduce child mortality, improve maternal health and combat HIV/AIDS, malaria and other diseases. For both developed and developing countries, there should be adequate logistics supply for efficient service delivery in order for these goals to be attained.

Logistics management in the health sector cannot be narrowly viewed as only dealing with utilization of material resources; it goes beyond that scope by encompassing efficient coordination and control of the flow of all operations that include human resource, customers, information and other resources. Silva (2009), states that the importance of health logistics cannot be overemphasized. Due to increased expenditure in healthcare sector, there is need to ensure that sufficient resources are allocated to meet the needs of an ever growing population. As such, there has to be sufficient and uninterrupted stock of medical supplies to meet the needs of the end user. This requires efficient stock management for pharmacy inventories and setting priorities in purchase and distribution of drugs (Oballa, Waiganjo & Wachiuri, 2015).

Logistics Management

Stank (2005), views logistics management as an important element of supply chain management and further emphasizes the importance of integrating all the logistics processes of all supply chain partners to better serve the needs of the ultimate consumer. Stevenson (2009) defines logistics as part of the supply chain that is concerned with the forward and reverse flow of goods, services, cash and information. It encompasses transport management, material handling, and warehouse inventory, order processing, distribution, third party logistics and reverse logistics activities. Ittmenn and King (2010), state that logistics encompasses all the information and material flow in the organization right from the point where the product or service is needed, to the management of incoming of raw materials, production, storage of finished products, delivery to customers and "after sales service".

According to Lambert and Burdurglo (2000), the main function of logistics managers involve planning and organizing of inventory, purchasing, transportation and warehousing activities. They further classify logistics into inbound logistics and outbound logistics. The former refers to activities such as procurement, material handling, transport and storage. The latter includes activities such as collection, maintenance, delivery or distribution of the items to the final consumer. Grant (2006) observes that logistics has evolved from a mere transport function to a strategic, cross functional and global activity that supplies raw material to factories and distributing finished goods to warehouses and customer outlets, in a highly fragmented value chain in a global economy.

Ristovska, Kozuharov and Petkovski (2017) observe that due to development in information technology has led to enhanced flow of information around the world which has led to increased information flow globally. They say that logistics is an important element which provides management with the total cost of operation as well as increasing efficiency in the company's business operations. Through a collaborated effort among supply chain players, together with a responsive approach, an organization can achieve better competitiveness through reduced lead time. This ensures that the end user not only gets value for money, the level of uncertainty in the industry is also reduced.

Rabinovich and Knemeyer (2006) came up with a new breed of logistics related organizations: logistics providers that support internet supply chains. These firms help the internet firms to integrate their operations with other logistics companies in order to effectively and efficiently fulfill the needs of their customers. These service providers provide relationships with both internet sellers and third party logistics providers and integrate the selling and flow processes throughout the supply chain.Lai and Cheng (2003), emphasize the importance of supply chain focus on the aspect of logistics transport providers as they function to link suppliers, manufacturers, sellers and customers throughout the supply chain.

Spillin (2013), opines that logistics management plays a major role in the market and its volume of business has attained substantial levels in several economies as a result of this. This has led to logistics management to be seen as an effective contributor to the competitiveness of a country. Ittmenn and King (2010) state that satisfaction of the needs and demands of goods for customers can only be achieved through proper and cost effective delivery of goods and services.Vlachos (2016) highlights six logistics capabilities that can impact on a company's performance which include logistics information management, close loop capability, supply chain integration, supply chain coordination, conformity capability and institutional incentives.

In the current business environment, logistics management strategy contributes greatly to overall corporate governance of an organization especially in the area of asset management and finance flow. According to Klosster (2009), devoid of a well-developed transport system, benefits of logistics cannot be fully enjoyed. A good transport system should provide increased efficiency, improved quality of service and a reduction in operation costs. An improvement in the transport sector requires concerted efforts in both public and private sector.

Global Logistics Management

In a study carried out by Ittmen and King (2010) for the Bureau of Transport and Economics (BTE) in Australia, it was found out that logistics systems had a major impact on the Australian economy. This study emphasized the importance of logistics management to a country's economy. With the advent of Globalization, there has been witnessed increased competition as a result of broadened market place. This has led customers to put great demand on the manufacturers not only to increase quality, but also to enhance service levels. Laosirihongthong and Dangayath (2005) further observe that one of the ways of improving efficiency by the manufacturing firms is to improve logistics performance. Hong and Vonderembse (2011) did a study in Korea in a leading logistics service provider known as Korean Express and observed that the volume of products, information and flow of service increased heavily, though this was blemished by logistics related challenges which included inability to handle increasing volumes of goods and supplies. According to Yadav (2015), a significant amount of money has been invested into global health initiatives but still availability of drugs is poor in several public health facilities. This researcher further observes that the increase in product volume of drugs, laboratory supplies, vaccines, mosquito nets and diagnostic kits has put more pressure on an already inadequately resourced supply chain. In the USA and many other developed countries, pharmaceuticals used are purchased by patients in retail pharmacies. The structure is such that a network of private distributors and wholesalers supply these products to hospital pharmacies and retail outlets twice a week.

According to Hansom & Berman (1998), in developing countries, pharmacies are considered to play a major role in national healthcare management since they provide over-the-counter and prescription drugs besides giving medical advice. Both controlled drugs and over-the-counter medicines are in some cases dispensed in informal settings, market places and kiosks. However there is no sufficient data or information on the number of these informal settings and kiosks. Tseng, Yue and Taylor (2005) observed that as a result of globalization and nationalization in the recent past, the importance of logistics management has seen growth in various spheres. This is further proved by a World Bank report on logistics performance which stated that a competitive network of global logistics would be a backbone of international trade.

Statement of the Problem

The healthcare system in Kenya has been facing several challenges some of which are logistics related. The Kenyan health sector comprises of Ministry of Health, faith based organizations, Non-Governmental organizations and private sector. For medical supplies to reach the user in time, it is crucial to integrate all the logistics activities since this can create value for money (Annan, 2013). Tarty (2011) stated that the healthcare system in Kenya is facing several

challenges making it difficult for supply chain to operate efficiently and effectively. Bakker (2010) observed that when a logistic network is inefficient, healthcare facilities will experience longer lead times and also stock outs .Kazi (2012), stated that in Kenya, several complaints arise from the public regarding erratic supplies of drugs and other medical supplies. According to Opati (2018), KEMSA, has in the past received bad publicity and its reputation dented because of inconsistent customer service and also due to operational inefficiencies. This has led to its decline in performance. In 2008 it began carrying out institutional reforms so as to redeem its image and also improve on its processes so as to ensure that it delivers on its mandate. The core mandate of KEMSA is to ensure timely and efficient distribution of medical supplies and equipment to all public health facilities within Kenya. However, despite a lot of resources being invested by the Kenyan government and other partners like USAID, service delivery of medical equipment and supplies has not billed up to the required local and global standards. It therefore emerges that the logistics management procedures adopted by KEMSA have an effect on customer satisfaction in terms of timely distribution of medical supplies. Several studies have been done relating to logistics management in public health facilities, however no one has been done specifically on how logistics management influences customer satisfaction in public health facilities in Kisumu county It is against this backdrop of challenges in distribution and transportation among others that this study aims to determine how these logistics practices affect customer satisfaction in public health facilities in Kisumu County.

Research Objectives

i) To examine the extent to which product storage management affects customer satisfaction in public health facilities within Kisumu County.

Research Hypothesis

H_{O1}: Product storage management does not affect customer satisfaction in public health facilities within Kisumu County.

Significance of the Study

This study will help all stakeholders in the supply chain to adopt new and better logistics approaches in the Health Sector in Kenya. This study will also help organizations do not have logistics management mechanisms to be able to get an opportunity to do so. It will also help organizations come up with best practices in relation to logistics in the Health sector, not only in Kisumu County but throughout the country.The findings of this study will also help the Kenyan government in conjunction with other players in the Health sector to come up with various legal frameworks that may help in enhancing customer satisfaction and also ensuring that whatever products that reach the consumers in a timely and efficient manner.

Scholars and academicians shall also benefit from this study. In addition to the several studies of this nature that have been done, the findings this study will add new knowledge to an existing pool of knowledge.

Scope of the Study

This research proposal aims to determine the influence of logistics on customer satisfaction among public health facilities that are supplied with products by KEMSA within Kisumu County. The independent variables are product storage, transport management, distribution management and Inventory management practices. This study will be carried out in Kisumu County. The target population of this study comprised of staff in the pharmacy, procurement and stores departments in this organization. A total of seventy one respondents shall be targeted, drawn from level four and level five public health facilities within Kisumu County. This study will be guided by theory of constraints, supply chain management theory and distribution resource planning theory. The independent variables in this study are product storage, transportation, distribution and inventory practices while the dependent variable is customer satisfaction.

Limitation of the Study

There are various challenges encountered during the study. The questionnaire contained closed ended questions which limited the respondents' opinion regarding the study variables however this was addressed by ensuring that the questions captured in the questionnaire were able to facilitate collection of data that is comprehensively and objectively addressed all the study variables. The study experienced respondents withholding vital information in one way or another therefore the researcher had to assure the participants the confidentiality so that they could freely share the information more so the formal letter obtained from the University supported the idea too hence it reduced the aspect of being victimised after the

study. The other challenge was questions were raised by the respondents how the study would be important to them the researcher had to assure them that she was ready to share the findings with the organization so that it may help in implementing policies that would see the organization improve the performance hence it brings sustainability in employment

2. LITERATURE REVIEW

Theoretical Review

This section comprises of the theories that support this study. Additionally, this chapter provides the discussion of the empirical and general literature that relates to the study.

Game Theory.

According to Brickley,Smith and Zimmermann,(2000) this theory is concerned with general analysis of strategic interactions. It is concerned with optimal decision making when all decisions are considered to be rational with each anticipating the likely actions and reactions of its opponents. This theory is being used in the study of a wide range of interactions in both the political and competitive strategy. Game theory involves three elements. The first of the three is players. These are the people who are involved in business. They often include business managers, companies and individual business owners. The second element is the strategies that are available for use by the players at specific points during the game. This element also includes the rules of the game which are created in order to specify the sequences of all possible moves and actions. The last element is the outcome of each possible strategy and the anticipated payoffs based on these outcomes.

This theory is a formal study of decision-making where several players have to make choices that majorly affect the interest of other players. According to Xu, Pan Ballot (2013) it is also regarded as the official study of conflict and cooperation. This theory applies to situations where actions of several agents, who may be either individuals, groups, companies or a combination of all of these, are interdependent. These researchers also state that this theory is divided into two approaches: the non-cooperative theory and the cooperative theory. The former applies in situations whereby the players can achieve more benefit by cooperating than staying alone. This theory is applicable in this situation because transport and customer satisfaction, which are variables in this study, require a lot of cooperation cutting across all players in the supply chain globally. Drechsel and Kimms (2010) observe that cooperation is becoming more and more crucial to improve the global logistics performance. They further observe that a new cooperation model has proven efficient to reduce global cost and improve service rates in logistics. This theory is applicable, more so the cooperative approach, because a properly managed transport system is bound to enhance customer satisfaction through timely delivery of medical supplies.

Empirical Review

Product Storage Management

Storage refers to the safekeeping of goods on a large scale in an orderly and systematic manner. According to Lambert (1998), warehousing is one of the important auxiliaries to trade. It creates time utility by bridging the time gap between production and consumption of goods. It also helps a company achieve benefits such as transport economies (combined shipment and full container load). A company can also enjoy production economies such as make-to-stock production policy. Warehouses also help an organization in taking advantage of quality purchase discounts and forward purchases which help in supporting the company's customer service policy. Chua and Teo (2008), define a warehouse a commercial building where goods are buffered and stored or a place where raw materials are stored until they are required either for consumption or production. Hompel and Shmidt (2007) explained warehouse management to include improvement and control of multifaceted distribution processes and is dependent on the tasks to be executed and on the market in which the warehouse operates in.

Tompkins (2003), states that warehouse management has a goal of effectively organizing the activities in the warehouse. It involves planning, and controlling techniques to run the warehouse. With the former involving what should be done and why it should be done. The latter is concerned with ensuring that the output is achieved. According to Bartholdi (2014), one of the functions of a warehouse is to match supply and customer demand. A challenge of managing a supply chain is

that demand may change quickly but supply takes longer to change. The other function is to consolidate products. This helps in reducing transport costs and also provides customer service. A warehouse also helps in postponing product differentiation by ensuring that generic product to be configured close to the consumer.

Tompkins (2003) cites the typical warehouse functions as: receiving, staging for cross-docking, reserve, forward and shipping. He opines that order picking is the most labour intensive and costly activity of most warehouses. This observation is in tandem with the one of Bartholdi and Hackman (2011), who observed that approximately 55% of total warehouse operating costs are related to order-picking operations.

According to Linder and Harold (2002), storage systems are essential of a logistics system since they allow one to overcome temporary, spatial, quantitative and qualitative mismatch between the availability and demand for material in the production , marketing and in consumption. They highlight the main objectives of a logistics storage system to include: organization of a rational system of storage operations at minimal cost to perform logistics operations, efficient use of all components, identification and mobilization of surplus unused property and provision of timely and complete information about the dynamics in changes in inventory. Makarenko (2003) emphasizes the importance of analyzing the use of materials since this helps in determining the savings in costs to be attained and also cost overruns.

The layout of the warehouse is also important for an organization to achieve efficiency. By reducing the time spent when moving from one point to other picking items, an organization can increase productivity. Carol (2000), found out that warehouse layout had a big effect on order picking travel distance. The researcher states that layout design has an effect of more than 60% of the travel distance. Tsige (2013) highlights the importance of technology in warehouse operations by stating that world class warehouse operations have adopted hand held Radio Frequency readers and also pick-to light and voice recognition technology. This has forced warehouses to phase out hard copy pick tickets since they were prone to inefficiencies and human error.

Linder and Harold (2002) state that storage systems can be created at the beginning, midstream and at the end of the freight traffic or industrial processes for the temporary accumulation of goods and timely provision of industrial and commercial structures with material resource in accordance with the internal market needs. They further observe that between production and transport and also between the times when goods leave the manufacturing entities to the customers, there have to be storage facilities whose work should be to smooth out uneven cycles of production, consumption and operation of various types of transport. As such the overall promotion of material flow of logistics chains from the producers and consumers must take into account the presence of a network of different storage systems. According to them a warehouse is a complex technical structure that consists of many interrelated elements, has a definite structure and performs a number of functions to transform material flow as well as the generation and processing of goods for the consumer, As such a warehouse should not be considered in isolation, but as an integral component of the supply chain.

Several researches have been done globally, regionally and locally relating to logistics management practices in the area of medical supplies. Rivtovska et.al (2017) carried out a research on the Impact of Logistics practices on company performance. The study conducted a sample of eighty respondents in Macedonia. The study found out that logistics management was necessary for increasing business efficiency, customer satisfaction and competitiveness. Ghoumrassi and Tigu (2017) carried out a study on the Impact of Logistics Management on Customer Satisfaction. The study respondents were drawn from multiple sectors of the economy. The study findings were that logistics management had a big impact on customer satisfaction and also that companies using logistics management had higher satisfaction levels than those that don't have.

Hyvonen (2007) conducted a study on the impact of logistics management practices among selected firms in Finland. The study findings were that if information technology was applied to logistics management, there was a resultant increase in sales and customer satisfaction. Vijayaraghavan and Raju (2008) did a study on how transport and logistics management had influence on performance among Indian based companies. The study found out that there was a positive relationship between logistics management and performance. In Rwanda, Njeri (2016) did a study on the effects of transportation of oil on performance of oil marketing firms in Rwanda. The study found out that transportation had a great bearing on performance of oil marketing companies in Rwanda.

In Kenya several studies have been undertaken in the area of logistics management. Mugo (2013) did a study on logistics and transportation among mobile phone companies in Kenya. The study found out that logistics greatly contributes to efficiency in the operations of the companies through enhancement of business activities and reduction of aggregate costs besides minimizing business risks. Bwari (2016) conducted a study in EABL on supply chain activities. The study findings were that inventory control, distribution management, transportation management and warehousing management influenced supply chain performance. Mwangangi (2016) investigated the influence of logistics practices on performance of manufacturing firms in Kenya. The study found out that there was a positive relationship between logistics management and performance of manufacturing companies in Kenya.

Mangala (2019) carried out a study on the impact of logistics management practices on performance of oil marketing companies in Kenya. The findings of this study were that logistics management activities had an influence on performance of oil marketing companies in Kenya. Nuahn (2015) carried out a study on the impact of logistics and transport practices on performance of Kenya Cooperative Creameries. The study found that there was a strong positive relationship between transport and logistics performance at KCC.

Conceptual Framework

Product Storage Management		**Customer Satisfaction**
• Product packaging • Product labelling • Load planning	→	• Repeat purchase • Order fulfillment • Referrals • Positive statements • Problem solving
Independent Variable		**Dependent Variable**
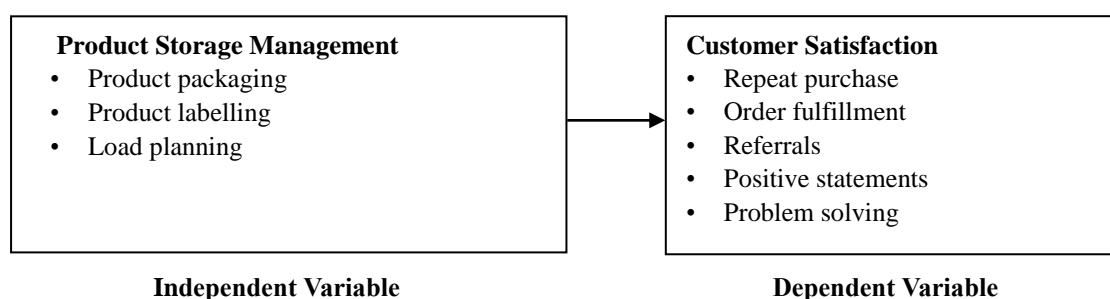
Figure 2.1: Conceptual Framework.

Critique of the Existing Literature Relevant to the Study

Mwangangi (2016), in his study on the influence of logistics management practices on performance of manufacturing firms in Kenya, used the e- mail survey method. The study looked at logistics management in manufacturing sector as a whole whereas this study intends to confine itself to influence of logistics management practices among private medical suppliers in Kisumu County, Kenya. In the study on impact of logistics and transport practices on performance of KCC, Nuahn (2015) used transport management, logistics management, distribution management and logistics information management as independent variables. This study is going to use similar independent variables except logistics information management. In my case, I shall use warehouse management as one of the independent variables.

Mangala (2019) did a study on the influence of logistics management practices on performance of oil marketing companies in Kenya. This study used similar independent variables to my study; however, the study had a sample target population of 164 employees, whereas my study has a smaller target population of 60 people who are different players in the logistics chain.

3. RESEARCH METHODOLOGY

Research design

According to Kerlinger (1986), research design is a plan and structure of investigation so conceived as to obtain answers to research questions. The plan is overall scheme or programme of the research. It includes an outline of what the investigator will do from writing the hypothesis and their operational implications to the final analysis of data. A research design expresses both the structure of the research problem and a plan of investigation used to obtain empirical evidence on relations of the problem. As such it can be described as a strategy for a study and a plan by which the strategy will be carried out. It specifies methods and procedures for data collection, data measurement and analysis of data. This study adopted a descriptive cross sectional research design. According to Cooper & Schindler (2006), this approach involves collecting data from a selected subset or from a population at one specific point in time. A descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orodho 2003). It

determines and reports the way things are and attempts to describe characteristics associated with target population, estimates of proportions of a population that have these characteristics and discovery of associations among other different variables. Cross sectional surveys have been used in previous studies on logistics including Serut (2013) and Muttimos (2014).

Target Population

The population of this study shall comprise of employees in public health facilities who are responsible for receipt, storage and distribution of medical supplies and equipment in the public health facilities. Staffs from these departments have been selected because they are the ones who are involved in the supply chain processes right from when the need of supplies arises up to when the needs are fulfilled. The target population for this study is 71 respondents.

Sampling Frame

A sampling frame is the actual set of units from which a sample has been drawn (Mugenda & Mugenda 2003).It is a list of items where a representative sample is drawn for the purposes of the research. The sampling frame of this study will include permanent employees in these facilities working in pharmacy, procurement and warehouse departments and a purposive sampling technique was used to select participants.

Sample Size and Sampling technique

A sampling frame is the actual set of units from which a sample has been drawn (Mugenda & Mugenda 2003).It is a list of items where a representative sample is drawn for the purposes of the research. The sampling frame of this study will include permanent employees in these facilities working in pharmacy, procurement and warehouse departments and a purposive sampling technique was used to select participants. Yamane (1967) formula mentioned below was used to calculate the sample size:

$$n = \frac{N}{1+N(e)^2}$$

Where n = the sample size

N= the population size

e = the acceptable sampling error

$$n = \frac{71}{1+71(0.05)^2} = 60$$

Research Instruments

This researcher used primary data. This is data that was being collected for the first time and thus happens to be original in character. This study will use structured questionnaires to collect data. Questionnaires are commonly used to obtain information about a population. The questionnaires will be self-administered by the researcher through the drop and pick technique. This technique gives the respondent sufficient time to complete the questionnaire. Likert type questions will be provided to respondents. A five point likert scale shall be used.

Pilot Test

The reliability and validity of the research instrument will be tested through a pilot test. Orodho (2003) stated that a pilot test helps to test the reliability and validity of instruments that are meant to collect data. Validity denotes the level to which an instrument measures what is intended to measure. Questionnaires for the pilot test will be administered to 6 respondents drawn from all the departments. This amounts to 10% of the 60 respondents. The respondents who will take part in the pilot study will not be included in the main study.

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Reliability

Reliability of data speaks of the extent to which results are consistent over time and an accurate representation of the total population under study (Joppe, 2000). If the results of the study can be reproduced under a similar methodology, then the research instrument is said to be reliable. This study used an internal consistency measure known as Cronbach's alpha (a). The recommended value is 0.7.Reliability of an instrument being the consistency of an instrument in measuring what it is intended to measure was established by first ensuring internal constancy approach followed by carrying out a pilot study. A questionnaire is considered reliable if the Cronbach's Alpha coefficient is greater than 0.70 (Katou, 2008). The four independent variables and the dependent variable were subjected to reliability test using SPSS and the results obtained are shown in Table 3.1. The results indicated that all the variables obtained had Cronbach's Alpha greater than 0.7 thereby achieving the recommended 0.7 for internal consistence of data (Mugenda & Mugenda, 2008).

Table 3.1: Reliability test

Variable	Cronbach alpha
Product storage management	.817
Transport management	.914
Distribution management	.858
Inventory management	.872
Customer satisfaction	.936

Validity

Data validity is the degree to which a test measures that which it is content validity supposed to measure (Porter, 2010). Mugenda (2008) define validity as the degree to which the research results obtained from the analysis of the data represent the phenomenon under study. According to Table 4.2 Kaiser –Meyer -Olkin measure of sampling adequacy indicated KMO value of greater than 0.5 meaning thereby that the sample size was good enough to treat the sampling data as normally distributed. Bartlett's test sphericity which tested the null hypothesis item to item correlation matrix based on the responses received from respondents for all the effective variables was an identity matrix. The Bartlett's test was evaluated through chi-square test having as shown in Table 3.2 for the entire variables and were all significant at 0.000 level of significant, indicating that null hypothesis is rejected.

Table 3.2: Test for Validity

Factors	KMO test	Barlett's test of sphericity		
		Chi-Square	Df	Sig.
Product storage management	0.921	118.54	3	0.001
Transport management	0.826	176.65	3	0.000
Distribution management	0.916	127.11	3	0.003
Inventory management	0.924	192.18	3	0.021
Customer satisfaction	0.814	176.02	3	0.004

Extraction Method: Principal Component Analysis.

Data Processing and Analysis

The completed questionnaires shall be edited for completeness and consistency. Quantitative data collected shall be analyzed by the use of descriptive statistics using Statistical Package for the Social Sciences (SPSS Version 21). Descriptive analyses such as mean and standard deviations will be used to present data. The inferential analysis method used was regression analysis. It provides a means of objectively assessing the degree of the correlation between the independent variables and the dependent variable. The regression coefficients specify the comparative importance of each of the independent variables in the prediction of the dependent variable. The regression question **is:**

Y= α+β1+X1+β2+X2+β3+X3+β4+X4+ε

Y= Customer perception

β0=coefficient of the factor

β1 to β4 = regression coefficients

X1= Reuse reverse logistics practices

X2= Remanufacture reverse logistics practices

X3= Recycle reverse logistics practices

X4= Product return reverse logistics practices

ε=Error term

4. RESEARCH FINDINGS AND DISCUSSIONS

Response Rate

In this study, out of a total of 60 questionnaires that were distributed to the sampled respondents, all of them were filled and returned. Therefore, all of them were correctly filled and which made up a response rate of 100.0%.

Table 4.1: Questionnaire Return Rate

		Frequency	Percent
Valid	Returned	60	100.0
	Not Returned	0	0.0
	Total	60	100.0

The study established that the researcher employed various strategic techniques that were attributed to the high response rate. For example, the researcher recruited one research assistant who was tasked with the distribution and collection of the questionnaires.

Descriptive Statistics of the Variables Product Storage Management and Customer Satisfaction

The study used the parameters where: 1= Not at All (NA), 2 = Small Extent (SE), 3=Neutral (N) , 4 = Moderate Extent (ME) and 5= Great Extent (GE). A summary of the findings is as shown in Table 4.2.

Table 4.2: Responses on Product Storage   Management

	N	NA (%)	SE (%)	N (%)	ME (%)	GE (%)	Mean	Std. Dev.	Max	Min
This organization has a functional stock labeling system.	60	0 (0.0)	3 (5.0)	12 (20.0)	19 (31.7)	26 (43.3	4.13	.911	5	2
This organization has well documented warehouse procedures.	60	0 (0.0)	0 (0.0)	4 (6.7)	14 (23.3)	42 (70.0)	4.63	.610	5	3
Our product storage systems greatly assist in ease of identification and retrieval of stock items.	60	0 (0.0)	0 (0.0)	5 (8.3)	22 (36.7)	33 (55.0)	4.47	.650	5	3
We regularly review our warehouse operating procedures.	60	0 (0.0)	2 (3.3)	4 (6.7)	27 (45.0)	27 (45.0)	4.32	.748	5	2
This organization has way of monitoring slow moving and expired medical supplies.	60	0 (0.0)	0 (0.0)	5 (8.3)	20 (33.3)	35 (58.3)	4.50	.651	5	3

This organization has a functional stock labeling system(mean = 4.13; Std dev= 0.911).This organization has well documented warehouse procedures(mean = 4.63; Std dev= 0.610).Our product storage systems greatly assist in ease of identification and retrieval of stock items(mean = 4.47; Std dev= 0.650).We regularly review our warehouse operating procedures(mean = 4.32; Std dev= 0.748).This organization has way of monitoring slow moving and expired medical supplies(mean = 4.50; Std dev= 0.651).

Table 4.3: Responses on Customer Satisfaction

	N	SD (%)	D (%)	U (%)	A (%)	SA (%)	Mean	Std. Dev.	Max	Min
I buy only from this organization.	60	17 (28.3)	13 (21.7)	13 (21.7)	14 (23.3)	3 (5.0)	2.55	1.268	5	1
I like the services I receive from the organization.	60	3 (5.0)	15 (25.0)	22 (36.7)	11 (18.3)	9 (15.0)	3.13	1.112	5	0
I would not hesitate introduce others to this organization	60	2 (3.3)	9 (15.0)	28 (46.7)	12 (20.0)	9 (15.0)	3.28	1.010	5	1
I always receive my orders at the right time	60	5 (8.3)	21 (35.0)	22 (36.7)	5 (8.3)	7 (11.7)	2.80	1.102	5	1
I check out for new products/ services by this organization	60	2 (3.3)	9 (15.0)	19 (31.7)	21 (35.0)	9 (15.0)	3.43	1.031	5	1

I buy only from this organization (mean = 2.55; Std dev= 1.268).I like the services I receive from the organization(mean = 3.13; Std dev= 1.112).I would not hesitate introduce others to this organization(mean = 3.28; Std dev= 1.010)I always receive my orders at the right time(mean = 2.80; Std dev= 1.102) I check out for new products/ services by this organization(mean = 3.43; Std dev= 1.031).The people were of the opinion not agreeing with the statements hence showing being undecided on how customer satisfaction was being affected by the independent variables

Inferential Statistics Analysis

Table 4.4: Correlation analysis of the study variables

		Product storage management	Transport management	Distribution management	Inventory management	Consumer satisfaction
Product storage	Pearson Correlation	1				
	Sig. (2-tailed)			.		
Transport management	Pearson Correlation	-.017	1			
	Sig. (2-tailed)	.896		.		
Distribution management	Pearson Correlation	.052	.542**	1		
	Sig. (2-tailed)	.695	.000			
Inventory management	Pearson Correlation	.336**	.097	.075	1	
	Sig. (2-tailed)	.009	.459	.570		
Consumer satisfaction	Pearson Correlation	-.085	.019	.073	.205	1
	Sig. (2-tailed)	.519	.885	.578	.115	
	N	60	60	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.5: ANOVA Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	108.932	4	27.233	1.124	.355[a]
	Residual	1332.668	56	24.230		
	Total	1441.600	60			

a. Predictors: (Constant), Warehouse management, transport management, distribution management, inventory management

b. Dependent Variable: Customer satisfaction

The ANOVA test is used to determine whether the model is important in predicting customer satisfaction. At 0.05 level of significance the ANOVA test indicated that in this model the independent variables namely; Product storage management, transport management, distribution management, inventory management were not predictors of customer satisfaction as indicated by significance value=0.355 which is greater than 0.05 level of significance (p=0.355 > 0.05).

Table 4.6: Model coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.584	12.311		.535	.595
	Warehouse management	-.331	.254	-.180	.-1.303	.198
	Transport management	-.195	.486	-.062	-.400	.691
	Distribution management	.237	.380	.097	.624	.535
	Inventory management	.689	.360	.265	1.912	.061

a. Dependent Variable: Customer satisfaction

Letting Y be customer satisfaction, X_1 be product storage management, X_2 be transport management, X_3 distribution management, and X_4 be inventory management be using the regression coefficients in Table 4.6, we have;

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

$$Y = 6.584 - 0.331 * X_1 - 0.195 * X_2 + 0.237 * X_3 + 0.689 * X_4$$

From the equation above when product storage management is increased by one-unit customer satisfaction will decrease by 0.331, a unit increase in transport management will result to 0.195 decrease in customer satisfaction, a unit increase in distribution management will result to 0.237 increase in customer satisfaction, and finally a unit increase in inventory management will result to 0.689 increase in customer satisfaction. It is worthy noting that transport management has more significance followed by distribution management, followed by warehouse management followed by inventory management at a given constant

Hypotheses Testing

H_{o1} Product storage management does not affect customer satisfaction in public health facilities within Kisumu County.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.085[a]	.007	-.010	4.9675

From the study findings in Table 4.7, the value of R-square is 0.007. This implies that, 0.7% of variation of customer satisfaction was explained by product storage management.

Table 4.8: ANOVA Test

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.391	1	10.391	.421	.0.519[b]
	Residual	1431.2019	59	24.676		
	Total	1441.600	60			

a. Predictors: (Constant), Warehouse management

b. Dependent Variable: Customer satisfaction

From the findings in Table 4.8, at 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; product storage management is not important in predicting of customer satisfaction as indicated by significance value=0.519 which is greater than 0.05 level of significance (p=0.519> 0.05).

Table 4.9: Coefficients of the Model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.640	5.340		3.491	.001
	Warehouse Management	-.156	.240	-.085	-.649	.519

a. Dependent Variable: Customer satisfaction

From Table 4.9, the study findings revealed that product storage management had no significant influence on customer satisfaction (t-statistic=-.649, p-value=0.519 > 0.05).

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Findings

This section presents a summary of both descriptive and inferential statistical findings. The summary captures the key results and interpretations on the influence of logistics on customer satisfaction among private medical suppliers, a case study of Kisumu Physiotherapy and Medical Supplies.

Product Storage Management on Customer Satisfaction.

From the findings value of R-square was 0.007. This implies that, 0.7% of variation of customer satisfaction was explained by product storage management at 0.05 level of significance the ANOVA test indicated that in this model the independent variable namely; product storage management was not important in predicting of customer satisfaction as indicated by significance value=0.519 which is greater than 0.05 level of significance (p=0.519> 0.05).

Conclusions of the study

Logistics on customer satisfaction was studied in terms of product storage management, transport management, distribution management and inventory management and their influence. The study has made a number of important contributions. The findings of the study resulted in an understanding that among the logistics product storage management, transport management, distribution management and inventory management have no influence on customer satisfaction. The intention of this study is to produce relevant results which are practical for organizations. Although some organizations have realized the importance of implementing measures in logistics, often they exactly not understand what to implement for long-term benefits. This is due to lack of understanding of what constitutes a comprehensive set of logistic factors. The findings of this study have a number of significant implications for managers. First, managers can use the results to assess what decision-making processes they can use to increase the performance. It also provides managers with an indication on areas that requires higher or lower investment to support responsiveness. The practitioners may gain more understanding as well as direction in the academic body of knowledge, which involves relationship in performance. The findings of the study will also assist policy makers in providing justification for allocation of resources t and maintenance. This study makes a significant contribution by providing a framework for decision making

Recommendations

In today's changing market environments, customer satisfaction is perceived to be a significant competitive weapon. The study therefore recommends that for organizations to be more competitive so as to cope with more highly dynamic environments there is need to be keener in to enhancing their logistic factors. To achieve a competitive advantage in a dynamic business environment, the study recommends that firms should streamline with all parties in logistic matters in order to improve customer satisfaction. In growing technological advances and the emergence of the global information organization there is need to embrace technology. Hence a more in-depth analysis is required to further the findings about logistic, therefore further research is recommended to confirm the findings of the study in developing economy

Recommendations for future studies

   i. The current research focused on logistic factors in Kenya so it can also be done on a wider perspective to include all regions.

   ii. The relationship between logistic factors and organizational performance in Kenya.

iii. Across-boundary research on other organizations other than what was mentioned. In future studies should collect data from a larger population and compare with other firms to further validate or extend theories and variables identified in this study.

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