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Effect of Supply Chain Management Relationship on the Performance of Public Hospitals in Nairobi County

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Abstract: **The purpose of the study was to establish the effect of supply chain management relationship on the performance of public hospitals in Kenya.The study was guided by the following objectives: to assess the influence of strategic supplier partnership on the performance of public hospitals in Nairobi County,to evaluate the influence of Customer Relationship on the performance of public hospitals in Nairobi County,to assess the influence of Information sharing on the performance of public hospitals in Nairobi County and finally to determine the influence of Supply chain innovation onthe performance of public hospitals in Nairobi County.The researcher used descriptive research design.This study will focus on all the 163 employees working with procurement department in various public hospitals for procurement of healthcare products and services in Nairobi County.The study used census where all employees were recruited to take part in this study.This study used primary data which was collected through use of questionnaires. Afive-point Likert scale questionnaire was used.. The researcher contracted two research assistants to collect data. The collected data from the questionnaire was be been given codes, keyed in the computer and eventually edited for completeness. Statistical Package for the Social Sciences (SPSS) and Microsoft Excel was used data analysis.Regarding strategic supplier partnership, the study established that strategic supplier partnership had a significant and positive effect on the performance of public hospitals in Nairobi County.The study also established that customer relationship leadership Styles had a significant and positive effect on the performance of public hospitals in Nairobi County.The study further established that information sharing had significant and a positive effect on the performance of public hospitals in Nairobi County.The study finally established that supply chain innovation had significant and a positive effect on the performance of public hospitals in Nairobi County.**
Keyword: **Customer relationship, Information sharing and Supply chain innovation**

I. INTRODUCTION

1.1 Background of the study

Hospitals provide health care through continuous prevention, diagnosis and treatment of diseases, physical and meta disabilities in human beings. The logistics in healthcare constitute of pharmaceutical products (pratyusha, 2014), medical and surgical supplies, devices, and other products as required by Healthcare Professionals like Doctors, nurses and administrative staff. The on-time action, precision and positive results are of paramount importance in healthcare. The supply chains Management (SCM) should optimize efficiency and effectiveness of the treatment provided. The sharp rise of driving costs with maintaining standards and regulation of hospitals is a tough task. As every subsystem work independently, aligning all subsystems together is a difficult task. At present hospitals are working on identifying weak areas in which work could be done to improve quality of service and patient care. The SCM's foremost goal should be transparency in all processes.

Supply chain activities cover everything from product development, sourcing, production and logistics as well as the information system. Supply chain management practices which include information sharing, lean practices, strategic

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supplier partnerships, customer relation and top managementsupport have become an essential factor for low performing firms to remain competitive in the global race (Okongwu et al, 2015) Tutuncu and Kucukusta (2018) goes beyond that and states that supply chain management lead to changes in the structure of the organization by integrating internal functions and linking those with the external operation of suppliers, customers and other stake holders of the supply chain. Supply chain performance refers to the extended supply chain's activities in meeting end-customer requirements, including product availability, on-time delivery, and all the necessary inventory and capacity in the supply chains to deliver that performance in a responsive manner.

1.2 Statement of the problem

Shortage in supply of medical products such as drugs continues to be challenges globally; According to the World Health Organization (WHO), health product shortage is a multifaceted and global problem, affecting both developing and developed countries. Health care products are a crucial part of healthcare, and their availability is important to ensure patients' access to quality and affordable services. Health product shortages and misuse have a far-reaching effect on patients' well-being and the hospital's operations. A study conducted by Ganatra, Karimi, Shital, and Kayumba (2020). All the facilities had experienced both drug shortages and drug expiries with 75% of them having a drug fill rate of between 50% and 70%. This still remain a common challenge in most health facilities in Nairobi County despite dare consequences of this challenge among its citizens.

As the economy grows, more requirements emerge and the operation and management of this needs become more complex. Supply chain management is highly critical to the superior performance of health care organizations (Prasad &shaker, 2018). However, information flows and exchanges that foster operational processes such as joint investments, production forecasting and procurement planning in innovative programs can enhance the performance of the hospital supply chain (Tynkkynen and Vrangbaek, 2018; Prasad and Shankar, 2018; Oduor et al. 2020).

Various scholars have stressed the importance of supply chain management practices. For instances,Nsikan (2019) examined supply chain management practices and hospital operational efficiency revealed a positive correlation between hospital supply operation and supply chain management practices namely strategic supplier partnership, supplier selection decision and integration of information communication technologies. However, the study was carried out in Nigeria.Locally Miyare (2014) examined supply chain management practices and organizational performance of Kenol-Kobil which revealed a strong relationship with their organizational performance. Further, Odiambo (2014) studied supply chain management practices and service quality in public hospitals in Nairobi by establishing the impact of supply chain management practices on quality of services and provided a guide to improve the quality of healthcare services. Another study by Chesaro (2016) studied supply chain management practices and operational performance of multinational manufacturing firms in Kenya which revealed that supply chain management practices have a significant impact on the overall performance of multinational manufacturing firms in Kenya. Mbabu (2016) studied green practices and supply chain performance of Government hospitals in Nairobi County which revealed that green supply chain practices are closely related to performance of supply chain. The study was limited to level 4 and 5 hospitals as relied upon on Health survey report (2012).

Though public hospitals recognize the potentials of effective and efficient management of medical supply chain, there still exists insufficient knowledge concerning the elements of supply chain management practices success. Researchers have examined the supply chain management practices on various aspects which included organizational performance, service quality and operational performance. This therefore opened a research opportunity for the researcher to examine the relationship between supply chain management practices and performance of public hospitals in Nairobi County

1.3 Objectives of the Study

1.3.1 General Objective of the Study

The general objective of this study was to establish the effect of Supply Chain Management Relationship on the Performance of Public Hospitals in Nairobi County

1.3.2 Specific Objective of the Study

i. To assess the influence of strategic supplier partnership on the performance of public hospitals in Nairobi County.

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ii. To evaluate the influence of Customer Relationship on the performance of public hospitals in Nairobi County.
iii. To assess the influence of Information sharing on the performance of public hospitals in Nairobi Count.
iv. To determine the influence of Supply chain innovation on the performance of public hospitals in Nairobi County.

2.0 Theoretical Framework

2.1 Theory

a) Principal-Agent theory

Principal-Agent theory was developed by Ross and Mitnick (1970). It is concerned with agency relationships. The two parties have an agency relationship when they cooperate and engage in an association when one party (the principal) delegates decisions and/or work to another (an agent) act on its behalf (Eisenhardt, 2014). The important assumptions underlying agency theory is that; potential goal conflicts exist between principals and agents; each party acts in its own self-interest; information asymmetry frequently exists between principals and agents; agents arc more risk averse than the principal; and efficiency is the effectiveness criterion. Two potential problems stemming from these assumptions may arise in agency relationships: an agency problem and a risk sharing problem. An agency problem appears when agents' goals differ from the principals' and it is difficult or expensive to verify whether agents have appropriately performed the delegated work (moral hazard). This problem also arises when it is difficult or expensive to verify that agents have the expertise to perform the delegated work (adverse select ion) that they claim to have. A risk-sharing problem arises when principals and agents have different attitudes towards risk that cause disagreements about act ions to be taken. The assumptions and prescriptions of agency theory fit naturally with the issues inherent in supply chain performance. In the process of managing supplier quality, buyers in agency relations arc faced with potential problems. By their nature, buyers expect suppliers to provide good quality and to improve the quality of supplied products and/or services, but suppliers may be reluctant to invest substantially in quality, especially if they perceive that buyers are reaping all the benefits. The difference between buyers and suppliers will result in the two parties concerning themselves only with their self-interest (Eisenhardt, 2014).

b) Dynamic Capabilities Theory

The aspect of dynamic capability was first coined by Teece, Pisano and Shucn in 1997. The theory describes an organization's ability to deliberately organize its resources in an effort to improve performance. According to Chien and Tsai (2016), dynamic capability refers to the ability to effectively adapt and respond to changes in the environment. Organizations should effectively and timely react to changes in its environment. This requires the adoption of different strategies that will harness multiple capabilities of the organization and put them into use. This will give the company the ability to integrate, develop and leverage on the environmental competitive advantage. Indeed, the current business world is very dynamic. Changes ranging from organizational stn1cturcs, culture, marketing and customer's tastes and preferences arc taking a different path. As such, organisations should have the ability to respond to these changes in the most effective manner (Chen & Tsai, 2012). The dynamic capability theory asserts that only organisations able to achieve this will actually be able to break even in this competitive world.

This theory insists on the key issues surrounding this sustainable competition. It focuses on the survival of an organization in the event of rapid changes. This is a trait senior manager in high end organisations ought to understand in order to keep all stakeholders happy during these tough and dynamic times. This theory is related to the subject matter since public hospitals today arc in a market that is highly dynamic and competitive. Changes in marketing strategy, organizational structure as well as tastes and preferences among customers are prevalent. Evidently, procurement integrates the in-house and external procurement components to address dynamics in the way organisations achieve operational excellence by reducing cost and saving on time used to procure goods (Kalau, 2016). Additionally, procurement will have a supply chain system that is up to date as far as trends in the market is concerned. This, in itself, equally implies that the organization's capabilities remain dynamic.

2.2 Conceptual Framework

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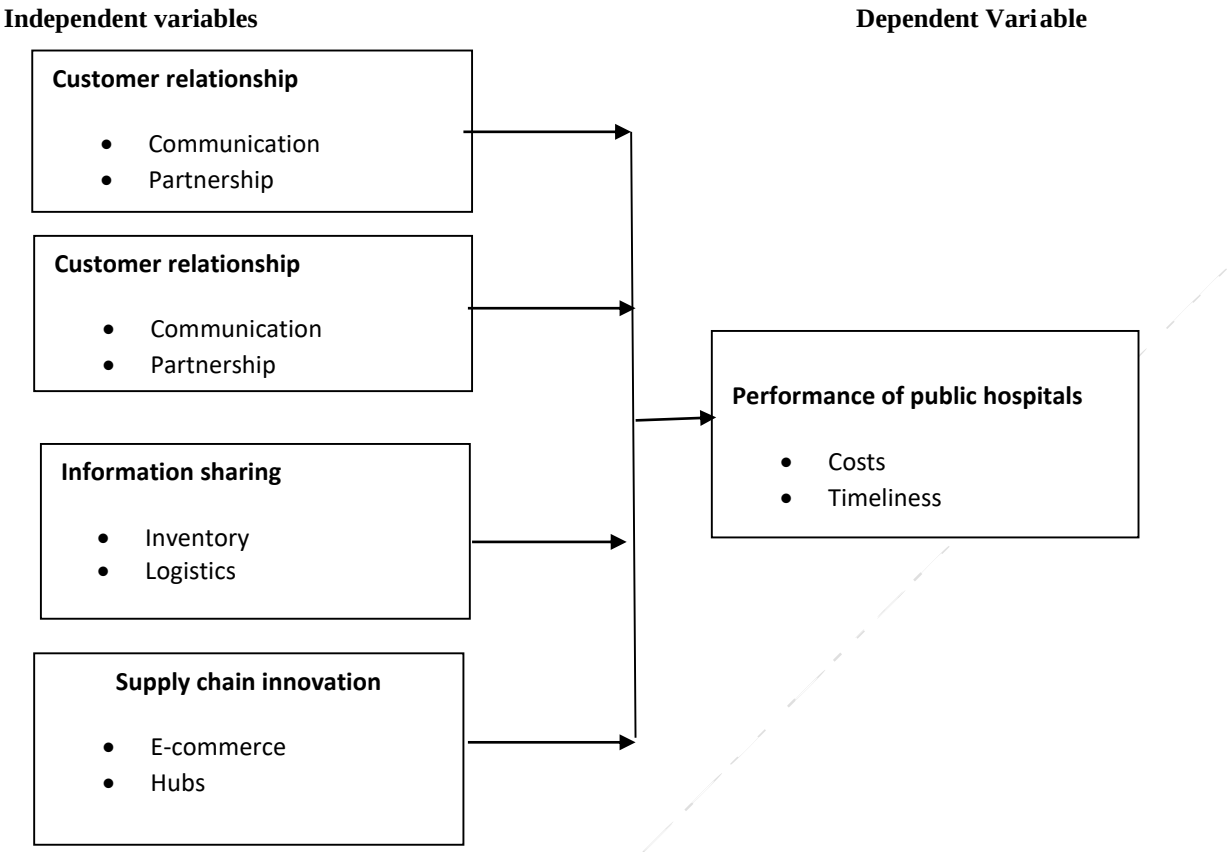

2.4 Empirical Review

Saviour and Essie (2019) conducted a study to assess the association between supply Chain Management Practices and Hospital Operational Efficiency.The study explores public hospitals in Nigeria to investigate the relationship between supply chain management practices and operational efficiency-cost minimization, delivery quality and service availability. Survey design was adopted to delineate the study population, select participants, and design appropriate method of data collection and analysis. Out of 584 healthcare supply chain executives that constituted the study population, 293 were selected from 18 public hospitals in Southern geopolitical zone of Nigeria using the multistage sampling method. The structured questionnaire was employed to glean relevant primary data which was analyzed quantitatively. The study found that operational efficiency was significantly and positively influenced by three major practices: strategic supplier partnership, supplier selection decision, and integration of information communication technologies among supply chain partners. Relevant implications of the findings for managers were highlighted and discussed.

Lee, Lee and Schniederjans (2011) conducted a study on Supply chain innovation and organizational performance in the healthcare industry. The study sought to describe the impact of SC innovation, supplier cooperation, SC efficiency, and quality management (QM) practices on organizational performance. This was tested using structural equation modeling based on data collected from 243 hospitals. The study found that the study support that organizational performance was positively associated with constructs of each SC innovation factor. Innovative design of SC has a significant impact on selection of and cooperation with excellent suppliers, improved SC efficiency, and encouragement of QM practices. The results suggest successful implementation of SC management is attained through continuous SC innovation with supplier cooperation, which in turn improves organizational performance.

Okiria, Mwirumubi, and Mpaata (2017) conducted a study to determine information Flow Management and the Effectiveness of the Supply Chain of Essential Medicines in the Public Sector in Uganda. The study assessed the relationship between the Information flow management in the public hospitals and the effectiveness of the downward supply chain of essential medicines in the selected 6 public hospitals in Uganda. A cross sectional descriptive and analytical survey was

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done with both qualitative and quantitative data collected. Two hospitals were regional referral and the four were general hospitals. The major findings of the study were that; sharing planning information, distribution schedules, knowledge of each other stock levels and new demand were statistically significant in influencing the downward supply chain effectiveness. Improved sharing of information that is accurate, timely and complete, development of computerized medicines management systems in the hospitals, Collaborative procurement planning at all levels, Improvement in records and record keeping and enhancement of online communication between the hospitals and the suppliers was significantly influencing the effectiveness of the supply chain.

Orang and Kwamboka (2020) conducted a study to determine the influence of healthcare information systems and policies on service delivery in selected private hospitals in Nairobi countyKenya. The study was carried out in four different private hospitals; the Nairobi Hospital, Aga Khan Hospital, M.P Shah Hospital and Mater Hospital. The four private hospitals represent the private hospitals in Kenya as they are the major private hospitals which are widely used and have implemented the use of healthcare information systems integration with the use policies in place and this forms a well unit of study analysis. The study utilized a descriptive research design while adopting a regression model to analyze data with a target population of 1617 from which a sample size of 168 respondents were drawn. The parameter of the findings indicated that service delivery in the hospitals has significantly influenced by the healthcare information system positively, regarding to policies the findings indicated that they have significantly influenced service delivery in the selected private hospitals; from the findings healthcare medical technologies have significant influenced the service delivery in selected private hospitals.

Laohasirichaikul, Chaipoopirutana and Combs (2011) assessed the effective customer relationship management of health care taking hospitals in Thailand. Their study investigated the effects and the relative importance of the four perceived service quality dimensions on corporate image, customer satisfaction, and customer loyalty. Factor analysis and multiple regression techniques were applied to data collected from 500 Thai outpatients of the five largest private hospitals in Bangkok. The findings indicate that the four dimensions significantly affected corporate image, customer satisfaction, and customer loyalty. More specifically, the doctor concern dimension is the most important factor affecting customer satisfaction and customer loyalty. The tangibles dimension is the most important factor affecting corporate image.

Kiruja and Ngugi (2019)conducted a study to assess influence of third party logistics management on performance of level four and five hospitals in Kenya.Primary research data was gathered using questionnaires; the questionnaires containing both open-ended and close-ended questions were administered. The research data was analyzed using qualitative techniques. Presentation of the quantitative analysis results was done in form of pie charts and bar graphs. Multiple regression analysis was used to establish the relations between the independent and dependent variables. The study established that the Relationship framework agreement helps the parties to understand to what extent they can build the foundation for their relationship. The more trust, transparency and cultural fit between a buyer and supplier, the more the parties are comfortable making investments in the relationship, innovations and continuous improvement opportunities that benefit both parties.

3. METHODOLOGY

The researcher used descriptive research design.This study focused on all the 163 employees working with procurement department in various public hospitals for procurement of healthcare products and services in Nairobi County. The study used census where all employees were recruited to take part in this study. This study used primary data which was collected through use of questionnaires. Five-point Likert scale questionnaire was used.. The researcher contracted two research assistants to collect data. The collected data from the questionnaire was be been given codes, keyed in the computer and eventually edited for completeness. Statistical Package for the Social Sciences (SPSS) and Microsoft Excel was used data analysis.

Model

Analysis of data used multiple regressions to test the research questions $Y=\beta+\beta1_{X1}+\beta2_{X2}+\beta3_{X3}+\beta4_{X4}+\varepsilon$Where,

Y = performance of public hospitals in Nairobi County

$\mathbf{X_1}$ = strategic supplier partnership

$\mathbf{X_2}$= customer relationships

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X_3 = information sharing
X_4 = supply chain innovation
While β_1, β_2, β_3 and β_4 were coefficients of determination and ε was the error term

4. REGRESSION RESULTS

Regression analysis denotes collection of statistical methods that investigate the relationship between more than one independent variable and one dependent variable (Paul & Zhang, 2010). Regression is often used when the intent of the analysis is prediction. The goal of regression is to arrive at the set of regression coefficients (B values), for independent variables that put the Y values expected from the equation as close to the Y values extracted as far as possible from the measurement. The computed regression coefficients lessen the total of the square deviations between the Y values predicted and obtained as well as refine the correlation between the Y values predicted and obtained for the data set(Paul & Zhang, 2010).

Regression analysis model summary

Table 1: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.970[a]	.941	.937	.33379
a. Predictors: (Constant), strategic supplier partnership, customer relationship, Information sharing and supply chain innovation				

A multiple linear regression analysis was performed to test the effect of the independent variables on the dependent variable. The average ratings for the four independent variables. The coefficient of determination and standard error of the regression model are shown in Table 1 above. Results indicate that R squared was 0.941 indicating that the independent variables explained 94.1% of the performance of public hospitals in Nairobi County. This indicates the model had good explanatory power. Further, the regression output in Table 1 presents the source of variance, mean of variances and the F value. The results indicate that the overall model was significant (f-value = 230.691; $p < 0.05$) and could provide important results. This indicates that the model could provide some predictive significance and was a good fit.

Table 2: Analysis of Variance of the Regression (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	102.808	4	25.702	230.691	.000[b]
	Residual	6.462	59	.111		
	Total	109.270	63			
a. Dependent Variable: performance of public hospitals						
b. Predictors: (Constant): strategic supplier partnership, customer relationship, Information sharing and supply chain innovation						

Further, the regression output on significance of the independent variables is presented in Table 3

Table 3: Significance of Independent Variables

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.308	.114		2.707	.000
	Strategic supplier partnership	.885	.052	.909	17.087	.000
	Customer relationship	.911	.040	.946	22.802	.002

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	Information sharing	.926	.034	.962	27.409	.003
	Supply chain innovation	.923	.043	.939	21.269	.004
a. Dependent Variable:performance of public hospitals						

The optimal regression model was:

$$Y=0.308+0.885X_1+0.911X_2+0.926X_3+0.923X_{4+}\varepsilon$$

The regression equation above has established that taking all factors into account (strategic supplier partnership, customer relationship, Information sharing and supply chain innovation) constant at zero, performance of public hospitals in Nairobi County will be 0.308.The findings presented also show that taking all other independent variables at zero, a unit increase in the strategic supplier partnership would lead to a 0.885 increase in the scores of the performance of public hospitals in Nairobi County and a unit increase in the scores of Customer Relationship would lead to a 0.911 increase of the performance of public hospitals in Nairobi County. Furthermore, unit increase in the Information sharing would lead to a 0.926 increase in the scores of the performance of public hospitals in Nairobi County. Finally, the findings shows that a unit increases in the scores of supply chain innovation would lead to a 0.923 increase in the performance of public hospitals in Nairobi County.

5. CONCLUSION

Regarding strategic supplier partnership, the study established that strategic supplier partnership had a significant and positive effect on the performance of public hospitals in Nairobi County. The study also established that customer relationship leadership Styles had a significant and positive effect on the performance of public hospitals in Nairobi County. The study further established that information sharing had significant and a positive effect on the performance of public hospitals in Nairobi County. The study finally established that supply chain innovation had significant and a positive effect on the performance of public hospitals in Nairobi County.

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