

Effect of Supply Chain Management Practices on Organizational Performance of Parastatals in Kenya.

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ABSTRACT: The aim of this study was to determine the effect of supply chain management practices on the performance of Kenya's state corporations. The study adopted a descriptive research design. A total of 142 parastatals were targeted from which 15 of them were selected to participate in the study. Purposive sampling was used to select two senior managers from each of the 15 parastatals. These respondents were selected from the finance and procurement departments. Questionnaires were used to collect primary data from the state corporations. Both descriptive and inferential statistics were used in the study. Inferential statistics conducted were regression analyses. Results indicated that outsourcing practices ($p=0.205>0.05$) have a negative but insignificant effect on organizational performance. On the other hand, inventory management practices ($p=0.006<0.05$), lean practices ($p=0.006<0.05$), and strategic supplier relationship management practices ($p=0.001<0.05$) all have a positive and significant effect on the performance of state corporations.

KEYWORDS: *Outsourcing, Inventory Management Practices, Lean Supply Chain Management Practices, Strategic Supplier Relationship Practices, Organizational Performance,*

I. INTRODUCTION

Organizations in the recent past have witnessed a number of occurrences that have forced them to rethink and strategize on innovative ways of managing their businesses. Additionally, the environment in which businesses operate has become unstable. Coupled with Globalization, ever-increasing technological advancement, cutthroat competition, complexities in the supply chain as well and the changing economic environment compel organizations to seek practices that will enhance efficiency and effectiveness in the firm. Supply Chain Management (SCM) enhances firm performance by ensuring the delivery of quality products, optimization of the organization's operations, and meeting or exceeding the customers' expectations. Organizations acquire and sustain competitive advantage by adopting effective and efficient SCM practices which also create customer value (Devaraj, 2007). This means that the firms that need to adopt efficient and effective practices should concentrate on supply chain management practices to meet customers' demands by ensuring the efficiency and effectiveness of the functions in the organization. According to Leuschner, Rodgers, & Charvet, (2013), there is a need to enhance supply chain management practices in order for easier management of the appropriate relationship and collaboration, sharing close partnerships, and comprehensive coordination of SCM activities. The effectiveness of the SCM practices cannot be enhanced individually but through interactions of various SCM practices. Effective utilization of the supply chain (SC) activities through SCM practices enhances the operational performance of the firm, which eventually affects the overall performance.

To be effective, supply chain management practices need a comprehensive effort to enhance the supply chain activities and functions. However, supply chain management practices are not devoid of challenges, especially in the parastatals. These challenges range from incongruent goals, a shift of focus from customer-forgotten relationships, and a unidirectional flow of information that requires comprehensive and clear attention for effective adoption in the organization (Koufterous, 2011). Thus, there is a need for the organization to rethink both internally and externally to ensure the implementation of the best supply chain management practices for better performance.

Supply chain management practices implemented are geared towards achieving sustainability in a firm's competitiveness and improvement in demand responsiveness. This assertion is supported by Abdallah et al., 2014 who found out that organizational performance advantage is enhanced by supply chain management. In a related study, Lee (2015) identified outsourcing, supplier partnership, product modularity, information exchange, and, customer relationship as the five key aspects of SCM practices. On the other hand, Min and

Mentez (2004) argue that cooperation between suppliers and organizations, exchange of information, and customer relationships are key SCM activities. The crux study was based on the following common supply chain management practices that include outsourcing, lean practices, strategic supplier relationships, and inventory management practices.

Measuring the performance of any organization is very important because, performance measurements enable managers to gauge the level of efficiency and effectiveness of both internal and external processes of an organization (Henri, 2011). Indicators of performance allow institutions to promote those practices that enhance efficiency and effectiveness, ensure high revenues, and achievement of the goals and objectives of an organization (Abdifatah, 2012). This study employed satisfaction of customers and operational efficiency as measures of organizational performance. Customer satisfaction is an indicator of how the organization responds to customers' demands. On the other hand, operational efficiency is an indicator of the effectiveness of internal processes, flexibility, and constant enhancement in operations.

The main focus of this study was to establish the effect of outsourcing supply chain, inventory, lean supply chain, and strategic supplier relationship practices on the organizational performance of the parastatals in Kenya.

II. LITERATURE REVIEW

2.1 Theoretical Literature Review

This study was anchored on the following theories. The first one is the resource dependence theory, and the second is the resource-based theory. The first theory is premised on the fact that firms within an industry are dependent on resources that originate from the environment. Organizations transform these resources into outputs through proper systems. The basic idea behind this theory is to ensure the sustainability and competitiveness of an organization by controlling uncertainties within the environment where businesses operate (Pfeffer & Salancik, (1979). The resource-based view lays an emphasis on the firm's competitive edge that results from the possession of exceptional resources. According to this theory, tangible resources comprise fixed capital and cash which are tangible, while intangible resources include organizations' reputation, image, brand name, intellectual properties, copyrights, and quality workforce (Montgomery, 2011).

2.2 Empirical Review

2.2.1 Outsourcing

Outsourcing is one of the strategies that most organizations are adopting to remain competitive. It entails contracting out non-core activities to major service providers who have specialized facilities and the capability of performing the task. Hence, outsourcing involves one organization procuring materials of the other specialized firm (Monczka *et al.*, 2015). The compelling reason for outsourcing is to manage costs and to enable an organization to concentrate on core activities. In their study, Akewushola and Elegbede (2013) concluded that organizations that contract out know-how decreased normal cost, enlarged sales turnover, and profitability, improved expertise, enhanced service value, led to a lean workforce, made efficient production procedures, lessened managerial workload, and kept time for main actions. In a similar study, Giustiniano and Clarioni (2013) report that outsourcing has a positive impact on the performance of organizations. The author further explains that through efficiency brought about by outsourcing, companies acquire a competitive advantage that enables them to compete favorably in the market and hence, better performance.

In relation to Lean practice, the aim is to produce products that are focused on meeting customer demands and desires by eliminating wasteful activities within the production system. According to Shah and Ward, 2007, lean production results in a reduction in cycle time, continuous improvement initiatives, just-in-time and continuous production, cross-cultural and functional teams, and preventive maintenance among other benefits. Punnakitkashem (2014) assessed how lean production affected operational performance. The study was done in the health sector in Thailand. In hospitals that have implemented lean operations from the findings, lean practices significantly influence the operation performance of an organization. The study focused on lean practices only thus presenting a conceptual research gap. This study not only focused on lean practices but also on other practices of the supply chain.

2.2.2 Strategic Supplier Partnership

Sustainability and profitability can be attained through a sustained association between organizations and their suppliers. This kind of partnership enables an organization to influence its planned efficiencies in terms of operation and capabilities. Strategic supplier partnerships lay emphasis on long-term and direct association between organizations and their suppliers where they have collective problem solutions (Li *et al.*, 2006).

In their recent study Khan and Siddiqui (2018) sought to find out whether there exists a relationship between factors of supply chain management and its effect on firms' performance. The findings revealed a positive relationship that supplier partnership significantly affects performance.

Partnerships enhance the efficiency of an organization in conducting its transactions with few suppliers. Giving suppliers an opportunity to take part in product design is an indication that the firm will gain through cost reduction and recognition of best aspects and help by the supplier in the assessment of this process (Tan *et al.*,

2002). Through an engagement with the supplier, the firm is also able to reflect on the needs and desires of the final consumer which are then incorporated into the design (Leppelt, Foerstl, Reuter & Hartmann, 2013). This also enables the organization to gain a deeper understanding of the product and its cost implications.

In their study, Li *et al.* (2006). found a positive and significant association between strategic relationships and performance. The study concluded that strategic partnerships help in the minimization of conflicts and thus, ample time for an organization to engage in productive activities for the organization. In a similar study Leppelt, Foerstl, Reuter & Hartmann (2013) established that there is a positive correlation between strategic supplier partnership and performance of organizations. The study opines that the collaboration entered into enhances the commitment of the partners to each other which ultimately leads to better performance. Supplier partnership through innovativeness and collaboration has brought value to the organization, hence there is a need to create the supplier partnership in order to foster the customers' value and be able to solve the problems that the customers face on a daily basis (Al-Abdallah, Abdallah & Hamdan, 2014).

2.2.3 Inventory Management

Inventories form one of the core components of business operation which comprises stocks of raw materials, work in progress, finished goods, and supplies held by a business organization to facilitate operations in the production process (Buxey, 2006). As stated by Stevenson (2010), inventory management practices involve systems that are adopted in order to manage stocks in an organization which involves activities such as recording and monitoring levels of inventory, anticipating future demands of stocks, and making decisions on how much to order, when to order and how to order.

Inventory plays a crucial role in the operations of the organization and its management practices enable the organization to grow as it relates to internal and external customers (Gibson, 2013). It has been found that a firm with robust inventory management practices can increase overall performance, which includes the profitability, sustainability, efficiency, and effectiveness of the operations of the organization, which is contributed through efficient management of the working capital, production, and customer satisfaction (Dobler, 2014).

Panigrahi (2013) sought to establish the relationship between inventory management practices and the profitability of the Indian Cement companies. The study that was conducted through the cross-section research covered a period between 2001 and 2010. The study focused on the effect of inventory management practices on the gross operating income of the five leading Indian Cement companies. The study concluded that there is a negative significant relationship between the inventory conversion period and the profitability of the Indian Cement companies.

In a related study that sought to find out the effectiveness of inventory control models, Kumar, Anzil, Ashik, Ashwin, and Ashok (2017) wanted to investigate the effect of inventory management practices through selective inventory control models. Through the survey of manufacturing firms operating in India, the analysis of the results established that the ABC and XYZ inventory control models were the most effective selective control models in manufacturing. However, in a related study, Ahmad and Zabri (2016) sought to establish the effect of the inventory management practices and operational performance of the micro retailing enterprises in Malaysia. It was further established that the systematic control models were effective inventory control practices that influenced the operational performance of the micro retailing enterprises.

Therefore, through the literature review, there seems to be no concurrence on the effect of supply chain management practices on organization performance and, therefore, the following hypotheses were developed to guide the research.

H₁: Outsourcing supply chain management practices have no significant impact on the organizational performance of the parastatals in Kenya

H₂: Inventory management practices have no significant impact on the organizational performance of the parastatals in Kenya

H₃: Lean supply chain management practices have no significant impact on the organizational performance of the parastatals in Kenya

H₄: Strategic supplier relationship practices have no significant impact on the organizational performance of the parastatals in Kenya

III. METHODOLOGY

The researcher adopted a descriptive research design because it enables us to understand and provide insights into the why and how of research. The study targeted one hundred and forty-two parastatals in Kenya. A sample size of fifteen parastatals was purposively selected out of which two senior managers were selected from the finance and procurement department. The total sample size was sixty respondents. The data collection instrument was a questionnaire administered through the drop-and-pick method. Respondents were given questionnaires and were collected later. A five-point Likert scale was adopted on the questionnaire.

The data was later subjected to a multi-linear regression equation model to test the relationship between the independent variables and the dependent variable. The study applied a constructive validity test to ascertain the degree to which the test measures what the researcher wants it to measure. For the test of the power of the

model, the researcher conducted an analysis of variance (ANOVA). Upon extracting the ANOVA table, the researcher ascertained the significance value.

The coefficient of determination (R^2) was used to measure the extent to which the variation in organizational performance could be explained by the various supply chain management practices. F-statistic was also computed at a 95% confidence level to test whether there is any significant relationship between the variables. This analysis was done using SPSS software.

This regression model was developed to find the relationship between independent and dependent variables.

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

Where Y = Performance

β_0 = Constant or Y intercept

X_1 = Outsourcing Practices, X_2 = Inventory Management Practices, X_3 = Lean Practices X_4 = Strategic Supplier relationship

$\beta_1, \beta_2, \beta_3$ and β_4 are the estimated coefficients and ε is the error term.

3.1 Diagnostic Tests

The study conducted a Multicollinearity test, Normality test, and Heteroskedasticity to determine the suitability of the data set for regressing. Multicollinearity was detected using the Variance of Inflation Factor (VIF), the Normality test was detected using Skewness and Kurtosis while Heteroskedasticity was detected using PP plots. In essence, the VIF values between 1-10 indicate an absence of multicollinearity, Skewness and Kurtosis values ± 3 indicate that the data set is normally distributed while PP plots with no clearly established pattern indicate that the data set has no Heteroskedasticity (Kothari, 2004).

IV. DATA ANALYSIS

4.1. Response Rate

The study distributed a total of 60 questionnaires to respondents of the study. Of these questionnaires, 49 of them were completely filled up and returned to the researcher. This was equal to a response rate of 81.7%.

4.2 Normality Test

The study sought to establish whether the data set is normally distributed using the normality test. This was conducted with the help of the Normal PP Plot and Skewness and Kurtosis as shown in the table below Table 4.1

	Skewness and Kurtosis				
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Organizational Performance	49	-.748	.340	.165	.668
Outsourcing Supply Chain Management Practices	49	-.491	.340	.112	.668
Inventory Management Practices	49	-.910	.340	.633	.668
Lean Supply Chain Management Practices	49	-1.197	.340	1.924	.668
Strategic Supplier Relationship Management Practice	49	-.361	.340	-.679	.668

The values of Skewness and Kurtosis are less than +3 or -3. This means that the data set is normally distributed.

4.3 Autocorrelation Test

An autocorrelation test was conducted using Durbin-Watson Statistics.

Table 4.2

Model	Durbin Watson Statistic
	Durbin-Watson
1	2.030 ^a

a. Predictors: (Constant), Strategic Supplier Relationship Management Practice, Outsourcing Supply Chain Management Practices, Lean Supply Chain Management Practices, Inventory Management Practices

b. Dependent Variable: Organizational Performance

From Table 4.2 the value of Durbin Watson Statistic $d=2.030$; which is roughly 2. This means that there was no serial correlation in the data set. Autocorrelation in this study showcased that the data values are not varying in regard to the time lags, hence showcasing the significance of the data values that were used in the study, making the findings of the study reliable and suitable in regards to the randomness of the data.

4.4 Multicollinearity Test

Multicollinearity was tested using the Variance of Inflation Factor (VIF) and the findings

Table 4.3

Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
Outsourcing Supply Chain Management Practices	.531	1.883
Inventory Management Practices	.374	2.674
Lean Supply Chain Management Practices	.393	2.545
Strategic Supplier Relationship Management Practice	.281	3.559

a. Dependent Variable: Organizational Performance

The values of VIF are all less than 10; this shows that there was no multicollinearity in the data set. According to Field (2018), VIF values in excess of 10 are an indication of the presence of multicollinearity but if it is less than 10 it shows no multicollinearity, hence very high intercorrelations or inter-association among the independent variables. It is therefore a type of disturbance in the data, and if present in the data the statistical inferences made about the data may be reliable. Hence, according to the set data, the VIF presented was less than 10, thus making the data reliable for analysis in the study.

Regression analysis was conducted to establish the effect of the identified supply chain management practices on organization performance. The findings are presented in subsequent sections.

4.5 Model Summary

The model summary showing the coefficient of correlation R and determination R squared is shown below.

Table 4.5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896 ^a	.803	.785	1.41220

a. Predictors: (Constant), Strategic Supplier Relationship Management Practice, Outsourcing Supply Chain Management Practices, Lean Supply Chain Management Practices, Inventory Management Practices

This table indicates that the coefficient of determination R square is 0.803; this means that 80.3% of change in organizational performance is explained by supply chain management practices. This indicated that the independent variable of the study chosen was relevant to supply chain management practices, hence their influence on organizational performance.

4.6 Analysis of Variance

An Analysis of Variance (ANOVA) was conducted at 5% level of significance and the findings are indicated in Table 20.

Table 4.6

Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	357.638	4	89.409	44.832	.000 ^b
Residual	87.750	44	1.994		
Total	445.388	48			

a. Dependent Variable: Organizational Performance

b. Predictors: Strategic Supplier Relationship Management Practice, Outsourcing Supply Chain Management Practices, Lean Supply Chain Management Practices, Inventory Management Practices

From Table 4.6 the value of F calculated is 44.832; this infers that the overall regression model of the study was significant.

4.7 Regression Coefficients and Significance

Table 4.7 gives the findings on the coefficients and the p-values showing the significance of the study variables.

Table 4.7

Regression Coefficients and Significance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.375	2.031		2.154	.037
Outsourcing Supply Chain Management Practices	-.126	.098	-.118	-1.288	.205
Inventory Management Practices	.273	.094	.317	2.900	.006
Lean Supply Chain Management Practices	.329	.115	.305	2.861	.006
Strategic Supplier Relationship Management Practice	.304	.085	.449	3.561	.001

a. Dependent Variable: Organizational Performance

The following equation emerges from the findings in Table 4.18;

$$Y=4.375-.126X_1+.273X_2+.329X_3+.304X_4$$

Where Y = Organizational Performance

X₁= Outsourcing Practices,

X₂ = Inventory Management Practices,

X₃= Lean Practices

X₄= Strategic Supplier relationship

At a 5% level of significance, the study documents that outsourcing practices ($p=0.205>0.05$) have a negative but insignificant effect on organizational performance. The finding contradicts Mwilu (2013) who studied the effect of supply chain management practices on performance among research institutions in Kenya and concluded that supply chain management practices had an effect on the performance of research institutions in Kenya. However, the study focused on the research institutions. Giustiniano and Clarioni (2013) conducted an empirical analysis of the impact of outsourcing on business performance. Results showed that outsourcing could contribute to giving companies a sustainable competitive advantage.

On the other hand, inventory management practices ($p=0.006<0.05$) have a positive and significant effect on organizational performance. Oballah, Waiganjo and Wachiuri (2015) investigated how inventory management practices affected performance in the health units in Kenya and established a positive relationship between inventory management and organizational performance. Osei-Mensah (2016) assessed how inventory management practices affected the delivery of services at St. Martins Hospital and indicated that strategic supplier partnerships were in place as a practice of managing inventories and using ICT in the management of inventories. Kiarie (2017) assessed how inventory management affected the competitive advantage of modern retail firms in Kenya and established a positive relationship between both on-shelf availability and inventory turnover and a firm's competitiveness.

Lean practices ($p=0.006<0.05$) have a positive and significant effect on organizational performance. Kanyanya (2013) examined lean manufacturing practices and the performance of organizations listed at the Nairobi Securities Exchange and established that lean production results in the performance of an organization and long-term growth. Punnakitikashem (2014) assessed how lean production affected operational performance and noted that lean practices significantly influence the operation performance of an organization.

Strategic supplier relationship management practices ($p=0.001<0.05$) have positive and significant effects on organizational performance. Wafula and George (2015) evaluated how strategic supplier partnerships affected organizational performance and noted that networking and communication channels have improved between the firm and its suppliers due to strategic supplier partnerships. It has also improved the delivery time of the products to consumers.

4.7 Hypotheses Testing

The hypotheses that were developed to guide the study were tested.

Table 4.8

Hypotheses Testing			
Hypotheses	Beta Coefficient	p-value	Remark
H₁ : Outsourcing supply chain management practices have no significant impact on the organizational performance of the parastatals in Kenya	-.126	.205>0.05	Accept the hypothesis
H₂ : Inventory management practices have no significant impact on the organizational performance of the parastatals in Kenya	.273	.006<0.05	Reject the hypothesis
H₃ : Lean supply chain management practices have no significant impact on the organizational performance of the parastatals in Kenya	.329	.006<0.05	Reject the hypothesis
H₄ : Strategic supplier relationship practices have no significant impact on the organizational performance of the parastatals in Kenya	.304	.001<0.05	Reject the hypothesis

5.6 Suggestions for Further Studies

The current study focused on supply chain management practices. It was operationalized as supplier relationship management practices, outsourcing supply chain management practices, lean supply chain management practices, and inventory management practices. From the regression analysis, 80.3% change in performance is explained by these supplier relationship management practices. Thus, future studies should be conducted to bring out other factors with an influence on organizational performance apart from supply chain management practices.

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