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**EFFECTS OF JUST-IN-TIME PROCUREMENT STRATEGY
ON ORGANIZATION PERFORMANCE OF FOOD AND
BEVERAGE MANUFACTURING FIRMS IN NAIROBI
COUNTY, KENYA**

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EFFECTS OF JUST-IN-TIME PROCUREMENT STRATEGY ON ORGANIZATION PERFORMANCE OF FOOD AND BEVERAGE MANUFACTURING FIRMS IN NAIROBI COUNTY, KENYA

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Abstract

Purpose: The objective of this study was to investigate the effects of Just-in-time procurement strategy on organization performance of food and beverage manufacturing firms in Nairobi County.

Methodology: The study adopted a causal research design. To collect primary data the respondents answered questions administered to them through questionnaires. The unit of observation consisted of the Heads of Procurement, Production, Sales and Finance of the food and beverage manufacturing firms located in Nairobi County as listed by Kenya Association of Manufacturers in 2019. The sample size was 83 heads of department. Face validity was used to determine the accuracy of the study instrument while test re-test method was used to determine the reliability. The completed questionnaires were analysed with the aid of Statistical Package for Social Sciences. Data was analysed using descriptive and inferential statistical techniques.

Findings: From the study findings Just-in-time (JIT) procurement strategy ($\beta=0.689$, $t=3.469$, $p=0.001$) had a positive effect on organization performance of food and beverage manufacturing firms. The value of adjusted R^2 was 0.167 indicating that there was variation of 16.7 percent on organization performance due to changes in JIT procurement at 95 percent confidence interval.

Conclusion: The study concluded that JIT Procurement strategy has a positive effect on organization performance of food and beverage manufacturing firms in Nairobi County. The overall effect of JIT Procurement strategy on organization performance was 68.9%. The study therefore accepted the alternative hypothesis that JIT procurement strategy has significant effect on organization performance of food and beverages manufacturers in Nairobi County.

Unique contribution to theory, practice and policy: Food and beverage manufacturing firms in developing countries should consider implementing JIT Procurement strategy. This will ensure that they purchase the optimal level of items when needed to avoid keeping unnecessary

inventory which ties up money and at the same time ensure that there is no shortage so that the customers have to wait. Policy makers in the food and beverage manufacturing sector should consider developing policies to promote JIT Procurement strategy in this industry. Further research should be conducted focusing on the service sector to investigate the effect of JIT Procurement strategy on organization performance for comparison.

Keywords: *Just-in-time Procurement Strategy, Organization Performance, Food and Beverage Manufacturing Firms*

1. INTRODUCTION

The paper is drawn from a study that was conducted in Nairobi county in Kenya thus the findings are applicable to especially food and beverage manufacturing firms in the county and across other manufacturing firms with similar characteristics in the country. Just-in-time (JIT) has been implemented successfully in Japan and other developed countries over the past decades. It is a philosophy as well as a strategy that guides an organization in organizing and managing its business more effectively and efficiently. Just-in-time is used to enhance organizations' performance, service level and reduce or eliminate waste from the end-to-end system (Khan *et al.*, 2017).

Just-in-Time (JIT) has been used by many manufacturers to improve organization performance in various perspectives (Masudin and Kamara, 2018). Surprisingly the adoption of JIT in the developing countries is still low and the manufacturing sectors in developing countries are still run on the basis of old production systems that include so many activities that add little value to the final production process (Adeyemi, 2010). JIT procurement strategy ensures provision of just the right quantity of raw materials and other inputs for the firm. JIT procurement means procuring goods and services exactly when they are needed and not before they are needed so that they wait as inventory, nor after they are needed so that it is the customers who have to wait (Kabuga, 2012). This means that JIT can be used as a strategy to create value in the procurement activities. JIT procurement helps organizations to reduce inventory management costs since goods are delivered in time of use and thus storage costs are minimized (Njeru, 2015).

Several lean companies have reached the point at which they manage their suppliers with lean principles using JIT purchasing (Demeter & Losonci, 2013). Under JIT purchasing, buyers are encouraged to buy from a small number of suppliers, ideally one for each material or class of materials (Landry, 2008). According to Cheng (2011) nearby suppliers have several advantages. First, JIT material supply with short delivery might reduce total waste of inventory and transport cost. Secondly, close locations of suppliers and manufacturers with JIT supply chain system reduces the uncertainties. Having reliable suppliers allows for a reduction in the number of suppliers and the associated costs (Singh *et al.*, 2013). On the other hand firms should seek certification in quality of items purchased. Certification of suppliers provides insurance that the goods coming into a production facility have already passed some quality inspection (Singh *et al.*, 2013).

1.1 Statement of Problem

Kenyan manufacturing firms need to be competitive both domestically and externally as manufacturing has impact to the entire economy. However, a review of Kenya's economic review shows that the manufacturing sector has registered limited growth. The sector registered a growth of less than 6% in the recent years as per Republic of Kenya Economic Survey of

2015, 2016, 2017 and 2018. From the economic reviews, the main reasons attributed to the low growth are high production costs and competition from imported goods. Compared to other countries in Africa, cost of production in Kenya has increased in recent years which saw Colgate Palmolive, Eveready, Reckitt Benckiser, Tata chemicals, Cadbury Kenya, Bridgestone, Kenya Fluorspar, Devki Steel and Procter & Gamble shifting their bases from Kenya (Wafula, 2016). This indicates a performance gap within the manufacturing sector which this study aims to resolve.

Global and regional research by (Rasit *et al*, 2018), Rahmani & Nayebi (2014) and Wyk & Naidoo (2016) indicates that JIT strategy can be one of the ways to improve organization performance. Locally a review of existing literature has not yielded a study carried out in Kenya's food and beverages sector specifically on the effects of JIT strategy on organization performance. Prior studies such as Maina (2013), Ondiek and Kisombe (2013), Keitany and Riwo-Abudho (2014) and Mwangangi (2016) looked at lean manufacturing, supply chain management and logistics management in respect to manufacturing firms in Kenya but not on JIT procurement strategy. This prompted the researcher to carry out the research on the effect of JIT procurement strategy on organization performance in food and beverage manufacturing firms in Nairobi County, Kenya.

1.2 Objective

The objective of the study is to establish the effects of just-in-time procurement strategy on organization performance of food and beverage manufacturers in Nairobi County in Kenya

2. LITERATURE REVIEW

This paper demonstrates the extent to which JIT procurement strategy affects the organization performance of food and beverage manufacturing firms in Kenya. The study was guided by the lean theory which was first coined by John Krafcik in his 1988 article titled *Triumph of Lean Production Theory*. Womack *et al.* (1990) then popularized lean in a book titled *The Machine that Changed the World*. The term Lean is defined as systematic approach to identifying and eliminating non-value add (wastes) through continuous improvement, flowing the product at the pull of the customer in pursuit of perfection (Andersson, *et al.*, 2006).

Choice of Lean Theory for this study was informed by the need to examine how just-in-time strategy affects organization performance. Just-in-time (JIT) is considered as a powerful tool to reduce waste and inefficiency, speed up the production process and delivery performance (Danese & Romano, 2011). This is similar to precepts of Lean Theory. The lean theory elaborates on how manufacturers gain flexibility in their ordering decisions, reduce the stocks of inventory held on site and eliminate inventory carrying costs. Lean just like JIT aims at creating flow by eliminating waste and implementation of pull system. Lean theory was therefore found applicable in this study on determining the effect of JIT Procurement strategy on organization performance.

The study was also guided by the value chain analysis model which was introduced by Michael Porter in his book on competitive advantage titled *Creating and Sustaining Superior Performance* (Porter 1985). Porter distinguished between primary activities which have directly contribution to add value to production of the goods or service and support activities, which instead have indirect effects on the final value of the products. Value activities of the firm are building blocks by which firms deliver products to the customer, earn profit or margins as well develop advantages over rivals Sultan & Saurabh (2013). Procurement is one of the

supporting activities in the Porter's value chain analysis model. JIT procurement helps organizations to reduce inventory management costs since goods are delivered in time of use and thus storage costs are minimized (Njeru, 2015). This means that application of a strategy like JIT Procurement can be one way of creating value in the value chain. Therefore the value chain analysis model was found relevant to this study.

Kaplan and Norton (1992) indicated that financial measures alone were inadequate to determine organization performance. They therefore included non-financial measures to give managers and executives a more balanced view of organizational performance, the balanced scorecard. Based on this performance can be defined as a set of financial and non-financial indicators which offer information on the degree of achievement of objectives and results (Kaplan & Norton, 1992).

Memia (2018) defined organization performance as the extent to which an organization achieves a set of pre-defined targets that are unique to its mission, vision and goal. In their study, Musau *et al.* (2017) measured organization performance using profitability, reliability, responsiveness, flexibility and cost. Bhatti *et al.* (2015) stated some of the indicators used by manufacturing organizations to measure overall organization performance among which include cost, quality, financial (profitability and return on equity), delivery reliability and time. In this study organization performance was measured using cost reduction and profit growth.

The evidence from the empirical review of literature shows that several studies on just-in-time, lean manufacturing, inventory management and supply chain management with respect to performance have been conducted in and out of Kenya.

Kaynak (2002) studied the relationship between just-in-time purchasing techniques and firm performance in United States of America. The sample in this study consisted of 214 organizations operating in the US. Structural equation modeling was used to test the hypotheses. The study established that just-in-time purchasing techniques were positively and directly related to firm performance. This study was however, conducted in a developed country therefore there is need to establish whether the same results can be achieved in a developing country like Kenya.

Kinyua (2015) carried out an assessment of just-in-time procurement system on organization performance with reference to Corn Products Kenya Limited. This descriptive study found out that JIT procurement had positive effects on the organization performance. Some of the study findings included improved returns on investments (ROI), adherence to Total Quality Management (TQM) principle of zero defects, reduced double handling of goods and saving on holding cash that would otherwise be employed in other business. One key limitation of this study is that it only looked at a single manufacturing firm, Corn Products Limited as opposed to the entire food and beverage manufacturing firms in Kenya.

Mutua (2015) conducted a study on lean supply chain management practices and organizational performance of large scale manufacturing firms in Kenya. The study adopted a descriptive research design and data collected using questionnaires. The target population was 655 large scale manufacturing firms in Kenya. The study concluded that the adoption of lean procurement practices improved the organizational performance. This study focused on large scale manufacturing and not specifically on food and beverage manufacturing firms in Nairobi County.

From the literature review, past studies have not focused on the effects of JIT Procurement strategy on organization performance of food and beverage manufacturing firms in Nairobi County, a gap this study seeks to fill. The hypothesis of the study was:

Ha: Just-in-time procurement strategy has significant effect on organization performance of food and beverage manufacturers in Nairobi County

3. RESEARCH DESIGN AND METHODOLOGY

The study was carried out among the food and beverage manufacturing firms in Nairobi County. The study adopted a casual research design. The respondents answered questions administered to them through questionnaires to collect primary data. The population targeted was 105 food and beverage manufacturing firms located in Nairobi County as listed by Kenya Association of Manufacturers (2019). From the firms the unit of respondents of this study were Heads of Procurement, Production, Sales and Finance who were considered to be familiar with the area of the study and would readily provide the data required. The sample size was 83 as determined by use of Miller and Brewer (2003) formula: $n = \frac{N}{1 + N(e^2)}$

Where:

n = sample size

N = the population size

e = margin of error or level of precision assumed $\alpha = 5\%$

$n = \frac{105}{1 + 105(0.05^2)}$

n=83

The study used stratified random sampling technique to select a sample for the study. The researcher used proportions calculated in table 1 to come up with a representative sample distribution per stratum. The sample size determination was guided by Kombo and Tromp (2006) recommendation that a sample size of 10% to 30% is representative enough for the study population.

Table 1: Sampling Frame

Sub-sector (KAM 2019)	Heads of Operations	Heads of Sales	Heads of Finance	Total	Sample Ratio	Sample Size
Alcoholic Beverages & Spirits	10	9	10	29	26%	8
Bakers & Millers	25	24	24	73	26%	19
Cocoa/Chocolate/Confectionery	29	28	27	84	26%	22
Dairy Products	7	9	8	24	26%	6
Juice/water & Carbonated soft drinks	23	22	23	68	26%	18
Slaughtering, Preparation & Preservation of Meat	8	6	6	20	26%	5
Vegetable Oils	7	6	4	17	26%	4
Total	109	104	102	315	26%	83

A 5-point Likert scale was used to determine the effect of JIT Procurement strategy on organization performance of food and beverage manufacturing firms in Nairobi County. Face validity was used to determine the accuracy of the study instruments while test re-test method was used to determine their reliability. The completed questionnaires were analysed with the aid of Statistical Package for Social Sciences. Data was analysed using descriptive and inferential statistical techniques. Inferential statistics was used to establish the effects of JIT procurement strategy on organization performance in the food and beverage manufacturing firms in Nairobi County. The model of the study was expressed as follows:

$$Y = \alpha + \beta_1 X_1 + \epsilon$$

Where,

Y = Organization performance

α = constant (coefficient of intercept)

X_1 = JIT procurement

β_1 = Coefficient of JIT procurement strategy

ϵ = Error term

4. RESULTS

4.1 Response Rate

The aim of this study was to establish the effects of JIT procurement strategy on organization performance of food and beverage manufacturing firms in Nairobi County. The study sample was 83 respondents who were required to fill in the questionnaires from which 56 were able to fill and return, a response rate of 68%. According to Mugenda & Mugenda (2003) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore this response rate was adequate for analysis. The response rate was therefore regarded good to conduct data analysis.

4.2 Descriptive Results

The respondents were requested to indicate the degree of their acceptance of each of the statements in light of daily practice in the firm in which they operate relating to just-in-time procurement strategy and organization performance.

Table 2: Effect of just-in-time procurement strategy on organization performance

	N	Minimum	Maximum	Mean	Std. Deviation
We have short lead times between the suppliers and our organization	56	2.00	4.00	3.27	0.70
Our suppliers respond quickly to our emergent needs of materials	56	2.00	5.00	3.55	0.66
Our Suppliers provide on-time and reliable deliveries	56	2.00	5.00	3.43	0.74
Our suppliers are certified for quality to reduce inspection time on product delivery	56	2.00	5.00	3.27	1.17
The company has established strategic partnership with suppliers to ensure quality materials are supplied	56	2.00	5.00	3.52	0.85
The firm procures items just when needed	56	1.00	5.00	3.43	1.13
Valid N (list wise)	56				

From the study findings in table 2, majority of the respondents accepted to great extent that their suppliers respond quickly to their emergent needs of materials as shown by a mean of 3.55 with a standard deviation of 0.66 and that the company has established strategic partnership with suppliers to ensure quality materials are supplied as demonstrated by a mean of 3.52 with a standard deviation 0.85. The respondents accepted to a moderate extent that their

suppliers provide on-time and reliable deliveries as illustrated by a mean of 3.43 and a standard deviation of 0.74, that the firm procures items just when needed as shown by a mean of 3.43 and a standard deviation of 1.13 and that they have short lead times between the suppliers and their organization as shown by a mean of 3.27 and a standard deviation of 0.70. Majority of the respondents further accepted to a moderate extent that their suppliers are certified for quality to reduce inspection time on product delivery as demonstrated by a mean of 3.27 and a standard deviation of 1.17. This was consistent with the findings of Kaynak (2002) who studied the relationship between just-in-time purchasing techniques and firm performance in United States and established that just-in-time purchasing techniques were positively and directly related to firm performance.

4.3 Inferential Results

4.3.1 Regression Analysis

Regression analysis was conducted and the results presented in table 3 below. The hypothesis tested was:

H₀: Just-in-time procurement has no significant effect on organization performance of food and beverage manufacturing firms in Nairobi County

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.427 ^a	0.182	0.167	0.08812

a. Predictors: (Constant), JIT procurement strategy

From the findings in table 3, the value of adjusted R² was 0.167 an indication that there was variation of 16.7 percent on organization performance due to changes in JIT procurement at 95 percent confidence interval. R is the correlation coefficient which shows the relationship between the study variables. From the study findings, there was a positive relationship between JIT procurement strategy and organization performance as shown by value of 0.427. This was consistent with the findings of Kinyua (2015), Kaynak (2002) as well as Mutua (2015) who established a positive relationship between JIT procurement and organization performance.

4.3.2 ANOVA Results

Table 4: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.093	1	0.093	12.034	0.001 ^b
	Residual	0.419	54	0.008		
	Total	0.513	55			

a. Dependent Variable: organization performance

 b. Predictors: (Constant), JIT procurement strategy

The ANOVA test of the processed data in table 4 had a significance level of 0.001 which shows that the data was ideal for making a conclusion on the population's parameter as the value of significance (p-value) was less than 5%. The F critical at 5% level of significance, 1 d.f, 54 d.f was 4.02 while F calculated was 12.034, since F calculated was greater than the F critical (value = 4.02), the overall model was significant.

4.3.3 Coefficients Results

Table 5: Coefficients of JIT Procurement Strategy

Model	Unstandardized Coefficients		Standardized	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	.258	.073		3.505	.001
X1	.689	.199	.427	3.469	.001

 a. Dependent Variable: organization performance

From the study findings in table 5, the regression equation for the effect of JIT procurement on organization performance was $Y=0.258+0.689X_1$. From this regression equation it was found that holding JIT procurement to a constant zero, organization performance would be 0.258. A unit increase in JIT procurement would lead to an increase in organization performance by 0.689. Since the p-value of 0.001 was less than 0.05 the null hypothesis which stated that just-in-time procurement strategy has no significant effect on organization performance of food and beverage manufacturing firms in Nairobi County was rejected. JIT procurement strategy was therefore a significant predictor of organization performance.

5. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

The study sought to establish the effects of JIT procurement strategy on organization performance in the food and beverage manufacturing firms in Nairobi County. Most of the respondents indicated that JIT procurement strategy positively affected organization performance. From the t-test, a p-value of 0.001 showed that there was a positive relationship between JIT procurement strategy and organization performance. From the regression equation $Y=0.258+0.689X_1$ it was found that a unit increase in JIT procurement strategy would lead to an increase in organization performance by 0.689. JIT procurement was a significant predictor of organization performance as the p-value was 0.001 hence less than 0.05. Similar relationship between JIT procurement and organization performance was established by Mutua (2015) who focused on large scale manufacturing firms in Kenya and Kinyua (2015) who studied JIT Procurement at Corn Products Kenya Limited.

5.2 Conclusion

The study concluded that JIT procurement strategy positively affected organization performance of food and beverage manufacturing firms in Nairobi County. The overall effect of JIT Procurement strategy on organization performance was 68.9%. The study therefore accepted the alternative hypothesis that just-in-time procurement strategy has significant effect on organization performance of food and beverage manufacturing firms in Nairobi County.

5.3 Recommendations

Based on the study findings, the study made recommendations to the food and beverage manufacturing firms, policy makers in the government and scholars. First, since there is a significant effect of just-in-time procurement strategy on organization performance, food and beverage manufacturing firms should consider adopting JIT procurement aspects like reducing lead times, certifying suppliers for quality and procuring items just when needed. To the policy makers in the government, the study recommends that necessary policies be put in place to promote adoption of just-in-time procurement strategy in food and beverage manufacturing firms in the country to enhance organization performance. Finally to the scholars, this study recommends that further studies should be conducted in Kenya aimed at the service sector on the effect of just-in-time procurement strategy on organization performance for comparison as this study focused on the manufacturing sector.

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