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Effect of Inventory Management Practices on Performance of Food Processing Firms in Nairobi County, Kenya

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Citation:

Mayabi Peres Linda, Thogori Miriam & Masinde Joseph (2024). Effect of Inventory Management Practices on Performance of Food Processing Firms in Nairobi County, Kenya. In: Mutembei Henry, Nduru Gilbert, Munyiri Shelmith, Gathungu Geoffrey, Kiboro Christopher, Otiso Wycliffe, Rithaa Jafford, Miriti Gilbert, Gichumbi Joel, Mwathi David, Gitonga Lucy, Nanua Jackin, Kahindi Roseline, Jonathan Kathenge & Muthui Zipporah (Eds.). Proceedings of the Chuka University Tenth Annual International Research Conference held in Chuka University, Chuka, Kenya from 5th to 6th October, 2023. 343-350 pp.

ABSTRACT

The inventory management practices account to about fifty percent of the better performance of any firm. The food processing sub sector performance has been declining thus its contribution to the Gross Domestic Product has reduced to 10% thus leading to operation inefficiency. The overall objective of the study was to probe the effect of inventory management practices on performance of food processing firms in Nairobi County. The study was premised on the lean theory. Descriptive design was employed.

A population of 172 food processing firms and a sample size of 120 firms was determined. Stratified and simpler random sampling were used to pick specific firms while data was collected using structured questionnaires. Descriptive statistics aided in describing the primary characteristics of the data. Regression analysis aided to ascertain the effect of inventory management on performance of food processing firms with the aid of SPSS version 28. T-statistics were used to gauge the significance of individual objectives at 5% confidence level while F-statistic was used to establish the overall significance of the model. The study established inventory management was found to be positively correlated to performance, ((regression coefficient 0.492, p-value 0.000). The study concluded that inventory management practices had substantial impact on performance on Food processing firms and recommends that firms should establish adequate quality control and quality monitoring points in order to get the best quality during the production and also as a way of minimizing on cost. The findings will contribute to theory of supply chain management and policy making regarding different of inventory management practices to ensure increase in performance.

Keywords: *Inventory Management Practices, Performance and Food and Processing Firms.*

INTRODUCTION

Organizations utilize inventory management strategies boost the efficiency of their supply chains. Mwangi (2013) addressed management of inventory and SCM while focusing on non-state organizations in Kenya. According, to the study found that inventory management positively affected performance. However, the study did not determine the effect it had on food processing firms. Tong *et al.*, (2019), inventory management entails organizations managing the effective and efficient acquisition, storage, packaging, receipt and distributing goods to meet organization's demand levels. Various studies have been done on the bearing of inventory management techniques on producti vity of various organizations in different contexts. These studies were guided with variables such as vendor management inventory, lead times, Justin time, ABC analysis and stock levels control. However, the studies have not explicitly revealed how inventory management practices such as; Stock levels control, Reorder level and Quality Control affect the performance of food processing firms.

Richard *etal.*, (2019) noted that there are three main components to performance of an enterprise that include financial and market performance of products and procurement performance. The financial includes aspects such as net returns, asset return and returns on money invested. While product performance involves elements such as market share, procurement performance includes lead times, customer satisfaction and operation efficiency. With regard to the present study, which is concerned with the supply chain, one measure of organizational performance from Richard *etal.*, (2019) will be used, that is, operation efficiency. Operation efficiency is an important supply chain performance measurement assist shows how

an organization ought to reduce redundancy, reduce cost and wastage while optimizing the resource that account most to its success and using top-notch businesses activities, technology and manpower(Pham,2017).

Manufacturing firms are the backbone of economic progress for countries by promoting industrial expansion.

They contribute significantly to economies by fostering job prospects and anchoring large industries (Anuar& Yusuf,2011). To sustain these contributions, manufacturing firms ought to embrace top-

Notch SCMPs in a addition to advancing their technology and manufacturing processes. Sandhu, He loaned Kristiano, (2013) opine that SCM practices in a company are seen as operational activities and central

business operations, that affect how efficient and effective the supply chain is. The major intention of

SCM is to improve supply chains and firm performance competitiveness in the long-run through integration with partners, of activities, operations and processes both internally and externally.

The partners are clients, industrialists, manufacturers, distributors and suppliers (Kim, 2006).

SCM

includes a variety of activities for instance all logistic management functions with partners, outsourcing, coordination, planning and procurement (Soosay *et al.*, 2008). Existing studies underscore that the definitive aim of SCM is to boost the productivity of firms (Li *et al.*, 2005, Chen & Paulraj, 2004; Min and Mentzer, 2004).

Kenya is an emerging economy that is averagely industrialized with a robust manufacturing sector in the African Continent (KAM, 2014). The Kenyan economy benefits greatly from the food processing industry.

Companies that process food and drinks in Kenya are categorized under the manufacturing industry. The industry contribute foreclose to 10 percent of GDP, with the majority of goods, approximately, 95% being food and beverages, building materials and basic chemicals (KIPPRA, 2018).

The Kenya Association of Manufacturers (2018) establishes that agricultural produce processing enterprises are the biggest contributor in regard to volume of production and employment in industrial and allied sector in the country. Agricultural firms therefore have the ability to boost economic growth by supplying raw materials and market for produce in bulk as well as acting as catalysts for expanded farm produce production. The segment is a key prolific sector of the economy projected to back the achievement of Vision 2030 due to its immense potential in poverty eradication, job creation and wealth establishment. In Kenya, food and beverage processing segment is a relatively well-developed sector with products ranging from dairy products, canned vegetables, bakery products, sugar and confectionary, fish, oil and fats among many other products (Kariuki, 2016).

Food and beverage processing firms in Nairobi vary from small-family-informal firms to large formal enterprises quoted in the Nairobi Securities Exchange. Others include subsidiaries of foreign and multinational companies. Multinational food and beverage

processing firms have established operations in Kenya either as foreign companies or as joint ventures (Muteshi *et al.*, 2017). The performance of food processing firms in Nairobi County has been declining, according to the World Bank report due to the unstable operating climate thus declining profitability over the past five years (World Bank, 2020). The subsector performance has also been declining as compared to other sectors for example according to the (KNBS, 2015) the agriculture output increased by 15.8%, building and construction increased by 13.1%, transport and storage increased by 13.7% while the input of food processing companies to GDP reduced from 15% to 10%. thus leading to operation inefficiency. According to hanse (2020), the current food production in the food processing firms does not meet the demand thus leading to uncertainty of the sector to meet one of the big four agendas in the county which is food security.

Inventory management involves a wide array of tasks involving purchasing, packing, planning, storage and receiving. These tasks are different in organizations owing to the industry, the manner of businesses and the processes entailed. (Barnes, 2013). Inventory management is a procedure used by businesses to control the acquisition, receipt, storage, packing and distribution of products that effectively and efficiently meet their demand (Lai&Cheng,20 19). Inventory management is primarily concerned with showing how the supplied goods are arranged (Mwangi, 2013).

Mankazana *et al.*, (2018), subsequently, sought to determine how efficient inventory management coupled with SCM may aid achieve top-notch performance in manufacturing industries in Johannesburg. Causal design coupled with mixed methodology approach were espoused. Every staff participated in the study. All employees under department of control of inventory, manufacturing and supply chain were furnished with questionnaire. The study clearly showed that the aforesaid variables have an effect on how well a business performs. It was advised that management see to it that the two departments continue to operate in sync with each other. The present study aspires to bridge the gap by carrying out the research in a different context, Kenya.

Mbah *et al.*, (2019) scrutinized inventory management and operational effectiveness of manufacturing enterprises in South-East Nigeria through a questionnaire distributed to 538 employees. At most 4 listed firms under manufacturing sector were considered. Regression analysis anchored testing of hypothesized statements. Findings ascertained that there is an affirmative substantial nexus between operational effectiveness on one hand and supplier partnership, cost of inventory, and material requirements planning on the other. This study seeks to bridge the gap by using quality control, stock levels and reorder level as the dimensions of inventory management.

Organizations utilize inventory management strategies boost the efficiency of their supply chains. Inventory management techniques are tools employed by firms to attain supply chain performance. A study was therefore, conducted by Mwangi (2013) addressing management of inventory and SCM while focusing on non-state organizations in Kenya. Those in the agricultural sector were considered. A descriptive research design coupled with use of questionnaires characterized the methodology employed. From the results, there was noteworthy relationship between management of inventory and SCM that denoted 73.2 percent change explained by the independent variables (just in time, economic order quantity, simulation, order batching). The current study bridges the gap by carrying out the study in a different context the food processing firms.

Kimaiyo and Ochiri (2014), the new KCC as a case study to unearth the influence of managing inventory on performance while considering manufacturing enterprises in Kenya. A representative sample of 83 respondents was used. A descriptive research design was espoused. Coupled with inferential statistics were applied to the analysis of quantitative data. The study came to the conclusion that reducing costs not only enhances performance but also prepares workers in managing and accepting inventory concept, furnishes an enterprise with adequate resources. Further ordering stocks and maintaining inventory levels may boost profitability. In addition, control of inventory, information exchange and channel relationship impact productivity. The present study will carry out research in different context that is food processing firms in Nairobi County.

Using a case of Safaricom Kenya Ltd., Kamau and Kagiri (2015) explored the interaction between management of inventory activities and competitiveness. Descriptive research design was used. Stratified random sampling was used to pick a sample of 80 personnel from targeted departments. Data were pooled using a semi-structured questionnaire. The results indicated that the competitiveness of Safaricom Company was affected by investment, shrinkage and turnover of inventory. The study inferred that practices used to manage inventory are essential to an organization's capacity for competition. Deductively, techniques used to manage inventory have an impact on maximizing profits, satisfying clients, growth of market share and returns on money invested. The present study will bridge the gap by using descriptive research design.

Ngugi *et al.* (2019) studied how systems used in managing inventory affected performance while been biased on manufacturing enterprises in Eldoret, Kenya. The research was directed by three independent variables namely VMI, ABC analysis and Just in time. Data were gathered by use of questionnaire. SPSS aided in analyses of gathered data. The study ascertained that Vendor Managed Inventory (VMI) impacted performance of the said enterprises and so was the Just in Time (JIT). Similarly, Nyawanga and Otinga (2021) came to the conclusion that manufacturing enterprises gain from optimally managing inventory after delving into management of inventory and performance of procurement in Law Courts in Kakamega County.

Key influencers of procurement efficiency were vendor managed inventory system, economic order quantity, and just in time.

In both studies, Ngugi *et al.*, (2019) and Nyawanga and Otinga (2021) underscore the importance of

JIT

Inventory management system. This is similar to the conclusions of Mukopi and Iravo(2015)looked at how wells

Ugar producing enterprises procurement functions performed in Western Sugar Belt in Kenya. The effect

of inventory management on performance of the procurement function of sugar manufacturing companies in the western sugar belt. Mukopi and Iravo (2015) applied the descriptive research design targeting the thirty procurement

workers drawn from Butali, Mumias, West Kenya, and Nzoia Sugar Companies. The research established that there was robust correlation between just in time and efficiency of the procurement function. However, the three studies while underscoring the merits of JIT, failed to show how it affected the supply chain performance in general. In the present study other aspects on inventory management will be examined as well and their effects on the supply chain.

In the same way, Ontita (2016) intended to ascertain the association between Kenyan textile companies 'performance and strategies used to manage inventory. The foregoing was investigated using a descriptive cross sectional approach. The target population included all the 35 textile manufacturing firms in Kenya. This study exploited first hand data. Questionnaires aided in obtaining data. The study found to a large extent, an affirmative link between operational effectiveness or performance and Justin time delivery in textile companies. Nevertheless, there was no clarity on how the JIT procurement affected the supply chain performance in the textile industry. The present study, will however, examine JIT and other approaches to inventory management.

However, there are studies which have examined inventory management from several dimensions. For instance, Wanyonyi (2017) delved into how service delivery in main supermarkets was affected by the practices used in managing inventory in Nairobi. Descriptive research design was espoused. The nexus between practices of managing inventory, and delivery of service, and its scope were determined by employing a survey of main supermarkets. It was discovered that the big supermarkets used JIT, ABC, EOG and VMI models to control inventory; however, VMI was implemented to a considerable extent. However, the study was not focused explicitly on the food processing industry. The present study will, therefore, examine the performance of these different aspects of inventory management in the food processing industry

The objective of the study was to investigate the effect of inventory management on performance of

food processing firms in Nairobi County. The null hypotheses were that there is no statistically significant relationship between inventory management and performance of food processing firms in Nairobi County.

METHODOLOGY

The study adopted descriptive research design since it facilitated in choosing and grouping of the components and features of object. The study covered 120 food processing firms out of 172 firms in Nairobi County. Stratified Simple random sampling was used to come up a sample size of 120 food processing firms. Data was collected using questionnaire. Descriptive and Inferential statistics were used to analyse data. Simple and Multiple linear regression analyses were then conducted using SPSS software version 28.0 in order to address study objective. Assumption of linear regression model of normality, multicollinearity and heteroscedasticity were tested before analysing data.

RESULTS AND DISCUSSIONS

Diagnostic Tests Test for Normality

Shapiro-Wilk Test was used to test for normality (Aczel & Sounderpadian, 2002). The p-value of Shapiro Wilk Test was 0.092 which is greater than 0.05 (insignificant) hence a conclusion that the residual was normally distributed.

Multicollinearity Test

Incidence and degree of multicollinearity if any was tested using Variance Inflation Factor (VIF). The VIF value was 1.092 less than 10 therefore, multicollinearity was absent. Multicollinearity may lead to wrong results due to its effect of inflating the predictor variables (Cooper & Schindler 2003).

Heteroskedasticity Test

This study used P-P plot to determine if the residuals had constant variance because they are best in the presentation of spread of residuals. The results indicated no specific pattern and the widths were neither increasing nor decreasing as the variables rise. Therefore, heteroscedasticity is absent.

Inventory Management and Performance Descriptive Statistics of

Inventory Management Inventory management was perceived in terms of supply chain manager's views. Selected statements captured inventory management indicators. The study summarizes the responses as captured in the field and relayed in Table 1.

Table 39: Descriptive Statistics Inventory Management

Statements	N	M	M	M	S
		i	a	e	t
		n	x	a	d
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Our firm has a well-established way of monitoring stock levels within the firm	1 0	2 .	5 .	3 .	. 7
Our firm does not have a system in place to monitor stock levels	0	0	0	4	4
Our firm does not have a system in place to monitor stock levels		0	0	6	4
Our firm does not have a system in place to monitor stock levels				0	2
Our firm does not have a system in place to monitor stock levels				0	7
Our firm does not have a system in place to monitor stock levels	1	3	5	3	.
Our firm does not have a system in place to monitor stock levels	0	.	.	.	5
Our firm does not have a system in place to monitor stock levels	0	0	0	6	9
Our firm does not have a system in place to monitor stock levels		0	0	2	9
Our firm does not have a system in place to monitor stock levels				0	3
Our firm does not have a system in place to monitor stock levels				0	3
Our firm always manages to order on time	1 0	2 .	5 .	3 .	. 6
Our firm always manages to order on time	0	0	0	7	1
Our firm always manages to order on time		0	0	4	3
Our firm always manages to order on time				0	3
Our firm always manages to order on time				0	2
Our reordering system is well automated	1 0	2 .	5 .	3 .	. 6
Our reordering system is well automated	0	0	0	8	3
Our reordering system is well automated		0	0	6	5
Our reordering system is well automated				0	9
Our reordering system is well automated				0	6

Our firm has adequate quality control within the supply chain	100	200	500	300	.6134
Our firm has quality monitoring points within the supply chain	100	200	500	3089	.633397
Aggregate	100			3745	.6397

Source: Primary Data (2022)

Table 1 shows that most supply chain managers agree that their firms had adequate quality control within the supply chain which had the highest mean of 3.9000. This implies that the food processing firms process high quality products thus enhancing customer satisfaction. Other supply chain managers were undecided on their firms having a well-established way of monitoring stock levels within their firms while other supply chain managers varied much on the same view with a standard deviation of 0.74427. Therefore, the overall mean of 3.745 and a standard deviation of .6397 indicated that the respondents generally agreed that inventory management are implemented by Food Processing Firms.

Descriptive Statistics of Performance of Food Processing Firms

Performance of food processing firms was perceived in terms of supply chain manager's views. Selected statements captured performance of food processing firms' indicators. As responded by the respondents, the study gives summary of their views in respect of performance as portrayed in Table 2.

Table 40: Descriptive Statistics of Performance

Statements	N	M	M	M	S
		i	a	e	t
		n	x	a	d
				n	.D
					e
					v
Our revenue performance has been improving in the last five years	100	300	500	304	.66810
Our delivery times have significantly	100	200	500	305	.64

improved	0	0	5	1
			0	5
			0	7
The market quickly absorbs majority of our products in good time	1 0 0	2 0 0	5 0 0	3 8 1
			0	7
			0	8
Our firm has reduced the levels of redundant costs	1 0 0	2 0 0	5 0 0	3 9 5
			0	1
			0	5
			0	7
There has been considerable reduction as a result of inventory management	1 0 0	2 0 0	5 0 0	3 9 8
			0	4
			0	4
			0	6
There has been considerable reduction as a result of proper information	1 0 0	2 0 0	5 0 0	4 0 6
			0	3
			0	2

exchange				0	7
				0	7
Therehasbeencostreductionasaresultoflogisticdesign	1	2	5	4	.
	0	0	0	0	7
		0	0	8	4
				0	7
				0	9
Increasedresourceefficiencyasresultofproperinformationsharing	1	3	5	4	.
	0	0	0	1	6
		0	0	3	7
				0	6
				0	5
Increasedresourceefficiencyasresultofinventorymanagement	1	3	5	4	.
	0	0	0	1	6
		0	0	9	9
				0	1
				0	8
				0	7
Increasedresourceefficiencyasresultoflogisticsmanagement	1	2	5	4	.
	0	0	0	2	7
		0	0	9	1
				0	4
				0	8
				0	5
Aggregate	1			3	.
	0			.	6
	0			9	7
				4	7
				5	0
					3

Source: Primary Data(2022)

The results from Table 2 indicate that most of the supply chain managers agreed that their firms utilized resources to a maximum level as a result of logistics management which had the highest mean of 4.2900, while other managers were undecided on their firm's revenue performance having improved for the past 5 years having a mean of 3.4100. In contrast to this other supply chain manager had varied views on their firms having cost reduction as a result of logistics design with a standard deviation of 0.74799. Therefore, the overall mean of 3.945 and a standard deviation of 0.67703 indicated that the respondents generally agreed that food processing firms were performing efficiently.

Pair Wise Correlation between the Study Variables

Correlation determines the direction of a relationship between any two variables Table 3.

Table 41: Pearson correlation between study variables

V	P	I
a		M
r		
i		
a		
b		
l		
e		
s		

P	1	0
		.431
1	0	1
M	.431	1

The correlation coefficient between inventory management and performance was 0.431 with a p-value of 0.000 which was found to be significant at the set significance level. This is because proper inventory management enhances performance of food processing firms. This suggests that implementation of the inventory management practices would lead to a statistically significant increase in performance.

Inventory Management and Performance

The study sought to ascertain the effect of inventory management on performance of food processing firms in Nairobi County. A simple linear regression was used to examine this relationship and the hypothesis was postulated as follows;

H03: There is no statistically significant relationship between inventory management and performance

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Source: Primary Data(2022)

The R^2 as shown in Table 4(a) was 0.186 denotes that 18.6% of the change in performance can be associated with inventory management, the rest (81.4%) of change in performance is explained by other factors not in the model.

Results shown in Table 4(b), (F-value 22.324, p-value 0.000) shows that the model used was statistically significant since $p = 0.000 < 0.05$. The findings of this study show that inventory management is a reliable predictor of performance

The study found out that constant of regression was 2.104 implying that holding other factors constant performance is equal to 2.104 units as shown in Table 4(c). The slope of regression model obtained was 0.492 and it implies that an increase in inventory management by one-unit results to 0.492 units increase in performance. The obtained (t-statistic was 4.725, P-value of $0.000 < 0.05$) at 5% significance level therefore, the null hypothesis was rejected. It was therefore rejected since the value was significant ($p < 0.05$). Accordingly, the study concurs that inventory management was an important consideration that need to be made when determining the performance of food processing firms in Nairobi County. This illustrated a statistically substantial effect of inventory management on performance.

These results concur with the results of Mbah *et al.* (2019), who scrutinized inventory management and operational effectiveness of manufacturing enterprises in South-East Nigeria and established that inventory management leads to better performance of an organization and Mwangi (2013) who reported that inventory management has an affirmative effect on performance. This output concurs theoretically with lean theory by James *et al.* (1996) since every business gain flexibility in ordering decisions and minimizes waste by reducing lead time and this will enhance performance. The present results suggest that inventory management could significantly improve the performance of the food processing firms since most of the supply chain managers opined that their firms had adequate quality control within the supply chain. This improves the customer retention level since when customers receive high quality products they continue purchasing from the same organization

The simple regression model for effect of inventory management on performance can be presented by the equation below.
$$Y=2.104+0.492X_3+\varepsilon$$

DISCUSSION

The third objective established the effect of inventory management on performance of food processing firms. The results of this objective indicated that inventory management had an affirmative effect on performance of food processing firms in Nairobi County. The results also revealed that most of the food processing firms had adequate quality control within the supply chain to ensure that the quality of goods produced and delivered to the customer are up to the standards. The results further revealed that through quality control there is reduction in cost where the reverse logistics cost and the cost of losing customers is reduced. The present findings suggest that inventory management could significantly improve the performance of the food processing firms.

CONCLUSION

Inventory management, was also found to positively and significantly affect the performance of food processing

firms. This means that when a firm has a liability system in place for quality control and monitoring stock level, this impacts on performance. Firm size was not substantial to the association between SCM practices and performance in that the association remained unaffected.

RECOMMENDATION

Inventory management was found to positively affect the performance of food processing firms. It is therefore recommended that firms should establish adequate quality control and quality monitoring points in order to get the best quality during the production and also as a way of minimizing on cost.

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