ROLE OF INVENTORY MANAGEMENT ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA – A CASE OF NEW KENYA COOPERATIVE CREAMERIES

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ABSTRACT

The past 15-20 years have seen an increase in research focusing on operational issues relating to supply chain management. Most of the research has been related to multi-echelon inventory models. The general objective of this study was to examine the role of inventory management on performance of manufacturing firms in Kenya. The specific objectives of the study were to determine how inventory management cost reduction affects performance of manufacturing firms in Kenya, to assess how the use of inventory control systems affects performance of manufacturing firms in Kenya, to investigate how lead time affects performance of manufacturing firms in Kenya and to establish how supplier demand affects performance of manufacturing firms in Kenya. The study population was 500 respondents. The sample size of the study was 83 respondents. A descriptive research design was used in this study. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS). The data was then presented using frequency distribution tables, bar charts and pie charts for easier understanding. The study concluded that holding stocks and ordering costs may increase the performance of an organization, cost reduction helps in preparing employees towards managing the inventory ideology, that cost reduction equips organization with sufficient resources and that inventory cost reduction helps in achieving profitability objective. Inventory control system, organizational development, information sharing and channels relationships affect the performance of the manufacturing firms. The study recommended that improved anticipation of future developments in manufacturing firms in Kenya will improve their performance. The study further recommended that unified data gives firms the information integrity and should be used. IT is a competitive tool in organizations for realizing its corporate competitive strategy.

Keywords: *supply chain management, performance, inventory management and supplier demand.*

INTRODUCTION

In the earlier years, Inventory Management was treated as a cost Centre, since Purchasing Department was spending money on inventory while Stores was holding huge stock of inventory, blocking money and space, Ramakrishna (2005).However, with the process of liberation and opening up of global economy, there has been a drastic change in the business environment, resulting in manufacturing organizations exposed to intense competition in the market place. Service companies' worldwide has been working out various strategies to face the challenges and to cut down manufacturing costs to remain competitive (Blomqvist, 2006).

Supply chain management is the process of efficiently integrating suppliers ,manufacturers ,warehouses and stores so that merchandise is produced and distributed in right quantities ,to the right locations ,and at the right time in order to minimize system wide costs while satisfying service-level requirements .In the retail environment ,this process is well known and has been in use for a long time (Fawcett et al, 2009), .Certain organizations such as Wal-Martt and Dell have managed to streamline their supply chain networks to become industry leaders .The term supply chain management can be conveniently divided into two areas :inventory management and distribution .Besides this two areas there are many other decisions critical to streamlining the process, such as facility location ,material procurement and adapting to changes in the system and environment (Rajeev, 2008).

Recent studies have shown that tremendous cost savings and potential revenue can be generated with the enhanced management of distribution and inventory. It was estimated that a company could reduce its total expenses by at least two percent through better inventory management and distribution of finished goods. This represents a percentage of total expenses, not just the amount providers spend on supplies (Schmidt, 2009).

Statement of the Problem

In majority of manufacturing industries, inventory constitutes some significant part of current assets (Songet al.,2006). Manufacturing companies attain significant savings from effective materials management, which amounts between 50%-60% of total costs (Songet al.,2006). Effective management of inventory can lead to a reduction in cost, resulting in a significant saving. A potential 6% saving on total cost through effective inventory management is achievable (Bell & Sturkhart, 1987).The various types of materials to be managed in any organization include purchased materials, work-in-progress (WIP), materials and finished goods (Banjoko, 2009). Indeed, for many manufacturing firms inventory costs account for over 50 % of total production costs (Chen, 2005).

Today, it is commonly accepted that the cost of holding stock to a business is between 4% and 10% on top of the stock's value (PPOA, 2005). Manufacturing firms in Kenya are characterized

by elongated or overextended chains retailers (buyers/agents) which, in turn, mean long chains of transactions between chain members and consumers (Amoro, 2011).(World Firm, 2007) showed that leading firms in Kenya are faced with problems of wrong forecasting due to an unavailability of enough inventory management information. In 2012 New KCC was affected by poor inventory management related cases leading to low performance (KAM, 2013). This caused erratic deliveries in these firms, late deliveries and inflexibility hence affecting customer satisfaction with in their downstream chain (KIM, 2013).Customers are concerned with the unavailability of the product and the ability of the firms to meet their needs timely (Aghazadesh, 2003).

Unavailability of integrated inventory management has affected performance at New KCC hence reduced profits in the downstream chain hence leading to loss of chain profits (Otieno, 2011). Locally, studies which have been done include, Kariuki (2003) attempted to explain the benefits of inventory cost management among private companies, Gathumbi (1997) examined the Application of Inventory Models in Drug Inventory Management. There are few local studies done on establishing the role of effective inventory management in enhancing performance of commercial firms in Kenya. There are studies done on the adoption of inventory management systems by the public sector in the developed world. Thus the need to validate these in the context of the developing countries and in specific the firming sector in the developing countries since the implementation of inventory management systems will adversely affect positively performance in terms of increasing the effective and efficiency of inventory management in the private sector. Thus the study focuses on how inventory management enhances performance of manufacturing firms in Kenya. This study therefore seeks to establish the role of inventory management in enhancing performance of manufacturing firms in Kenya with reference to New KCC.

Literature Review

Cost Reduction

Eyaa and Nagitta (2011) in Uganda did research to explain none compliance in public procurement in Uganda. One of the objectives was to investigate if lack of professionalism was responsible for none compliance of procured supplies. The PPDA audit report of 2008 previously revealed lack of professionalism was high among public procurement officers in Uganda and this could be attributed to the fact that the profession was still young. This position is confirmed by Basheka and Mugabira (2008) who state that the level of professionalism in public procurement is low or non-existent.

Eyaa and Nagitta (2011) collected data from the respondents who were procurement officers using a structured self administered questionnaire. Professionalism was measured using 12 items obtained from the works of Ntayi et al., (2009). These items covered integrity, confidentiality, being ethical, matters relating to conflict of interest, competencies in the area of procurement and the level of procurement knowledge.

Inventory Management Systems

Loukis et al (2009) in Greece did a research and their objective was to prove the hypothesis that IT investment makes no contribution to business performance. The sample of the survey was randomly selected from the database of ICAP and consisted of 304 Greek companies from the 27 most important sectors of the Greek economy. In this sample there was equal representation of small, medium and large companies. In particular 103 of these companies were small (with more than 10 and less than 50 employees), 103 were medium (with more than or equal to 50 and less than 250 employees) and 98 were large (with more than or equal to 250 employees).
Additionally two similar samples were also created-with the same percentages of companies from the above 27 sectors. The hypothesis was rejected meaning that in Greece, IT investment makes a statistically significant contribution to business performance.
The study population was 120 central government procuring and disposing entities (PDE'S). The list of entities was obtained from the Public procurement and disposal of Public assets authority (PPDPAA). Consistent with Kreijcie and Morgan (1970), the sample size selected was 92 randomly selected from the population order to give each entity an equal chance of being selected. Their findings was that familiarity with procurement regulations and professionalism explain 52.4% of the variation in compliance with procurement regulations.
Chase et al.,(2009), explained the concept of inventory management brings in the total systems approach to managing the entire flow of information, materials and services from raw materials suppliers through factories and warehouses to the end user/customer. The study further confirmed that a firm's success depends on how they manage their materials effectively. They indicate that it is important to monitor inventory at each stage because it ties up resources. Therefore, effective inventory management is fundamental to the survival of business, industry and economy.

Lead Time

Grönroos (2001) emphasized the importance of lead time in the experience of inventory management, similar to the idea proposed by Lehtinen and Lehtinen (2002). Customers bring their earlier experiences and overall perceptions of a service firm to each encounter because customers often have continuous contacts with the same service firm (Grönroos, 2001). Therefore, the lead time issue was introduced as yet another important component in the perceived quality inventory management model, so that the dynamic aspect of the service perception process was considered as well. A favorable and well-known time strategy is an asset for any firm because it has an impact on customer perceptions of the communication and operations of the firm in many respects. If a service provider has a strong inventory management in the minds of customers, minor mistakes will be forgiven. If mistakes often occur, however, the image will be damaged. If a provider's image is negative, the impact of any mistake will often be magnified in the consumer's mind. In a word, lead-time can be viewed as a filter in terms of a consumer's perception of quality Parasuraman et al. (2005). Lead-time has to live up to service

promises, especially if the service provider is "claiming" the quality service position in the firming industry.

According to Navon & Berkovich (2006), the main logistic responsibility in any organization is to formulate master programme for the timely provision of materials, components and work-in-progress. Stevenson (2001), explained that logistics, including materials and goods flowing in and out of a production facility as well as its internal handling has become very important to an organization to acquire competitive advantages, as the company's struggle to deliver the right product at the correct place and time. The main aim is to actually promote, with low cost, a flow whose velocity allows the execution of manufacturing process with expected satisfaction level.

Bowersox & Closs (2002), articulated that improvement in continuity of supplies with reduced lead times, will lead to improvement in cooperation and will also enhance cooperation's and communications with reduced duplication of efforts, reduction in material costs and improvement in quality control, which are the main benefits of materials management

Supplier Demand

Organizations which do not have performance means in their processes, procedures, and plans experience lower performance and higher customer dissatisfaction and employee turnover (Andersen and Christensen, 2005). Measuring the performance of the purchasing function yields benefits to organizations such as cost reduction, enhanced profitability, assumed supplies, quality improvements and competitive advantage as noted by (Basheka & Bisangabasaija, 2010).

Although the need for performance in firms has long been recognized, for a variety of reasons, many organizations fail to measure it adequately (Cagliano et al, 2003) review the history of PP in the literature through the 1980s and early 1990s and conclude that a general weakness of "traditional" measures is that they recognize and reward mainly short-term gains, rather than long-term ones. (Donovan & Williams, 2003) argued that measuring long-term impact is notoriously difficult. In another study, Zineldin (1995) described and empirically analyzed the major factors influencing the relationship between firms and their corporate customers in Sweden. Zineldin's study was based on 179 responses from small, medium, and large firms. Significant findings include the following. First, small and medium-sized firms have more stable relationships and contact with their firms than do larger firms. They also have relationships with fewer firms. Second, small firms are less satisfied with their relationship with their firms due to a lack of confidence and cooperation. In addition, small firms feel their Companies are less knowledgeable of their business. Third, the most important factors in the selection of a lead firm are confidence and trust, competitiveness on loans, and adaptations and speed of decisions. Personal contact with the firm and the level of firm technology, while important, are not sufficient reasons for choosing a firming partner.

Research Methodology

A descriptive research design was used in this study. The target population of this study comprises of the general staff of New KCC headquarters which are 500. Thus Role of Inventory Management on Performance of manufacturing firms and its application are relevant at this level prompting the choice of the population. This study is expected to produce both quantitative and qualitative data. Once the questionnaires are received they was coded and edited for completeness and consistency. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS) version 20. This technique gives simple summaries about the sample data and present quantitative descriptions in a manageable form, Gupta (2004). Together with simple graphics analysis, descriptive statistics form the basis of virtually every quantitative analysis to data, Kothari (2004). The significance testing was done at 5% level of significance and SPSS was used for this purpose. The data was then presented using frequency distribution tables, bar charts and pie charts for easier understanding.

Findings

Regression analysis

A linear multiple regression analysis was used test the relationship between the four independent variables (cost reduction, inventory management systems, supplier demands and lead time) and the dependent variable; organizational performance. Statistical Package for Social Sciences (SPSS) was applied to code, enter and compute the measurements of the multiple regressions for the study.

Coefficient of determination explains the extent to which changes in the performance of manufacturing firms can be explained by the change in the independent variables (cost reduction, inventory management systems, supplier demands and lead time).

Table 4.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
					F Change	Sig. F Change
1	.792[a]	.627	.597	.5224	3.567	.031

According to the findings in the table above, the value of adjusted R^2 is 0.596. This indicates that a variation of 59.7 % of performance of manufacturing firms the four independent variables at a confidence level of 95%. In addition other factors that were not studied in this research contribute to 40.3% of the performance of manufacturing firms. Therefore, further research should be conducted to investigate the other factors which contribute to that 37.3% of the organizational performance at New KCC.

The significance value is 0.031 which is less than 0.05 thus the model is statistically significant in predicting how the independent variables (cost reduction, inventory management systems, supplier demands and lead time) on the dependent variable (performance of manufacturing firms). The F critical at 5% level of significance was 2.56. The F calculated (value =3.567) was greater than the critical value (3.567>2.56) an indication that the independent variables (cost reduction, inventory management systems, supplier demands and Lead time) affect the organizational performance with reference to New KCC.

Table 4.2ANOVA[a]

Model		Sum of Squares	df	F	Sig.
	Regression	50.120	4	3.567	.031[b]
	Residual	3.048	49		
	Total	53.168	53		

After regression the equation;

$Y= 0.254+0.242X_1+0.432X_2+0.091\ X_3 + 0.043X_4+ \varepsilon$ will be achieved

Where Y is the dependent variable (performance of manufacturing firms) X_1 is the Cost Reduction, X_2 is inventory management systems, X_3 is supplier demands, $X_4$is the lead time.

Taking all independent variables constant at zero, the performance of New KCC will be 0.254. The data findings also showed that taking all other independent variables at zero, a unit increase in inventory management systems will lead to a 0.432 increase in the performance of New KCC; a unit increase in cost reduction will lead to a 0.242 increase in the performance of the New KCC; a unit increase in the supplier demands will lead to a 0.091 increase in the performance of the New KCC while a unit increase in the lead time will lead to a 0.043 increase in the performance of the New KCC.

Table 4.3 Multiple Regressions

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.254	.472		.141	.031
	Cost reduction	.242	.183	.241	.567	.024
	Inventory Management Systems	.432	.341	.493	.374	.017

Supplier demands	.091	.137	.106	.643	.027
Lead time	.043	.110	.068	.243	.035

Therefore inventory management systems contribute more to the performance of the New KCC. At 5% level of significance and 95% level of confidence; cost reduction showed a beta value of 0.0242 and 0.024level of significant; inventory management systems showed a beta value of 432 and 0.017 level of significant; supplier demand showed a beta value of 0.091 and 0.027 level of significant and lead time showed a beta value of 0.043 and a 0.035 level of significant. Inventory management system was found to be the most significant among the four variables.

Summary of the findings

Inventory Cost Reduction

The study showed that cost reduction is necessary for implementation of inventory management for performance of New KCC. Inventory cost reduction eliminates wastages on the materials used for production of milk at KCC. According to the study, holding stocks and ordering costs will increase the performance of an organization. Cost reduction helps in preparing employees towards managing the inventory ideology and also in achieving profitability objective of KCC. This is in line with the literature by A.O. Olukunle, (2008)that inventory management will eliminate wastages on the materials used for production.

Inventory Management system

The findings agreed that use of inventory control systems affect implementation of quality inventory management to a great extent. Inventory management systems do affect implementation of quality inventory management. Inventory management systems assist in lowering costs thus profitability.

The study showed t that improved anticipation of future developments at New KCC will improve the organizational performance. New innovations and technologies are promising to save costs and thus improving the performance of the New KCC. Inventory management systems provides tools to enable organizational operations to consistently offer exemplary service delivery, that unified data gives you the information integrity. According to the findings, IT is a competitive tool in the organization for realizing its corporate competitive strategy.

The findings are in collaboration with literature Ma & Tang, (2001), who argued that Management Systems helps to develop quality process based reviews for process improvements that reduce process variability and aim for "zero defect". Inventory Management Systems facilitates resource integration and decision making through cross functional teams that improve efficiency and effectiveness. One way to improve operations is to set up automated inventory

tracking from the time you accept merchandise at the receiving dock or factory floor to the sale of your goods.

Supplier Demands

The study found out that supplier demands affects the performance of the New KCC. According to the findings, organizational development, Information sharing and channels relationships affect the performance of the New KCC. The study further showed that inter organizational systems and supplier relationships competencies also affect the performance of an organization to a larger extent.

Lead Time

The study found out that favorable and well-known time strategy affects the profitability of organization to a very large extent; and that also they strongly agreed that creation of value affect the profitability of the New KCC.

The study further showed that improvement in continuity of supplies and lead time can be used as a filter in terms of a consumer's perception of quality which in turn affect the profitability of New KCC to a large extent. The findings were in collaboration with Dimitrios, (2008) who argued that Cycle-time reduction almost always means reduced costs, reduced inventory levels, improved production predictability, increased customer service, and better quality. To reduce cycle time, manufacturers need to streamline every aspect of their operations, especially the order-to-delivery process

Conclusion

The study concluded that cost reduction is necessary for implementation of inventory management for performance of manufacturing firms. The study concluded that holding stocks and ordering costs may increase the performance of an organization. Cost reduction helps in preparing employees towards managing the inventory ideology and equips organization with sufficient resources and that inventory cost reduction helps in achieving profitability objective.

The study concluded that improved anticipation of future developments in manufacturing firms in Kenya will improve their performance and new technologies are promising to save costs and thus improving the performance of the New KCC. The study further concluded that Inventory Management System is a competitive tool in the organization for realizing its corporate competitive strategy.

The study concluded that information sharing and a channels relationship affect the performance of the manufacturing firms and enhances productivity.

Recommendation

The study recommended that manufacturing firms should minimize the cost of production (which includes materials, labour and service costs) to attain their optimum performance level.

The costs involved in inventory-production that are incurred by manufacturing companies are categorized under holding stocks and ordering costs.

The study recommended that improved anticipation of future developments in manufacturing firms in Kenya will improve their performance. The study further recommended that there should be unified data,information sharing and channels relationshipsand use of inventory management systems as a competitive tool in the manufacturing firms for realizing their corporate competitive strategy.

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