ROLE OF STRATEGIC INVENTORY MANAGEMENT ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA: A CASE OF DIVERSEY EASTERN AND CENTRAL AFRICA LIMITED

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Full Length Research

Available Online at: http://www.iajournals.org/articles/iajpscm_v1_i4_22_44.pdf

ABSTRACT

Strategic inventory management is the systematic approach of identifying and solving the relevant stocking issues so as to achieve the targets and objectives set by management. Manufacturing firms face myriad of problems including: poor inventory control, poor strategies in order fulfillment, reduced consumer effective demand due to poor forecasting and lack of proper ICT application systems leading to poor performance. The purpose of the study was to assess the role of strategic inventory management on performance of manufacturing firms in Kenya. The study focused on 155 employees in the supply chain department at Diversey Eastern and Central Africa (DECAL). The target population was 105 employees from the various sections in the supply chain department who are directly involved in managing inventories in the organization. The sampling frame was the Human Resource register at DECAL which stipulates that the Supply Chain department comprises of 155 employees working in the various sections in the organization. The population sample was 51 respondents and stratified sampling technique was used since the population from which the sample is drawn does not constitute a homogenous group. Structured questionnaires containing both open ended and closed ended questions were used to collect primary data. 48 questionnaires were filled and returned for analysis. Data collected was analyzed using both qualitative and quantitative data analysis approaches with the aid of Statistical Package for Social Science (SPSS) version 20. Analysis of variance (ANOVA), correlation and regression analysis were also used while analyzing data. Descriptive analyses such as frequencies and percentages were used to present quantitative data in form of frequency distribution tables and graphs such as bar charts and pie charts on major research questions while open ended questions were analyzed qualitatively, arranged thematically and presented on narrative form to draw conclusions and recommendations.

Key Words: *strategic inventory management, performance, manufacturing firms, Kenya, Diversey Eastern and Central Africa Limited*

INTRODUCTION

Worldwide, inventory is regarded as vital to the successful functioning of any manufacturing firm as it is the lifeblood and the heart of any manufacturing system (Ballou, 2005). Inventory often represents as much as 30% of the total capital invested in industrial organizations (Dobler, 2006). This was confirmed by Sawaya (2006) who posit that it may represent 33% of the company assets and as much as 90% of the working capital. Vohra (2008) asserts that there is need therefore to analyze the costs of maintaining certain levels of inventory as there are costs involved in holding too much stock and costs involved in holding too little inventory since substantial share of funds is invested in them.

As with many other western countries, there have being a relative decline in performance of the manufacturing industry in Australia and as a result, its contribution to the total Australian GDP is less than half what it was four decades ago. This was attributed to poor strategic inventory management leading to increased cost of production resulting to the gross operating profit margin for the manufacturing firms to fall from 9.5% in the year 2013 to 7.8% in the year 2014 (Anthony, 2014). Similarly, in most of Africa, performance in the manufacturing industry has been poor over the last decades. Decline in performance of the manufacturing firms in Nigeria resulted to a decline in GDP from 9.6% in the year 2006 to 5.0% in the year 2013. This was attributed to high cost of production especially in the oil and gas sector and inappropriate investment in equipment and machinery due to poor strategic inventory management, Nigerian Manufacturing Enterprises Survey, (NMES,2013)

Decline in performance of the manufacturing industry resulted to a decline in the global Gross Domestic Product (GDP) from 5.00 percent in the year 2010 to 3.08 percent in the year 2011 as a result of poor inventory control and reduced consumer effective demand due to poor strategies in managing inventories, Kenya National Bureau of Statistics (KNBS, 2012). KNBS (2012) also observed that, poor performance of the manufacturing firms in Kenya contributed to a decline in GDP to 1.5 percent in the year 2008 from 7.0 percent achieved in the year 2007. The GDP rose to 2.7 percent in the year 2009 and a further increase of 5.8 percent in the year 2010. However, this growth declined to 4.4 percent in the year 2011. This was attributed to poor inventory control, reduced consumer effective demand, delays in fulfilling customer's orders and inappropriate technology application due to lack of proper strategic inventory management.

Manufacturing organizations in Kenya have ignored the potential savings from strategic inventory management, treating inventory as necessary evil and not as an asset requiring management (Temeng, 2010). Salawati (2012) posit that in the 1980's inventories of raw materials, work-in-progress components and finished goods were kept as a buffer against the possibility of running out of needed items. However, large buffer inventories consume valuable resources and generate hidden costs (Salawati, 2012). Nyabwanga (2012) also observed that too much inventory consumes physical space, creates a financial burden, and increases the possibility of damage, spoilage and loss. On the other hand, too little inventory often disrupts business operations leading to poor performance among manufacturing firms (Dimitrios, 2008).

Kenya manufacturing firms face problems of fluctuating inventories, inaccurate forecast, poor responsiveness to customer's needs and lack of proper ICT application systems resulting to poor performance (Mathuva, 2013). This was confirmed by Awino (2012) who observed that New Kenya Cooperative Creameries (KCC) faced problems of: erratic deliveries, reduced consumer effective demand and high cost of production due to poor strategic inventory management techniques leading to declined performance. Kagira (2012) also noted that Kenya Tea Development Agency managed factories faced problems of fluctuating inventory levels, poor demand management and lack of proper inventory control systems due to poor strategic

inventory management techniques leading to poor performance. Ondiek (2012) affirmed that Kenya manufacturing firms are facing competition in the current markets, therefore the need to come up with new strategies of managing inventories effectively in a bid to improve their performance.

The manufacturing industry in Kenya include building, construction and mining sector, chemical and allied sector, energy, electrical and electronic sector, food, beverages and tobacco sector, leather products and footwear sector, metal and allied sector, motor vehicle assembly and components sector, paper and paperboard sector, pharmaceutical and medical equipment sector, plastics and rubber sector, textile and apparel sector and timber, wood products and furniture sector, Kenya Association of Manufacturers, (KAM, 2013). Millennium Management Consultants, MMC (2013) affirms that DECAL is classified under Basic Industrial Chemical Sector. MMC (2013) also noted that DECAL faces persistent problems of: misallocation of resources by investing in less critical items leading to unnecessary costs, inaccurate forecasts, poor responsiveness to customer's orders and lack of proper inventory control systems due to poor strategic inventory management leading to declined performance

STATEMENT OF THE PROBLEM

Decline in performance of the manufacturing industry resulted to a decline in the global GDP from 5.00 percent in the year 2010 to 3.08 percent in the year 2011 because of poor inventory control and reduced consumer effective demand due to poor strategies in managing inventories (KNBS, 2012). KNBS (2012) also observed that, poor performance of the manufacturing firms in Kenya contributed to a decline in GDP to 1.5 percent in the year 2008 from 7.0 percent achieved in the year 2007. The GDP rose to 2.7 percent in the year 2009 and a further increase of 5.8 percent in the year 2010. However, it declined to 4.4 percent in the year 2011 as a result of poor inventory control, reduced consumer effective demand, delays in fulfilling customer's orders and inappropriate technology application due to lack of proper strategic inventory management.

Manufacturing firms in Kenya face problems of fluctuating inventories, inaccurate forecast, poor responsiveness to customer's needs and lack of proper ICT application systems resulting to poor performance (Mathuva, 2013). Similarly, Awino (2012) observed that New KCC faced problems of erratic deliveries, reduced consumer effective demand and high cost of production due to poor strategic inventory management techniques leading to poor performance. Kagira (2012) also noted that Kenya Tea Development Agency managed factories faced problems of fluctuating inventory levels, poor forecasting and lack of proper inventory control systems due to poor strategic inventory management techniques leading to declined performance. The situation at DECAL as per MMC (2013) affirms this by indicating multiple problems such as misallocation of resources by investing in less critical items leading to unnecessary costs , inaccurate forecasts, poor responsiveness to customer's orders and lack of proper inventory control systems due to poor strategic inventory management leading to declined performance. As a result of such

challenges, a mismatch between the role of strategic inventory management and performance is eminent, thus the study proposes to assess the role of strategic inventory management on performance of manufacturing firms in Kenya with reference to DECAL.

GENERAL OBJECTIVE

To assess the role of strategic inventory management on performance of manufacturing firms in Kenya

SPECIFIC OBJECTIVES

1. To determine the role of inventory control on performance of manufacturing firms in Kenya.
2. To assess the role of order fulfillment on performance of manufacturing firms in Kenya.
3. To examine the role of demand management on performance of manufacturing firms in Kenya.
4. To establish the role of ICT application on performance of manufacturing firms in Kenya.

LITERATURE REVIEW

Theoretical Review

Theoretical review refers to putting forward opinions of theories to give good understanding of previous research works and help to identify and analyze important factors and relationships within envisaged situations (Simons, 2009). Different theories have been employed in inventory management. The study adopted the following theories: Lean theory, theory of constraints, Transaction Cost Theory (TCT) and Resource Based View (RBV) theory.

Lean Theory

Lean thinking has its origins in Japanese production operations (Lamming, 2008). Toyota practiced the principles of lean management as early as the 1950s forming the basis of strategic inventory management which today is envisaged as an essential core principle of almost any production system in all industries worldwide (Lysons, 2006). Lean production is 'lean' because it uses less of everything compared with mass production: half the human effort in the factory, half the factory space, half the investment in tools, half the engineering hours to develop a new product in half the time and it requires far less half of the needed inventory on site (Eroglu, 2011). The expected results are fewer defects while producing a greater and ever growing variety of products. Wallian (2007) asserts that there are 5 key principles to lean thinking which include: identifying all steps across the value stream by eliminating non-value adding activities and processes leaving just a stream of value adding activities, making those activities that create the value flow by linking value-adding activities effectively to deliver total value to the customer, only making what is pulled by the customer just-in- time and striving for perfection by continually removing successive layers of waste.

In strategic inventory management, Scheid (2010) opined that lean theory is useful in that it eliminates buffer stock, minimizes waste in production process thus providing manufacturing firms with great flexibility in their ordering decisions, reduction of inventory hold on site, and eliminate inventory-carrying cost. Lean thinking aids in making only what is pulled by the customer just in time leading to order fulfillment (Vollman, 2006). Similarly, lean thinking enables organizations to strive for perfection by continually removing successive layers of waste such as activities that add cost or consume resources, but are not operationally necessary and do not add value leading to efficient inventory control (Yugang, 2009). In addition, lean thinking identifies all steps across the value stream with the aim of eliminating non-value adding activities and processes through employment of appropriate ICT application systems in the organization (Wadhwa, 2010)

Theory of constraints

The theory of constraints is a management philosophy that seeks to increase manufacturing throughput efficiency or system performance measured by sales through the identification of those processes that are constraining the manufacturing system (Goldratt, 2006). Kazim (2008) argues that theory of constraints is based on the principle that a chain is only as strong as the weakest link or constraint and to elevate and manage the constraint is deemed necessary. The difficulties in the theory of constraints are: very long lead times, large number of unfulfilled orders, high level of unnecessary inventories or lack of relevant inventories, lack of key customers engagement and frequent changes or absence of control related priority orders, which implies on schedule conflict of resources (Fawcett, 2009). The theory of constraints thus emphasizes on focusing effectively through managing the capacity and capability of these constraints if they are to improve the operational performance of their organization (Umble, 2006)

In strategic inventory management, Boyd (2007) suggested that the theory of constraints is useful through reduction of waste by identifying all steps across the value stream through eliminating non-value adding activities and processes leaving just a stream of value adding activities that in turn improves performance. Theory of constraints is also useful in identifying order fulfillment strategies available to manufacturing firms in order to respond effectively to increasing product variety and demand from customers (Trietsch, 2005). Similarly, theory of constraints minimizes investment in stock and allocates resources optimally through use of various inventory control techniques and systems to achieve optimal inventory levels (Yugang, 2009). In addition, the theory of constraint is of great significance in ensuring value of each process or step is measurable and measurements should be conducted regularly by analyzing the value of the product before and after the process in terms of profitability and market share in a bid to increase the manufacturing throughput efficiency or system performance (Mukherjee, 2010)

Transaction Cost Theory

TCT has become an increasingly important anchor for the analysis of a wide range of strategic and organizational issues of considerable importance to a firm (Williamson, 2006). In particular, the TCT has been employed in studying firm's boundaries, vertical integration decisions, the rationale for conducting an acquisition, managing the supply chain links, their networks and other hybrid governance forms (Goshen, 2008). TCT is grounded on the assumption that the relationship between human and environmental factors is the reason why transaction costs increase in the economic system (Hart, 2006). This is however not the only reason why these costs exist. The interdependence of factors contributing to transaction costs can contribute to their increase (Ciborra, 2007). Attempts to reduce transaction costs should not aim to reduce the effect of a single factor, but the effects of the interdependencies between factors (Bakos, 2009). A transaction cost is not only the sum of the costs generated by the different factors, but is influenced by the imbricate interdependent relationship between them (Barney, 2007)

In strategic inventory management, Wigand (2005) posited that TCT is important in determining the various costs such as: stockholding cost, ordering cost, carrying cost and price per unit of inventory that form the constituent costs of a product that enable allocation of resources optimally and cushion against unnecessary costs being incurred in the organization which in turn improves performance.TCT is useful as it provides the ultimate total cost of a product after production which enables manufacturers to pre-determine their expenses based on available order fulfillment strategy employed thus enabling them to respond to increasing levels of product variety and demand (Pine, 2006). Similarly, TCT enables manufacturing firms to stock various classes of inventories according to their dollar value to a firm that in turn balances the customer's requirements with the capabilities of the supply chain by primarily forecasting on demand and synchronizing it with production, procurement and distribution capabilities to enable timely delivery of supplies in the right quantity (Gonzalez, 2010). In addition, TCT depict ICT as a tool that sustains information needs, providing additional information and information management power so as to facilitate efficiency of the transactional process within which economic exchanges take place (Ciborra, 2007)

Resource Based View Theory

The source of an organization's competitive advantage lies mainly in how it exploits its distinctive internal resources and competencies, by setting strategic objectives based on what they enable it do (David, 2011). The resource-based approach starts with the organization's strengths and seeks an environment that will enable it exploit them by changing environments to suit what it does best rater than changing what it does best to fit the environment (Kuncoro, 2005). One of the key insights of the resource-based view is that not all organizational resources are a potential source of competitive advantage (Hitt, 2011). However, in order to be competitive, resources must be valuable by being capable of creating customer value through: allowing the firms to implement strategies that will enable it to meet customer's needs more

efficiently and effectively, rare and in high demand, difficult for competitors to imitate and difficult to substitute (Sampurno, 2010)

In strategic inventory management, Sulastri (2006) found that RBV approach is useful by employing various strategies in controlling inventories in the organization through optimal utilization and allocation to be more competitive and improve on performance. RBV also uses techniques such as value analysis to study the function of material, components or systems to identify areas of unnecessary costs as it forms a key component of an inventory control strategy that minimizes costs to the bottom-line (Husnah, 2013). RBV thus ensures product quality is guaranteed which in turn meets customer's needs and specifications through fulfillment of orders (Wadhwa, 2010). In order to achieve this, RBV exploits supplier-led approach through creating a challenge for firms down the value chain to learn how to exploit the new machinery, consumables or processes, scale-intensive approach through use of ICT application where advantage is gained from economies of scale and information intensive approach by exploiting information technology which in turn influences performance among manufacturing firms (Denson, 2008)

EMPIRICAL LITERATURE

In the study on the effects of inventory management practices on cost reduction, Rajeev (2010) empirically examined the relationship between lean supply, inventory control and data recording systems as independent variables and cost reduction as dependent variable with reference to machine tools small-scale enterprises at Bangalore, India. The findings of the study indicated positive relationship between independent variables and dependent variable. On the contrary, Roumiantsev (2005) analyzed the impact of inventory management on financial performance, by empirically examining the relationships between inventory control systems, lead times and lean supply as independent variables and financial performance of manufacturing firms as dependent variable in Germany. They found that there was no evidence that inventory control systems are associated with financial performance, but the other independent variables indicated a positive relationship with the dependent variable.

In the study on the effects of inventory management on performance, Cacioppio (2005) empirically examined the relationships between cost control, lean supply and order fulfillment as independent variables and performance as dependent variable among a sample of pharmaceutical manufacturing firms in Canada and found that there is a positive relationship between all independent variables and dependent variable. Similarly, Tracey (2005) confirmed that by conducting a study on impact of supply chain management (SCM) capabilities on organization performance by empirically examining the relationship between competitive position, cost control and customer satisfaction as independent variables and organization performance as dependent variable. The study's findings found that a positive relationship exit between the independent variables and dependent variable.

In the study on the impact of inventory management on performance, Eroglu (2011) empirically examined the relationship between demand management, customer satisfaction and lean supply as independent variables and performance of manufacturing firms as dependent variable in Canada, and found that there was no positive relationship between demand management and performance while the other independent variables indicated a positive relationship with the dependent variable. This was affirmed by Koumanakos (2008) who studied the effects of inventory management practices on performance by empirically examining the relationship between accurate forecast, cost control and customer satisfaction as independent variables and performance of manufacturing firms as dependent variable operating in three industrial sectors in Greece, in the food, textiles and chemical sector. Findings indicated a positive relationship between all independent variables and dependent variable.

In the study on the effects of inventory management practices on performance, Sushma (2007) empirically examined the relationship between ICT application, cost control and lean supply as independent variables and performance as dependent variable on Indian consumer electronic manufacturing firms. They found a positive relationship between all independent variables and dependent variable. This was confirmed by Agus (2006) who examined the effects of inventory management practices on financial performance, by empirically examining the relationship between Information Technology, lead times and cost control as independent variables and financial performance as dependent variable on a sample of companies that were randomly chosen from manufacturing companies, specifically non-food based manufacturing companies with medium to high technology in Wang valley, Malaysia. Findings indicated a positive relationship between independent variables and dependent variable.

RESEARCH METHODOLOGY

Introduction
This chapter introduces the research methodology, which involves the study of various steps that are generally adopted by the researcher in studying the research problem along with the logic behind them. The methodology includes the research design, population of the study, sampling frame, sample and sampling technique, data collection instruments, data collection procedure, pilot testing and data analysis methods and presentation.

Research Design
Research design is a plan and structure of investigation so conceived as to obtain answers to the research questions (Cooper, 2008). This study adopted descriptive research design. Descriptive design was appropriate because it involves collecting data in order to answer pertinent questions concerning the current status of subjects under study (Mugenda, 2003). The research design provided facts and suggestions on major connections between the variables where the results were generalized for all manufacturing firms.

Population of the Study

A population is the totality of all subjects that conform to a set of specifications comprising the entire group of persons that is of interest to the researcher and whom the research results can be generalized (Pilot, 2006). The study focused on 155 employees in the supply chain department at DECAL working in the following sections; directorate, procurement, production, warehouse, distribution, customer service and value chain support. Target population refers to a specific group of individuals to which the researcher is interested in generalizing conclusions (Catillo, 2009). The study focused on 105 employees in the following sections; directorate, procurement, production, warehouse, customer service and value chain support.

Sampling Frame

A sample frame is the source material or device from which a sample is drawn (William, 2012). The sampling frame used was the human resource register which stipulated that the supply chain department at DECAL comprised of 155 employees working in the following sections; directorate, procurement, production, warehouse, distribution, customer service and value chain support.

Sample and Sampling Technique

A sample is a portion or a subject of the research population selected to participate in a study as a representative of the research population (Huber, 2008). This study adopted stratified sampling technique which is defined by Kothari (2012) as a sampling technique used when a population from which a sample is drawn does not constitute a homogenous group. This was the case since the study had subgroups or strata which were heterogeneous in target population whose response was important in achieving the objectives of the study. The sample size was determined by Nasuirma (2000) formula which is expressed as follows:

$$n = \{NC_V{}^2\}/\{C_V{}^2 + (N\text{-}1)\epsilon^2\}$$

Where: n – is the sample size

N – is the target population (105)

C_V – is the coefficient of variation (take 0.5)

ϵ – is the tolerance of desired level of confidence, at 95% level (take 0.05)

$$n = \{NC_V{}^2\}/\{C_V{}^2 + (N\text{-}1)\epsilon^2\}$$

$$= \{105 \text{ X } 0.5^2\}/\{0.5^2 +\}(105 - 1)0.05^2\}$$

$$= 26.25/0.51$$

$$= 51 \text{ respondents}$$

Data Collection Instruments

Data collection instruments refer to tests, questionnaires, inventories, interview schedules or guides, rating scales, and survey plans or any other forms, which are used to collect information on identical items from respondents (Roger, 2006). Structured questionnaire containing both open-ended and close-ended questions were used to collect primary data that assisted the researcher to get reliable information by seeking opinion from the respondents as it was cheap since the respondents were not geographically dispersed and were located in the same organization and adequate time was provided to give well thought answers.

Data Collection Procedures

Data collection procedure is the process of gathering information from all the available sources using data collection instruments with the aim of using such data in research (Cooper, 2008). The questionnaires for the study were designed and distributed to the various respondents through hand delivery, as it was cheap since the respondents were found within the same organization. They were provided with ample time to critically analyze their responses and deliver genuine information before the questionnaires were collected later on for analysis.

Data analysis methods and presentation

Data analysis is the process of resolving data into its components to disclose its characteristic elements and structure for accuracy (Mugenda, 2003). Data to be collected was analyzed using both quantitative and qualitative data analysis approaches. Data from closed and open-ended questions in the questionnaire was coded and entered into the computer using statistical package for social science (SPSS) version 20. The study used ANOVA to test the level of significance of the variables on the dependent variable at 95% level of significance. The study also used correlation to establish the relationship between the variables. Regression analysis is a quantitative research method used when the study involves modeling and analyzing several variables, where the relationship includes a dependent variable and one or more independent variables to provide meaningful and accurate conclusions of the phenomenon under study (David, 2005). The study used regression analysis, as it was able to relate dependent variable with multiple variables as shown in the equation below.

$$(y = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon)$$

Where:-

       y= Dependent variable (performance of manufacturing firms)

                    X_1=Independent variable (Inventory Control)

       X_2= Independent variable (Order fulfillment)

       X_3= Independent variable (demand management)

       X_4= Independent variable (ICT application)

       $\beta 1 - \beta 4$ = Regression coefficient for each independent variable

       ε −Random or stochastic term

Descriptive analysis such as frequencies and percentages were used to present qualitative data in form of frequency distribution tables and graphs such as bar charts and pie charts on major

research questions to enable easier understanding and interpretation using inferential statistics while open ended questions were analyzed qualitatively, arranged thematically and presented on narrative form to draw conclusions and recommendations.

RESEARCH RESULTS

Analysis of Variance

From the ANOVA statistics in the table 4.3, the processed data, which is the population parameters, had a significance level of 0% which shows that the data is ideal for making a conclusion on the population parameters as the value of significance (p-value) is less than 5%. The calculated value was greater than the critical value (3.131>1.9861) an indication that there were significant difference between performance of manufacturing firms and inventory control, order fulfillment, demand management and ICT application. The significance value was less than 0.05 indicating that the model was significant. This is shown in table 1.

Table 1: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.488	4	0.372	3.131	.028[b]
	Residual	32.9	43	0.329		
	Total	**34.388**	**47**			

Regression analysis

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table below the value of adjusted R squared was 0.733 an indication that there was variation of 73.3% on the performance of manufacturing firms due to changes in inventory control, order fulfillment, demand management and ICT application at 95% confidence interval. This shows that 73.3 % changes in performance of manufacturing firms could be accounted to changes in inventory control, order fulfillment, demand management and ICT application. R is the correlation coefficient which shows the relationship between the study variables. This is shown in table 2.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874[a]	.772	.733	.12225

Regression coefficients

The findings revealed that holding inventory control, order fulfillment, demand management and ICT application to a constant zero, performance of manufacturing firms would stand at 0.878. A

unit increase in inventory control would lead to increase performance of manufacturing firms by a factor of 0.325. A unit increase in order fulfillment would lead to increase in performance of manufacturing firms by factors of 0.345. A unit increase in demand management would lead to increase in performance of manufacturing firms by a factor of 0.458 and unit increase in ICT application would lead to increase in performance of manufacturing firms by a factor of 0.471. The study further revealed that inventory control, order fulfillment, demand management and ICT application were statistically significant to affect the performance of manufacturing firms, as all the p value (sig) were less than 0.05%. The study also found that there was a positive relationship between performance of manufacturing firms and inventory control, order fulfillment, demand management and ICT application. The above findings are in line with David (2015) assertion that regression analysis is able to relate dependent variable with multiple independent variables and provide meaningful and accurate conclusions of the phenomenon under study. This is shown in table 3.

Table 3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.878	.357		2.459	.016
Inventory Control	.325	.097	.202	3.351	.002
Order Fulfillment	.345	.147	.212	2.347	.010
Demand management	.458	.132	.353	3.470	.017
ICT application	.471	.093	.391	5.065	.029

The established regression equation was:

$$Y = 0.878 + 0.325\ X_1 + 0.345\ X_2 + 0.458\ X_3 + 0.471\ X_4$$

Summary of Findings

Performance of manufacturing firms

The study findings revealed that market share had a great significance to performance with a mean of 4.60 and a standard deviation of 0.66 which was small thus performance was adequately measured in the organization through identification of KPI's. Performance was measured on KPI's such as on-time-in-full and sales forecast accuracy which are set annually and reviewed biannually and the whole organization is appraised on-line at the end of the year. The organization Forecasted demand by synchronizing it with production, procurement and distribution capabilities in order to improve performance in terms of increased market share. Also the organization employed the use of EOQ model by identifying KPI's for evaluating

performance in terms of profitability margins. Similarly, the organization employed the use of use of TQM model which ensures value for each process or step is measurable so as to improve performance in terms of reduced investment expenditure. In addition, the organization balanced customer's requirements with the capabilities of the supply chain in order to fulfill orders thus improve performance in terms of increased customer satisfaction and finally, the organization ensured Inventory control through optimal allocation of resources in order to increase performance in terms of reduced stock turnover. The above findings are in line with the findings by Neely (2005) that performance is defined as an output which is aligned to the objectives of a firm in terms of profitability, stock turnover, market share, investment expenditure and customer satisfaction. In this case, the organization was found to adequately measure performance to a large extent.

Inventory control

On inventory control, the study revealed that a unit increase in inventory control would lead to increased performance of manufacturing firms by a factor of 0.325 at a significance level of 0.002. The study established that accurate inventory control supports organizational efficiencies in terms of product supply to customers as low inventory causes lost sales while higher inventory impacts negatively on performance of the organization due to tying up of large capital resources. The study revealed that the organization measured obsolete and redundant inventory levels in a proactive manner. Also, the organization used ABC analysis model to allocate resources in terms of costs to the various classes of stock items. Similarly, the organization ensured proper budgeting through organizing and coordinating; production, selling, distribution and service functions. In addition, the organization adopted stock control systems such as radio frequency identification and coding systems that help to improve their performance and cut a competitive edge compared to their competitors in the industry and finally, the organization reduced variable costs related directly to manufacturing a product. The above findings are in line with the findings by Yugang (2009) that efficient inventory control therefore allows an organization to minimize investment in stock, allow money to be available within the organization for other purposes, keep ordering and stockholding costs as low as possible and reduce the possibility of obsolescence and physical deterioration through budgeting which helps to organize and coordinate production, selling, distribution and service functions thus in turn bolsters performance.

Order Fulfillment

On order fulfillment, the study revealed that a unit increase in order fulfillment would lead to an increase in performance of manufacturing firms by a factor of 0.345 at a significance level of 0.010. The study established that unfulfilled orders are lost sales that impact on the whole organization in terms of performance as a result of customer dissatisfaction. The study noted that the organization engaged in planning and controlling to meet anticipated demand in future period. The organization also adopted order fulfillment strategies such as make-to-order, assemble-to-order and engineer-to-order. Similarly, the organization fostered good relationships

with suppliers through early buyer involvement approach and finally, the organization produced products in varieties so as to meet different tastes and preferences thus meeting customer needs which is a key driver to organizational success. The above findings concur with the study findings by Singh (2006) that one of the important drivers of organizational success is that enterprises must take the needs and wants of their customers into account which in turn leads to fulfilled orders thus improving the organization's performance.

Demand Management

On demand management, the study revealed that a unit increase in demand management would lead to an increase in performance of manufacturing firms by a factor of 0.458 at a significance level of 0.017. The study established that accurate demand is measured through KPI's such sales forecast accuracy and it is only when the organization has accurate forecast that it can supply goods and hence reflect good organizational performance. The study noted that the organization employed ABC analysis model by classifying inventory items according to their level of importance. Also, the organization formulated a master program for the timely provision of materials, component and work-in-progress. Similarly, the organization employed the use of postponement strategy by employing agile supply approach. In addition, the organization employed the use of EOQ model by forecasting demand of supplies to ensure timely delivery in the right quantity and finally, the organization ensured demand variability is reduced and improved operational inflexibility through accurate forecasting. The above findings are in line with the study findings by Walter (2005) that a good demand management process can enable a company to be more proactive to anticipated demand and more reactive to unanticipated demand by finding ways to reduce demand variability and improve operational inflexibility thus improving organizational performance.

ICT Application

In ICT application, the study revealed that a unit increase in ICT application would lead to an increase in performance of manufacturing firms by a factor of 0.471 at a significance level of 0.029. The findings established that ICT application helps derive trends and hence assist in ensuring reports and statistics are available for planning demand and supply as well as reports for analyzing on performance. IT-enabled supply chain integration results in significant and sustained firm's performance gains such as operational excellence and revenue growth. The study noted that the organization monitored inventories at different stocking locations through ICT application such as use of CCTV cameras. Also, the organization centralized key data and linked it to various departmental users effectively through ICT application. Similarly, the organization ensured transparency, accountability and coordination for efficient implementation of various operations through ICT application. In addition, the organization employed various inventory control systems such as VMI, CRP and DRP to ensure smooth operations and finally, the organization employed supplier led approach through exploiting new machinery and information intensive approach by exploiting information technology. The above findings are in

line with the study findings by Karkkainen (2010) that nowadays advanced information technology allows manufacturing firms to gain control over their supply chains which would not be predicted before leading to improved organizational performance.

CONCLUSIONS

From the research findings, the study established that accurate inventory control supports organizational efficiencies in terms of product supply to customers as low inventory causes lost sales while higher inventory impacts negatively on performance of the organization due to tying up of large capital resources, therefore the study concludes that inventory control had a positive influence on performance of manufacturing firms in Kenya. The study also established that the organization had adopted order fulfillment strategies such as make-to-order, assemble-to-order and engineer-to-order, a move which had increased efficiencies in supplies, therefore the study concludes that adoption of order fulfillment strategies had a positive impact on performance of manufacturing firms in Kenya. The study also revealed that the organization accurately measured demand through KPI's such as sales forecast accuracy, thus the study concludes that demand management had a positive influence on performance of manufacturing firms in Kenya. In addition, the study established that the organization employed ICT application through centralization of key data and linking it to various departmental users effectively as well as monitoring inventories at different stocking locations, thus the study concludes that ICT application had a positive influence on performance of manufacturing firms in Kenya.

RECOMMENDATIONS

Based on the findings, the study recommends that the management of manufacturing firms need to keep their inventory control strategies updated. This ensure minimal investment in stock, allow money to be available within the organization for other purposes, keep ordering and stockholding costs as low as possible and reduce the possibility of obsolescence as well as physical deterioration. There is need for the management to adopt order fulfillment strategies such as make-to-order, assemble-to-order and engineer-to-order since in today's competitive manufacturing sector, customer demands are bound to increase from time to time due to improvement of product quality in parallel with product variety. To effectively manage demand, management has to adopt a good demand management process that can enable the organization to be more proactive to anticipated demand and more reactive to unanticipated demand by finding ways to reduce demand variability and improve operational inflexibility. The study also recommends that the management adopts appropriate ICT application systems that allow manufacturing firms to gain control over their supply chains, which could not be predicted before by adopting inventory control systems such as VMI, CRP and DRP to ensure smooth operations.

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