INFLUENCE OF SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF THE NAIROBI SECURITIES EXCHANGE'S LISTED, FOOD MANUFACTURING COMPANIES IN NAIROBI

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ABSTRACT

Food manufacturing companies in Nairobi are performing poorly and facing intense competition from the imported food stuffs from overseas. This is due to dynamics` and complicated supply chain that poses enormous challenge and risks in the food industry. The main purpose of this study was to find out the influence of supply chain practices on the performance of food manufacturing companies in Nairobi Kenya. The study was guided by the following research objectives: To find out how product development affect the performance of food manufacturing companies in Nairobi Kenya, To determine how inventory management affects the performance of food manufacturing companies in Nairobi Kenya, To establish the extent to which lead time affects the performance of food manufacturing companies in Kenya and To determine how technology affects the performance of food manufacturing companies in Nairobi Kenya. The study employed a descriptive survey research design. The study sample consisted of ninety respondents (90) who are support staff members from six (6) manufacturing companies listed in the NSE. Simple random sampling procedure was used to select the support staff members. The key data collection instrument used in this study was questionnaire. Seventy nine (79) responded. The collected data was analyzed using both quantitative and qualitative data analysis approaches, both correlation and regression, and analysis of variance (ANOVA) were used. The close ended questions were analyzed quantitatively whereas the open ended questions in the questionnaire were analyzed qualitatively. Descriptive analysis such as frequencies and percentages was used to present quantitative data. The analyzed data has been used in the formulation of conclusions and recommendations.

Key Words: *supply chain management, Nairobi Securities Exchange's, food manufacturing companies, Nairobi*

Introduction

The study focused on the influence of supply chain management practices on performance of the selected NSE listed food manufacturing companies in Nairobi Kenya. Food manufacturing companies in Nairobi are performing poorly and facing intense competition from imported food. This is due to dynamics` and complicated supply chain that poses enormous challenge and risks to the food industry.

The food industry is vast and diversified, categorized by different segments such as fresh food industry, organic food industry, processed food industry and livestock food industry. Each segment need different supply chain strategies such as procurement and sourcing, inventory management, warehouse management, packaging and labeling system, and distribution management, thus, the uniqueness characteristics of food supply chain (Georgiadis, 2005).

According to Sunil and Meindl (2004), supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Sunil and Meindl (2004) observe that within each organization, the supply chain includes all functions involved in receiving and fulfilling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service. This is in line with what Kietzman (2003) who observed that supply chain is a network of retailers, distributors, transporters, storage facilities, and suppliers that participate in the production, delivery, and sale of a product to the consumer. It is typically made up of multiple companies who coordinate activities to set themselves apart from the competition.

Sourcing of raw materials involves collection of all ingredients after which individual member companies operate their own stringent in-house quality assurance policies. These include strict specifications for material supplies, routine testing of all incoming materials and the use of vendor assurance schemes to monitor supply sources.

New product development involves the process of coming up with a different material which play several roles for the organization. Other than maintaining growth and protecting the interests of investors, employees, suppliers of the organization, new products help keep the firm competitive in a changing market and hence having a direct impact on competitiveness (Patrick, 2004).

Manufacturing process of a given food product starts once it has been bought from the farmer. This is the point where transformation of raw ingredients into food, or of food into other forms. Food processing typically takes clean, harvested crops or butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products.

Distribution food from one place to another is a very important factor in public nutrition. Where it breaks down, famine, malnutrition or illness can occur. In the Ancient Rome, food distribution

occurred with the policy of giving free bread to its citizens under the provision of a common good. Customers play a key role in the food manufacturing supply chain. They place an order for something to be made to their own specifications. A reflection of consumers' satisfaction is their continuing purchase of the same products. Industry recognizes that consumers play an active, important role in the food control process through their participation in the standard-setting process and discussions on scientific and technical issues.

Supply chain is a complex process which requires the best practices to achieve the desired organizational goal which is basically the optimization of profits. The study therefore intends to examine a number of supply chain practices that various organizations have continued to use to maximize their performance. These include but not limited product development, inventory management, technology and financial status and service levels.

The Product life cycle describes the stages a product goes through from beginning to end (Aitken, 2003). The competitive criteria generally differ during the different phases of product life cycle; for instance, availability and technology are needed at the introduction phase, and cost, quality and speed are needed at the maturity phase (Chang, 2006) The discussions in marketing and logistic literature universally conclude that it would be desirable to determine the life cycle of each product in the firm.

The life cycle stages have a great impact on appropriate supply chain design. This implies that a firm’s product-specific procurement, manufacturing, and distribution priorities must change over time. To be effective, a firms supply chain design strategy should have a strategic orientation and be governed by objectives that are different from traditional objectives.

Inventory management plays a fundamental role in food manufacturing companies. It provides the modern food manufacturing company with a platform to address their management and communication needs. Industry-specific features and seamless integration enhance quality, service, product safety and operational efficiency. Specialized tools address the critical issues in food production management including product tracing, quality management, product identification and specification, expiration dates, production lots, date codes and hold management.

Lead time being the time between order and placement of material and the actual delivery, the shorter the lead time, the better the supplier. Every food manufacturing company is comfortable when the lead time is shortest possible. Long lead time has the impression that the specific supplier is less efficient or he just has more customers than he can serve thus delaying deliveries (Beamon, 2005).

Organization technologies have led to a host of innovations which seem to be radically changing the nature of manufacturing industry. The increasing replacement of mass production, specialized, single-purpose, fixed equipment by computer aided design and engineering capabilities (CAD/CAE), robots, automatic handling and transporting devices, flexible

manufacturing systems (FMS), computer aided/integrated manufacturing (CAM/CIM), cellular manufacturing, just-in-time (JIT) techniques, materials resource planning (MRP) and telematics has allowed firms to produce a larger variety of outputs efficiently in smaller batches and less time. (Kaplinsky, 2006).

The greater flexibility of new technologies (NT) is also believed to have important implications for the level of 'optimal' scales. Contrary to the previous 'mass production' technological paradigm where increasing scales were crucial to cost reductions, NT's flexibility is said to provide "opportunities to switch production between products and so reverse the tendency towards greater scale" (Kaplinsky, 2006).

Porter (2003) stresses in particular the need for the interconnection between strategy and technology to be thought through. In this respect, part of the specialized literature explains that in order to foster the competitiveness of the organization, strategy should drive the development of technology. Therefore, technological development can bring to the plant a group of competitive weapons and a better technological base, applicable to other products and markets. This implies the adoption of a one-directional perspective, that is to say, the causal relationship goes from strategy to technology, and not vice versa.

This study was to find the influence of the key best supply chain practices on the performance, with reference to food industry in Nairobi Kenya. The industry has a number of players. Among the major food manufacturing companies listed in Nairobi Securities exchange (NSE) include Mumias sugar, Bidco Oil Refineries Ltd, Finlays Ltd, Kapa Oil Refineries Ltd, Kenya Nut Company, Maisha Flour company, Kenya Seed Company, House of Daeda Group, Melvin Marsh International, Premier food industries Ltd, Promasidor, Proctor & Allan (E.A) Ltd, Nestlé Kenya Ltd, Razco Ltd and the Sigma Supplies Ltd, Eeast African breweries Ltd (Business Directory, 2010). A close examination of these companies reveals that they have a complex food chain process which requires the best supply chain practices to realize the best results.

Statement of the Problem

Supply chain management practices contribute 50% to the profitability and performance of any organization (Choy, 2002). The performance of the food manufacturing sector in Nairobi have been affected by use of obsolete supply chain management practices and technologies with Spoor state of physical infrastructure, limited research and development, poor institutional framework, and inadequate supply chain innovation, technical, and entrepreneurial skills (ROK, 2012)

Since independence, the Kenyan economy has remained predominantly agriculture, with industrialization remaining an integral part of the country's development strategies. The industrial sector's share of monetary GDP has remained about 15-16% while that of manufacturing sector has remained at a little more than 10% over the last two decades.

Manufacturing activities account for the greatest share of industrial production output and form the core of industry (ROK, 2012).

The intermediate and capital goods industries are also relatively underdeveloped, implying that Kenya's food manufacturing sector is highly import dependent. Locally-manufactured food comprises 10% of Kenya's exports. However, the share of Kenyan products in the regional market is only 7% of the US $11 billion regional market (ROK, 2012).

Entry of substandard and counterfeit products with fairly cheaper prices has unfairly reduced the market share for locally manufactured food products. Counterfeit trade has also discouraged innovation efforts, reduced the revenue base for food manufacturers/ (ROK, 2012). It is therefore apparent that the local food manufacturers risk losing the market share, leaving Kenya with an option imports and heavy job losses.

General Research Objective

The general objective of this study was to find out the influence of supply chain practices on the performance food manufacturing companies in Kenya.

Specific Research Objectives

1. To find out how product development affect the performance of food manufacturing companies in Nairobi.
2. To determine how inventory management affects the performance of food manufacturing companies in Nairobi.
3. To establish the extent to which lead time affects the performance of food manufacturing companies in Nairobi
4. To determine how technology affects the performance of food manufacturing companies in Nairobi.

Theoretical Review

This section presents a theoretical review in the study area. Product life cycle theory has been given adequate attention. The product life-cycle theory is an economic theory that was developed by Raymond Vernon in 1966 in response to the failure of the Heckscher-Ohlin model to explain the observed pattern of international trade.

Product Life Cycle Theory

The theory of product life cycle is based on the experience of the United States market. Vernon himself observed and found that a large proportion of the world's new products came from the US for most of the 20th century. The United States at the time was the initiator of the new technologically driven products of the time. The theory suggests that early in a product's life-cycle all the parts and labor associated with that product come from the area in which it was invented. After the product becomes adopted and used in the world markets, production gradually moves away from the point of origin. In some situations, the product becomes an item that is imported by its original country of the invention. A commonly used example of this is the invention, growth and production of the personal computer with respect to the United States. The theory provides a discussion basing on five stages which include introduction, growth, maturity, saturation and declining. Under introduction, new products are introduced to meet local/ national needs, and new products are first exported to similar countries, countries with similar needs, preferences, and incomes (Charles, 2007). According Charles introduction stage is where a product is conceptualized and first brought to market. The goal of any new product introduction is to meet consumers' needs with a quality product at the lowest possible cost in order to return the highest level of profit.

In the new product stage, the product is produced and consumed in the US; no export trade occurs. In the maturing product stage, mass-production techniques are developed and foreign demand (in developed countries) expands; the US now exports the product to other developed countries. In the standardized product stage, production moves to developing countries, which then export the product to developed countries (Charles, 2007). The second stage, growth is whereby a copy product is produced elsewhere and introduced in the home country and elsewhere to capture growth in the home market. This moves production to other countries, usually on the basis of cost of production (Sameer & Krob, 2005).

At the maturity stage, sales growth has started to slow and is approaching the point where the inevitable decline will begin (Charles, 2007). Defending market share becomes the chief concern, as marketing staffs have to spend more and more on promotion to entice customers to buy the product. Additionally, more competitors have stepped forward to challenge the product at this stage, some of which may offer a higher-quality version of the product at a lower price. This can touch off price wars, and lower prices mean lower profits, which will cause some companies to drop out of the market for that product altogether (Charles, 2007).

Saturation as a period of stability is where the sales of the product reach the peak and there is no further possibility to increase it. this stage is characterized by: Saturation of sales (at the early part of this stage sales remain stable then it starts falling, it continues till substitutes enter into the market and marketer must try to develop new and alternative uses of product (Charles, 2007).

The fifth stage is referred to as decline whereby poor countries constitute the only markets for the product. Therefore almost all declining products are produced in developing countries like the PCs are a very poor example here, mainly because there is weak demand for computers in developing countries (Val, 2005). Basing on the application this theory in this study, the theory plays a significant role in its application on the influence of supply chain management practices on the performance of food manufacturing companies in Kenya. The theory provides useful information on the stages involved in all the process that are employed by the manufacturing companies starting from production to consumption levels of a given product.

However, it can be noted that the theory has its strength and weakness. The strength of this theory is that when used alongside with the analysis of sales figures and forecasts, this theory can be a powerful tool in providing guidance and marketing tactics that are appropriate at a particular stage in a given food manufacturing company (Val, 2005). The worlds trading importing and exporting has changed immensely over the years. Hence it might not conform to current trends of life. Moreover, there is no real proof that all products must die. Some products have been seen to go from maturity back to a period of rapid growth thanks to some improvement or redesign. Some argue that by saying in advance that a product must reach the end of life stage, it becomes a self-fulfilling prophecy that companies subscribe to.

Pareto Analysis Theory (ABC Classification) of Inventory Management

ABC classification is a method of classifying inventory items according to the dollar value to a firm. Class A items though smaller volumes but tends to generate higher sales value followed by the class B items. The class C items are of a very large volume but generate a very small sales value. Class A items normally range from 5% to 20% of all inventory items and account for between 50% and 80% of sales value. The class B items normally range from 20% to 40% of all inventory items and account for 20% to 40% of sales value. The class C items normally constitute 50% to 70% of all inventory items and account for 5% to 25% sales value (Roach, 2005). Fitzsimmons,(2004) and Tanwari, (2000) reported that is the basis for material management processes and help to define how stock is managed and is an appropriate technique for classifying inventory items according to the importance of their contribution to the annual cost of the entire inventory system.

The classical economic order quantity (EOQ) model seeks to find the balance between ordering cost and carrying cost with a view of obtaining the most economic quantity to procure by the distributor (Onawumi, 2010). Roach (2005) explained that the EOQ formula has been used in both engineering and business disciplines. Engineers study the EOQ formula in engineering economics and industrial engineering courses. On the other hand, business disciplines study the EOQ in both operational and financial courses. In both disciplines, EOQ formulas have practical and specific applications in illustrating concepts of cost tradeoffs as well as specific application in inventory. Schwarz, Leroy (2008) reported the EOQ model considers the tradeoff between

ordering cost and storage cost in choosing the quantity to use in replenishing item inventories. However, Muckstadt & Sapra (2010) noticed that it is often difficult to estimate the model accurately. The cost and demand values used in models are at best an approximation to their actual values. Thus, there is some contradict about the concept. There are many researchers that using the ABC analysis with EOQ to apply to their study. Yusuf (2003) studied on the analysis of stock management in public utility companies that some of the problem facing with stores control systems were highlighted to include the dearth of qualified stores personnel, overstock and sometimes under stocking, pilferages, deterioration, obsolesced and insufficient store materials.

Moreover, Siriporn (2005), Gonzalez & Jose (2010), researched on the inventory shortage problem that faced with the cause of sales loss as well as profit loss, they used ABC analysis technique, find a demand forecast for raw material in the next time using EOQ, reorder point and safety stock for solving this problem. Furthermore, Eshun, *et al.* (2010), applying ABC inventory analysis to the 23 products of the manufacturing and EOQ to determine ordering patterns for minimize total costs under uncertain demand.

Technology life Cycle Theory (S Curve)

In the technology literature, a consensus has been developed about the shape of technological evolution, and a consensus is emerging about the major explanation for this phenomenon. Regarding the phenomenon, prior research suggests that technologies evolve through an initial period of slow growth, followed by one of fast growth, and culminate in a plateau. When plotted against time, the performance resembles an S curve. Support for this phenomenon comes primarily from the work of Utterback, (2002). This author addresses the progress of a technology on some primary dimension that is critical to consumers when the innovation emerges. Some examples of this are resolution in monitors and printers and recording density in desktop memory products. Subsequent authors have either accepted this view or found additional support for it.

Authors have not developed any single, strong, and unified theory for the S curve. However, an emerging, and probably the most compelling, explanation revolves around the dynamics of firms and researchers as the technology evolves. We call this explanation the technology life cycle because it explains the occurrences of three major stages of the S curve: introduction, growth, and maturity (Utterback, 2002). These stages are described as emerging from the interplay of firms and researchers over the life of the technology. Introduction stage: A new technological platform makes slow progress in performance during the early phase of its product life cycle. Two reasons may account for this: First, the technology is not well known and may not attract the attention of researchers. Second, certain basic but important bottlenecks must be overcome before any new technological platform can be translated into practical and meaningful improvements in product performance. For example, the laser beam was a new platform that

required much time and effort to achieve the safety and miniaturization required to use it as a surgical tool (Utterback, 2002)

Growth stage: With continued research, the technological platform crosses a threshold after which it makes rapid progress. This stage usually begins with the emergence of a dominant standard around which product characteristics and consumer preferences coalesce (Utterback 2002). That consensus stimulates research on the new platform, which in turn leads to improvement in its performance. Furthermore, publicity of the standardization draws a large number of researchers to study the new platform. Their cumulative and interactive efforts also lead to rapid increases in performance. The rapid progress leads to increases in sales of products based on the new technology, which increases revenues and profits and offers further support for research. In turn, these added resources fuel further improvement in performance (Klepper, 2000).

Maturity stage; after a period of rapid improvement in performance, the new technology reaches a period of maturity after which progress occurs slowly or reaches a ceiling (Chandy, 2000), Propose several reasons for this change. Foster (2000) suggests that maturation is an innate feature of each platform; a technology is good for only so much improvement in performance. Adner and Levinthal, (2002) suggest that as a market ages, the focus of innovation shifts from product to process innovation. As such, performance increases are few and modest, leading to technological maturity. Maturity occurs when there is less incentive for incumbent firms to innovate because of fears of obsolescence or cannibalization from a rival platform. Thus, the rate of innovation reduces relative to the growth stage. Perhaps the best explanation is that of Sahal, (2001). He proposes that the rate of improvement in performance of a given technology declines because things become either impossibly large or small or system complexity. When these limits are reached, the only possible way to maintain the pace of progress is through radical system redefinition, that is, a move to a new technological change.

Research Design

A study design is the plan of action the researcher utilizes for answering the research questions. Trochim, (2006) indicates that research design provides the glue that holds the research project together. A design is used to structure the research, to show how all of the major parts of the research project the samples or groups, measures, treatments or programs, and methods of assignment work together to try to address the central research questions (Trochim, 2006). This study will adopt a survey research design. The design will be chosen because it is useful in describing the characteristics of a large population, makes use of large samples, and thus making the results statistically significant even when analyzing multiple variables. The design will enable a thorough examination of the influence of supply chain management practices on the performance of food manufacturing companies in Kenya. Moreover, this research design will

also enable the researcher to use various data collection instruments such as questionnaires and interview guide.

Target Population

A population is referred to as all elements, individuals, or units that meet the selection criteria for a group to be studied, and from which a representative sample is taken for detailed examination. This study targets the NSE listed food manufacturing companies in Nairobi Kenya and their staff members in the procurement/supply chain department. In total the target population will be twenty food manufacturing companies (20) and three support staff members (n=300).

Sample and Sampling Procedure

A sample is a smaller group or sub-group obtained from the accessible population (Mugenda & Mugenda, 1999). The sample size of this study consisted of six (6) food manufacturing companies and Ninety (90) support staff members. On the other hand, sampling is the process of selecting units like people, organizations among others from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen. The total number of food manufacturing companies that are registered by Nairobi Security Exchange which is situated in Nairobi is twenty (20). Simple random sampling procedure was used to arrive at 30% of these companies. This is in accordance to Gall et al., (2007) who observe that at least 30% of a given population is an equal representative sample. As such, six (6) food manufacturing companies were selected in this study. Simple random sampling procedure was used to sample 30% of the support staff. The total number of staff targeted is three hundred (300). Out of this number, ninety staff members (90) were selected as a representative number. Thus, from each company at least fifteen staff member were picked.

Description of Research Instruments

Questionnaires were used as the key data collection instruments in this study. Questionnaire was used to collect data from the support staff members. The questionnaires were used because they are straight forward and less time consuming for both the researcher and the participants (Owens, 2002). The questionnaire consisted of both close and open ended items. The questionnaires were structured as follows: Section I: Background Information, Section II: The influence of product development on the performance of food manufacturing companies, Section III: The impact of inventory management on the performance of food manufacturing companies in Kenya, Section IV: The influence of lead time on the performance of food manufacturing companies in Kenya and Section V: The influence of technology and innovation on the performance of food manufacturing companies in Kenya, Section VI: The supply chain interventions to improve the performance of food manufacturing companies in Kenya.

Data Collection Procedure

The researcher distributed the questionnaire to the support staff members. Assistance from the organization management was sort. The researcher in person made a personal follow up to ensure that the entire questionnaires are filled and collected on time. This process of data collection was done while assuring the participants confidentiality of the provided information.

Data Analysis Procedure

The collected data was analyzed using both quantitative and qualitative data analysis approaches. Quantitative approach involved descriptive analysis. Frequencies and percentages were used to present quantitative data in form of tables and graphs based on the major research questions. Data from close ended questions in the questionnaire was coded and entered into the computer using Statistical Package for Social Science (SPSS). Regression analysis was used with the equation ($Y= B0 + B_1 X_1 + B2\ X2 + B_3\ X_3 + B_4\ X_4 + \varepsilon$) to relate the variables, analysis of variance and correlation analysis was used to analyze the data. The answers provided in the open ended questions were analyzed qualitatively organized, arranged thematically and presented on a narrative form.

Regression Analysis

In this section the researcher used a multiple regression model to derive if there was a relationship between the dependent variable and independent variables. The researcher sought to make predications factors affecting performance of food manufacturing companies (Y) using information on product development (X1), inventory management (X2), lead times (X3) and technology (X4). A multiple regression equation for predicting Y was expressed as follows;

$$Y= B0 + B_1 X_1 + B2\ X2 + B_3\ X_3 + B_4\ X_4 + \varepsilon$$

Where:

Y – is the dependent variable that is Performance of food manufacturing companies

X_1- X_5 – are the independent variables

X_1 – Product development

X2 – Inventory management

X_3 - Lead time

X_4 - Technology

B0 - is the constant

B_1- B_5 – are the regression coefficients or change induced in Y by each X

ε- is the error

To apply the equation, each Xi score for an individual case is multiplied by the corresponding Bi value, the products are added together, and the constant B0 is added to the sum. The result is the predicted Y value for the case. For a given set of data, the values for B0 and the Bi are determined mathematically to minimize the sum of squared deviations between predicted scores. In this case, the regression coefficients for following values are as follows:

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.427[a]	.182	.135	.486

a. Predictors: (Constant), Product development, Inventory management, Lead time and Technology

The results in table 1 indicates that the coefficient of regression R=0.4271 shows a moderate strength of relationships between independent variables and the dependent variable. The coefficient of determination, R2=0.424 shows the predictive case of the model and in this case, 18.2% is explained by the independent variables. The adjusted coefficient of determination R2 adjusted=0.135 shows the predictive power after factoring in the effects of some variables with low explanatory power or degree of freedom. In this case 13.5% performance of food manufacturing companies is explained by the independent variables. Finally the standard error of estimate is 0.486.

Regression Coefficients

Table 2: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.118	.517		4.093	.000
	Product development	.006	.072	.008	.082	.935
	Inventory management	.026	.103	.026	.251	.803
	Lead time	.354	.094	.374	3.766	.000
	Technology	.040	.083	.049	.483	.630

The beta values guides on interpreting the adjusted R^2 and show the contribution of every variable to explanation. Table 2 above shows that regression coefficient of B_1 to B_4 plus their corresponding beta values. Thus the regression equation then simplifies to:

$$Y=2.118+0.06X_1+0.026X_2+0.354X_3+0.040X_4+0.486$$

$$R=0.427$$

$$R^2=0.182$$

Adjusted $R^2=0.13$

This means that after running the multiple regression form; product development, inventory management, lead time and technology, their relationships are positive given that all the unstandardized coefficients for B_1 to B_4 are positive.

Analysis of Variance

Analysis of variance was carried out to determine if a statistically significant difference in mean occurs between the independent variable and the dependent variables.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.522	5	.904	3.831	.004[a]
	Residual	20.304	86	.236		
	Total	24.826	91			

a. Predictors: (Constant), Product development, Inventory management, Lead time and Technology

b. Dependent Variable: Performance of food manufacturing companies

Table 3 show the results where the F ratio is 3.831with 0.004 significance. This means there was not much difference in mean between dependent and independent variables. The sum of squares gives the model fit. It explains that the data set fits into regression model. These variables statistically significantly predicted, $F= 3.831$, $p < .0004$, $R^2 = .0.182$. All six variables added statistically significantly to the prediction, $p < .05$.

Summary of Findings

How product development affect the performance of food manufacturing companies in Nairobi Kenya

The researcher first sought to find out how product development affects the performance of food manufacturing companies in Nairobi. The findings from the study indicated that respondents were satisfied with the timely introduction of new products to the market, and activations, as the product grow sales rise, profit peak, price softens, unit cost decline, and mass market appears, sales promotions, product monitoring KPIs and attractive packaging influenced the performance of food manufacturing companies. However, the respondents were neutral that in the decline phase whether product innovation is done had any effect on the performance of food manufacturing companies. 92.4% of the respondents indicated that poor application of the practices effectively affected negatively the overall performance of their organization. High levels of SCM practices have led to enhanced competitive advantage and improved our organizational performance, SCM has enabled our organization to increase productivity and reduce inventory and cycle time, effective application of the SCM has enable our company to increase market share and profits for all members of the supply chain and SCM has enabled our organization to improve its competitive advantage and performance through price/cost, quality, delivery dependability, time to market, and product innovation had influenced performance of food manufacturing companies.

How inventory management affects the performance of food manufacturing companies in Nairobi

The second objective sought to determine how inventory management affects the performance of food manufacturing companies in Nairobi. The findings from the study showed that respondents agreed that providing replenishment techniques in the company, reporting actual and projected inventory status in the company, and monitoring of material in order to increase productivity and efficiency of the company influenced the performance of their companies to a high extent. On the other hand setting targets for the company had an average influence on the performance of their companies. 86.1% of the respondents indicated that indeed there were challenges associated with inventory management in their company. 70.9% of the respondents indicated that there are incidences of inventory inaccuracy in their company. Respondents indicated that the following; inventory inaccuracies that are potential losses due to inability to meet customer demand, rescheduling the production line, increase the risk of production and escalating shipping costs, had an average effect to the performance of their company.

The extent to which lead times affect the performance of food manufacturing companies in Nairobi

The third objective sought to establish the extent to which lead time affects the performance of food manufacturing companies. The findings indicated that respondents agreed that the following

factors influenced lead time in their company; that lead time has led to a better understanding of the market behavior making it able to develop more profitable schemas that fit better with customer needs, and that lead time has created an opportunity area to improve the customer service levels. However, the respondents were undecided on the statements that their company has always been experiencing a shorter lead time thus no delays in deliveries, their company has been experiencing a longer lead time due to a high number of customers than it can serve and lead time has increased our company's ability to detect and correct any behavior that is not within terms agreed in the contract by penalization. 54.4% of the respondents felt that lead time influences the performance of their company while as 45.6% of the respondents indicated that lead time did not influences the performance of their company.

How technology affects the performance of food manufacturing companies in Nairobi

The last objective sought to determine how technology affects the performance of food manufacturing companies in Nairobi. The findings showed that respondents indicated that technology influences the performance of food manufacturing companies to a high extent. The means for each of the category were food storage, food distribution, food processing/manufacturing and managing resources. Respondents agreed that poor and labor intensive technologies, low skilled and inexperienced personnel and lack of enough capital to acquire technology, are some of the technological factors affecting the performance of the food manufacturing companies in Kenya.

Conclusions

Performance, particularly good performance of the food manufacturing companies is important to the Kenyan economy. Supply chain interventions need to be put in place that address issues such as negotiating contracts with external suppliers, involvement of E-procurement, creation of a close relationship with suppliers and provision of continuous tracking over the physical movement of inventor. These issues have been clearly addressed in each of the four objectives. To conclude, it is therefore important to note that product development process, inventory management, lead time, technology and innovation have a significant influence on the performance of food manufacturing companies in Kenya and it is important to address them as the success of such companies depend on the effect management of these four issues.

Recommendations

The researcher recommends that food manufacturing company need to utilize the supply chain practice that is product development, inventory management and lead time, technology and innovation in order to achieve their business goals.

Product Development

Product development is an important strategy for the profitability of food manufacturing companies. According to the study, timely introduction of new products and activation create a competitive edge for the food companies. Food manufacturing companies should carry out in depth study of the market structure and segments before introducing new products to the market. The products monitoring KPIs should be in place to monitor growth and decline of the product in the market. The researcher also recommends that food scientists and technologists in collaboration with food processing equipment manufacturers should work closely to developed cost-effective ways of processing, storage and distribution of food to reach the growing population of consumers in sound and safe product. Companies should embrace the digital marketing techniques to cope with ever changing consumer demands, and preferences. Companies should therefore narrow in to fewer moving products with extended shelf life for maximum profitability.

Inventory Management

Inventory replenishment techniques were major concern raised in the study. To avoid carrying of excess inventory that might be a risk to the company, accurate forecast, (supply & demand) should be in place. This will help in reducing stock outs/lost sales and carrying of excess inventory. Food companies also need embrace just in time principle (JIT).

Lead Time

Food manufacturers need to have a correct analysis of lead time as this provides the industry with various benefits which include; better understanding of the market behavior, meeting customer's needs, and creating opportunity areas to improving customer relations by increasing the level commitment. It was noted that different customer require response within a specified time. The Kenyan Market is quite complex with substitute foods readily available, therefore customers will go for what is available if they do not receive the products in time. To improve lead times, proper planning and communication within the supply chain is important. This will eradicate unnecessary costs like; demurrage, lost time, and the cost of meeting customers' demands in timely manner.

Technology and Innovation

Technology affects performance of manufacturing companies to a larger extent. Companies should invest in new technologies that support mass production, distribution and storage facilities. Managing the resources of the entire organization is important for the profitability. Training of staff should be a priority to cope with the rapidly changing technologies.

Food manufacturing companies need to train their personnel so as to appreciate the concept of supply chain management and the best practices, develop customer relationship management, supplier relationship management and engage in closer cooperation with other companies, government and regional players and finally a need to invest in IT systems.

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