

## DETERMINANTS OF EFFECTIVE INVENTORY MANAGEMENT AT KENOL KOBIL LIMITED

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### ABSTRACT

Inventory management is concerned with ensuring that all activities involved in storekeeping and stock control are carried out efficiently and economically by those employed in the store. There has been a question for management about the efficiency of inventory management procedures in place resulting from inconsistencies of inventory levels leading to various weakness like losses that come as a result of over, under-stocking, expiry inventory, failure to meet targets and low morale of the company members. As a result the company's stores are over crowded making the work of a store-keeper difficult, late issue of materials to the department and these in turn result into poor inventory service delivery. Kenyan oil marketer Kenol Kobil posted an 8.96 billion shilling (\$105.66 million) pretax loss in 2012 from a 4.93 billion shilling profit in 2011(RoK, 2013). The Energy Regulatory Commission statistics indicate that crisis related to inventory management hinders effective management of stores at Kenol Kobil limited. The study was guided by four objectives (information technology, distribution channels, Staff Competency and material handling equipments. The study was a descriptive research design. The target population was procurement managers, stores managers and other stores personnel in the Kenol Kobil. Questionnaires were the main data collection instruments. The study employed both quantitative and qualitative analysis techniques. Data was presented using tables, pie charts and bar graphs. Inferential statistics includes correlation and regression analysis. The study found out that information technology Reduces lead times on effective inventory management; that

information technology has no effect on Increased lead times in effective inventory management; that no change on lead times brought by information technology. The study also found that Most employees have basic Staff competency (competencies) on inventory management at kenol kobil.

**Keywords:** *Determinants of Effective Inventory Management At Kenol Kobil Limited.*

## Introduction

According to Kotler (2000), inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials (work-in-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low. Inventories are essential for keeping the production wheels moving, keep the market going and the distribution system intact. They serve as lubrication and spring for the production and distribution systems of organizations. Inventories make possible the smooth and efficient operation of manufacturing organizations by decoupling individual segments of the total operation Wood, (2004). Purchased parts inventory permits activities of the purchasing and supply department personnel to be planned, controlled and concluded somewhat independently of shop-product operations. These inventories allow additional flexibility for suppliers in planning, producing and delivering an order for a given product's part, loner gan (2003).

Inventory is essential to organization for production activities, maintenance of plant and machinery as well as other operational requirements. This results in tying up of money or capital which could have been used more productively. The management of an organization becomes very concerned in inventory stocks are high. Inventory is part of the company assets and is always reflected in the company's balance sheet. This therefore calls for its close scrutiny by management, Sallemi (1997) Management is very critical about any shortage of inventory items required for production. Any increase in the redundancy of machinery or operations due to shortages of inventory may lead to production loss and its associated costs. These two aspects call for continuous inventory control. Inventory control and management not only looks at the physical balance of materials but also at aspects of minimizing the inventory cost.

Dobler (2000) argues that well and efficiently controlled inventories can contribute to the effective operation of the firm and hence the firm's overall profit. Proper management of inventory plays a big role in enabling other operations such as production, purchases, sales, marketing and financial management to be carried out smoothly. Basic challenge however is to determine the inventory level that works most effectively with the operating system or system existing within the organization. management

Historically, inventory management globally has often meant too much inventory and too little management or too little inventory and too much management. There can be severe penalties for excesses in either direction. Inventory problems have proliferated as technological progress has increased the organization's ability to produce good in greater quantities, faster and with multiple design variations. The public has compounded the problem by its receptiveness to variations and frequent design changes (Tersine,1982). Since the mid1980s the strategic benefits of inventory management and production planning and scheduling have become obvious. The business press has highlighted the success of Japanese, European, North American firms in achieving unparalleled effectiveness and efficiency in manufacturing and distribution. In recent years, many of the firms have 'raised the bar', yet again by coordinating with other firms in their supply chains. For instance, in stead of responding to unknown and variable demand, they share information so that the variability of the demand they observe is significantly lower (Silver,PykeandPeterson,1998).

### Statement of the Problem

For many organizations, there is no doubt that inventory management enhances their operations. Organizations with high levels of finished goods inventory can offer a wide range of products and make quick delivery from their backyards to the customers Stanton, (2004). There has been a question for management about the efficiency of inventory management procedures in place resulting from inconsistencies of inventory levels leading to various weakness like losses that come as a result of over, under-stocking, expiry inventory, failure to meet targets and low morale of the company members. As a result the company's stores are over crowded making the work of a store-keeper difficult, late issue of materials to the department and these in turn result into poor inventory service delivery (Wood, 2004).

Kenyan oil marketer Kenol Kobil posted an 8.96 billion shilling (\$105.66 million) pretax loss in 2012 from a 4.93 billion shilling profit in 2011 (RoK, 2013). The Energy Regulatory Commission statistics indicate that crisis related to inventory management hinders effective management of stores at Kenol Kobil limited. The Oil marketer has agreed to pay the disputed Kshs 1.2 billion it owes Kenya petroleum Oil Refineries (ERC, 2013). The move could see the troubled oil marketer allowed back to the two oil import avenues, easing its current woes (RoK, 2013). KenolKobil disputed the amount claiming the Refinery owes it Kshs 2.2 billion in product losses incurred due to inefficiencies in the refinery (ERC, 2013). Finance costs climbed 153.1 percent to Sh1.1 billion as a result of a 47.4 percent increase in short term borrowings to Sh25.6 billion as well as higher interest rates (KenolKobil, 2012). Gross profit declined by 70.1 percent from Sh6.1 billion to Sh1.8 billion in the first half of 2012 (Wahito, 2012). The company posted a loss per share of 4.27 shillings from earnings of 2.22 shillings (\$1 = 84.8000 Kenyan shillings). Information available from the foregoing background shows that Kenol Kobil has problem of inventory management).

A study by Mumo (2005) on the impact of Kenol Kobil on exports of the multinational oil companies operating in Kenya, talks about the reliance of the oil industry on Kenol Kobil to store and transport their fuel stocks to the western Kenya depots for export to the great lakes region. According to Njeru (2008) the research on the causes of poor performance in inventory management found out that inadequate skill was a major factor affecting efficiency of inventory management. This study therefore is intends to fill this research gap by determining effectiveness of inventory management in the public sector with specific reference to Kenol Kobil limited.

## Objectives of the Study

### General Objective

The main objective of the study was to determine effectiveness of inventory management at Kenol Kobil limited.

### Specific Objectives

- i. To assess the effects of information technology on the effective inventory management at Kenol Kobil limited.
- ii. To find out how distribution channels affect effective inventory management at Kenol

Kobil limited.

- iii. To establish how Staff competency (competencies) affect effective inventory management at KenolKobil limited.
- iv. To establish how Government policies affect effective inventory management at KenolKobil limited.

## Literature Review

### Technology Diffusion Theory

Rogers' Diffusion of Innovation Theory tries to explain how adoption was made to new ideas as well as to innovations by suggesting in the theory, five innovation attributes through which adoption is effected, which are: “observability, compatibility, trial ability, relative advantage and complexity” (Rogers, 1995). An attribute is said to have a relative advantage when the new innovations is seen to be better than the previous idea that it is replacing. Rogers' theory emphasizes that it is easier to implement innovations that show an improved advantage over that which was there before, making it easier to adopt. Greenhalgh et al, (2004) adds that users would not adopt innovations that they did not see any relative advantage in them. The ability of an innovation to be easily adopted is that it has to be compatible with a previous idea, meet their experience in the past and fulfill existing values, meaning that there is a higher chance for an innovation to be adopted if it is more compatible. An innovation that is seen to be difficulty to use as well as to understand is said to be complex. New innovations are categorized from the simple to complex ones which define the relevance users find in them, where the ones seen as simple to operate are easily adopted (Greenhalgh et al, 2004).The ability to experiment with an innovation in least time is called trial ability, and if the user is able to test the item before full implementation saves them resources, energy and precious time and hence becomes easily adopted. The visibility of the innovation’s results as seen by adopters is called observability, where the innovation becomes more adoptable if the outcomes are positive.

### Bargaining Theory of Distribution Channels

A critical factor in channel relationships between manufacturers and retailers is the relative bargaining power of both parties. In this article, the authors develop a framework to examine bargaining between channel members and demonstrate that the bargaining process actually affects the degree of coordination and that two-part tariffs will not be part of the market contract even in a simple one manufacturer–one retailer channel.

To establish the institutional and theoretical bases for these results, the authors relax the conventional assumption that the product being exchanged is completely specifiable in a contract. They show that the institution of bargaining has force, and it affects channel coordination when the complexity of non specifiability of the product exchange is present. The authors find that greater retailer power promotes channel coordination. Thus, there are conditions in which the presence of a powerful retailer might actually be beneficial to all channel members. The authors recover the standard double-marginalization take-it-or-leave-it offer outcome as a particular case of the bargaining process. They also examine the implications of relative bargaining powers for whether the product is delivered “early” (i.e., before demand is realized) or “late” (i.e., delivered to the retailer only if there is demand). The authors present the implications for returns policies as well as of renegotiation costs and retail competition.

### Theory of resources and capacities

As from the theory of resources and capacities it is habitual to consider that those sources are in internal and external factors of the enterprises. The entrepreneur, by means of the strategy combines these factors establishing his distinctive competencies. As from the theory of resources and capacities it is habitual to consider that those sources are in internal and external factors of the enterprises.

Brown’s (1997) interpretation of multiple resources theory was that timing involves verbal resources at the perceptual/central stages, whereas search and tracking are 9 spatial tasks. This argument, though, still fails to explain the asymmetry. If anything, there should be minimal interference, as the tasks draw on separate resource pools. In the event of an interference effect, it should affect both tasks in a similar manner, rather than affecting one task while leaving the other untouched. On the other hand, working memory, with its central executive, can offer an explanation. The central executive controls attention and coordination functions, such as allocating attention between dual tasks. Mental arithmetic and timing both draw on the central

executive, which is why bidirectional interference occurs between these two tasks. Simple visual search or tracking tasks, on the other hand, only use the visuospatial Sketchpad.

### Agency Theory

This was put forward by Jensen and Meckling (1976). They proposed that when a firm issues outside equity, it creates agency costs of equity that reduce the value corporate assets. Jensen's free cash flow theory alleges that if management is not closely monitored they will invest in capital projects and acquisitions that do not provide sufficient expected returns. Jensen and Meckling (1976) continue to argue that debt financing can help overcome the agency costs of external equity. The effect of employing external debt rather than equity financing is that it reduces the scope for managerial perquisite consumption, which can have an adverse effect on the value of the firm. With debt Outstanding, the most of excessive perks consumption will result in managers losing control of the company due to default and bondholders seizure of the company assets.

Thus external debt serves as a bonding mechanism for managers to convey their good intentions to outside shareholders. Because taking on debt validates that managers are willing to risk losing control of their firm if they fail to perform effectively, shareholders are willing to pay a higher price for the levered firms. The use of debt to control the agency of external equity can be accomplished in two ways: Debt forces managers to be monitored by the public capital. If investor have negative view of managements competence, they will charge high interest rate on the money they lend to the firm or they will insist on restrictive bond covenants to constrain management's freedom or both. Outstanding debt limits management's ability to reduce firm value through incompetence or perquisite consumption, (Jensen, 1986).

The discipline that debt provides has been further explored by Jensen (1989) and Ofek (1993). They argue that high leverage can provide benefits in the dynamic sense that companies with high leverage ratios may respond more quickly to the development of adverse performance than companies with low debt to equity ratios. Ofek (1993) argues that: A choice of high leverage during normal operations appears to induce a firm to respond operationally and financially to adversity after a short period of poor performance, helping to avoid lengthy periods of losses with no response. The existence of debt in capital structure may thus help to preserve the firm's

going concern value. The above however, are still considered to be insufficient to outweigh the agency cost of debt. The cost entail writing detailed covenants into bond contracts which sharply constrain the ability of the borrowing firm's managers to engage in expropriate behavior. The agency cost reduces the benefits of the debt interest tax shield. However an optimal (value maximizing) debt to equity ratio is reached at the point where the agency cost of debt equals agency cost of equity.

### Empirical Review

In this 21st century, the internet and internet-based technologies are impacting business in several ways. The various internet and internet technologies that are used in inventory management include e-mails for accessing and contacting clients, website technologies designed for distributing, searching, and retrieving documents over the Internet. These new technologies are promising to save costs, to improve customer and supplier relationships, business processes and performance, and to open new business opportunities.

These technologies allow organizations to respond better to existing challenges and improve the anticipation of future developments. As with the case with earlier innovations, rich multi-faceted interactions are occurring between developments in the place, global business environment, work environments, and technical innovations (Thompson and Cats-Baril 2003). One area that has recently and significantly gained attention is the Business-to-Business (B2B) inventory management that encompasses the of goods and services as well as higher-level management tasks and logistics.

The competency movement was originally initiated by McClelland (1973) as an alternative to the trait and intelligence approaches in measuring and predicting human performance. Spencer and Spencer (1994) defined competency as internal characteristics of an individual that produced effective and superior performance. Sparrow (1996) divided into three categories as organizational competency, managerial competency and individual competency. He defined individual competency as list of behavioral characteristics related to job tasks. Schippment, Ash, Carr & Hesketh (2000) defined competency as adequate knowledge to successfully complete job tasks. Arthey & Orth (1999) defines it as a set of observable performance dimensions, including individual knowledge, skills, attitudes, and behaviors, as well as collective team, process, and



organizational capabilities, which are linked to high performance, and provide the organization with sustainable competitive advantage.

## Data Analysis/Findings

### Regression analysis

#### 4.4 Regression Analysis

The researcher conducted a multiple regression analysis so as to determine effectiveness of inventory management at KenolKobil limited. The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study.

**Table 4.1: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.884 <sup>a</sup>	.781	.780	1.05533

a. Predictors: (Constant), Information Technology, Distribution Channels, Staff Competency and Government policy)

b. Effective inventory management

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (Effective inventory management) that is explained by all the four independent variables (Information Technology, Distribution Channels, Staff Competency and Government policy).

The four independent variables that were studied, explain only 78.1% of the Effective inventory management as represented by the  $R^2$ . This therefore means that other factors not studied in this research contribute 11.9% of the Effective inventory management. Therefore, further research should be conducted to investigate the other factors (11.9%) that Effective inventory management.

### ANOVA<sup>b</sup>

The significance value is .0000 which is less than 0.05 thus the model is statistically significant in predicting Information Technology, Distribution Channels, Staff Competency and Government policy. The F critical at 5% level of significance was 7.9. Since F calculated is greater than the F critical (value = 53.1233), this shows that the overall model was significant.

**Table 4.2: ANOVA (Analysis of Variance)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	683.676	10	683.676	577.95	.000 <sup>b</sup>
	Residual	180.421	150	1.114	6	
	Total	824.098	159			

a. Predictors: (Constant), Information Technology, Distribution Channels, Staff Competency and Government policy)

b. Effective inventory management

### Coefficient of determination

The researcher conducted a multiple regression analysis so as to determine the relationship between  $v$  and the four variables. As per the SPSS generated table 4.8, the equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$ ) becomes:

$$Y = 2.976 + 0.877X_1 + 0.588X_2 + 0.705X_3 + 0.299X_4 + \epsilon$$

Where Y is the dependent variable (Effective inventory management), X<sub>1</sub> is Information Technology, X<sub>2</sub> is Distribution Channels, X<sub>3</sub> is Staff Competency and X<sub>4</sub> is Government policy.

According to the regression equation established, taking all factors into account (Information Technology, Distribution Channels, Staff Competency and Government policy) constant at zero, Effective inventory management will be 2.976. The data findings analyzed also show that taking all other independent variables at zero, a unit increase in Information Technology will lead to a 0.877 increase in Effective inventory management; a unit increase in Distribution channels will lead to a 0.588 increase in Effective inventory management, a unit increase in Staff competency will lead to a 0.299 increase in Effective inventory management. This concludes that Information technology influences contribute more to the effective inventory management followed by distribution channels.

At 5% level of significance and 95% level of confidence, Information Technology had a 0.000 level of significance; Government policy showed a 0.005 level of significant, Distribution channels showed a 0.002 level of significant, and Staff competency had a 0.008 level of significant; hence the most significant factor is Information Technology.

**Table 4. 3: Coefficient of determination**

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	2.976	1.584		0.678	0.003
Information Technology	0.877	0.359	4.897	0.597	0.000
Government policy	0.588	0.285	2.455	0.707	0.005
Distribution channels	0.705	0.145	3.326	0.269	0.002

Staff competency	0.299	0.310	2.297	0.439	0.008
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- a. Predictors: (Constant), Information Technology, Distribution Channels, Staff Competency and Government policy
- b. Effective inventory management

Significance value = P- Value- If P -value are less at 5%. We conclude that all the independent variable were significant in contributing to effective inventory management.

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