

Analysis of Value of Supply Chain Strategies on Inventory Price Variations in Supermarkets in Nakuru Town Kenya

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Abstract: *In recent times there have been reports of supermarkets facing market challenges resulting to low returns and closure. A substantial part of these pressures can be traced to the supply chain where variations in the inventory prices can considerably affect the ability of the supermarkets to restock. This study aimed to analyse the effects of Supply Chain Management strategies on Inventory price variation in supermarkets, in Nakuru Town Kenya. In particular it sought to assess the effect of building collaborative networks, vendor managed inventory systems and the use of ICT on the management of inventory price variations supermarkets in Nakuru town. Descriptive survey research design was adopted targeting the management and procurement staff of six large supermarkets in Nakuru town. A sample size of 92 was obtained through stratified random sampling. Data was collected by use of structured questionnaires. Both descriptive and inferential statistical methods were used to analyse the data. The findings revealed that A correlation analysis on whether vendor managed inventory systems significantly affected the management of inventory price variations in supermarkets in Nakuru town shows a significant relationship exists ($r = 0.636, p < 0.05$). The Pearson's product moment coefficient of correlation was also high indicating that there was a strong relationship between the variables. Hence, better control of price changes in the supermarkets supply chains could be achieved through vendor managed inventory strategies. There is need for the supermarkets to engage more in vendor managed inventory systems as this will be very economical to both the vendor and the supermarket in the long run. Under this arrangement, it will be relatively easy to have more inventory control and also enhance warning in terms of price variations.*

Keywords: *Inventory Price Variations, Supply Chain Strategies*

I. Introduction

A stable inventory market is very good for investment in any given country. It serves as an indicator of the robust performance of the economy which is attracting investments. Inventory prices are usually stable relative to the prevailing political and economic situations, that is, externalities which largely characterize their performance. These externalities have a considerable effect on the inventory supply chain and influence their variations. The variations in turn affect the inventory value by increasing the investment risks and often result in losses for inventory holders. Internal factors such as supply chain management have been observed to be of critical importance to the stability of the inventory prices. However, the influence of the inventory prices on their performance has not received much research attention and what exists in literature are just anecdotes and few case studies.

Supply chain management (SCM) is "the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long term performance of the individual companies and the supply chain as a whole."(Jacoby, 2009) It has also been defined as the "design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally." (Mentzer et al., 2001). Supply chain dynamic characteristically dominate the production and retail stages of any business entity. The purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and the velocity of inventory movement. Main functions of Supply Chain Management are as follows: Inventory Management; Distribution Management; Channel Management; Payment Management; Financial Management; Supplier Management; Transportation Management and; Customer Service Management. The present study will focus on inventory price variations which is an integral part of inventory management. Hence, of particular interest to the current study is the effects of price variations in the inventories in the major retail outlets for utility products namely supermarkets. SCM is a cross-functional approach that includes managing the movement of raw materials into an organization, certain aspects of the internal processing of materials into finished goods, and the movement of finished goods out of the organization and toward the end consumer. As organizations strive to focus on core competencies and become more flexible, they reduce their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other firms that can perform the activities better or more cost

effectively (Jacoby, 2009). The effect is to increase the number of organizations involved in satisfying customer demand, while reducing managerial control of daily logistics operations. Less control and more supply chain partners led to the creation of the concept of supply chain management. However, with the increase of many actors in the supply chain comes the issue of inventory price variations.

The analysis of the long-run effects of inventory price disruptions is important to supermarkets in Kenya for a number of reasons. First, managers and investors are likely to have more faith in estimates of economic impact that are based over long horizons, as it provides them with a more complete picture of the economic implications of disruptions. By examining the long-run inventory price effects of disruptions, it is possible to shed light on the time pattern of abnormal inventory price behavior in terms of when it starts, how long it lasts, and whether firms recover quickly from disruptions. These issues are important for setting realistic expectations of the likely consequences of disruptions. Second, Addy-Tayie (2012) suggest that much of the supply chain management efforts in the recent past have focused on increasing the efficiency (lowering costs) of supply chain operations, and less on managing the risks of disruptions. Much of the recent academic literature on supply chain models also seems to focus on managing costs (Milner and Kouvelis, 2002; Corbett and De-Croix, 2001; and Cachon and Fischer, 2000).

This could partly be because improving efficiency is an ongoing activity at most firms, so managers have developed the necessary skills to deal with it, and they know how to justify and manage resources that improve efficiency. On the other hand, major supply chain disruptions are infrequent, they are hard to predict and manage, thus making it difficult to justify why resources should be devoted to proactively manage such risks. Evidence on the negative economic impact of disruptions can change a firm's perceptions on the importance of anticipating and managing the risk of disruptions.

The growth of supermarkets in Kenya has been attributed to such factors as increased urbanization; a growing middle class and its changing lifestyles; and market liberalization that has led to increased competition in the sector. However much growth was not seen within the retail chains until the mid '90s when supermarkets grew from 5 to the current over 300 stores in Kenya. These range from well-established retail chains to independent one store supermarkets. According to Kenya Economic Survey 2012, wholesale and retail trade sector which supermarkets are part of is among top five sectors that have driven Kenya's growth in the last five years. The sector was second with 20% after transport with 18.5%. There is need to ensure supermarkets growth and continuity. However in recent times there have been reports of supermarkets facing market threats resulting to low returns and closure. Their performance is dwindling and this has been attributed to competitive pressures. One way to address this issue may be to address the issue of procurement best practices as these are argued, accrue benefits directly to the bottom line of organizations. Today, procurement strategies are more a part of a business's success than ever before. Not only has technology given companies the opportunity to truly make purchasing more efficient and inexpensive, but companies are now spending a larger percentage of their revenue on products and services than they were thirty years ago.

Procurement best practices are strategies that may be followed when making company purchasing decisions. These practices may include building supplier relationships, team-based approaches to procurement and proper use of technology or e-procurement. Implementing procurement best practices may significantly improve the effectiveness of purchasing decisions. One of the most important procurement best practices may be improving the relationship between the buyers and suppliers. Choosing a supplier based solely on competitive pricing is often viewed as short-sighted and may be ineffective. An alternative procurement practice is to use suppliers that offer reliable products at fair and stable prices. Building a long-term relationship with a reliable supplier can result in better customer service and may prove to be more cost effective over time. Most research, however, fail to pin-point the strategies used by retail supermarket chains to manage the inventory prices in the supply chains profitably. Hence, it is not clear how supermarkets approach the supply chain management and how exactly it impacts on their performance. The present study, therefore, seeks to address this gap by examining the supply chain strategies used by supermarkets in managing price variations in Kenya Every business exists to make profit. In the 21st century, these profits are realized in a myriad of ways including cost savings, improvement of working capital and reduction of risk. However in recent times there have been reports of supermarkets facing market challenges resulting to low returns and closure. Their performance is dwindling and this has been attributed to competitive pressures. A substantial part of these pressures can be traced to the supply chain where variations in the inventory prices can considerably affect the ability of the supermarkets to restock. According to Kendricks and Singhal (2004), there is sufficient evidence indicating that firms do not quickly recover from the negative effects of price disruptions in the supply chain. For the stockholder in the supermarkets, this event could impinge on his earnings, while loyal customers may have to rethink their loyalty if the supermarket(s) decide to increase their prices in order to cushion themselves from the inventory price changes. Studies on the effects of price variations in the supply chain and how they affects the consumer retail business remain scanty, hence, this informed the need for the present study which sought to establish the strategies used by supermarkets in Kenya to manage inventory price variations in their supply chains.

II. Literature Review

Theoretical Review

The theoretical framework was based on the Stakeholders theory. Procurement can be viewed as involving at least two parts with different goals, a buyer and one or more vendors competing for the contract. However in addition to the agency relationship between buyer and competing vendors, there may be a number of internal stakeholders possibly with conflicting goals, adding complexity to the procurement process. These groups of internal stakeholders may include IT staff, procurement personnel, users, user representatives, line managers, financial officers and cost controllers.

These may have conflicting interests even though there may not be an agency relationship between them; one common observation is that different user groups in different parts of a business may have conflicting requirements. This is where stakeholder management theory may be helpful. Eisenhardt and agency theory has been influential development of stakeholder theory Jones, (1995), Hill and Jones, (1992). Flak and Rose (2005) have done a thorough literature study of stakeholder theory and discusses the strengths and weaknesses of the theory for theoretical contribution to the e-government field. Jones defines stakeholders as applying not only to groups easily characterized by words such as customers or employees but also to subgroups of customers and employees (e.g. shop workers and middle managers) who may have distinct and competing interests.)

Vendor Managed Inventory Systems

VMI has been described as an inventory and supply chain management tool in which the supplier has taken the responsibility for making decisions on the timing and amounts of inventory replenishment. This tool has also been called a continuous replenishment process, continual replenishment or automatic replenishment (Blatherwick, 1998). The advantages of using VMI to the downstream member, usually a large retailer, have well been documented (Cahon and Fisher, 1997). Achieng' (2013) noted that the main advantages of VMI were reduced costs, and increased customer service levels to one or both of the participating members. Lee (2000) found that VMI greatly reduced inventory-carrying costs and stock-out problems while, at the same time, it offered the ability to synchronize both inventory and transportation decisions.

According to Fox (1996) noted that VMI's advantages included improved customer service, reduced demand uncertainty, reduced inventory requirements and reduced cost based on a case study at Johnson and Johnson. With the reduced stock-outs, suppliers not only saved, but they also received more information on the customers' demand patterns that aided the supplier in planning better on their own inventories. The ability to plan better on inventories and deliveries are often cited as major advantages to the upstream member using VMI (Jain, 1994).

Addy-Tayie (2012) developed an analytical model to calculate inventory levels and delivery rates to minimize costs for small suppliers forced to use VMI by larger clients. One important finding of the study was that reducing variability in the amount and timing of the demand increased the benefits of lowered prices. In addition, Blatherwick (1998) noted that VMI was an excellent tool when ordering the policies of the downstream supply chain members were less sophisticated and erratic, or when the distributor was selling to a large number of buyers with erratic buying patterns.

III. Objective of the Study

To establish how vendor managed inventory systems affect inventory price variations in supermarkets in Nakuru town

IV. Research Hypothesis

H_{01} : There is no significance influence of vendor managed inventory systems on inventory price variations of supermarkets in Nakuru town

V. Methodology

The study adopted a descriptive research design. This is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orodho, 2003). The major purpose of descriptive research is to provide a description of the state of affairs as it exists and show the relationships between the variables. The target population for this study, comprised the management and procurement staff of six leading supermarkets in Nakuru town who are 120 in number (Chamber of Commerce, 2016).

Table 1: Population Distribution

Name of supermarket	Management	Procurement	Total
Nakumatt	6	20	26
Tuskys	6	20	26
Naivas	5	15	20

Stagematt	5	15	20
Ukwala	5	12	17
Woolmatt	2	9	11
Total	29	91	120

The study employed proportionate stratified random sampling to select samples to participate in the study. Achieng' (2013) refer to sampling as a process of selecting a group of people, events or behavior with which to conduct a study. Based on the target population size of 120, a sample size of 92 was obtained using simplified formula delivered by Yamane (1967) for proportions where confidence level is 95% and $P \geq 0.5$ are assumed

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = Sample size; N = Population size; e = Margin of error.

$$n = \frac{120}{1 + 120(0.05)^2} = 92$$

Table 2 shows the response rate of the questionnaires.

Table 2: Response Rate

No. of questionnaires Returned	Target No. of respondents	Response Rate (%)
80	92	87

The high questionnaire response rate (87%) shown in Table 2 resulted from the method of administration of the instrument, which was in this case researcher administered. This was acceptable according to Mugenda and Mugenda (2003).

VI. Findings And Discussions

The researcher sought to establish how vendor managed inventory systems affect inventory price variations in supermarkets in Nakuru town. Concerning this objective, several statements on the effect of vendor managed inventory systems on the management of inventory price variations in supermarkets were posed to the respondents and they were asked to rate them. The status of effects of this variable was rated on a 5 point Likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The results on this are summarized in Table 3.

Table 3: Vendor managed inventory systems and inventory price variations

Statement	SA	A	N	D	SD
	Freq(%)	Freq(%)	Freq(%)	Freq(%)	Freq(%)
VMI Improves service levels due to better coordination or replenishment orders	19(24)	35(44)	10(13)	11(14)	5(6)
VMI leads to reduced lead time and increased inventory turns	14(18)	29(36)	8(10)	24(30)	5(6)
VMI leads to reduced inventory stock outs by increasing inventory visibility	17(21)	31(39)	10(13)	15(19)	7(9)
VMI leads to increased inventory turnover	22(28)	25(31)	11(14)	17(21)	5(6)
VMI leads to smooth supply chain processes	13(16)	30(38)	10(13)	18(23)	9(11)
VMI reduces costs due to better resource utilization for production and transportation,	32(40)	39(49)	4(5)	5(6)	0

It is evident from the findings in Table 3 that the use of VMI Improves service levels due to better coordination or replenishment orders as was indicated by majority (44%) of the respondents. A notable feature of this was that use of VMI leads to reduced lead time and increased inventory turns (36%) and also leads to reduced inventory stock outs by increasing inventory visibility (39%). The findings also indicate that VMI leads to increased inventory turnover (31%) and also to smooth supply chain processes (38%). Other findings also indicate that VMI Reduces costs due to better resource utilization for production and transportation (49%). These results suggest that the supermarkets stood to gain alot through exploiting the power of VMI. In particular, a VMI system cushioned them from arbitrary variations in prices as the vendors themselves bore most of the costs and risks in the supply chain.

These findings concur with Achieng'(2013), who found that reducing variability in the amount and timing of the demand increased the benefits of lowered prices. Fox (1996) also cited the advantages of VMI's including; improved customer service, reduced demand uncertainty, reduced inventory requirements and reduced cost based on a case study at Johnson and Johnson. With the reduced stock-outs, suppliers not only

saved, but they also received more information on the customers' demand patterns that aided the supplier in planning better on their own inventories. Similarly, Addy-Tayie (2012) observed that VMI enhances competitive advantage through cost savings, relationships and information quality. Irungu and Wanjau (2011) also established that the system makes it easy to replenish, reduce incidences of stock out and rejection of deliveries, help supermarkets react to up and downs in demand, allow replenishment in friendly loads, enhance improved relationship between partners, increase accuracy in demand forecasts and overall improvement in customer service levels. The implications are that VMI systems can be adopted by supermarkets to gain competitive advantages.

VII. Conclusion

A correlation analysis on whether vendor managed inventory systems significantly affected the management of inventory price variations in supermarkets in Nakuru town shows a significant relationship exists ($r = 0.636$, $p < 0.05$). The Pearson's product moment coefficient of correlation was also high indicating that there was a strong relationship between the variables. Hence, better control of price changes in the supermarkets supply chains could be achieved through vendor managed inventory strategies.

VIII. Recommendations

There is need for the supermarkets to engage more in vendor managed inventory systems as this will be very economical to both the vendor and the supermarket in the long run. Under this arrangement, it will be relatively easy to have more inventory control and also enhance warning in terms of price variations.

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