

## **Effect of Inventory Control Management on Mumias Sugar Retailers' Satisfaction Level: A Survey of Mumias Sugar Retailers in Kiambu County, Kenya**

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### **Abstract**

This study aimed at exploring the effect of inventory control management on Mumias sugar retailers' satisfaction level with a view of assessing its impacts and proposing a framework for improving retailers' satisfaction level. The objectives of the study included: examining the effect of warehousing and distribution on Mumias sugar retailers' satisfaction level; determining the effect of stock replenishment methods on Mumias sugar retailers' satisfaction level; establishing the effect of inventory storage and retrieval systems on Mumias sugar retailers' satisfaction level and to determine the effect of inventory costs on Mumias sugar retailers' satisfaction level. The target population consisted of Mumias sugar retail outlets in Kiambu County and employed systematic random sampling technique. The sample size consisted of a total population of ninety seven (97) respondents who were shared equally among the three major constituencies of Kiambu County. This study adopted a descriptive research design and the findings of this survey were derived from descriptive data analysis based on the research questions presented to the target population. A response rate of 89% was obtained. Findings indicated that improved and efficient inventory control management had reduced the deterioration of sugar in the store; this has also improved satisfaction level of the retailers. Kiambu County Mumias sugar retailers prefer using continues review method to control the inventory in the warehouses. There is a strong deviation from the manual systems, thus many of the Mumias sugar retailers in the county had moved from using manual paper systems to automated system which is a more easier and efficient way of controlling the flow of sugar in their stores thus making sure that there is no sugar shortage in the warehouse. The major cost incurred by the Mumias sugar retailers in Kiambu County is the transport cost. Many sugar retailers had received complaints from their customers which had resulted due to delayed delivery of sugar to the customer's destination and also as a result of hike in sugar prices due to warehouses running out of stock.

The study therefore recommended that Mumias Sugar retailers should forecast market for their products so that they can stock enough inventories to avoid under stocks and reduce on damaged inventory. Mumias Sugar Company should adopt the new ways of communication like the use of social networks and other quick communication ways to ensure effective collaboration between the company and its retailers. The retailers should be encouraged to take insurance policies to insure their sugar stores against the various risks like fire and theft so as to prevent loss of commodity and other valuables. The sugar store owners should also provide their employees with safety working conditions and safety gears to prevent injuries among the employees.

**Keywords:** Inventory control management, Retailers satisfaction level

### **Introduction**

Inventory control 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 (Kotler, 2002).

According to Keth et al., (1994) the major objective of inventory management and control is to inform managers how much of a good to re-order, when to re-order the good, how frequently orders should be placed and what the appropriate safety stock is, for minimizing stockouts. Thus, the overall goal of inventory is to have what is needed, and to minimize the number of times one is out of stock.

Retailers can maximize inventory efficiency through three types of initiatives: ensuring that the product is right, this is about assortment rationalization, which has a positive impact on stock levels, but does not primarily focus on them. ensuring the delivery channels are correct, this is about product flow optimization, which directly addresses the inventory question, but is generally considered as a long-term initiative and making sure stock management is performed according to best practices, this include; inventory management excellence, an initiative which directly targets the skills, art and science of managing pushed and pulled inventory from the initial forecast to the management of overstocks and returns (Salmon, 2011).

Many sugar retailers either small, medium or large i.e. supermarkets in Kenya have experienced benefits of inventory control management in one way or another; these benefits includes, proper coordination of how they receive goods from suppliers or major manufacturers, improved end user satisfaction, proper storage and retrieval systems, increased customer goodwill, increased sales due to efficient and effective deliveries, reduced wastages and obsolescence, high profits and growth among other benefits.

The sugar industry in Kenya dates back to 1922, with the establishment of the first sugar factories. The industry directly and indirectly supports 5 million Kenyans representing about 16% of the entire Kenyan population. Sugar cane growing is also a major source of income to over 150,000 shareholders. In Kenya, sugarcane is grown on fairly flat regions in the Western, Nyanza and Coast Provinces. About 85% of the total cane supply is from small-scale growers whilst the remaining is from the nucleus estates of the sugar factories. The sugar companies operate under regulation by the Kenya Sugar Board, a public body charged with the

responsibility of promoting and fostering the effective and efficient development of sugar cane for production of white sugar (Kenya National Bureau of Statistics, 2009).

#### Statement of the problem

There are many challenges in managing inventory to balance the supply and demand, thus a retailer would very much be willing to have enough inventories to satisfy the demands of customers, hence no lost sales due to inventory stock-outs. On the other hand, the retailer does not want to have too much inventory staying on hand because of the cost of carrying inventory. The retailers are the major actors involved in downstream distribution channels and face a special challenge in keeping inventory at reasonable levels due to the difficulty of forecasting demand and expectations of customers about product availability (Coyle et al., 2003).

According to Lining and Ying (2008) the inventory investment for a small business takes up a big percentage of the total budget yet inventory control is one of the most neglected management areas in small firms. Many small firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of inability to control the inventory efficiently.

A critical factor for retailers is that they do not have a good inventory system. If the retailer does not have good inventory system, they will not be able to forecast demands with any kind of accuracy. This might result in them running out of stock every so often (Levinson, 2005).

#### Research Objectives:

The general objective of this study was to investigate the effect of inventory control management on Mumias sugar retailers' satisfaction level in Kiambu County, Kenya.

The specific objectives of this study were as follows:

To examine the effect of warehousing and distribution on Mumias sugar retailers' satisfaction level in Kiambu County, Kenya

To determine the effect of stock replenishment methods on Mumias sugar retailers' satisfaction level in Kiambu County, Kenya.

To establish the effect of inventory storage and retrieval systems on Mumias sugar retailers' satisfaction level in Kiambu County, Kenya.

To determine the effect of inventory costs on Mumias sugar retailers' satisfaction level in Kiambu County, Kenya.

#### **Literature Review**

The chapter discussed the literature review of the study. The main aim of the literature review was to explore the available and existing information which had been covered by the various researchers. The literature was reviewed from, journals, the internet, reference books, working papers, reports and periodicals.

#### Theoretical Framework

##### Theory of Constraints

A constraint is any element or factor that limits the system from doing more of what it was designed to accomplish. Theory of Constraints encourages partners within the SCM to identify the problems that they face every day preventing them from achieving their goals. With the theory of Constraints they are able to identify amicable solutions (Goldratt and Cox, 1992).

Supply chain collaboration amongst independent firms or business units often provides larger benefits from effectively satisfying end customer needs than working in isolation. However, a lack of awareness about the existence of constraints along the supply chain prevents the benefits of collaboration from being fully realized (Togar et al., 2004).

There are various types of constraints interrelated with each other. Physical constraints are often driven by human behavior i.e. habits, decisions, and actions. At the same time, human behavior is affected by metrics and policies around supply chain operations. When the goal of a supply chain is created, the chain members create policies that regulate and guide the behavior of the supply chain including performance metrics – to assess the attainment of the goal (Simatupang and Sridharan, 2002).

### **Transaction Cost Theory**

Transaction cost theory is an economic approach that reflects different types of transaction costs e.g. coordination, contracting deals and information sharing making it possible for economic perspective to take into account the economic rationality of supply chain relationships. Transaction cost theory explains how information advantage in a relationship is enjoyable and beneficial for firms and information sharing in business is a transaction cost (Eiriz and Wilson, 2006).

Transaction cost theory contributes to the study of supply chain relationships and networks, and the efficiency of economic activities. In transaction cost theory, the unit of analysis is the transaction used to describe the economic activity and the governance structures in business relationships (Riordan and Williamson, 1985).

### **Empirical Review of Variables**

#### *Warehousing and Distribution*

The warehouse is a point in the logistics system where a firm stores or holds raw materials, semi-finished goods, or finished goods for varying periods of time (Coyle et al., 2003).

A centralized storehouse network can be more efficient and cost-effective in the following reasons: the incidence of separate ordering of the same material is reduced, thereby reducing ordering costs and avoiding overstocking of items, supervision and control is improved and personnel and space requirements are reduced. Stores should be located as close as possible to where the material will be required on the basis of the amount of time customers are willing to wait for material from inventory (Susan and Michael, 2000).

There are three basic functions of warehouse: Receiving inbound goods from transportation carriers and performing quality and quantity checks, Transferring goods from the receiving docks and moving them to specific storage locations throughout the warehouse and Shipping the goods outbound to customers by some forms of transportation (Lambert, et al., 1998).

#### **Stock Replenishment Methods**

Retailers and manufacturers have taken a starting point of ECR the implementation of efficient replenishment programs, because they provide the quickest benefits, and this, encourage more companies to implement them. Efficient replenishment covers

activities such as store replenishment, materials flows, and inventory control, management of warehousing, and processing and delivery of orders. There are various existing stock replenishment methods as illustrated below: Continuous review model, Two-bin method, Periodic review model, Economic Order Quantity Model (EOQ), Min/max method, Alternative Order Quantity Approach, Just In Time (J.I.T), Multi-echelon distribution-type and Heuristic stochastic model (Stevens, 1989).

### **Storage and Retrieval systems**

The options for automated support systems and other technology for inventory are ever advancing. Inventory management can use increasingly sophisticated, automated materials management systems, as well as technology like RF bar code and other data-gathering devices, automated storage and retrieval systems (ASRS), electronic parts catalogs and imaging, ecommerce, and electronic data interchange (Susan et al., 2000).

Kudac and Junior (2008) state that an accurate inventory records are a must and are an essential ingredient which enables us to provide a satisfactory level of customer service and that they form a key element to determine the need for replenishment of inventory.

### ***Inventory Costs***

Inventory management aims at holding inventories at the lowest possible cost so as to ensure uninterrupted supply of goods to keep business operations flowing. Decisions on inventory management must compromise between the different cost components, such as the costs of supplying inventory, inventory-holding costs and costs resulting from insufficient inventories (Hugo et al., 2002).

There are three types of costs that must be considered in setting inventory levels and these are: holding or carrying costs, ordering costs and stock out costs (Gourdin, 2001).

### ***Mumias Sugar retailers' satisfaction level***

Retailers' satisfaction directly relates to the quality of goods delivered to them by manufacturers and other producers. Quality depends on various elements like the durability of the commodity and the ability of that product to meet the required needs of the final consumers. Producers and manufacturers must conform to quality as this will affect the retailers' performance in the market directly. To retain their customers they must always measure to the market expectations (Ishikawa, 1985).

Jonson (2000) indicates that packaging affects supply chain effectiveness because it represents an interface between the supply chain and its main customer: the end user and enables the chain's primary task i.e. serving end consumers to be accomplished. This is especially evident in the FMCG (Fast Moving Consumer Goods) supply chain. Packaging Logistics is a fairly new concept that has during the last years developed and gained increased attention by both industry and scientific community.

### Research Methodology

This study adopted a descriptive research design in form of a survey and involved the analysis of the effect of inventory control management on Mumias sugar retailers' satisfaction level.

Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass and Hopkins, 1984). The target population of this study consisted of retailers dealing with Mumias sugar within some constituencies in Kiambu County. These constituencies included Kikuyu, Thika and Ruiru.

The researcher used Systematic Random sampling where every  $k^{\text{th}}$  of the population was included. The sample size consisted of 97 respondents out of a target population of 486 Mumias sugar retailers in Kiambu County.

A sample size of 20% and above is appropriate representative of the target population (Glass and Hopkins, 2002). Primary data was collected using self-administered questionnaires. Two types of questionnaires both close ended and open ended were administered. Empirical and theoretical literature from books, journals and the internet were sourced for the purpose of collecting the secondary data.

Reliability of the instruments was tested by issuing 20 questionnaires to randomly selected Mumias sugar retailers in the county and a reliability of 0.6 was acceptable for this study. Reliability is the degree to which such instruments produce consistent results after a repeated trial is inevitable (Mugenda and Mugenda, 1999). Descriptive statistics in the form of frequencies and percentages was used for analysis in the study. Statistical Package for Social Science (SPSS) version 22 was used to present the data in the form of frequency, tables and percentages.

### Results of the Study

#### Effects of Improved and efficient warehousing

Table 4.1:

Effects of Improved and efficient warehousing

Effect	Frequency response	Percentage
Increased sales	19	22%
Reduced deterioration levels	26	30%
Good customer satisfaction	14	17%
Efficient storage and retrievals	27	31%

Source: Primary Data

From the table 4.1, 22% of the respondents were of the view that improved and efficient warehousing had led to increased sales of sugar among the operators. A larger percentage of the respondents, 30% argued that improved and efficient warehousing had reduced deterioration levels of sugar. 17% of the respondents were of the view that the idea of improved and efficient warehousing had led to the satisfaction of the customers. A more larger percentage of the respondents, 31% were of the view that improved and efficient warehousing of sugar had led to efficient storage and retrievals of sugar among the retailers.



Figure 4.1 Effects of Improved and efficient warehousing

**Suggested requirements to be implemented by the company to reduce time for sugar delivery**

The respondents were also asked to suggest on the various requirements that the sugar company should implement to help in reducing the time taken by Mumias Sugar Company to deliver the sugar to their warehouses. The responses were recorded in table 4.8 as below:

Table 4.2:  
Suggested requirements to be implemented.

Requirement	Frequency response	Percentage
Use of social media for communication	23	27%
Improved transport/logistic management	26	30%
Use Online ordering system	37	43%

Source: Primary Data

From the table 4.2 above, most of the respondents 43% were of the view that the company should implement the online ordering system so as to reduce the time taken when ordering sugar from Mumias Sugar Company. 30% of the respondents suggested that the company should improve the transport/logistic management, so as to reduce the time to transport the sugar to the warehouses. 27% of the respondents were of the view that the company should implement the use of social media which is a real time communication platform that will help to reduce the time taken for the delivery of sugar from the company to the warehouse and also pass real time information.

**Challenges faced by Mumias sugar retailers in warehousing**

Table 4.3:  
Challenges of warehousing

Challenge	Frequency	Percentage
Storage challenge	27	31%

Communication challenge	19	22%
Transport challenge	18	21%
Infrastructure challenge	22	26%

The table 4.3 above shows the findings on the challenges faced by the operators on warehousing. Many of the respondents listed some of the challenges which were faced by the Mumias sugar retailers on warehousing. The responses were as follows: 31% indicated that they were facing storage challenge, 21% transportation challenge saying that they were unable to offer transport services to their customers from the location of the warehouse to the various destinations. 22% said that they were facing communication challenge between the retailers and the customers, and this had led to poor relationship and low customer satisfaction. 26% of the respondents indicated that they faced poor infrastructure as a challenge and this affected the way they operated their business, this was also evident due to the fact that many of the warehouses were not well accessible due to the poor roads which led to their premises.

#### Methods used to control inventory levels by Mumias sugar retailers

Table 4.4:

Methods used to control inventory

Response	Frequency	Percentage
Continuous review	39	45%
Periodic review	13	15%
Just-in-time	16	19%
Fixed order system	18	21%

Source: Primary Data

From the table 4.4, a larger percentage of respondents 45% advocated for continuous review as a method they use for inventory control, 15% of the respondents chose periodic review as the method they use to control inventory, 19% use the just-in-time method of inventory control while 21% use the fixed order system as the method of inventory control. This implies that the most preferred method of inventory control by Mumias sugar retailers is the continuous review method which enabled the sugar retailers to ensure satisfaction among the customers. The respondents argued that by so using the continuous review inventory method as a control inventory method, it help them in ensuring that they do not run out of stock. This in return helped in maintaining customer satisfaction.

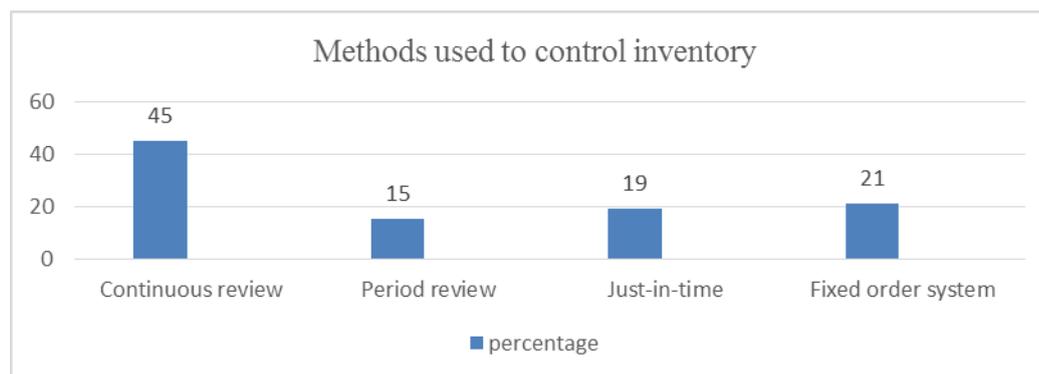


Figure 4.2 Methods used to control inventory

Source: Primary Data

**Effects of sugar stock out**

The respondents gave their view on the effects of sugar running out of stock in the warehouse. These views were recorded and analyzed in table 4.12 below:

Table 4.5

Effects of sugar Stock out

Effect	Frequency	Percentage
Loss of customers	47	55%
Customer dissatisfaction	22	26%
Increased price of sugar	17	19%

Source: Primary Data

From table 4.5 above, most of the respondents 55%, were of the view that the major effect faced by Mumias sugar retailers in the county due to sugar stock out is loss of customers. 26% of the respondents argued that most of the retailers faced customers’ dissatisfaction while 19% were said to have faced increased sugar price. This implies that most of the retailers end up losing customers in the event that they run out of stock and this generally affected their sugar retail business.

**Use of Automated storage and retrieval systems**

In regard to the question concerning the use of automated inventory systems in their retail stores in controlling the movement of the Mumias sugar stock, they respondent either Yes or No, the results and analysis are as below:

Table 4.6

Use of automated inventory storage and retrieval systems

Response	Frequency	Percentage
Yes	53	62%
No	33	38%

Source: Primary Data

From table 4.6 above, a higher percentage 62% of the respondents stated that they have indeed installed automated inventory storage and retrieval systems to control the movement of Mumias sugar in their stores. A lower percentage 38% of the respondents responded not to have installed automated inventory storage systems to monitor the movement of sugar in their stores. Many of those who responded to have

installed the automated system listed Microsoft Dynamic Navision System as one of the software they use in controlling the movement of sugar in their stores. This implies that many of the Mumias sugar retailers in the county had moved from using manual paper systems or excel sheets to automated system which is a more easier and efficient way of controlling the flow of sugar in their stores thus making sure that there is no sugar shortage in the warehouse.

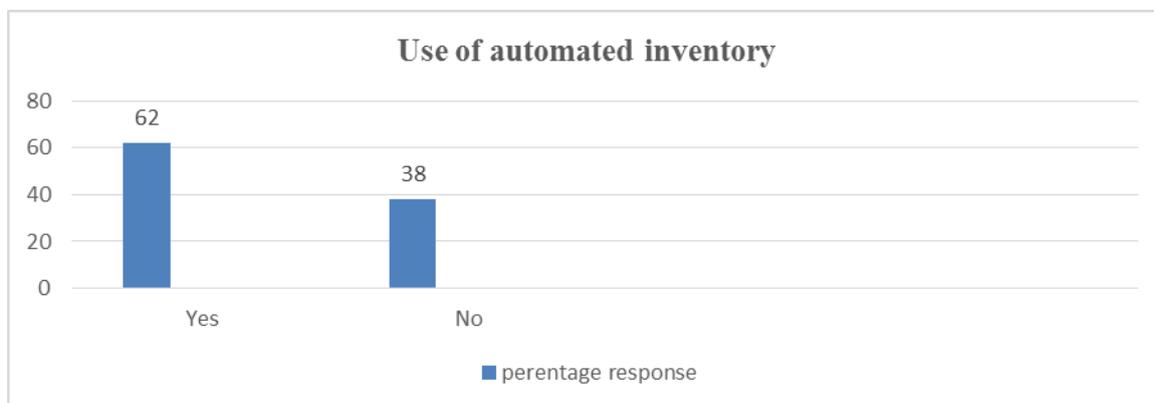


Figure 4.3 Use of automated inventory

Source: Primary Data

**Equipment used to handle and move sugar by Mumias sugar retailers**

Table 4.7

Equipment used to handle and move sugar in and out of the warehouse

Equipment	Frequency	Percentage
Fork lifts	17	20%
Pull and push carts	11	13%
On-rails transfer carts	5	7%
Conveyer belt	9	9%
Manual carrying	44	51%

Source: Primary Data

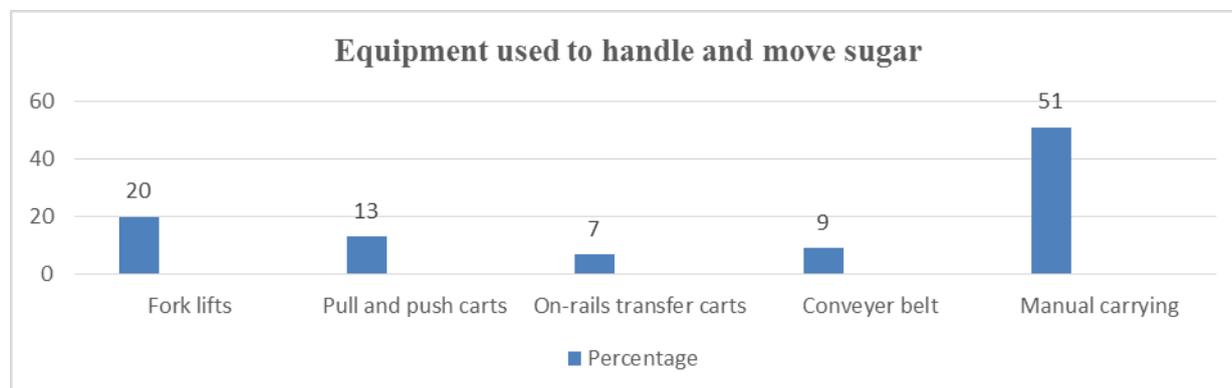


Figure 4.4 Equipment used to handle and move Mumias sugar

Source: Primary Data

From figure 4.7, most of the Mumias sugar retailers use manual carrying in their stores to move and handle sugar in the store. This is evident by the higher percentage of 51% of the respondents who were of this view. 20% of the respondents said to be using fork lift in their stores to move and handle sugar. 13% were for the pull and push carts, 7% were for the use of On-rail transfer carts while 9% argued to be using conveyer belt to move and handle sugar in the stores.

#### Various cost incurred in storage of Mumias sugar by the retailers

Table 4.8 Cost incurred

Cost incurred	Frequency	Percentage
Insurance cost	23	27%
Transport cost	41	47%
Packaging cost	22	26%

Source: Primary Data

From the table 4.8 above, many of the respondents 47% were of the view that most of the incurred cost in the warehouse was the transport cost. This was argued to be as a result of transporting the sugar from the Mumias Sugar Company depots and distribution points to the warehouse and also transporting the same sugar to the customer's premises. 23% of the respondents indicated insurance cost while 26% responded to be facing more of the packaging cost. This implies that the most incurred cost by the Mumias sugar retailers in Kiambu County is the cost of transportation.

#### Ways of reducing inventory cost in the warehouse

Table 4.9

Reducing inventory cost in the warehouse

ways of cost reduction	Frequency	Percentage
Under-stocking	8	10%
Reducing rate of deterioration	27	32%
Buying sugar using JIT	12	13%
Holding the right quantities	35	41%
No response	4	5%

Source: Primary Data

From table 4.9 above, a higher percentage 45% of the respondents were of the response that they opted to holding the right quantities of the of sugar at any given time so as to help in minimizing the cost in the warehouse. 32% were of the response that they reduced the rate of deterioration of sugar in the warehouse in order to reduce the cost in the warehouse. 13% of respondent that they were buying sugar using Just in Time (JIT) as a means of reducing the cost in the warehouse, a lesser number of 10% of the respondents said to be under stocking in order to reduce the cost in the running of the warehouse while 5% of the respondents failed to reply on

this question. This implies that most of the Mumias sugar retailers in Kiambu County opted for holding the right quantities of sugar in their warehouses a more perfect way of ensuring that the cost is reduced.

**Retailers’ satisfaction due to effective and efficient inventory control management**

Respondents were to respond to whether efficient and effective inventory control management can lead to retailers’ satisfaction level.

Table 4.10:  
Improved Mumias sugar retailers’ satisfaction level

Response	Frequency	Percentage
Strongly Disagree	9	10%
Disagree	11	13%
Neutral	7	8%
Agree	22	26%
Strongly Agree	37	43%

Source: Primary Data

From the table 4.10, 43% of the respondents strongly agree that effective and efficient inventory control management had led to sugar retailers’ satisfaction. 26% agreed to this factor of effective and efficient inventory control management leading to the satisfaction of the retailers. A lower percentage of the respondents were of a neutral view to the increased level of satisfaction brought by the effective and efficient inventory control management. 10% and 13% were of strong disagreement and disagreement respectively of the view that effective and efficient inventory control management had led to the satisfaction of the retailers.

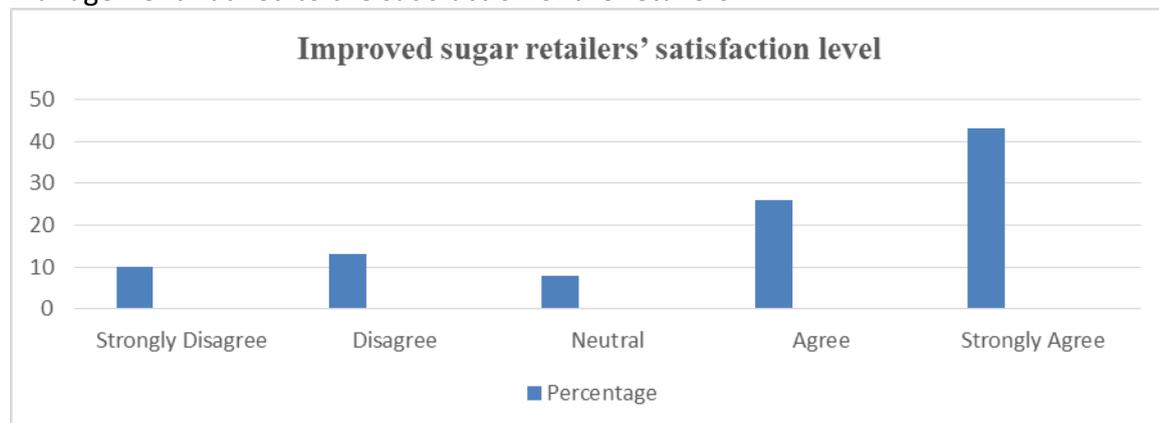


Figure 4.5 Improved sugar retailers’ satisfaction level

Source: Primary Data

**Conclusion**

Findings revealed that Weighing the pros and cons can help small business owners determine the appropriate levels of inventory to stock. Inventory control management is a practice that should be applied across all levels within the supply chain management and is highly adopted by Mumias sugar retailers in their retail outlets to ensure an efficient and effective business operation.

When a company holds a high level of inventory, it ties up business funds that the company could use in other areas such as research and development or marketing. This confirms a study by Lining and Ying (2008) who asserted that the inventory investment for a small business takes up a big percentage of the total budget yet inventory control is one of the most neglected management areas in small firms. Many small firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of inability to control the inventory efficiently. Companies may stock high levels of inventory in anticipation of demand or for an existing order, but customers may change specifications or require different materials for future products. Many sugar retailers either small, medium or large i.e. supermarkets in Kenya have experienced benefits of inventory control management in one way or another; these benefits includes, proper coordination of how they receive goods from suppliers or major manufacturers, improved end user satisfaction, proper storage and retrieval systems, increased customer goodwill, increased sales due to efficient and effective deliveries, reduced wastages and obsolescence, high profits and growth among other benefits. This confirms a study by Keth et al. (1994) that proper inventory control management leads to improved growth and profit maximization.

Improved and efficient inventory control management can lead to increased sales of sugar among the operators, reduce cases of deterioration, result to an efficient storage and retrievals system and hence result to increased high retailers satisfaction level. It can also be concluded that improved inventory control management can lead to increased customer satisfaction since the customers are able to obtain sugar in the right quality, right quantity and at the right price. This supports findings by Ishikawa (1985) who asserted that retailers' satisfaction level directly relates to the quality of goods delivered to them by manufacturers and other producers. Quality depends on various elements like the durability of the commodity and the ability of that product to meet the required needs of the final consumers.

The purpose of this research study was to investigate the effect of inventory control Management on Mumias sugar retailers' satisfaction level.

### **Recommendations**

Mumias Sugar retailers should forecast market for their products so that they stock enough inventories to avoid under stocks and reduce on damaged inventory.

Mumias Sugar Company should adopt the new ways of communication like the use of social networks and other quick communication ways to ensure effective collaboration between the company and its retailers.

The sugar retailers should be encouraged to take insurance policies to insure their sugar stores against the various risks like fire and theft so as to prevent loss of commodity and other valuables. The sugar store owners should also provide their employees with safety working conditions and safety gears to prevent injuries among the employees.

Many of the Mumias sugar retailers should consider holding enough sugar stock in order to maintain their customers and improve on their profits. The retailers should also fix the stock levels that is, maximum, minimum, and reorder levels for all items in stock in order to avoid inadequate stocks or stock outs and result to other costs such cost due to loss of customers.

Mumias Sugar Company should minimize on its inventory expenses by using skilled labour and also increase on its sales by widening on market for its products.

Mumias Sugar retailers should identify the order quantity that minimizes total cost of stock holding, stock ordering and purchase costs in order to maximize profits.

Mumias Sugar Company should put into consideration inventory management when planning for better profits in the coming years and should also minimize the cost of production as lowest as possible so that the same can be reflected to its retailers.

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