INVENTORY MANAGEMENT PRACTICES, CHALLENGES AND PROSPECTS - THE CASE OF ASELLA MALT FACTORY

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Abstract

Inventory management is a critical management issue for organization regardless of their size and types. The overall objective of this study was to assess inventory management practice; challenges and prospects of Asella Malt Factory. The study used descriptive research design in which both quantitative and qualitative type of data was used for the purpose of the study. The target populations were 247 employees of the factory. To come up with a precise sample size stratified sampling technique was employed. As means of data collection instrument, questionnaire and interview were applied. Both open and close ended questionnaire were distributed to 153 employees of the factory, 140 (91.5%) complete responses were returned from the respondents. Moreover, semi-structured interview was conducted with the head purchasing and property administration to supplement data collected using questionnaire. The SPSS version 20 was used to process the primary data which is collected through questionnaire. Accordingly, the result of the study revealed that the factory did not give an emphasis to inventory management practices like EOQ, and JIT which enabled the factory to have adequate quantities of high quality items available to serve customer needs. The study further indicates that the main challenges that hindered implementation of inventory management practices in the factory were; reluctant to invest in modern technologies which enhance effective inventory management, In adequate resource for implementing inventory management practices, lack of proper training, failure of top management to involve employees in inventory management related decision and poor record keeping, Poor coordination and communication, unreliable suppliers and poor infrastructure. Finally, the study recommends that the factory should embrace inventory management practices so as to improve and enhance effective inventory management. In addition the factory should increase resource allocation to modern technology and staff training so as to develop the necessary skills, update their knowledge which enables the factory to overcome the problem of implementing inventory management practices.

Keywords:
Inventory Management Practices, Challenges and Prospects of Inventory Management Practices

1. INTRODUCTION

In the world of intense competition fueled by globalization, increasing consumer awareness, and technological improvement, organizations that are keen towards large scale success must at all times hype its service availability as consumers can very easily divert their interests elsewhere [50]. Consequently, managing inventory efficiently has become an important operational weapon for products and service firms wishing to survive the competitive pressures.

Inventory management is a critical management issue for organization regardless of their size and types. To demonstrate how vital the efficient management of inventory is, we have been counseled to make a careful study and learning from the "Proverbial Ant". Seemingly inconsequential, the biblical ant appears to have mastered the art and science of adequately keeping inventories of food and other materials for its future use [22].

Inventories represent those items which are either accumulated for sale or they are in the process of manufacturing or in the form of materials, which are yet to be utilized. 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 [2]. It involves the recording and monitoring of stock level, forecasting future demand and deciding on when and how to order [1].

The American Production and Inventory Control Society define inventory management as the branch of business management concerned with planning and controlling inventories [58]. Inventory management is concerned basically with planning and control of materials. It deals with where to buy, when to buy, and how much to buy to ensure uninterrupted supply of inventory at lowest possible cost for ongoing operation of business. The primary goal of inventory management, therefore, is to have adequate quantities of high quality items available to serve customer needs, while also minimized the costs of carrying inventory [8].

Most of firms hold inventory so as to meet their customers' needs. Inventory therefore constitutes the most significant part of current assets of these firms and because of the relative largeness of inventories maintained by the firms, a considerable amount of fund is being committed to holding inventory. It thus becomes essential to deploy cutting-edge techniques to manage inventories so as to avoid lost sales, costs of changing production rates, overtime costs, sub-contracting, unnecessary cost of sales and backorder penalties during periods of peak demand [11].

According to Adeyemi and Salami [1], inventory constitutes the most significant part of current assets of majority of manufacturing firms, because of the relative largeness of inventories maintained by those firms; a considerable amount of organization's fund is being committed to holding inventory. It thus, effort must also be made by the management to strike an optimum investment in inventory since it costs much money to tie down capital in excess inventory.

According to Ozer and Wei [61] manufacturing firms are progressively turning their attentions to inventory management practices. Inventory management practices are activities and functions used by organizations to manage stocks of finished products, semi-finished products and raw materials. Proper implementation of these activities enables the firm to minimize waste and costs and increase revenue. However, implementation of inventory management practices is coupled by a myriad of challenges especially by organizations in developing countries.

It found that inadequate resources for implementing inventory management practices is major a problem to most firms. Companies fail to invest in inventory in technology and infrastructure lack effective inventory management systems. The firm should put proper infrastructure to maintain maximum and minimum levels of inventory. This enables the firm to save holding costs, stock out costs and lead time costs [3].

Adeyemi and Salami [1] argue that, in the theoretical literature, a vast array of inventory management best practices like just in time, vendor managed inventory, collaborative planning, forecasting and replenishment, automatic replenishment, agile system, and material requirement planning) abound. But experience and empirical evidence has revealed that there is limited knowledge and understanding of these practices, their mode of operation, and practical relevance in the Nigerian manufacturing industry. This lack of awareness and limited embrace of these cutting-edge practices in inventory management could account for the rising increase in raw material wastages, longer lead-time, lost sales, product shortages, backorder penalties, increasing production cost, and poor quality issues currently ravaging in the industry.

Several practices have been put forward for effective management of inventory. Some of these practices for this study includes: the use of Economic order quantity, Vendor managed inventory practices, material requirement planning and just in time practices.

1.1 STATEMENT OF THE PROBLEM

The inventory investment for a business organization takes up a big percentage of the total budget, yet inventory control is one of the most neglected management areas in firms. Many firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of the slack inventory management or inability to control the inventory efficiently. Different studies reveal that in both private and public organization is not well managed resulting to unnecessary losses as inventories balance sheet represent from 20% to 60% of total assets, so has to be handled with great care for smooth running of the organizations operations [39].

Most organizations have not treated inventory as an asset that requires management and have therefore ignored the potential savings from proper inventory management. As a result, many inventory systems have been based on arbitrary rules. Unfortunately, some organizations end up having more funds invested in inventory than necessary due this fact they are not able to meet customer demands because of poor distribution of investment among inventory items [4].

Manufacturing firms facing problems in their replenishment processes force upstream suppliers to build excessive stock [5]. To be able to compete in today's global market; manufacturing firms need to have control over their inventory levels [7]. The more inventory manufacturing firms keep the more exposed they are to uncertainty costs associated with holding them. High inventory levels can lead to scrap, outdated products, increased inventory carrying costs and warehousing costs [23]. Thus, effective inventory management practice plays a decisive role in the growth and survival of an organization in the sense that failure to an effective and efficient management of inventory was means that the organization failed to meet its objectives.

A number of studies have been done in the area of inventory management practices:

In [17], the authors conducted the study in Kenya on influence of inventory management practices on organizational competitiveness: A case of Safaricom Kenya Ltd. The study revealed that inventory management practices are very vital to the competitiveness of organizations. As such, inventory management practices affect profit maximization, customer satisfaction, market share growth and product quality targeting return on investment.

In [18], the authors found out that inventory management can influence a firm's supply chain performance by achieving service delivery to the customers, meeting forecast demands and gaining a competitive edge. But this study however was not giving emphases to challenges of inventory management.

In [19], the authors conducted a research in Nigeria on optimization of inventory control and management in the case manufacturing industry. The study found different challenges of inventory management such as delay in supply of goods or material, the interruption in production and stock out of goods or materials during production and problem of when to order and how much to order as it affects manufacturing industries in Nigeria. The study recommend best practices that will ensure effective inventory control of stock and customers satisfaction and retention in both public and private industries in Nigeria.

Raymond et al. [45] examine the role of inventory management practices in the performance of production department, a case of production manufacturing firms. They found that inventory management practices enhance the performance of production in manufacturing firms.

In view of above facts, the researcher aimed at to assess the overall inventory management practices; major challenges and prospects in the case of Asella Malt factory. Since Malt is the major input for beer production, the factory currently supplies only around 40 per cent of the requirement of Ethiopian brewers. Brewers are importing 60 per cent of their malt requirements, creating a significant market potential for high quality domestically produced malt barley. Currently, Asella is the domestic supplier of malt. Imports are a fast growing source of reliable malt for brewers in Ethiopia, companies such as Boormalt and Malteuropare supplying malt due to the shortage and the poor quality of malt from Asella (Monitor Group, 2012 [53]). These problems initiate the researcher to assess inventory management practices; challenges and prospects of the factory due to the fact that effective inventory management practice contributes decisive role to enhance operational performance.

1.2 OBJECTIVE OF THE STUDY

1.2.1 General Objectives:

The general objective of the study is to assess the overall inventory management practice; challenges and prospects of Asella Malt Factory.

1.2.2 Specific Objective of the Study:

1. To identify the commonly used inventory management practices in the factory.
2. To investigate the major challenges, the factory encounters in implementing inventory management practices.

3. To assess the prospect, the factory expects from inventory management practices.

2. LITERATURE REVIEW

2.1 INVENTORY MANAGEMENT CONCEPT

Inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials (working-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low. It is the process of efficiently overseeing the constant flow of units into and out of an existing inventory. This process usually involves controlling the transfer in of units in order to prevent the inventory from becoming too high, or dwindling to levels that could put the operation of the company into jeopardy [24].

Brigham et al. [8] posit that the firm should design and develop an inventory management system that balances the demand and supply. This is intended to reduce inventory costs, reduce the cycle time and improved sharing of information. Therefore, the firm can effectively manage its inventory and coordinate its supply chain system leading to improved performance.

Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods. The scope of inventory management also concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods and demand forecasting. Balancing these competing requirements leads to optimal inventory levels, which is an on-going process as the business needs shift and react to the wider environment [29].

The main objective of a good inventory management is to place an order at the right time from the right source with the right quantity and quality. While developing an appropriate inventory management system of inventory the following objectives should be kept in mind that Organizations should try to minimize the possibility inventory obsolescence by giving due attention during procurement of materials. Besides materials storage, distribution and usage should be appropriate to avoid shrinkage or obsolescence of the materials. Accordingly a firm should maintain inventory to such a level that smooth and unhampered service provision is ensured without any obstruction [54].

2.2 DEFINITION OF INVENTORY

Inventory is defined as a stock or store of goods. These goods are maintained on hand at or near a business's location so that the firm may meet demand and fulfill its reason for existence. If the firm is a retail establishment, a customer may look elsewhere to have his or her needs satisfied if the firm does not have the required item in stock when the customer arrives. If the firm is a manufacturer, it must maintain some inventory of raw materials and work-in-process in order to keep the factory running. In addition, it must maintain some supply of finished goods in order to meet demand [56].

Inventories are the stock of any item or resource used in an organization. In a broader context, inventory can include raw materials, work-in-progress, finished goods and supplies held by a business organization to facilitate operations in the production process for creation of a company goods and services [12].

2.3 REASONS FOR HOLDING INVENTORY

Organization hold inventories in order to operate smoothly production process, to absorb seasonal fluctuations in usage or demand, to meet possible shortages in the future, to take advantage of bulk purchasing discount, to provide buffer between production processes. This is applicable to work in progress inventory that effectively decouple operation, to absorb variation in demand and production, to ensure that sufficient goods are available to meet anticipated demand, as a deliberate investment policy particularly in times of inflation or possible shortages and as a necessary part of the production process [30].

It is economically unsound and physically impossible to have goods arrive in a system exactly when demand for them occurs. Without stock at hand customers would have to wait for long periods before their orders are fulfilled. Inventory is therefore vital to the successful functioning of manufacturing firms and occupies the most strategic position in the structure of working capital. To ensure organizational growth and productivity, it is important that good inventory management be practiced since a substantial share of fund is invested in a firm's inventory [28].

In [33], the authors also stressed that there are three motives for holding inventories, which are transactional, precautionary and speculative motives. The transaction motive occurs when there is a need to hold stock to meet production and sales requirements. A firm might also decide to hold additional amounts of stock to cover the possibility that it may have under estimated its future production and sales requirements. This represents a precautionary motive, which applies only when future demand is uncertain. The speculative motive for holding inventory might entice a firm to purchase a larger quantity of materials than normal in anticipation of making abnormal profits. Advance purchase of raw materials in inflationary times is one form of speculative behavior.

2.4 INVENTORY COSTS

Inventory represents an investment in the organization whether as a result of deliberate policy or not [30]. According to Coyle et al. [12] Inventory cost are important for three major reasons. First, inventory cost represents a significant component of total logistics cost in many companies. Second, the inventory levels that a firm maintains at points in its logistic system will affect the level of service the firm can provide to its customers. Third, cost trade-off decisions in logistics frequently depend upon and ultimately affect inventory carrying cost.

As with any other investment, the cost of holding stock must be related to the benefits to be gained. To do this effectively, the costs must be identified.

The categories of cost associated with inventory are: costs of holding stock (carrying costs), costs of obtaining stock (ordering cost), stock out costs, and the cost of the stock itself.

2.4.1 Costs of Holding Stock:

Costs of Holding Stock, also known as carrying cost, is the variable cost of keeping inventory on hand, and is a combination of the costs associated with opportunity costs, interest on capital invested on the stock, storage charges (rent, lighting etc.), taxes, equipment maintenance and running cost, insurance and security, shrinkage, and other variables. It represents one of the highest costs of logistics [30].

If a firm can determine the cost of holding one unit of inventory for one year, it can determine its annual holding cost by multiplying the cost of holding one unit by the average inventory held for a one-year period. Average inventory can be computed by dividing the amount of goods that are ordered every time an order is placed by two. Thus, average inventory is expressed as $Q/2$; annual holding cost can be expressed as $H(Q/2)$ where $H=$ Holding cost, $Q=$ Quantity [12].

2.4.2 Costs of Obtaining Stock:

The costs, sometimes known as ordering or procurement cost is the expense of placing an order for additional inventory and does not include the cost or expense of the product itself. It includes the clerical and administrative costs associated with the purchasing, accounting and goods received departments; transport cost; and set up and tooling costs associated with each production run where goods are manufactured internally. Set up cost refers more specifically to the expense of changing or modifying a production or assembly process to facilitate product line change over's. The fixed portion of set up cost must include use of the capital equipment needed to change over production facilities, while the variable expense might include the personnel costs incurred in the process of modifying or changing the product line [12] [30].

2.4.3 Stock-out Costs:

Lucey [30] defines stock out cost as "the costs associated with running out of stock". Coyle et al. [12] also asserts that it is the cost of not having product available when a customer demands or needs it. When an item is unavailable for sale, a customer may accept a back order for future availability of the needed product, or perhaps purchase (or substitute) a competitor's product, directly taking profit from the firm experiencing the stock out. If the firm permanently loses the customer to its competitor, the profit loss will be indirect but longer lasting. On the physical supply side, a stock out may result in no new materials or in semi-finished goods or part, meaning idle machine time or even shutting down an entire manufacturing facility.

Determining the cost of not having an item available for sale, however, may be much more challenging. For a company dealing with raw materials or supplies for a production line, a stock out may mean wholly or partially shutting down operations. Such operations cutbacks are particularly critical for firms involved in just-in-time manufacturing or assembly operations.

According to Lucey [30], stock out costs include lost contribution through the lost sale caused by the stock out, loss of future sales because customers may go elsewhere, cost of production stoppages caused by stock out of work-in-progress and raw materials, and extra costs associated with urgent, often small quantity, replenishment orders.

2.4.4 Cost of the Stock:

Cost of the stock also called purchasing cost is the cost of the purchased item itself. These costs according to Coyle et al. [12], are buying in prices or the direct cost of production. These costs are needed to be considered when discount are available for bulk purchases, and when savings in production cost are possible with longer batch runs. If the firm purchases a part that goes into its finished product, the firm can determine its annual purchasing cost by multiplying the cost of one purchased unit (P) by the number of finished product demanded in a year (D), hence, purchasing cost is expressed as purchase * demand (PD).

2.5 FUNCTIONS OF INVENTORY

According to Sander and Howleg [46] historically organizations have ignored the potential savings from proper inventory management, treating inventory as a necessary evil and not as an asset requiring management. As a result, many inventory systems are based on arbitrary rules. Inventory management according) is a fundamental pillar in an organization and it should be taken seriously. Some of the goods and services required may not be readily available within the country thus global sourcing may have to be applied. Due to this, a robust inventory management is required to be in place to ensure timely delivery and quality standards are observed [34].

But the current organizations are keen to managing inventory as a step towards minimizing operational costs. In order for an organization to survive and be effective in meeting their market demand, the organization must be cognizant of its supply chain management for better performance and sustained survival. Inventory management aims at efficient purchasing, storage and use of the materials. Inventory management practices play a major role in the operation of many businesses and manufacturing companies. In manufacturing, inventories of raw materials allow companies to operate independently of their sources of supplies [36].

Stock and Lambert [56] assert that inventory serves five purposes in the firm. Thus, inventory provides protection from uncertainties in demand and order cycle, enables the firm to achieve economies of scale, balances supply and demand, enables specialization in manufacturing, and acts as a buffer between critical interfaces within the supply chain.

2.6 INVENTORY MANAGEMENT PRACTICES

In today global business environment which is characterized by numerous competitive pressures and sophisticated customers demanding speedy solutions, manufacturing firms are progressively turning their attentions to inventory management practices. The concept of inventory management practices basically focuses on the techniques used to ensure that stock of raw materials or other supplies, work-in-progress and finished goods are kept at levels which provide maximum service levels at minimum costs. Inventory management practices are activities and functions used by organizations to manage stocks of finished products, semi-finished products and raw materials. Proper implementation of these activities enables the firm to minimize waste and costs and increase revenue [61].

Inventor management plays a decisive role in the enhancement of efficiency and competitiveness of business enterprises. There

is increased need for organizations to in place effective inventory management practices as a strategy to improve their quality of business operation. Effective inventory management is a means of holding an appropriate quantity of inventory with better quality since too much inventory consumes unnecessarily our limited space, creates a financial burden, and increases the possibility of materials to be obsolete. Too little quantity of inventory often disrupts business operations, and increases the likelihood of poor customer service [14].

The profitability of any organization directly and indirectly is affected by the inventory management system operated by that firm. Inventory management practices addresses two important questions of how much to order and when to order thus helping an organization become more productive and efficient than before, gravitate towards stock control, and quality control [31]. Some of these practices include for this study: economic order quantity, vendor managed inventory, materials requirements planning, and just-in-time practices.

2.6.1 Economic Order Quantity Practices:

The economic order quantity (EOQ) theory [37] determine the optimal inventory level. EOQ refers to an inventory level that can minimize both inventory holding cost and inventory ordering cost [32]. The EOQ model is used to determine an optimal ordering size that will minimize the sum of ordering and carrying costs [63]. This model was found on the assumption that demand equals annual total quantity ordered by the firm at any point in time [38].

The EOQ model considers a tradeoff between storage cost and ordering cost when making a decision on the quantity to use when replenishing inventory items. Ordering frequency is usually reduced by a larger amount of quantity ordered, hence reduced ordering cost but increases storage costs and requires a larger space for storage too [60]. Some costs declines with holding inventory, while others holding costs increases and that the total inventory associated cost curve has a minimum point [32].

2.6.2 Vendor Managed Inventory Practices:

Vendor-managed inventory is a practice in which inventory replacement decisions are centralized with upstream manufacturers or distributors [40]. It is a new feature of supplier partnership in which emphasis is on good working relations between customers and suppliers. The manufacturer enters into a collaborative or partnership agreement with the distributor, under which the latter agrees to stock a specified range of items and meet specified service levels. In return, the customer undertakes to buy the specified items solely from the distributor and no longer keeps the items in stock.

Brownell and Reynolds [9] states that this partnership enables manufacturing firms reduce chances to defective items and the risk of obsolescence because the supplier is involved and for this to work, proper communication is an important factor. It enhances working capital due to the reduced inventory levels and obsolescence and enhanced stock turn with improved cash flow.

VMI practices enable manufactures or distributors to eliminate the need for customers to reorder, reduce or exclude inventory and obviate stock outs. It relieves the customer of much of the expense of ordering, shipping the materials, counting inventory and stocking low-value items. By passing these costs normally managed by the customer on the supplier, the customer is able to reduce the overall cost of product and increase on margins [41]. There's also reduced lead times with enhanced sales and a reduction of lost sales due to stock outs [20].

2.6.3 Materials and Requirements Planning Practices:

Materials requirement planning is a practice that makes available either purchased or company manufacturing assemblies just before they are required by the next stage of production or for delivery. It enables orders to be tracked throughout the entire manufacturing process and assists purchasing and control departments to move the right supplies at the right time to manufacturing or distribution points [21].

The operation of a lean MRP inventory system is very useful to manufacturing firms since it results to relatively low inventory levels. The warehousing costs and material handling costs are significantly reduced. This increases return on assets through decreased conversion costs [31].

2.6.4 Just-In-Time Management Practices:

JIT is a Philosophy of manufacturing based on planned elimination of all waste and continuous improvement of productivity [42]. JIT production according to [43], the authors is making what the customer needs, when it is needed and in the quantity needed using the minimum resources of people, material, and machinery. The primary elements of JIT include having only the required inventory when needed; to improve quality to zero defects; to reduce lead time by reducing set-up times, queue lengths and lot sizes; and to accomplish these things at minimum cost.

Coyle et al. [12] defined Just-In-Time (JIT) System as an inventory control system that attempts to reduce inventory levels by coordinating demand and supply by the point where the desired item arrives just in time for use. Ideally, products should arrive exactly when a firm needs it, with no tolerance for late or early deliveries.

JIT help in reduction of inventory levels within a firm. As such, firms end up lowering their investments in inventories. JIT emphasize on having in hand the minimum required quantity of materials for immediate use. As such, inventory holding costs are substantially reduced [25].

2.7 CHALLENGES OF INVENTORY MANAGEMENT PRACTICES:

Effective inventory flow management in supply chains is one of the key factors for success for the organization. The challenge in managing inventory is to balance the supply of inventory with demand. A company would ideally want to have enough inventories to satisfy the demands of its customers and no lost sales due to inventory stock-outs. On the other hand, the company does not want to have too much inventory staying on hand because of the cost of carrying inventory.

Enough but not too much is the ultimate objective [12]. Implementation of inventory management practices is coupled by a myriad of challenges especially by organizations in developing countries.

It found that inadequate resources for implementing inventory management practices is major a problem to most firms. Companies fail to invest in inventory in technology and infrastructure lack effective inventory management systems. The firm should put proper infrastructure to maintain maximum and

minimum levels of inventory. This enables the firm to save holding costs, stock out costs and lead time costs [44].

Lack of commitment by the top management of the organization is a major contributor to poor inventory management systems. In most cases the management fails to provide the required support to their subjects for effective implementation of inventory management practices for example the top management might fail to involve its supply chain partners in inventory management decisions. This brings about poor coordination, increased communication costs which negatively impact on the supply chain performance of the organization [48].

Organizations especially in the developing economies the top management is reluctant to invest in modern technologies and equipment to facilitate inventory management this inhibits effective management of stocks. This prolongs the cycle time and delay delivery of goods and services to the final consumer and thus may negatively impact on supply chain performance. This causes lack of cooperation between the suppliers and the organization which eventually leads to delayed delivery of goods and services or no delivery in extreme cases. To succeed in inventory management the organization should ensure that it has reliable suppliers to supply goods and services on time [15]

In recent years, a number of firms have faced numerous challenges especially in inventory management or material control, thus affecting the performance of manufacturing companies. There have been cases of materials overstocking which eventually get expired or out dated, under stocking, lack of stock-taking, theft of materials by workers and delays in deliveries of materials into the organizations among others [45].

2.8 PROSPECTS OF INVENTORY MANAGEMENT PRACTICE

Inventory management is essential in the operation of any business that wishes to achieve efficiency in production. Many large manufacturing firms have saved millions of dollars in costs and decreased inventories while improving efficiency and customer satisfaction though various inventory management practices [10]. This is because inventory management results to integration of better production methods to minimize costs and wastages.

Inventory management refers to all the activities and organizations involved in maintaining inventory for their operation so that adequate supplies were available and the costs of over under stocks were low [51].

Managing inventory efficiently has become an important operational weapon for organizations wishing to survive the competitive pressures. Inventory management enables the firm to control materials used and stored in the company with the objective of providing exactly what is required where and when it is required employing a minimum of residual stock thus incurring the least possible cost. Inventory management has enabled firms to have adequate quantities of high quality items available to serve customer needs, while also minimize the costs of carrying inventory [8].

Maintaining optimum levels of inventory is important in an organization because excess inventory results in stock holding costs (rental charges, opportunity costs, obsolescence costs, breakages, pilferage) and inadequate inventory (stock outs) is also

costly as customers may leave to competitors [6]. For each sale that an organization does loose as a result of stock outs, the company not only loses profits but also customers who may be dissatisfied and source for an alternative reliable supplier [52]. When inventory management (maintaining adequate inventory levels) is carried out efficiently, it ensures that the materials needed in an organization are available in the right quality, quantity thus avoiding issues overstocking and under stocking and ultimately guaranteeing customer satisfaction and increased profits [55].

3. RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

In this study the researcher has applied descriptive type of research design. A descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables in certain situation. The aim of a descriptive study is to provide the researcher with a profile or to describe the relevant aspects of the phenomenon from an individual, organizational, industry-oriented, or other perspective [49].

Descriptive research design is therefore used in this study since the researcher intended to look at the problem at hand thoroughly to define it, clarify and obtain pertinent information through assessment of overall inventory management practice; challenges and prospects.

3.2 POPULATION OF THE STUDY

Population refers to the group about whom the researcher wants to know more and from whom a sample can be drawn. The population for this study was employs of Asella Malt Factory.

Mugenda and Mugenda [35] defines target population as the specific population about which information is desired. The target population for the study was 247 permanent staff members of the factory comprising of different departments that include Managing directorate, supply and production, Finance, Purchasing and prosperity administration, technical and information technology which researcher select for their relevance for the study at hand.

3.3 SAMPLE TECHNIQUES AND SAMPLE SIZE

An optimal sample should be one which fulfills the requirements of efficiency, responsiveness, reliability and flexibility. Accordingly, if a population from which a sample is to be drawn does not constitute a homogenous group, stratified sampling technique is generally applied in order to obtain a representative sample of the target group [26].

The researcher employed a stratified sampling technique which is a probability sampling technique where in the researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different strata. Stratified random sampling was necessary since the study had sub-groups in target population whose response is important in achieving the objectives of the study.

3.3.1 Sample Size:

Determining sample size is a very important issue because samples that are too large may waste time, resources and money, while samples that are too small may lead to inaccurate results.

The main factor considered in determining the sample size is to keep it manageable enough and also to enable the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource [35].

The target population was made up of 247 members with 6 stratums. To come up with a precise sample size, the researcher used [57] simplified formula to calculate the size at 95% confidence level and p=0.05. The formula produces an effective method of determining sample size as shown below:

$$n=N/(1+N(e)^2) \qquad (1)$$

where, n is the sample size, N is the population size, and e is the level of precision. When this formula is applied to the above sample, we get equation as:

$$n = 247/(1 + 247 \ (0.05)^2) = 153 \qquad (2)$$

$$n_h = (N_h/N)*n \qquad (3)$$

where, n_h is the sample size for stratum h, N_h is the population size for stratum h, N is total population size and n is total sample size.

Table.1. sample and sampling size

Department	No. of Staff	Sample Size $n_h = (N_h/N)*n$
Managerial Directorate	6	4
Finance	11	7
Purchase and Property administration	55	34
Supply and production	116	72
Technical services	57	35
Information Technology	2	1
Total	247	153

Source: Factory Human Resource Data, 2018

3.4 SOURCES OF DATA

Data are facts, figures and other relevant materials past and present serving as bases for study and analysis [27]. The types of data used for this study were primary data collected by the researcher directly from the respondents for the specific purpose of addressing the research problem. Accordingly both qualitative and quantitative primary data were employed for this study.

3.5 DATA COLLECTION METHODS

Primary data are those which are collected afresh and for the first time, and this happen to be original in character [26]. As data collection tools, closed and open ended questionnaires and semi-structured interview were employed. The questionnaires were designed based on the research questions. For quantitative data, the respondents were asked to indicate their level of agreement and disagreement using a five-point Likert scale (1=strongly disagree 2=disagree, 3=neutral 4=agree and 5=strongly agree) about inventory management practices, challenges and prospects of their factory.
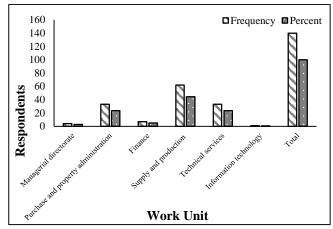
To obtained qualitative data the researcher made semi-structured personal interview with the head of Purchasing and property administration of Asella malt factory.

3.6 DATA ANALYSIS

In this study the quantitative data analysis was done using descriptive statistics to compute mean and standard deviation using a statistical tool known as SPSS version 20. The findings of each variable have been presented using tables. The qualitative data collected were used to further explain and get in-depth insight about the findings of the quantitative data. Thus, the findings of the qualitative data have been summarized parallel with quantitative data.

4. RESULTS AND DISCUSSION

The result and discussion was done in line with the objectives of the study which were: to identify the commonly used inventory management practices in Asella malt factory, to investigate the major challenges encountered the factory to implement inventory management practices and to assess the prospect factory expect from inventory management practices.

Source: Own survey result, 2018

Fig.1. Respondents Work Unit

It can be revealed from the Fig.1 that the majority of the respondents in this study were those directly responsible for the inventory management of the factory.

It was revealed from Table.2 that majority of respondents disagreed with variables of EOQ practices which state that the factory orders the optimal ordering quantity for an item of stock that minimizes cost, minimizes the storage cost by using economic order quantity practices, uses economic order quantity practices to estimate how much of an item to order, Economic order quantity practices enable the factory to plan for its inventory replenishment on timely basis and Economic order quantity practice helps the factory in deciding when to order an item of stock by the mean score of 2.54, 2.51, 2.49, 2.47 and 2.44 respectively. This indicates that majority of respondents disagree with the individual variable of economic order quantity practices. In addition the result obtained through interview also support the above findings which indicates that the factory do not adopt economic order quantity practices.

In line with this findings John et al. [22] state that majority of manufacturing companies in Nigeria were either not aware of the existing inventory models or were simply not ready to adopt them as a guide to their inventory management practices. While some firms who were aware of the models (especially the EOQ) complain about its practical complexities, others feel that the models were not relevant to their present inventory needs. Thus, the generality of assumption among manufacturing companies is that the practicability of the inventory models seems not to portray the daily economic realities and inventory problems that confront them. Thus, it could be concluded that the existing inventory models have not gained wider acceptability and popularity among companies in Nigeria. Similarly in [13], the author points out that many companies are not using the EOQ method due to poor results arising from inaccurate data input. He clarifies that many errors in the calculation of EOQ in the computer software package are due to the failure of the users in understanding the data inputs and system setup that control the output. In [59], the author states that in order to use EOQ appropriate database was a prerequisite for the application of the techniques. This implies that manufacturing entities need to have a well identifiable database.

Table.2. Economic Order Quantity practices

Economic order quantity practices	N	5	4	3	2	1	Mean	Std.
		%	%	%	%	%		
The factory uses economic order quantity practices to estimate how much of an item to order.	140	1.7%	17.%	19.9%	28.6%	35.7%	2.49	1.042
The factory orders the optimal ordering quantity for an item of stock that minimizes cost.	140	5.7%	20%	13.6%	30%	30.7%	2.54	1.034
Economic order quantity practices enable the factory to plan for its inventory replenishment on timely basis.	140	1%	17.9%	28.6%	35.7%	17.9%	2.47	1.000
Economic order quantity practice helps the factory in deciding when to order an item of stock.	140	1.4%	14.3%	27.9%	40%	16.4%	2.44	.976
The factory minimizes the storage cost by using economic order quantity practices.	140	1.4%	16.4%	15.7%	36.4%	30%	2.51	.993

Source: Own survey, (2018)

Table.3. Vendor Managed Inventory practices

Vendor Managed Inventory practices	N	5	4	3	2	1	Mean	Std
		%	%	%	%	%		
The factory use vendor managed inventory practice for supplier partnership.	140	13.6%	40.7%	25%	15%	5.7%	3.41	1.079
The factory use vendor managed inventory practices to achieve flexibility to responses.	140	31.4%	47.9%	7.1%	8.6%	5%	3.44	.931
The factory uses vendor managed inventory practices to maintain timely delivery.	140	23.6%	47.1%	14.3%	10%	5%	3.56	1.020
The factory uses vendor managed inventory practices to reduce lead time.	140	13.6%	50.7%	20.7%	11.4%	3.6%	3.59	.981
The factory uses vendor managed inventory practices to reduce the chance of acquiring defective product.	140	16.4%	47.9%	22.1%	11.1%	2.1%	3.65	.959

Source: Own survey, (2018)

Table.4. Challenges of Inventory Management Practices

Challenges Of Implementing Inventory Management Practices	N	5	4	3	2	1	Mean	Std.
		%	%	%	%	%		
Lack of commitment by top management to support factory employees for effective implementation of inventory management practices.	140	30%	42.1%	19.3%.	5.7%	2.9%	3.91	.988
Failure of top management to involve employees in inventory management related decision	140	22%	43.6%	10.9%	20.7%	2.9%	4.06	.807
Reluctant to invest in modern technologies which enhance effective inventory management.	140	30%	44.3%	20%	4.%	1.4%	3.97	.897
Lack of trained and competent professionals who understand the concept of inventory management.	140	25.7%	42.9%	5.7%	15.7%	10%	4.04	.704
Poor record keeping.	140	25.7%	47.9%	18.6%	2.9%	5%	4.06	.779

Poor infrastructure.	140	23.6%	43.6%	10.7%	12.1%	10%	3.99	.729
Lack of proper training.	140	27.1%	46.4%	12.9%	2.9%	10.7%	3.96	.826
Unreliable suppliers	140	25%	45.7%%	9.3%	14.3%	5.7%	3.95	.825
Poor coordination and communication.	140	20.7%	45.7%	10%	8.6%	15%	3.99	.777
In adequate resource for implementing inventory management practices.	140	21.4%	40.7%	15%	10.7%	12.1%	3.66	.935

Source: Own survey, (2018)

It was clearly depicted from Table.3 that majority of respondents agree with the variable of VMI practices which state that the factory uses vendor managed inventory practices to reduce the chance of acquiring defective product, vendor managed inventory practices to reduce lead time, The factory uses vendor managed inventory practices to maintain timely delivery, the factory use vendor managed inventory practices to achieve flexibility to responses and the factory use vendor managed inventory practice for supplier partnership with the mean score of 3.65, 3.59, 3.56, 3.44 and 3.41, respectively.

These findings also in line with the response obtained through interview that presented as follows: Currently Asella malt factory on promising way to adopt Vendor Managed Inventory to reduce chances of acquiring the defective supplies, through making supplier partner by centralizes inventory replenishment decisions with upstream distributors. According to the responses of the officials the factory reduce the overall cost of product and increase on margins by passing costs of ordering and shipping to the supplier, that the firm buys specified items solely from the distributor and no longer keeps items in store. In line with this, Brownell and Reynolds [9] that partnership enables manufacturing firms reduce chances to defective items and the risk of obsolescence because the supplier is involved and for this to work, proper communication is an important factor.

It was clearly revealed that majority of respondents agree with the variable of MRP practices which state that majority of respondents agreed with variables of MRP practices which state that the factory adopted Material Requirement planning practices to control the flow of supplies to meet planned demand, to reduce inventory holding cost, for detailed planning of production and inventory management, to move the right supply at the right time to manufacturing point and to reduce inventory level with mean score of 3.68, 3.64, 3.61, 3.61 and 3.49 respectively.

This indicates that the factory is on promising way to adopt Materials Requirement Planning practices. The respondents also agreed with Material Requirements Planning assist the factor to control the flow of supplies to meet planned demand and to reduce inventory holding cost, the factory uses Materials Requirement Planning practices for detailed planning of production and inventory management, to move the right supply at the right time to manufacturing point and to reduce inventory level. This is in line with the Saunders [47] states that materials and requirements planning inventory management practices is very useful to manufacturing firms since it results to relatively low inventory levels and significantly reduced holding and handling costs.

It was clearly depicted that majority of respondents disagree with the variable of JIT practices which state that the factory adopted just in time practices to reduce inventory and its associated carrying costs, to have only the required inventory when needed, to reduce storage cost and to timely replenish

inventory with mean score 2.58, 2.51, 2.50 and 2.47 respectively. Other respondents neither agreed nor disagreed with the variable of JIT practices which state that the factory adopted just in time practices to manufacture products based on planned elimination of waste and continuous improvement of productivity with the mean score of 3.11 and standard deviation 1.039. This result indicates that majority of respondents disagree with the individual variables of which states that factory uses just in time practices to reduce inventory and its associated carrying costs, to have only the required inventory when needed, to reduce storage cost and to timely replenish inventory which enable the factory to manufacture products based on planned elimination of waste and continuous improvement of productivity.

In addition to these the results obtained through interview also support the above result. In order implement just in time practices, the issue of having reliable supplier which the factory is currently faced is the critical problem. Although the factory is on way to try the promising supply relationship management there is still the challenges of getting reliable supplier. But Kootanaee, et al. [25] state that JIT model is able to identify the value chain challenges and helps in reduction of production waste in the system. It is about having right items, right quality and right quantity at the right time and place. If JIT is implemented well, it has the potential of enhancing production quality, increase productivity, improve production efficiency and finally reduces wastes and other avoidable costs associated with production. In addition JIT help in reduction of inventory levels within a firm. As such, firms end up lowering their investments in inventories. It emphasize on having in hand the minimum required quantity of materials for immediate use. As such, inventory holding costs are substantially reduced.

It was depicted from Table.4 that majority of respondents agreed with variables of challenges in implementing inventory management practices which state that the main challenges encountered the factory in the implementation of inventory management practices were as follows: failure of top management to involve employees in inventory management related decision, poor record keeping, lack of trained and competent professionals who understand the concept of inventory management. Other challenges included: poor coordination and communication, unreliable suppliers and Poor infrastructure.

In addition to these findings, interview was also conducted according to the predesigned question. Accordingly, structured questionnaire was prepared in advance. Based on this, the researcher conducted an interview with the head of purchasing and property administration of the factory that has directly relation with the study at hand. Thus, the researcher recorded and transcribes the response of this officials and the result was summarized as follows. In order to implement effective inventory management practices, they are prerequisite issues such as: adopting modern technology, preparing effective data base

through proper record keeping and preparing training to get trained and competent staff who understand the concept of inventory management practices to do those activity it is mandatory to have adequate resources. The others challenges of implementing inventory management practices was issue of having reliable supplier which the factory is currently faced. Although the factory is on way to try the promising supply relationship management there is still the challenges of getting reliable supplier.

In line with this findings, In [62], the authors found that lack of trained and competent professionals who understand the concept of inventory management is a major challenge to most organizations that seek to effectively implementing inventory manage practices. In [59], the authors found that lack of commitment by the top management in the organization is a major contributor to poor inventory management practices. In most cases the management fails to provide the required support to their subjects for effective implementation of inventory management practices for example the top management might fail to involve its supply chain partners in inventory management decisions. This brings about poor coordination, increased communication costs which negatively impact on the supply chain performance of the organization. In [60], the authors found that inadequate resources for implementing inventory management practices is major a problem to most firms. Companies fail to invest in inventory in technology and infrastructure lack effective inventory management systems. The firm should put proper infrastructure to maintain maximum and minimum levels of inventory. This enables the firm to save holding costs, stock out costs and lead time costs.

It was depicted that majority of respondents agreed with variables of inventory management practices prospects which state that enabled the factory to have adequate quantities of high quality items available to serve customer need, assist to reduce lead time, enable the factory to control materials, enhance effective prediction of supply delivery date, enhance timely replenish of inventory and enable the factory to have right supply at right time. Other respondent also agreed with the individual variable of assist the factory in the detailed planning of production and inventory management, enhance effective coordination and communication, Assist the factory to balance the supply of inventory with demand, reduce inventory level and associated carrying cost.

In addition the findings obtained by interview also support this finding. line with this Brigham and Ehrhard (2005) state that in inventory management practices enables the firm to control materials used and stored in the company with the objective of providing exactly what is required where and when it is required employing a minimum of residual stock thus incurring the least possible cost.

5. CONCLUSION

The study concludes that the factory do not adopt EOQ practices to Minimize storage costs, to estimate how much of an item to order and to decide when to order an item of stock, to plan for its inventory replenishment on timely, to estimate how much of an item to order. Rather the factory depends on guesstimate in managing inventory rather than adopting scientific models in determining inventory quantities and managing inventory cost. Similarly the study concludes that the factory do not adopted just in time practices which assist them to reduce storage cost, to timely replenish inventory, to reduce inventory and its associated carrying costs and in order to manufacture products based on planned elimination of waste and continuous improvement of productivity.

The study also concluded that the factory has been on the promising way to adopt vendor managed inventory practices to reduce the chance of acquiring defective product, to reduce lead time, to maintain timely delivery of supplies, for supplier partnership and to achieve flexibility to responses through making supplier partnerships and passing costs of ordering and shipping to the supplier.

The study concluded that the factory also manifest Material Requirement planning practices to control the flow of supplies to meet planned demand, to reduce inventory holding cost, for detailed planning of production and inventory management, to move the right supply at the right time to manufacturing point and to reduce inventory level.

The study concluded that the main challenges that hindered implementation of inventory management practices in Asella Malt factory are: failure of top management to involve employees in inventory management related decision, poor record keeping, and lack of trained and competent professionals who understand the concept of inventory management. Other challenges included: poor coordination and communication, unreliable suppliers and poor infrastructure.

The study concluded that the prospects of implementing effective inventory management practices are: enabled the factory to have adequate quantities of high quality items available to serve customer need, assist to reduce lead time, enable the factory to control materials, Enhance effective prediction of supply delivery date, enhance timely replenish of inventory and enable the factory to have right supply at right time. Other prospects included: assist the factory in the detailed planning of production and inventory management, enhance effective coordination and communication, assist the factory to balance the supply of inventory with demand, reduce inventory level and associated carrying cost.

6. RECOMMENDATIONS

Based on the findings made in this study, the following recommendations are made:

1. Rather than depending on heuristics and guesstimate in managing inventory, there is need for Asella malt factory to adopt scientific inventory management practices in determining inventory quantities and managing inventory cost. As effective inventory management plays decisive role in the enhancement of efficiency and competitiveness, the factory need to place effective inventory management practice as a strategy to improve their quality of business operation.

2. The factory should embrace inventory management practices and information technology so as to improve and enhance effective inventory management. This can be achieved through develop a policy framework for faster

implementation of the best inventory management practices like EOQ, VMI, JIT and MRP.

3. The factory should invest in modern information technology in inventory management as this will reduce inventory costs and improve returns, improve information sharing and hasten orders from suppliers hence shortening the lead time. This can be achieved through design and develop an effective inventory management system that balances the demand and supply. This enables them to reduce inventory costs, reduce the cycle time and improve sharing information. Therefore, the factory can effectively manage its inventory and coordinate its supply chain system which helps them to improve performance.

4. The factory should adopt proactive inventory management strategies rather than completely relying on reactive measures that depend on changes in market and inventory supplies situation.

5. Best practice inventory management software's should be deployed by firms as a reliable strategy for managing the rising cost of the holding stock. This may involve training employees on the usage of the soft ware's, or by acquiring the services of external system engineers and consultants.

In order to attain competitive advantage in the industry Asella malt factory should increase resource allocation to staff training, research and development in inventory management so as to develop the necessary skills, update their knowledge. To do this the commitment of top management is not an option but it is necessary.

7. SUGGESTIONS FOR FURTHER STUDIES

In the view of the study findings with the purpose of establishing dependable, reliable, valid and comprehensive conclusion on the assessment of inventory management practices; challenges and prospects in Asella Malt factory, as the study was limited to only one case factory another research could be carried out taking a large representative sample that was not covered in this study for the purpose of validating the findings revealed by this study.

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