

Effects of Inventory Control Management Systems on Organization Performance in Tanzania Manufacturing Industry- A Case Study of Food and Beverage Manufacturing Company in Mwanza City

Irene Omari Mbugi, Sr. Dr Deusdedita Lutego

Department of Finance and Accounting, St. Augustine University of Tanzania, Mwanza Campus, Tanzania
irenembugi1@gmail.com

Received: 28 Jan 2022; Received in revised form: 09 Mar 2022; Accepted: 18 Mar 2022; Available online: 29 Mar 2022
©2022 The Author(s). Published by AI Publications. This is an open access article under the CC BY license
(<https://creativecommons.org/licenses/by/4.0/>)

Abstract— This study was about the effect of inventory control management systems on organization performance in Tanzania manufacturing industry: a case study of food and beverage manufacturing company in Mwanza City. The specific objectives of the study were to: determine the types and purposes of inventory control management practices followed ascertain the influence of inventory control management practices on organizational performance and determine how technology adopted in operationalization of inventory control management practices affect organization performance. In order to accomplish the objectives, qualitative approach method was adopted. Using purposive sampling, five participants in the inventory and production department were selected and interviewed. Data was analyzed using content analysis techniques with the aid of Nvivo Qualitative Analysis software. Other data was collected from documentary review company and industry published reports. The findings of the study revealed that the food and beverage manufacturing company had evidence of different types of inventories which included raw materials, work-in-progress and finished goods managed under FIFO system for cost reduction and production efficiency. It was also evident that the company carried inventory control management using perpetual inventory system done on periodic basis and inventory system is combined with a computerized database of inventory quantities at various locations for up-dating in real time by store and warehouse using barcode scanners. It was also revealed that inventory control management system using principles of Economic order quantity [EOQ] affects organizational performance in terms of cost reduction, production efficiency, flexibility and profitability. The study recommends an implementation of new practices/models such as Vendor Managed Inventory (VMI) in the company's inventory control management.

Keywords— *Inventory Control Management Practices, Organizational Performance, EOQ.*

I. INTRODUCTION

Managing assets of kinds by organizations across the world can be viewed as an inventory challenge to public as well as private organizations. This is because both public and private organizations tend to experience several difficulties in managing their inventories. The most observed challenge is that poor inventory can lead to under stocking while over stocking may result in increased total costs of inventory (Koumanakos, 2008). Organisations can

overcome the challenge by utilizing sound control techniques or systems such as economic order quantities (EOQ) model to ensure effective inventory supervision, which in turn may lead to purchasing favorable quantities of raw materials for input in the production process. However, is mostly afforded by large organizations due to large capital investment and use of sophisticated technology.

Regardless of level of sophistication of control system, it is argued that inventory has to be leveled down in order to maximize storage costs and to boost up inventory to the level of customers' demand in the target market (Medard 2013; Atnafuand Balda 2018). One of the plausible ways is to avoid placing a lot of capital in inventory but this may subsequently lead to dwindling of profitability and cashflow. It thus implies that the chain supply inventory personnel need to have competence in procurement process as deficiency of or limited facts and skills in procurement.

Furthermore, an inventory control system is vital because it ensures that assets and stock are adequately managed and that precise demand forecasting is maintained to minimize unexpected procurement operations. This will help the company execute effective procurement procedures that meet market demand and supplier factors (Brigham & Gapenski, 2013). Agus & Noor (2010) also stated that precise forecasting of demand allows the business to reduce operating expenses, improved efficiency and on time supply of products and services for the future requirements by fulfilling the growing expectations of customers. This leads to increased consumer fulfilment as the outcome of the best value of products and services provided, also improved organizational effectiveness. In a similar vein, previous studies have established that improper inventories control management may cost an organization a loss ranging from 25 percent to 40 percent of the expected value, resulting from lost sales as a direct consequence of customer dissatisfaction (Makweba and Xi, 2009). Thus efficient inventory control system is part and parcel of supply chain activities to enable the organization to have sustainable competitive edge in the market and to improve firm's profitability as well. In spite of the importance of inventory control systems in organizations, such as Tanzanian manufacturing firms including food and beverage production companies, there is paucity of empirical research of the effect of inventory control system on organizational performance.

Statement of the Research Problem

Manufacturing firms have become less competitive in the market due poor inventory control systems. Tanzanian manufacturing beverage companies such as those found in Mwanza City are facing competition from other manufacturing companies in other parts of the country where they need to assume more effectual techniques of regulating and managing inventory through removing waste in the production process, reducing holding costs, ordering costs and many others.

Countless manufacturing establishments have adopted inventory management systems in their efforts to survive in the markets as well as to improve their business operations. However, in what way the inventory control schemes they apply affect organizations' performance of manufacturing companies, in particular food and beverage manufacturing companies in Tanzania has not been studied.

Inventory control management's impact on organizational efficiency has been a contentious topic to both scholars and researchers as they hold different views and findings about its influence on an organizational performance. Mukopi and Iravo (2015), for example, discovered that inventory management had a favorable impact on performance. Similarly, Mogere, Oloko and Okibo (2013) found that there is a substantial link between inventory control management and organizational performance. Both studies were conducted in Kenya in the setting of sugar industry and tea industry respectively. However, a Nigerian study by Otuya and Eginwin (2017) among SMEs in Delta State, revealed there was no direct link between the two variables of inventory control management and organizational performance. In Nigeria, certain empirical research have also been conducted in the contexts of engineering firms, manufacturing and cement industries but none in the food and beverage industry (Eneje, Nweze and Udeh (2012); Duru, Okpe & Udeji (2014).

In the context of Tanzania exists few empirical studies on inventory control systems such as that by Ondyeki (2019) focused on inventory control system of assets and their safety in public sector while Medard (2017) focused the relationship between inventory control and management of assets also in public sector. Besides, the majority of studies for example, Otuya & Eginwin, 2017; Otuya & Eginwin 2017; Atnafuand Balda, 2018) have adopted quantitative approach and have not obtained deep insights of how inventory control systems contribute to organizational performance and yet manufacturing food and beverage firms have intensive capital in inventories whose management is vital to company's sustainability in a competitive market. Hence, this study fills the knowledge by investigating using qualitative approach the effects of inventory control management systems on organizational performance in Tanzania manufacturing industry in the selected food and beverage manufacturing company in Mwanza City. Based on these gap identified and discussions made on empirical and theoretical evidences, the following basic research questions were formulated.

- (i) What influence inventory control management practices have on organizational performance of the food and beverage manufacturing company in Mwanza city?
- (ii) How technology adopted in operationalization of the inventory control management practices affect organizational performance in the food and beverage manufacturing company in Mwanza city?

II. LITERATURE REVIEW

2.1 Theoretical Review

According to Kafyetta (2016), an inventory control system management is a arrangement that systematizes all inventory management activities. These systems are described to integral successfulness of any business organization and are principally used to proficiently capture stock movements using both hardware and software gears in supply chain. Inventory management, according to Saleemi (2004), is a critical issue in every firm that should not be disregarded. The goal is to save precious investment while lowering expenses and enhancing affordability. He goes on to say that the major goal of inventory control is to reduce lazy time produced by stocks shortages and non-availability of stocks, as well as inventory carrying cost expiration losses.

2.1.1 Types of Inventory Control Systems

Inventory control systems are viewed as necessary components in day – to- day operations of an organization, whose significance to enhance organizational performance. According Ali et al (2014), the following are types of inventory control system: shipping, purchasing, receiving, warehouse storage, turnover, tracking, and reordering of inputs. Nevertheless, there is no a common ground among managers and scholars to what makes the difference between stock organization and stock control systems, as an effective inventory control system entail inventory management and vice versa to increase supply chain productivity and efficiency so that the correct inventory is available at the right time to satisfy client demands (Adoga & Valverde, 2014). From En- Kanselu's (2008) perspective there are two forms of inventory control systems which organizations can employ; explicitly, perpetual inventory control systems and periodic inventory control systems. En- Kanselu further informs that within these two systems, there are two sub systems of inventory control management systems: barcode systems and radio frequency identification (RFID) systems.

2.1.1.1 Perpetual Inventory Control Systems

The perpetual inventory control system is concerned with regular updating inventory records and accounts at any

time when inventory Items are collected, traded from inventory, transported as of one area to alternative, retrieved from inventory, and discarded. (En-kanselu 2008). The author further points out that, some establishments prefer perpetual inventory control systems because they deliver up-to-date inventory information and better hold negligible manual inventory counts. They are also chosen to because they are considered fast an accurate in capturing inventory on continual basis when they are they are properly utilized and managed (En-Kanselu, 2008). For the matter of emphasis, Chopra (2015) adds that perpetual inventory control performs better when used together with a database of inventory amounts by storeroom staffs using barcode scanners.

In spite of the importance, they have for the better performance of the organization, perpetual inventory control systems have observed short comings. First, these systems are technologically dependent as it is impossible to maintain them manually. Instead, they require technical equipments and software, which results in a large rate of execution, particularly for businesses with a great number of locations or warehouses. In addition, they need necessary periodic maintenance and upgrades, which also add extra cost.

Second, because they do not employ a consistent inventory system, a perpetual inventory system may cause recorded inventory to differ from real inventory over time. Third, since so much time occurs between physical inventory counts, they make it problematic to discover where inconsistencies in inventory amounts arise when employing a periodic inventory management system (En-kanselu, 2008). As a result, inaccuracies, stolen products, and inadequately scanned objects have an impact on the inventory that is recorded creating an expected deviation from the actual inventory counts. Therefore, the choice and use of any inventory control system need careful consideration considering strengths and weaknesses it has, and on top of this its impact on an organizational performance.

2.1.1.2 Periodic Inventory Systems.

On the side of periodic inventory control systems, they do not pathway inventory on a daily basis. Instead, they are said to consent establishments to comprehend the opening and finish level of inventory within certain duration of time. These types of inventory control systems capture inventory by employing actual inventory amounts. When actual inventory is whole, the stability in the purchases account moves into the inventory account and is accustomed to concur with end inventory cost. They are user friendly as there are few problems of using a periodic inventory system (Chopra, 2015).

2.1.1.3 Barcode Inventory Control Systems

Barcode inventory control systems are regarded more precise and effective than physical inventory operations. When utilized as fragment of an entire control inventory system, barcode systems instantly update levels of inventory whenever labors scan them using a barcode scanner or mobile device. En-kanselu (2008) describes the advantages of using bar-coding in inventory control system management procedures, such as maintaining precise data of all inventory transactions, eliminating time-consuming data errors that may occur frequently with manual or paper systems, and minimizing manual data entry errors.

2.1.2 Inventory control Management Practices/ Techniques

There are several inventory control management practices or models underlying management of inventory control system for the purpose of having the correct quantity of inventory on hand to run a profitable and cost-effective business. It is said to apply mostly in large-scale businesses, such as manufacturing industries. According to Adamu et al (2014), they are said to apply mostly effective in large-scale business organizations, such as manufacturing industries. They include Stock Review, Automatic Replenishment, ABC Inventory Model, Just-In Time (JIT) Inventory, Economic Order Quantity (EOQ) and Vendor Managed Inventory.

Stock review is construed to be the easiest inventory control system management technique which is found to be more favourable in small-scale organizations. Its implementation entails a frequent review of existing inventory against anticipated future demands. (Adamu et al, 2014). The stock review process is manually, yet in certain cases an automated stock review is used to calculate the minimum stock level in order to assure continual inventory checks and supply reordering to satisfy minimal levels. Its only demerit is that it is labour-intensive and also prone to errors; therefore, it needs much care in its application (Adamu et al, 2014).

2.1.2.1 Vendor Managed Inventory

Vendor Managed Inventory (VMI) this is a supply network approach in which the contractor or supplier manages the buyer's inventory (Smaros et al., 2003). For the purpose of tracking the customer's stock level, the vendor is granted access to its purchaser's inventory and demand information. Furthermore, the vendor has the ability and duty to refill the purchaser's inventory in accordance with the inventory control principles and objectives that have been mutually agreed upon (Smaros et al., 2003). It entails placing purchase orders in accordance with a long-term inventory degree schedule and shared forecast data. A boost transport observer notifies the consumer of

substances in transit as soon as the purchase order is pressed. Following that, the goods is sent, delivered, and "logged" according to the shipment procedure. However, the VMI concept is ideally used to the implementation of inventories at retailer's distribution middle. The advantage of VMI system is that customers are able to expel stock outs because suppliers may have replenished their inventories (Potilen & Goldsby, 2003).

2.1.2.2 Economic Order Quantity (EOQ)

According to Ogbo (2011), the economic Order quantity (EOQ) refers to ordering amounts that reduce the cost of inventory stability while maintaining pricing in proportion to re-order costs EOQ requires the following assumptions, according to Onwubolu et al. (2006): (i) Demand is known and constant; (ii) Lead-time is known and constant; (iii) Inventory is received in one batch, at one time; (iv) Quantity discounts are not possible, (v) The only variable costs are the cost of placing an order and the cost of holding inventory; and (vii) Stock-outs can be completely avoided if orders are placed at the right time. With these assumptions inventory usage over time has a saw tooth type of characteristic which means that the graph of the inventory usage undergoes gradual variations.

As compared to other inventory control management practices, the EOQ method renders, to some considerable extent, complications in application of it. The reason given is that it requires an organization to understand the yearly usage in units, ordering value in greenbacks according to order, annual sporting cost charge, unit value in dollars, and order amount in gadgets are the following records. Nevertheless, the merit attributed to EOQ method is that it strives to locate the order quantity that has the minimum total price of carrying the stock for the purpose of minimizing the holding costs (Mandal, 2012). In other words, EOQ is cost effective as it helps an organization to cut down business running costs. Therefore, it is a viable inventory control management practice which can be used by an organization in order to attain high profitability. They are assumptions necessary in basis of EOQ.

2.1.2.3 Just-In Time (JIT) Inventory

Just-In-Time technique is construed as aggregated practices that are used to do away with waste wherein materials, parts, and in place ordering immediately different items needed to meet instantly manufacturing requirements (Mazanai (2012). These large-scale business methods are thought to cover the full inventory supply chain. Shared product design with suppliers and customers, moving away from incompatible sourcing nearby suppliers, minimal machine determined times, and overall preventative protection are all identified components of JIT (Mazanai, 2012).

According to Mazanai (2012), JIT is an inventory technique used to improve a commercial enterprise's return on investment by reducing inventory and its associated wearing fees, as well as enhancing performance and, as a result, saving inventory management costs and lead time expenses. In an endeavor to obtain JIT, Bicheno (2016) argues that the process has to have indicators of what is going on everywhere inside the entire inventory system. JIT is said to result in significant improvements in a manufacturing company's return on the investment and optimum performance. It underlines the importance of manufacturing in the creation of devices that is, useful tools or devices that arrive when needed, neither in earlier time nor later time but on time (Bicheno, 2016), Muchaedepe et al (2019) and Chase et al (2009), cited in Adeyemi and Salami (2010) Furthermore, a just-in-time inventory system keeps stock levels low by only producing for particular customer requests. The outcome is a significant reduction in stock investment and scrap expenditures, despite the fact that, as the above-mentioned authors suggest, an excessive degree of coordination is required.

According to Farzaneh (2012), JIT can eliminate garage, investment, insurance, ordering, and shipping costs. However, it is contingent on the current circumstances. In the ideal circumstance, when all of the parameters are met, it is more cost-effective to choose JIT over EOQ since it results in a simultaneous reduction in purchase price, protection charge, and ordering fee, as Farzaneh recommends (2012).

2.1.2.4 ABC Inventory Model

Mandal (2012) believes that the ABC stock control scheme is entirely based on the principle that a small portion of the items may specifically constitute a large portion of the cash price of the entire inventory used in the production method, while a notably large portion of the cash price of stores may be obtained. In line with this ABC technique to stock management, Ng (2007) observes that high value gadgets are more closely controlled than low cost items. It is elaborated that in application of ABC Inventory Model, depending on the quantity paid for that specific item, each stock item is allocated an A, B, or C letter. "A" or the most expensive devices should be under the strict supervision and responsibility of the most skilled employees, whilst "C" or the cheapest price can be under basic physical control. (Ng, 2007).

Lyson (2006), on the other hand, comments that ABC assessment is a well-established categorization approach based on the Pareto principle for deciding which objects must be prioritized in the management of an organization's stock. generally, ABC analysis is thought to

be a method for prioritizing the management of inventory and inventories classified into three domains-A, B, and C. Dealing with A items necessitates the most managerial effort and attention. C things receive the least attention, whereas B goods fall somewhere in the middle (Lyson 2012; Lyson & Farrington, 2006).

2.1.2.4 Automatic Replenishment

Another inventory management technique is the automatic replenishment model. Vijay (2004) in Kitheka (2012) defines automation as a technique dealing with the application of mechatronics and computer systems for producing products and services at a factory. According to Gitau (2016). Most organizations automate to address concerns such as labor shortages and high labor costs, as well as to increase productivity and minimize manufacturing lead-times. All of this adds up to cheaper operating costs and more sophisticated customer support as a result of automation. Stock can occur in a variety of areas along the supply chain, as well as in various documents such as raw materials inventory, work-in-process (WIP), or finished goods inventory

2.1.3 Organizational Performance

Organizational performance remains a central theme in contemporary literature and scholars are continuously discussing various factors such as organizational structure (Awino 2015), strategic innovation (Shisia et al 2014) and human capital human capital (Odhon'g and Omolo 2015) that inform performance in diverse organizations. In this study the focus is on inventory control system as a factor influencing performance.

Lebens and Euske (2006) define performance as a measure of monetary and non- monetary pointers that indicate evidence about the grade of achievement of the organization's objectives. In most studies, performance measurement has been limited to a financial perspective, leading to various restrictions like emphasis on the internal factors of the company and overdue accessibility of performance-related information.

To overcome these restrictions performance has to be measured as a multidimensional that includes financial and non-financial indicators (Neely, 2002). For example, non-financial organizational performance can be attained by improvement of product quality, refining production efficiency, responsiveness to customers' needs, customers' satisfaction, while financial indicators as profitability, return on investment, sales and lastly its market share. Brudan (2010) further stresses that; organizational performance measurements should involve identification, monitoring and communication of the results using performance indicators. In this research study, organizational performance, as influenced by inventory

systems, are measured in regard with the following indicators: profitability, cost reduction, flexibility and production efficiency.

2.2 Empirical review

There is already a body of researches carried out on inventory control systems in relation to their influence on organizational performance across the globe and in various industries as well as in public institutions. The following sections provide a review of some studies conducted in African context, as they are more relevant to the current study topic.

2.2.1 Inventory control management practices and organization performance

Previous research has found a link between inventory management strategies such as Economic Order Quantity (EOQ), Just in Time (JIT), Marginal analysis, vendor-controlled inventory, and Order batching and agricultural sector performance (Mwangi, 2013) as well as retail institutions (Omondi & Namusonge, 2015). Furthermore, inventory control has been discovered to have a straight influence on the road building schemes performance (Ang'ana, 2012).

Similarly, Mogere, Oloko, and Okibo (2013) discovered a good relationship between the usage of material requirements, distribution planning, and vendor-controlled inventory and operational efficiency and organizational performance. As a case study, the research was conducted at the Gianchore tea facility in Kenya. Its goal was to evaluate inventory control systems impacts functioning routine in the tea business by employing a designed questionnaire as a information collection tool and regression data analysis.

On the other side, Lwika, Ojera, Mugenda and Wachira (2013) used both primary and secondary data to examine how inventory management practices impact on financial performance of selected firms. The study was carried out in the context of the Kenya sugar manufacturing firms. Through relationship analysis the results revealed that inventory management impacts certainly on both return on sales and return on equity.

Similarly, Kimaiyo and Onchiri (2014) investigated the importance of inventory management on the performance of new Kenya Cooperative Creameries. The study had a sample size of 83 respondents selected from a target demographic of 500 people. The study used a descriptive research approach to establish that inventory management through holding stocks and ordering expenses tended to improve company performance. According to the findings of the study, the value of inventory control in supply chain

management seems to be handled across a wide range of industries in Kenya.

In the same vein, Mwangi and Nyambura (2015) did a study in the context of companies involved in Kenyan food processing sector. The focal point of the study was to examine the role inventory management plays in the performance of these companies. This study, like Mwangi and Nyambura (2015), used a descriptive research approach and multiple regression data analysis. According to the findings, the essential features of inventory management that had a vital impact in improving the performance of food processing industries were maintenance of production, controlling cost, declining loss record, and constant supply.

Another study was by Wangari and Kagiri (2015) which sought out find out the influence of inventory control management practices at Safaricom Kenya Ltd on its competitiveness edge in the market. The drop and pick questionnaires from respondents' method were used to collect data which were analyzed through multiple regression analysis technique. According to the findings of the study, inventory venture, inventory shrinkage, and inventory incomings were important forecasters of competitiveness in Safaricom Ltd and organisational effectiveness in the Kenyan market. Ngei and Kihara (2017), on the other hand, aimed to determine the impact of inventory control on the efficiency of gasoline manufacturing enterprises in Nairobi City County. The study used both primary and secondary data and they were analyzed using multiple regressions. The reported results from the study were that Vendor Managed Inventory (VMI), Enterprise Resource Planning (ERP), Radio Frequency Identification (RFID) and e-procurement significantly predicted performance of gas firms in the Kenya.

Atnafuand Balda (2018) empirically examined the impact of inventory management practices on firms' competitiveness and organizational performance in micro and small enterprises in Ethiopia.

The study included a sample of 188 micro and small businesses (MSEs) working in the manufacturing sub-sector, from which data for this study were acquired. The results from the study indicated that higher levels of inventory management practice can lead to an enhanced competitive advantage and improved organizational performance. Also that, a competitive advantage can have a direct, positive impact on organizational performance.

Otuya and Eginiwin (2017) analysed the effect of inventory management practices on profitability of SMEs in Nigeria. The study used a descriptive research design and the population consisted of all SMEs operating in

Delta State. Multiple regression analysis of the data indicated that inventory turnover has a substantial positive link with the financial success of SMEs. The study also found a negative association between inventory conversion period and profitability, as well as no significant positive relationship between inventory leanness and profitability. Overall, the study concluded that inventory management plays a significant role in a firm's corporate financial performance; thus, firms' inventory systems should maintain proper inventory levels to improve profit and reduce inventory costs associated with holding excess stock in warehouses. This study is somewhat different from current study which looks a single manufacturing firm for in-depth insights of how inventory management practices on impact on its performance. Based on such findings, the researcher construed that inventory management practices could similarly have a direct impact on performance of food and beverage manufacturing firms in Tanzania

2.4.2 Technology usage in inventory control management and organizational performance

In regard to the context of technology in inventory control management and organizational performance, Kitheka and Ondiek (2014) investigated how automation in inventory management affects the operation of supermarkets in Western Kenya. The study used a descriptive survey approach and focused on Kisumu-based stores.

Kakamega, and Bungoma towns. Multiple regressions technique was used to analyze data. The results which were drawn from the study data established that computerization of inventory management had a straight linear effect on supermarkets performance.

Mukopi and Iravo (2015) studied the effects of inventory management on performance in the Kenyan sugar business using a survey approach. The study polled 30 procurement employees strained from a target population of 100 at sugar businesses in Kenya Western Counts. The study found that strategic supplier partnerships, lean inventory systems, legal policies, and information technology all had a strong close link with inventory management, which led to improved business performance.

In addition, Onchoke and Wanyoike (2016) investigated the impact of inventory control procedures in Agrichemical distributors in Nakuru Central Sub-County,

Kenya, on their procurement performance in their study. The questionnaires used in the study were self-administered and dropped and picked from respondents. Multiple regressions were utilized to examine the given data. Following that, the study's findings demonstrated that inspecting of inventory, inventory safety measures, and a inventory which is automated inventory management system all had a good and significant impact on procurement performance.

III. RESEARCH METHODOLOGY

This research applied a qualitative approach method. Purposive sampling technique was used to selected six from nine managers involved in the inventory and production department of a food and beverage manufacturing company for personal face to face in-depth semi-structured interview (Yin 2014). This is line with the recommendation of Yin (2003; 2014) that contends in single case study, face-to-face interviews with six (6) to Eight (8) individuals is sufficient as the information being presented by extra interviewees reached saturation in that range of interview participants. The interview discussions were tape recorded and transcribed thereafter analyzed using thematic analysis techniques and presented in terms of emerging themes, patterns or meanings as well as quotations from interviewees (Yin 2014; Bell, Bryman and Harley 2019).

IV. RESULTS AND DISCUSSION

4.1 Participants' Profile

This research sought to examine the effect of inventory control management systems on organizational performance in food and beverage manufacturing company, Mwanza city Tanzania. This involved conducting in-depth personal interview with production manager, three stores managers, purchasing manager and logistics manager, who provided data which were later analyzed to yield the findings of this study. As noted in table all managers had experience three years and above and hence were expected to have sufficient on inventory control management practices being used in company's manufacturing facility

Table 4.1: Profile of research participants

Participant Code	Position held	Working experience (years)	Role in Inventory management
P1	Production Manager	3	Overseeing input of raw material and output of

			Finished inventory
P2	Purchasing Officer	4	Purchasing stock within Tanzania
P3	Logistics Manager	6	Plan and controlling stock movement
P4	Stores Control Officer	3.5	Managing company store
P5	Store Control Officer	4	Managing the warehouses
P6	Factory Foreman	5	Supervising production process

To complement the study, the researcher included two senior management staff, particularly the marketing manager and product development manager in the same unit as one way of ensuring reliability and validity of information collected about the outcome of inventory control management systems on organizational performance.

4.3 Research objectives

(i) Inventory control management practices and organizational performance

Inventory control managers reported that they have adopted perpetual inventory control system that makes use of computerized bar codes to scan the finished goods or raw material package. However, used manual system was also applied for items purchased without bar code labels, especially those sourced locally within Tanzania. The use of computerized bar code system was preferred ahead of manual at its various store sites and warehouses because it reduces human error and is automatically linked to the purchasing department and helps in inventory reconciling process. The inventory stocktaking is conducted on weekly basis due to higher stock turnover and to ensure fresh inputs are sourced and finished are delivered to customers on timely basis. One of the respondents remarked:

“Yes, our stock turnover of raw materials as well as finished goods (ready to consume drinks and beverages) requires us to be very careful and serious in ensuring adequate fresh stock for the next production cycle. It is also helps us to plan for procuring raw materials that are sourced outside the country [Tanzania] because of long lead time between placing an order and its delivery time. This is critical in our business because we have certain level of daily production schedule that specifies the amount of inventory in tones for each line-item production. Within our inventory system we have to have economic order quantity [EOQ] management which triggers re-order process” (P1).

This observation of the use of perpetual inventory control and automatic inventory reconciling process concurs with work of En- Kanselu (2008) who contended that some

businesses favor perpetual inventory control systems because they provide up-to-date data and can manage low-volume manual inventory counts. The same argument is reinforced by Chopra (2015), who stated that perpetual inventory management systems are favored for inventory tracking because they provide accurate data on a continual basis when correctly maintained. This finding also concurs with Chopra (2015) who explicated that perpetual inventory control systems work best when used side by side with a database of inventory quantities using barcode scanners. It also helps the company to run its daily operations efficiently and sufficiently.

Another participant pointed out that EOQ concept was critical, especially when the company gets orders that required higher production than routine production.

“Sometimes, we get special orders and so it is important to manage the inventory in our various stores factoring the logistic function of stock from source to out factory. Thus use of periodic stock count using barcode scanners not only simplify the process but also helps to identify EOQ”(P2).

This observation about the company’s use of economic order quantity (EOQ) when pressing orders that required higher production than routine production agrees with Mandal (2012) who made it clear that for the company to use EOQ method it has to recognize annual usage in units, ordering value. Mandal (2012) further adds that the EOQ approach aims to find the order quantity with the lowest total carrying cost so as to minimize the holding costs.

The observation that the company employs regularly an economic order quantity (EOQ) indicates that inventory control bears a substantial optimistic affiliation with the organizational performance and consequently it highly subsidizes to economic production quantity and quality products in the context of projected and accounted costs and planned or scheduled time to customers ultimately leading to maximum profitability. This is because the EOQ method or technique of inventory control management practices helps the company to order only the needed items at the right time and at the right place or location of the business.

Participants also reported that their inventory control management system contributed to the organizational performance in terms of reduced inventory holding costs, minimizing the keeping of expired materials and space occupancy in their warehouses. Participants further commented that the following of EOQ enhanced timely production process and the company was able to meet customer orders of foods and beverage on timely basis. These findings agree with previous studies of Otuya and Eginwin (2017) who found that inventory control management practices among SMEs in Nigeria have an effect on corporate financial performance. Mwangi and Nambura's (2015) studies also showed that inventory control management system had an essential impact in the success of a firm in the Kenyan food processing sector which agrees with the findings of this current study. This agreement of findings might be ascribed to the fact that Kenya and Tanzania are geographically located in East Africa which makes social, economic, and even political interaction between people of the two regions possible for sharing experience. Therefore, based on these results it can be stressed that there is an urgent necessity for companies to utilize inventory control management practices which have to be considered as assets rather than liabilities, although at times they may lead to high running costs especially in automated inventory control devices. Thus, the practice of inventory planning and control as well as the consideration of other factors that influence inventory control management is essential.

(ii) Use of technology in inventory control management and organizational performance

The use of technology in inventory control management systems is about complete or partial computerization of the inventory system. For computerized inventory system, the software gives inventory management employees the ability to check inventory levels of inputs real-time. It also aids the administration personnel and sales force to check the levels of finished inventory in real-time. For example, the sales force while in their field job they may need to be updated with inventory levels of the finished so that they can accurately inform customers of availability and delivery of their consignments without the need to physically go and verify the inventory levels at the factory. The food and beverage company in Mwanza city uses a computerized inventory system combined with a database of inventory quantities at various locations for up-dating in real time by store and warehouse workers using barcode scanners. The majority of respondents reported that they used computerized inventory system assisted the company to do real time to update of inventory level of certain class of raw material items with barcodes and all company finished goods. The use of this automated system speeded

up the recording and inventory level updating to alert purchasing personnel to plan, to place orders as well as linking with company's logistic system to remove any guesswork. One participant summed up some of the benefits for company using computerized inventory control management system.

“One of the greatest advantages of us having a computerized inventory system is that the system makes is faster in updating stock level and more accurate counting items. The human errors are minimized. So scanning bar codes or QR codes on items we stock for use in our production and delivery to our customers is faster and easier than manually writing down stock numbers or flicking through many pages of inventory sheets in the traditional system, searching for the correct item and their quantities” (P4).

This finding indicates the importance of having an application of computerized inventory system in an organization, especially in today's information and communication technology era. It also emphasizes that when computerized inventory system is properly and effectively utilized, it is not only fast but also it is accurate compared to manual inventory system. On the other hand, computerized inventory system helps to avoid unnecessary errors in ordering and evaluating products and services through the use of software. The only disadvantage is that operating automated inventory control systems is costly as it requires large capital investment at the beginning as well knowledgeable and skilled personnel.

The use computerized inventory control management system is not without challenges and necessity the actors of entire value chain to have scan readable labels. For example, it was reported that for some items that were purchased locally from farmers and traders, the inventory control management system is affected manually based on FIFO system as each item was labeled with entry date. The challenge however comes to bulky items in 1000kg packages. One participant made a vivid comment.

“There are times when computerized inventory system is either not working or not used at all. The company switches to manual inventory control management system which is laborious and we do encounter inaccuracy in the inventory level and sometimes we have to switch to another item production till the needed raw materials are shipped into factory premises. In such situations, our sales may drop as no production of the desired items is in stock for sale”

The inference from this observation is that computerized inventory control has to be used hand in hand with manual inventory control management. The two systems can complement each other, each helping to overcome the weaknesses of another. This is likely to result into optimal organizational performance.

Another participant made the following comment regarding use of technology:

“Technology adoption in terms of computerized in inventory control management can benefit the company in terms accuracy and real-time update of inventory levels of company stocks. However, where there is failure in the computerized inventory system may be due to power outage or faults in the automated system itself, the company production indirectly goes down due shortage resulting in insufficient stock for going in production on time. In these circumstances production is below the target and the company can lose sales as there are not sufficient goods for sale” (P1)

This finding suggests that computerized inventory control management is not entirely reliable especially in situation of power outage although it is fast and accurate. This is because it may be pretentious affected by a number of reasons, together with power shortage and power cut off as well as technical faults in the automated system itself. This makes the application of manual control management a necessary supplement.

Another challenge arouses from not being orderly and knowledgeable about the inventory control system on the part of inventory control personnel. This was voiced by majority of the participants and summed by a comment from one participant:

“In some cases when the competent system controller is out of the station, the assistants lack knowledge to carry out the task of ordering for ensuring economic order quantity. This has a negative effect on company’s production level” (P2).

This finding makes it necessary for managers and inventory control management personnel to undergo intensive training on how to operate automated inventory control management systems in order to utilize them fully and effectively; otherwise, they will be of no value to the organizational performance. Nevertheless, the managers reported that computerized inventory control system, when it was in full use, it gave the company an edge over its competitors. For instance, when the system is efficient and speeds re-ordering process, input raw materials are delivered on time and production goes on un-interrupted. There is also the issue of time saving which means faster inventory update on company site and its warehouses.

These sales force while conducting their field job they needed to be updated with inventory levels of the finished so that they can meet customers of availability and delivery of consignments. All these led to efficient production and appropriate delivery of raw material to the plant and timely delivery of finished products to the consumers. So computerized inventory control management system is one of the factors that affect productivity of the food and beverage company and indirectly affects company sales and profits.

These observations were summed by comments of one participant.

“The computerized inventory control management system directly affects the procurement efficiency in the company and also affects general performance of the company in terms timely production and delivery. It is a cost-effective way of managing company inventory be it input raw material, work-in process or finished goods. However, these benefits can be achieved when the company is using competent and honest employees and its computerized system is regularly updated” (P2)

This finding is in line with that of Kitheka & Ondiek (2014) who found that inventory control management impacts on performance of super markets operating in western Kenya and came up with the finding that, inventory of automation management has a positive linear influence on supermarket performance. Similar finding was also arrived at by Onchoke and Wanyoike (2016) in their analytical study and found that computerized inventory control systems positively and significantly improved the performance of agricultural wholesalers in Nakuru Central Sub-County, Kenya. From these findings, it can be concluded that the use of technology in inventory control management is inevitable in any manufacturing firm striving to perform better and remain competitive in today’s domestic and global market which is heavily characterized by application of automated service for maximum efficiency and sufficiency to meet the customers’ needs and satisfaction.

V. CONCLUSION

This study examined the effect of inventory control management systems on organization performance. The adopted perpetual inventory control system that applied the principles of Economic Order Quantity (EOQ) enabled the food and beverage manufacturing company to know the extent to which an item ought to be ordered, not only that but also at what exact time it should be ordered to meet

customers, demand and subsequently their satisfaction. Second, the use of the computerized inventory control management system and other inventory management practices when properly applied positively, they are able to contribute to the company's performance in terms of employees' productivity, cost reduction, production efficiency, timely product delivery, and customer satisfaction.

VI. IMPLICATIONS

The food and beverage manufacturing company should adhere to principles of the Procurement Act of Tanzania Public Sector for its employees in areas of internal control procedures. More emphasis should also be placed on rationalization e-tendering, e-requisitioning, and e-sourcing to complement its current computerized inventory control management system. Finally, a quantitative study on the same topic should also be conducted in more than one food and beverage manufacturing companies in Tanzania for the sake of making generalization.

REFERENCES

- [1] Adamu, M. O. Budlender, N. and Idowu, G. A. (2014). A note on Just-in-Time Scheduling on flow Shop Machines. *Journal of the Nigerian Mathematical Society*, 33, 321-331.
- [2] Adeyemi, S. L. and Salami, L.O. (2010). Inventory management: A tool of optimizing resources in a manufacturing industry. *Journal of Social Science*, 23(2); 135-142.
- [3] Adoga, L. and Valverde R. (2014), *Fundamentals of Production Management*. Lagos: Enykon Consult Press.
- [4] Adoga, I., and Valverde, R. (2014). *An RFID Based Supply Chain Inventory Management Solution for the Petroleum Development Industry*, *Journal of Theoretical & Applied Information Technology*, 62, (1), 199-203.
- [5] Agus, A & Noor, Z.M (2006/2010). Supply chain management and performance. An Empirical Study. A working paper University of Malaysia.
- [6] Ali, K, Chan, S. and Kannan, P. (2014). Inventory Management of Perishable Products: A time Decay linked logistic Approach. *International Journal of Production Research*, 51, (13), 3864-3879
- [7] Aljunaidi, A., &Ankrak, S. (2014). The Application of Lean Principles in the Fast-Moving Consumer Goods (FMCG). *Journal of Operations and Supply Chain Management*, 7(2), 1-24.
- [8] Ambe, I. M. (2012). Determining Supply Chain Practices and Strategies of Light Vehicle Manufacturers in South Africa. Published PhD Thesis. Pretoria, South Africa: University of South Africa.
- [9] Aramide, S. F. & Bashir, M. (2015). The Effectiveness of Internal Control System and Financial Accountability at Local Government Level in Nigeria. *International Journal of Research in Business*, Vol. 3(8), pp.1-6.
- [10] Arnold, G. (2008). *Corporate financial management* (4thed.). England: Financial Times/Prentice Hall.
- [11] Atnafu, D and Balda, A (2018), The impact of inventory management practices on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia, *Cogent Business & Management*, Vol. 4, 1-16
- [12] Ballan, S., Bødiker, K. B., & El Ebras, R. (2015). *Inclusive business in Egypt: A Baseline Assessment for Fast Moving Consumer Good Sector*. Bonn, Germany: Business Action Network (IBAN).
- [13] Bicheno, J. (1996/2016). *Supplier partnerships*. National institute for manufacturing management, London
- [14] Blanchard, D. (2010). *Supply Chain Management Best Practices* (2nd ed.). London: Wiley Publishers.
- [15] Brigham, E.F &Gapenski L.C (1993/2013). *Intermediate Financial Management*. New York:Dryden Press.
- [16] Brudan, A. (2010), *Rediscovering performance management: systems, learning and integration*, *Measuring Business Excellence*, Vol. 14, No. 1, pp. 109-123.
- [17] Chapman, S., Arnold, T. K., Gatewood, A. K., & Clive, L. (2015). *Introduction to Materials Management* (8th ed.). London: Pearson.
- [18] Chase, C. (2013). *Demand-driven forecasting: A structured approach to forecasting*. New Jersey: Wiley Publishers.
- [19] Chopra, A. (2015). *Innovative state: How new Technologies can Transform Government*. New York: Atlantic Monthly Press.
- [20] Chuchu S A, Adoyo A and Osuga B O (2015), Information management for essential medicines supplies in public primary care facilities in Nairobi County, Kenya, *African Journal of Pharmacy and Pharmacology*, Vol.9(19), pp. 532-539
- [21] Denzin, NK, & Lincoln, YS (2011). *The SAGE Handbook of qualitative research*. Thousand Oaks: Sage Publications.
- [22] Duru, A. N., Okpe, I. &Udeji, A. O. (2014). Inventory positioning and firm performance in engineering companies. Evidence from Nigeria. *World Engineering & Applied Sciences Journal* Vol. 5 (3), pp. 85-91
- [23] Eneje, C., Nweze, A. &Udeh, A. (2012). Effect of efficient inventory management on profitability: Evidence from selected brewery firms in Nigeria. *International Journal of Current Research*, Vol.4, pp. 350-354.
- [24] Eroglu, C., & Hofer, C. (2011). Lean, leaner, too lean? The inventory-performance link revisited. *Journal of Operations Management*, Vol. 29, pp.356-369
- [25] Farzaneh, D. P. (2012). The Effect of inventory management on firm performance. *International Journal of Productivity and Performance Management*, 57(5), 355-369.
- [26] Gitau R W (2016), Inventory Management practices and organizational productivity in parastatals in Kenya, Master's Thesis University of Nairobi, Kenya
- [27] Ideet, I. L., &Wanyoike, D. (2012). *Role of Buyer-Supplier Relationship on Supply Chain Performance in the Energy Sector in Kenya: A Survey of Kenya Power and Geothermal Development Companies*

- [28] Jooste C, Kim V., & Roberts-Lombard M (2015), "Reinter mediation Strategies For Disinter mediated Travel Agencies: A Strategic Marketing Perspective", *International Business & Economics Research Journal*, Vol. 14 (3)
- [29] Joseph, L. (2014). Inventory Management Techniques and their Importance. *Journal of Economics & Economic Education Research*, Vol.16 (1), pp. 98-106.
- [30] Kafyatta, G. (2016), *Investigating the Effectiveness of Inventory Control Techniques in Uganda Public Institutions*, Diploma in Supply Chain Management Dissertation, Namulyango College of Business, Mbalala, Uganda
- [31] Kagashe G A , Makenya, F B and Buma D (2012), Medicines Wastage at a Tertiary Hospital in Dar Es Salaam Tanzania, *Journal of Applied Pharmaceutical Science* Vol. 4 (06), pp. 098-102
- [32] Kanda, M. K. & Iravo M. A. (2015). Access Factors Affecting Supply Chain Efficiency of Medical Supplies in public Health Centres in Kenya: A Case Study of Public Health Centres in Elgeyo Marakwet Count. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 5 (2), pp. 32–41.
- [33] Kazare B (2009), Assessment of the Effectiveness of Inventory Management and Control Process in Higher Learning Institutions in Tanzania, Saint Augustine University of Tanzania (SAUT) – Mwanza.
- [34] .Kimaiyo, K. K. & Ochiri, G (2014). Role of Inventory Management on Performance of Manufacturing Firms in Kenya – A case of new Kenya Cooperative Creameries. *European Journal of Business Management*, Vol. 2 (1), pp. 336-341.
- [35] Kimotho, H.K.(2014).Assessment of Insurance Uptake and Penetration in Kenya (A Case of Nakuru County). <http://ir-library.ku.ac.ke/handle/123456789/10087>
- [36] Kitheka S S (2012), Inventory Management automaton and the performance of supermarkets in Western Kenya, Master's Thesis, Technical University of Mombasa, Kenya
- [37] Kitheka, S.S., & Ondiek, G.O. (2014). Inventory Management Automation and the Performance of Supermarkets in Western Kenya. *International Journal of Research in Management & Business Studies*, Vol. 1(4.), pp.9-18.
- [38] Kothari, C.R. (2014). *Research methodology, methods and techniques*, India: New age International Publishers.
- [39] Koumanakos, D.P. (2008). The effect of inventory management on firm performance. *International Journal of Productivity and Performance Management*, Vol. 57, pp. 355-369.
- [40] Kros, J. F., Falasca, M. & Nadler, S. S. (2006). Impact of just-in-time inventory systems on OEM suppliers, *Industrial Management and Data systems*, Vol. 106(2), pp.224-241.
- [41] Kumar,M.,Talib,S.A. and Ramayah,T.(2013).Business Research Methods, Oxford Press, UK
- [42] Kurano, T., McKay, K. N. and Black, G. W. (2014). Proactive Inventory Policy Intervention to Mitigate Risk within Cooperative Supply Chains. *International Engineering Computations*, 5, (2), 249-264.
- [43] Lwiki, T., Ojera, P.B., Mugenda,N.G., &Wachira, V.K. (2013).The Impact of Inventory Management Practices on Financial Performance of Sugar Manufacturing Firms in Kenya. *International Journal of Business, Humanities and Technology*, Vol. 3 (5), pp. 75-85.
- [44] Lysons K. and Farrington. B (2006), *Purchasing & Supply chain Management*, 7th edition, London, Person Education Ltd.
- [45] Makabira, D. K., & Waiganjo, E. (2014). Role of Procurement Practices on the Performance of Corporate Organizations in Kenya: A Case Study of Kenya National Police Service. *International Journal of Academic Research in Business and Social Sciences*, 4(10), 369.
- [46] Makombe, P. (2015), *Inventory Control in the Changing World: The Technology Perspective*, A paper Presented at the Procurement and Supply Chain Summit, Kericho, Kenya.
- [47] Malhotra N. K, Nunan D and Birks D F (2017), *Marketing Research: An applied Approach*, Fifth Edition, London, UK, Pearson Education Limited
- [48] Mapunda, D. R. (2014). Performance of physical distribution of bank Supplies and its impacts on profitability: A case of CRDB Bank plc. Doctoral dissertation. Mzumbe University
- [49] Masaburi, D. J (2006). A Paper presented at the Workshop on Strategic Procurement planning held at Chanika IPS College.
- [50] Medard J (2017), Assessment of Inventory Management in Parastatal Organisations in Tanzania: A case of VETA Kigoma, Master's Thesis Presented to Open University of Tanzania, Dar es Salaam
- [51] Mercado, E.D. (2017). *Hands - On Inventory Management*. New York, London: Taylor and Francis group
- [52] Miles, M. B., Huberman, A. M., & Saldaña, J. (2013). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). New York: SAGE Publications.
- [53] Mogere, K., Oloko, M. & Okibo, W. (2013). Effect of Inventory management practices on Operational Performance of Tea Processing Firms: A Case Study of Gianchore Tea Factory, Nyamira County, Kenya. *The International Journal of Business & Management*, Vol.1 (5), pp.12-27.
- [54] Mohamad, S. J., Suraidi, N.N., Rahman, N.N.S. & Suhaimi,R.D.S (2016). A Study on relationship between inventory management and company performance: A case study of textile chain store. *Journal of Advanced Management Science*, Vol. 4(4), pp. 299-304.
- [55] Mohamed, I. A., Evans, K., & Tirimba, O. I. (2015). Analysis of the Effectiveness of Budgetary Control Techniques on Organizational Performance at Dar-Salaam Bank Headquarters in Hargeisa Somali and *International Journal of Business Management & Economic Research*, Vol. 6(6).
- [56] Muchaendepi, W, Mbohwa C, Hamandishe, T and Kanyepe, J (2019), Inventory Management and Performance of SMEs in the Manufacturing Sector of Harare 16th Global Conference on Sustainable Manufacturing - Sustainable Manufacturing for Global Circular Economy
- [57] .Mukopi, C. M. & Iravo, A. M. (2015).An Analysis of the Effects of Inventory Management on the Performance of the

- Procurement Function of Sugar Manufacturing Companies in the Western Kenya Sugar Belt. *International Journal of Scientific and Research Publications*, Vol. 5(5), pp. 1-13.
- [58] Mukopi, C.M. & Iravo, A.M. (2015). An analysis of the effects of inventory management on the performance of the procurement function of sugar manufacturing companies in the Western Kenya Sugar Belt. *International Journal of Scientific and Research Publications*, Vol. 5(5), pp. 2-14.
- [59] Mukopi, C.M., & Iravo, A.M. (2015). An Analysis of the Effects of Inventory Management on the Performance of the Procurement Function of Sugar Manufacturing Companies in the Western Kenya Sugar Belt. *International Journal of Scientific and Research Publications*, Vol. 5(5), pp. 2-14.
- [60] Muma, B. O., Nyaoga, B. R., Matwere, B. R. & Nyambega, E. K. (2014). Green Supply Chain Management and Environmental Performance among Tea Processing Firms in Kericho County, Kenya. *International Journal of Economics, Finance and Management Science*, Vol. 2(5), pp. 270-276
- [61] Mwangi, A.G. (2013). Inventory Management and Supply Chain Performance of Non-Governmental Organizations in the Agricultural Sector, Kenya. Master's Thesis Presented to University of Nairobi.
- [62] Mwangi, W., & Nyambura, M.T. (2015). The role of inventory management on performance of food processing companies: a case study of Crown Foods Limited Kenya. *European Journal of Business and Social Sciences*, Vol. 4(04), pp. 64-78.
- [63] Mwangi, W., & Nyambura, M.T. (2015). The role of inventory management on performance of food processing companies: a case study of Crown Foods Limited Kenya. *European Journal of Business and Social Sciences*, Vol. 4(4), pp. 64-78.
- [64] Neely, A. (2002), *Business Performance Measurement: Theory and Practice*, Cambridge University Press, UK.
- [65] Neumann, C S and Pardini, D (2014), Factor Structure and Construct Validity of the Self-Report Psychopathy (SRP) Scale and the Youth Psychopathic Traits Inventory (YPI) in Young Men, *Journal of Personality Disorders*, Vol. 28(3), pp. 419–433
- [66] Ngei, N.M., & Kihara, A. (2017). Influence of Inventory Management Systems on Performance of Gas Manufacturing Firms in Nairobi City County, Kenya. *International Journal of Business & Law Research*, Vol. 5(2), pp. 21-39.
- [67] Njeru M D, Njeru A, Memba F and Tirimba O I (2015), Effect of cash management on financial performance of deposit Takin: SA000's in Mount Kenya region, *International Journal of Scientific and Research Publications*
- [68] Odhongo, E.A., & Omolo, J. (2015). Effect of Human Capital Investment on Organizational Performance of Pharmaceutical Companies in Kenya. *Global Journal of Human Resource Management*, 3 (6), 1-29.
- [69] Ogbo, A. (2011). Production and operations management. Supply Chain Management: An International Journal. Enugu: De-verge Agencies Ltd. 12(4), 284–296. (2007).
- [70] Ogbo, A. I. (2011). *Production and operations management*. Enugu: De-verge Agencies Ltd
- [71] Olhager J (2013), Evolution of operations planning and control: from production to supply chains, *International Journal of Production Research*, Vol. 51, pp. 32-47
- [72] Omondi, D., & Namusonge G. (2015). The Role of Supply Chain Leadership in Retail Institutions' Performance: The Case of Nakumatt Holdings Limited, Kenya *International Journal of Humanities and Social Science*, Vol. 5 (2), pp. 135-142.
- [73] Onchoke, B. N., & Wanyoike, D. M. (2016). Influence of Inventory Control Practices on Procurement Performance of Agrochemicals Distributors in Nakuru Central Sub-County, Kenya. *International Journal of Economics, Finance and Management Sciences*, Vol. 4 (3), pp. 117-126.
- [74] Ondyeke Y (2019), An analysis of the management of inventory control system in Tanzania higher education institutions: a case of the Open University of Tanzania Headquarters, Master's Thesis Presented to Open University of Tanzania, Dar es Salaam
- [75] Otuya S and Eginwiwin E. J (2017), Inventory Management and SMEs Profitability. A Study of Furniture Manufacturing, Wholesale and Eatery Industry in Delta State, Nigeria, *Journal of Finance and Accounting*, Vol. 5 (3), pp. 75-79
- [76] Prempeh, K.B. (2015). The impact of efficient inventory management on profitability: evidence from selected manufacturing firms in Ghana. MPRA Paper No. 67889. Available online at <https://mpra.ub.uni-muenchen.de/67889>.
- [77] Ramos E, Pettit T J, Flanigan & M, Romero L and Huayta K (2020), Inventory Management Model Based on Lean Supply Chain to Increase the Service Level in a Distributor of Automotive Sector, *International Journal of Supply Chain Management*, Vol. 9 (2), pp. 113-132
- [78] Resnik D. B (2015) *What is ethics in research & why is it important*, National institute of Environmental Health.
- [79] Sarkar B, Mandal, B and Sumon Sarkar S (2017). Preservation of deteriorating seasonal products with stock-dependent consumption rate and shortages. *Journal of Industrial & Management Optimization*, Vol. 13 (1), pp. 187-206.
- [80] Shisia, A., Sang, W., Matoke, J., & Omwario, B. N. (2014). Strategic Innovation and Performance of Public Universities in Kenya. *European Journal of Business and Management*, 6(23), 259-269.
- [81] Silver, E. A., and Peterson, R (2013). *Decision systems for inventory management and production planning*. New York, NY: Wiley. [\[Google Scholar\]](#)
- [82] Silverman D (2011), *Interpreting Qualitative Data: A Guide to the Principles of Qualitative Research*, 5th edition, SAGE, Singapore
- [83] Sitienei, W. & Memba, F. (2016). The effect of inventory management on profitability of cement manufacturing companies in Kenya: A case study of listed cement manufacturing companies in Kenya. *International Journal of Management and Commerce Innovations*, Vol. 3(2), pp. 111-119.

- [84] Sliver, K. and Peterson, J. (2013), Importance of inventory Management, *Journal of Procurement and Research*, Vol. 2, pp. 13 – 24.
- [85] Tempelmeier, H. (2011). *Inventory Management in Supply Networks*, 3rd. Edition, Norderstedt (Books on Demand), ISBN 3-8423-4677-8
- [86] Thomas J R and Nelson J K (2001), *Research Methods in Physical Activity*, 4th Edition, Champaign IL, Human Kinetics, Routledge, London
- [87] Thorpe R and Ellwood P (2010), *Challenges and controversies in Management Research*, 1st Edition Routledge Publications, London, UK
- [88] Toomey, J.W (2010). *Inventory Management Principle Concept and Techniques: Materials Management/Logistics Series*, Kluwer Academic Publishers, London
- [89] Tracy S J (2010), *Qualitative Quality: Eight “Big-Tent” Criteria for Excellent Qualitative Research*, Sage Journals, New York, USA
- [90] Wambua, B. J., Okibo, W. B., Nyang’au, A. & Ondieki, S. M. (2015). Effects of Inventory Warehousing Systems on the Financial Performance of Seventh Day Adventist Institutions: A Case of Adventist Book Centers (ABC), Kenya. *International Journal of Business and Management*, Vol. 10(4), pp. 259 -264.
- [91] Wangari, K.L., Kagiri, A.W. (2015). Influence of Inventory Management Practices on Organizational Competitiveness: A Case of Safaricom Kenya Ltd. *International Academic Journal of Procurement and Supply Chain Management*, Vol. 1(5), pp. 72-98.
- [92] Wilson, J. (2010). *Essentials of business research*, London: Sage.