The Role of Inventory Management System on Operational Performance in Cement Industry (A Case Study on Habesha Cement Share Company, Ethiopia).

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Abstract:
Inventory management is one of the most critical practices in many of the organization, which are focused on meeting and exceeding the customers' satisfaction levels while at the same time reducing the cost of the operation in the organization. The main purpose of the study is to find out the effect of inventory management system on operational efficiency of Habesha cement share Company as a case study. To achieve the purpose of the study the researcher used, quantitative approach, to undertake the description of various kinds of inventories, costs associated with keeping the inventory control and the impact of inventory management on company's operations. 56 sample were taken out of the total population by simple random sampling techniques as source of data. Interview and questionnaires were used as a data collection instrument. To analyses the collected data descriptive and inferential statistics were applied, specifically correlation and regression from the inferential statistics. The result of the study indicates that Inventory management and control affects significantly the operational performance of Habesha Cement Share Company. The implementation of an effective inventory management and control leads to many benefits in the organization including ensuring reduction in cost of operations, decline of overall administration and inventory costs, increased operations efficiency and timely response to customers' needs.
Key words: Inventory management, Operational Performance, Cement industry.

I. Introduction

Due to high complexities in the supply chain function, ever changing technology, intense competition and the economic reforms in the recent past, there is need for the organizations to develop and implement practices in the organization inventory management in order to enhance the performance of the organization, and one of the critical resources in the organization is inventory since it directly affects the efficiency and effectiveness of the operations in the organization, which ultimately affects the sustainability and organization performance (Pujari, 2018).

Inventory plays a crucial role in the operations of the organization and their management practice enables the organization to grow as it relates internal and external customers (Gibson, 2019). Inventory management is essential in the firms as it has a direct influence on the financial resources of the organization that ultimately affects the overall performance of the firm. A firm with a robust inventory management practices can increases the overall performance, which includes the profitability, sustainability, efficiency and effectiveness of the operations of the organization, which contributed through efficient management of the working capital, production and customer satisfaction (Dobler, 2014). Effective management of the inventory in the organization ensures the transformation of the broad and general business objectives into the operational actions which it main focus it to hit between the inventory investment and customer satisfaction (Pirttila & Virolainen, 2012).

Inventory management practices are models used by organizations in order to manage and control their stocks. According to Stevenson (2010), "inventory management practices involves the systems that are implemented with a purpose to ensure optimal level of stocks are kept in the organization and it involves

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activities such as recording and monitoring the levels of stocks in the organization, forecasting the demand of the materials and products and making the decisions on how much to order, how to order and when to order".

In settings of traditional system, inventories of raw materials, work-in-progress components and finished goods were kept as a buffer against the possibility of running out of needed items. However, large buffer inventories consume valuable resources and generate hidden costs. Consequently, many companies have changed their approach to production and inventory management. Since at least the early 1980s, inventory management leading to inventory reduction has become the primary target, as is often the case in just-in-time (JIT) systems, where raw materials and parts are purchased or produced just in time to be used at each stage of the production process. This approach to inventory management brings considerable cost savings from reduced inventory levels. As a result, inventories have been decreasing in many firms (Chen et al, 2005.p.43), although evidence of improved firm performance is mixed (Koliaset al, 2019).

Hence, to maintain an optimal level an organization of inventory there is need to adopt robust system that it will ensure accurate track of the levels of the inventory in the organization, that will ensure adequate management of the supply chain players and to maintain control of the stocks internal processes. For the firms to adopt the inventory management system there is need for the organization to understand the supply chain processes, the market environment of its products and the operation processes in the organization (Muhayimana, 2015). The most commonly used inventory management system implemented by the organization are the Economic Order Quantity, Vendor Managed Inventory (VMI), Just In Time (JIT), Cycle Counting, ABC Analysis/Pareto Analysis, Two-Bin System (Kanban), Automatic Stock Replenishment and Stochastic Model Systems.

This is therefore prompting the researcher to carry the study on the effect of inventory management system and control on operational performance in case of Habesha Cement Share Company.

II.   Literature Review

It is a principal necessity for any organization to have a proper inventory control system. Miller (2018) explained inventory system as a set of policies that controls and monitors inventory level and determine what level should be maintained, how many orders should be made and when stock should be replenished. Miller (2018) furthermore explained inventory control as the supervision of the storage, supply and accessibility of items to ensure an adequate supply without oversupply. Coleman (2000) and Jay and Barry (2006) defined inventory management as a science-based art of ensuring that just enough inventory stock is held by an organization to meet its demand. Systems in inventory management are developed with the aim of reducing costs associated with the entire process on inventory management and are however described as complex systems to develop (Jones & Riley, 1985). Emmett (2005) defined inventory management as an approach to manage the flow of production in a supply chain, to achieve the required service level at an acceptable cost.

Stock and Lambert (2001), categorized inventories into six main types, namely:

Cycle stock: is the inventory that results from the replenishment process and is required in order to meet demand under conditions of certainty. That is when the firm can predict demand and replenishment times (lead times) perfectly.

In-transit inventory (pipeline): is the inventory that is en-routed from one location to another. It may be considered part of cycle stock even though it is not available for sale and or shipment until after it arrives at the destination.

Safety or buffer stock: is the stock held in excess of cycle stock because of uncertainty in demand or lead time. The notion is that a portion of average inventory should be devoted to cover short-range variations in demand and lead time.

Speculative stock: is inventory held for reasons other than satisfying current demand. That is inventories purchased as a result of speculations of price hikes.

Seasonal stock: is a form of speculative stock that involves the accumulative volume of inventory before a season begins in order to maintain a stable labour force and stable production runs or in the case of agriculture products, inventory accumulated as a result of a growing season that limits availability throughout the year.

Dead (obsolete) stock: is the set of items for which no demand has been registered for some specified period of time. They are out of date, deteriorated or no longer useful as a result of, for example, advancements in technology.

According to Hillier and Lieberman (2001), organizations should follow the following steps in order to have an effective inventory management system: Firstly, the need to develop a mathematical model which describes the behavior of inventory; secondly, the need to design and adopt an optimal inventory policy with respect to the firm's mathematical model; thirdly, the need to develop a computerized information processing system that will provide information on the current inventory levels; and lastly, the need to use the current inventory levels information to apply the optimal inventory policy to replenish existing inventory levels.

Narain and Subramanian (2008) indicated that a good inventory management system provides information to effectively manage the flow of materials, effectively utilize people and equipment, coordinate internal activity and communicate with customers. They further indicated that inventory management does not make decisions or manage operations, but provides information to managers to enable them to make more accurate and timely decisions to manage their operations. Ellram (1996) stated that inventory management is an important function that helps to insure the success of manufacturing and distribution companies. The effectiveness of inventory management systems is directly measurable by how successful a company is in providing high levels of customer service, low inventory investment, maximum throughout and low costs. Inventory management entails holding an appropriate amount of inventory. Too much inventory consumes physical space, creates a financial burden, and increases the possibility of damage, spoilage and loss. On the other hand, too little inventory often disrupts business operations, and increases the likelihood of poor customer service (Dimitrios, 2008).

Inventory management cycle involves the following areas: planning, ordering and scheduling of the materials used in the manufacturing process. Inventory management exercises management over three types of inventories that is raw materials, work in progress and finished goods. Purchasing is primarily concerned with management over the raw materials inventory, which includes; raw materials or semi-processed materials, fabricated parts and MRO items (Maintenance, Repair and Operations) (Garry, 1997).

Zenz (1994) indicated that inventory control involves the planning, ordering, and scheduling of materials used in the manufacturing process. It also exercises the control over three types of inventory that is raw materials, in process inventory (work in progress) and finished goods. He reveals that inventories make up a sizeable percentage of company's assets and usually the largest single current asset. Typically firms hold from 15 to 40 percent of their total capital invested in their inventories. Many companies list inventory reduction as their first priority thus inventory control becomes one of the purchasing foremost goals.

According to Bowersox (2002 P. 12.), the inventory management needs to be organized in a logical way so that the organization can be able to know when to order and how much to order. This must be attained through calculating the Economic Order Quantity (EOQ). Monetary request amount engages correlation to arrange their stock re-establishment on an ideal premise. For instance, the arrangement can be scheduled to happen from month to month, quarterly, half yearly, or yearly. By so doing, it enables firms to have insignificant limit costs or zero inside their circulation focuses. Along these lines, as associations attempt to enhance the stock administration, the EOQ and Re-Order Point (ROP) are necessary instruments that associations can utilize.

Operational efficiency of organizations is what occurs when the right combination of people, process, and technology come together to enhance the productivity and value of any business operation, while driving down the cost of routine operations to a desired level. (Ensynch,2009) states that the end result is that resources previously needed to manage operational tasks can be redirected to new, high value initiatives that bring additional capabilities to the organization. Organizations must be able to examine baseline operational processes that support the business, and then plan, implement, and support the right procedures. Being process-driven means the operations that support business activities become highly efficient.

According to Abo, Tetsuo, (1994), inventory control ensures regular supply of materials so as to enable uninterrupted production; it minimizes investment of capital on purchase of materials. It also reduces damage of obsolesce, reduces inventory carrying costs, avoids duplication in ordering the materials, avoids theft or loss of material, simplifies accounting of materials and it makes use of modern technique such as standardization; value analysis: input substitution which cut down the material costs.

A study carried out by Victoire (2015) investigated the impact of inventory management on profitability in Rwanda using a manufacturing company as case study. The findings indicate that inventory management had significant impact on the company's financial performance. Morgan (2009) conducted a research study in United States of America on inventory management performance in case of Alien Technology Corporation. The findings revealed that efficiency inventory management of the Alien Technology Corporation is achieved by applying just in time purchase by assuring smooth and well maintained relationship with suppliers of materials to ensure constant supply when the corporation is in need of raw materials to facilitate production. The researcher concluded that for any company to grow should take greater control on inventory because inventories are heart to the manufacturing companies for the purpose of meeting customer demand without running stock out or over stock situation.

III. Research methodology

The Researcher adopted quantitative research design. The study undertakes the description of various kinds of inventories, costs associated with keeping the inventory control and the impact of inventory management on company's operations. The Study were conduct at Habesha Cement Share Company Ethiopia. The target population is stratified in to four strata, which are; Finance Department, Supply Chain Department, Marketing and Sales Department, and Plant Operation. After stratifying the target population, the Yamane

formula were applied to determine the appropriate sample size. Proportional sample size from each stratum will be calculated. The research data were collected from both primary and secondary data sources. In collecting primary Data, the researcher were used questionnaires and interview. For Secondary Data which includes, related literature from text books, document review of organization activities, the organizational brochures, reports, magazines, internet and newspapers.

The data transformed in to quantitative form that permitted analysis using quantitative methods. Descriptive statistics will be used to analyze general information collected related with respondents background in addition to these the extent of inventory management system and control were analyzed using descriptive statistics on the extent of inventory management system and control by Habesha cement share company. In the final section correlation and regression were used to analyze the collected data on the effect of inventory management system and control on operational performance.

IV. Findings.

Descriptive Statistics for Inventory Management Model

Inventory Model	N	Mean	Std. Dv.
ABC Approach	37	3.8642	.35070
Just in Time	37	1.3368	.53085
Economic Order Quantity	37	4.2895	.63182
Vendor Managed Inventory	37	4.8763	.38585

Source: Research Data (2020)

Distribution of Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.597	.800		-.771	.390
ABC Approach	.476	.186	.312	2.555	.015
1 Just in Time	-.395	.144	-.337	-2.052	.048
Economic Order Quantity	.260	.084	.356	3.095	.004
Vendor Managed Inventory	.573	.168	.413	3.420	.002

a. Dependent Variable: Operational Performance

Source research data 2020

V. Discussion

The model shows a strong and statistically mostly significant positive relationship between ABC (β = .476, t = 2.555, p = .015), EOQ (β = .260, t = 3.095, p = .004), VMI (β = .573, t = 3.420, p = .002), and operational performance while JIT (β = -.295, t = -2.052, p = .048) is inversely relationship. The coefficients are positive for ABC approach, Economic Order Quantity, and Vendor Managed Inventory which would indicate that as the selected inventory management and control system become larger or increased, it is related to higher operational performance which is what we would expect the vice versa is true for Just in Time. Overall, the consistency of regression coefficients on the selected inventory management and control system suggests that these variables are important factors influencing operational efficiency although at different degrees. All the independent variables were significant predictors of operational performance since their significance value was less than 0.05 ($p < 0.05$). Additionally, the results show that multicollinearity did not pose a problem in the study since all the variables met the criteria of Tolerance should be > 0.1 or VIF (variance inflation factor) should be > 1 and < 3.

VI. Conclusion

Based on the above findings of the study, the following conclusions were made in relation to the four research objectives; The study concludes that inventory management and control is a process that is continuous in the organization and therefore there is always need for managing inventory throughout using a certain technique good inventory management and control can lead to good performance in an organization.

With respect to the findings of the research study, it is conclusive that inventory management and control impact significantly the operational performance of habesha cement Share Company. The implementation of an effective inventory management and control leads to many benefits in the organization including ensuring reduction in cost of operations, decline of overall administration and inventory costs, increased operations efficiency and timely response to customers' needs. While there are different inventory

management and control, the findings of this research study establish that Habesha cement Share Company likely to benefit from ABC approach, Economic Order Quantity model, and Vendor Managed Inventory models**.**

Suggestions for Further Studies

This study is mainly focused on Inventory management and control system on operational performance. From the research findings, it was noted that there are other aspects affecting operational performance and this study can be improved by considering other factors. Future researchers can investigate on other variables that affecting organization operational performances like uncertain demand management, Inventory turnover and cost reduction. Also, this research should be tested replicating in other Cement Industries and the results can be compared so as to establish whether there is consistency among the cement manufacturing on the effect of inventory management and control on operational performance. Then new comparisons can be generated in the future. In this manner, new concepts can be generated by analyzing the different cement manufacturing and this also provides a big picture for the subject to observe similarities and diversities on the implications.

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