

Inventory control and Performance of Manufacturing Firms

Adeyeye Josiah Olufemi, Ogunnaike Olaleke,
Amahian Augusta, Olokundun Maxwell and Inelo Fred
Department of Business Management, Covenant College of Business and Social Sciences,
Covenant University, P.M.B. 1023, Ota Ogun State, Nigeria

Abstract: This study was based on a conceptual approach to examine how inventory control influences performance of manufacturing firms. The study began with an introduction which was followed by the research objectives and questions. The statement of the research problem was discussed as well as the significance of the study. A study was dedicated to the conceptual and theoretical framework which was followed by a conceptual analysis and discussion based on review from literature. The study concluded with findings from literature and implications for further research.

Key words: Just in time inventory control, vendor managed inventory control method, material requirement planning, distribution resource planning, performance

INTRODUCTION

In the past, inventory control was not seen to be necessary. In fact excess inventories were considered as indication of wealth. Management by then considered over stocking beneficial. But, today firms have started to embrace effective inventory control due to its strategic role. Inventory constitutes the major part of a Nigeria manufacturing firm's current assets due to the big size of inventories kept by firm's most part of an organization's fund is being invested into it. It has become complete important for firms to manage their inventories efficiently to ensure customers are satisfied and organizations remains in operations via minimization of losses. This would help to minimize the costs of changing production rates, overtime, sub-contracting, unnecessary cost of sales and back order penalties during periods of peak demand. Inventories are mainly collection of idle resources of an organization that has a monetary value held for the purpose of future use such as production and/or sales. Inventories provide a significant link between production and sales of product and constitute a large percentage of the cost of production. It is one of the important assets of many manufacturing companies representing a significant fraction of the total invested capital. There are three kinds of inventory that are of concern to managers:

- Raw materials: Inputs into the production-process that will be modified or transformed into finished goods

- In process goods: Partially completed final product that are still in the production process
- Finished goods-final products available for sale, distribution or storage, moreover, in the administration of the inventory of an organization the following question should always be remembered

Certainly, if a manager effectively controls these three types of inventory, capital can be released that may be tied up in unnecessary inventory; production control can be improved and can protect against obsolescence, deterioration and/or theft. This gives rise to inventory control which is one area organizations are to pay attention to. Inventory control is the integrated functioning of an organization dealing with supply of materials and allied activities in order to achieve the maximum co-ordination and optimum expenditure on materials.

Williams and Tokar (2008) inventory control is the most important function of inventory management and it forms the nerve center in any organization that has inventory. Inventory control is a function that is very vital and of great significant to the performance of any kind of organization. It is not peculiar to only the manufacturing organizations but also necessary to service-oriented organization such as banks schools hospitals, each at these institutions still requires some amount of inventory to stock and control, so as to minimize overhead costs and improve performance nevertheless, the primary focus in this research will be on production cum marketing oriented organization. Inventory control is pivotal in

effective and efficient performance of an organization. It is also vital in the control of materials and goods that have to be held (or stored) for later use in the case of production or later exchange activities in the case of services. The principal goal of inventory control involves having to balance the conflicting issues of not wanting to hold too much stock and not to tie up capital which in turn have an adverse effect on the performance of manufacturing firms. This guides against the incurring of costs such as storage, spoilage, pilferage and obsolescence and the desire to make items or goods available when necessary for the manufacturing firm to perform properly.

Good inventory management in any manufacturing organization saves the organization from poor quality production, the displeasure of customers, loss of profit and good social responsibility which in turns have a direct effect in the performance of the firm. This is done by ensuring timely delivery of raw materials to the factory and distribution of finished goods, in order of production to the warehouse. If inventory management is not adequately maintained, production cannot meet the aspirations of customers which is loss of revenue to the organization and makes the organization performance very low. Right from procurement to the time of processing, quality of raw material is the chief determinant of the productive efficiency of any manufacturing concern.

MATERIALS AND METHODS

Statement of problem: According to Temeng etc., historically, however, 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. It must not be overlooked that some problems associated with inventory management are created by lack of effective and efficient inventory management arising mainly from the management inability to identify the proper inventory control strategy to be adopted or even where identified, the application is often inadequate.

The real problem therefore has been in the determination of the best inventory control method that fits into an organization very well and also to get the best inventory level at which money invested in inventory will produce a rate of return higher than it if invested in some other areas of the business (Amoako-Gyampah and Gargeya, 2011). Manufacturing firms are finding it challenging as to Determination of how much of the inventory is the ideal stock as a challenge. If inventory level is high, capital is unproductively tied up. If the level of inventory is low, production will be affected. However,

this study aim to carry out an investigation on the relationship between inventory control technique and performance of manufacturing firm and also find out if inventory control has an effect on performance of a manufacturing firm.

Objectives of this study: The broad objectives of this research are to ascertain the relation between inventory control and performance in a manufacturing firm while its specific objectives are to:

- Examine the relationship between vendor managed inventory and performance in a manufacturing firm
- Determine the extent to which just in time inventory control method affect manufacturing firm in Lagos state

Research questions:

- Is there a relationship between vendor managed inventory and performance of a manufacturing firms
- Does just in time inventory control method affect manufacturing firm in Lagos State

Significance of the study: Inventory control is a function that is very important and of great significant to any kind of organization. It is not peculiar to only the manufacturing organizations but also necessary to service oriented organizations. This study is limited to the inventory control procedures and techniques as applied in manufacturing firms in Lagos State with a view to improving the organizations performance. This study would be beneficial to the management of manufacturing firms to improve their operational performance and also information.

RESULTS AND DISCUSSION

A conceptual framework is a research tool intended to assist a researcher in developing an understanding of the situation under investigation. In this study, performance of a manufacturing firm is as being dependent on the inventory control practices. Inventory control technique is being conceptualized as just in time inventory control, vendor managed inventory control method, material requirement planning, distribution resource planning.

Vendor managed inventory control and performance: Vendor managed inventory is a type of inventory control method whereby the supplier is given the obligation of handling the client's inventory. The vendor is given access to its client's inventory record account and

request information for the reasons behind watching over the customer's inventory level. Vendor managed inventory involves partnership among suppliers and their customers (e.g., distributor, retailer or product end user) which deviate from the usual traditional ordering process. Usually, sending of purchase orders is replaced with customers electronically send daily demand information to the supplier. The supplier generates replacement orders for the customer based on this demand information. The process is guided by conjointly agreed upon intentions for the customer's inventory levels, fill rates and transaction costs Irungu and Wanjau debated that vendor managed inventory systems could be used to gain competitive advantage by depending on inventory supplier reliability and solid buyer/supplier dealings to produce income and lessen risk. Their results propose that vendor managed inventory has been operational in retail supermarkets by refining inventory management, cash flow and risk controlling. Weele and Raaij affirmed in their studies that application of the Vendor-Managed Inventory system results to enhancement in service levels rather than cost reductions. Vendors and clients have linked computer systems often using Electronic Data Interchange (EDI).

Just in time inventory control and performance: Just in time actually is a well-developed philosophy for managing inventories. A Just-in-Time (JIT) inventory system places great emphasis on reducing inventory levels to a bare minimum, and so providing the items just in time as they are needed. This philosophy was first developed in Japan, beginning with the Toyota Company in the late 1950's and is given part of the credit for the remarkable gains in Japanese productivity through much of the late 20th century.

Amoako-Gyampah and Gargeya (2001) have contributed to the literature by conducting a study on the process of implementation of Just-in-Time (JIT) in manufacturing firms of Ghana. They pointed out that there is huge difference between firms that practice just in time systems and the firms that don't practice just in time. Difference are in terms of their efforts to set up time reduction, suppliers' partnership and the training of employees to ensure quality movements continuously. The main focus of the just-in-time is on circumventing waste wherever, it might occur in the production process. One form of waste is excessive inventory. Others are unreasonably large setup costs, without cause long lead times, production facilities that are not operative when they needed and faulty items. Curtailing these types of waste is a major job of top level management. Kennedy, etc., undertook empirical to assess the effect of inventory

control systems on operational performance of tea processing firms in Kenya focusing Gianchore tea factory. The study had the following objectives as follows: determine the effect of material requirement planning on operational performance, establish the influence of continuous replenishment on operational performance and establish the extent to which distribution resource planning influence operational performance and the effect of vendor managed inventory on operational performance of Gianchore tea factory.

The empirical study had a target population 119 respondents consisting of one factory manager, sixteen middle level managers, thirty six factory supervisors and sixty six employees working at Gianchore tea factory. The study employed purposive sampling and stratified random sampling techniques that was applied to select a sample of fifty five respondents for this study. The study used questionnaire for collection of their data and quantitative data was analyzed using descriptive and inferential statistics and regression analysis to assess the association between the variables in the study. The study found out that there is a significant correlation between the use of inventory control systems and operational performance of a tea processing firm.

Amoako-Gyampah and Gargeya (2001) have contributed to the literature by conducting a study on the process of implementation of Just-in-Time (JIT) in manufacturing firms of Ghana. They pointed out that there is huge difference between firms that practice just in time systems and the firms that don't practice just in time. Difference are in terms of their efforts to set up time reduction, suppliers' partnership and the training of employees to ensure quality movements continuously.

Inventory control and performance: Ogbo and Ukpere (2014) carried out a study on the relationship between effective system of inventory management and organization. The study used a total of eighty-three respondent that constituted the sample for the study. The study raised four research questions. Four hypotheses were generated in the study and research hypothesis constitute the sample for the study. The study tested hypothesis tested using Chi-Square Non Parametric Test. The study found out empirically flexibility in inventory control management is an important approach to achieving organizational performance. The study also affirmed that organization benefits from inventory control management by way of easy storage and retrieval of material, improved sales effectiveness and reduced operational cost. The study also found that there is a relationship between operational feasibility, utility of inventory control management in the customer related

issues of the organization and cost effectiveness technique are implemented to enhance the return on investment in the organization.

Timothy, Patrick and Nesta examined in their empirical study the impact of inventory management practices on the financial performance of sugar manufacturing firms in Kenya. An analysis was carried out on the extent to which lean inventory system, strategic supplier partnership and technology are being applied in sugar manufacturing firms. They used a total number of eight operating sugar manufacturing firms from the period 2002-2007. The study was carried out using primary data by generating structured and semi-structured questionnaires administered to key staff in the organizations. Secondary data was obtained from annual financial performance statements available in the year book sugar statistics. The study used descriptive statistics to test the impact of inventory management practices and correlation analysis was used to determine the nature and magnitude of the relationship among inventory management variables. The empirical study showed that there exists a positive correlation between inventory management and return on sales.

Theoretical framework

Theory of economic order quantity (wilson eoq model):

Mathematical models have been developed within the scope of operations management to determine the optimal inventory level. The most widely used model is the EOQ model. This model was developed by F.W. Haris in 1913. But, still R.H. Wilson is given credit for his early in-depth analysis of the model. Timothy, Patrick and Nebat in their work affirmed that Economic Order Quantity model is also known as the Wilson EOQ Model. According to this model, some costs (ordering costs) decline with inventory holdings, while others (holding costs) rise and that the total inventory-associated cost curve has a minimum point. This is the point where total inventory costs are minimized. The economic order quantity is the level of inventory that minimizes the total of the inventory holding cost and ordering cost.

Theory of constraint: The theory of constraints is a management philosophy that seeks to increase manufacturing throughput efficiency or system performance measured by sales through the identification of those processes that are constraining the manufacturing system. Kazim argues that theory of constraints is based on the principle that a chain is only as strong as the weakest link or constraint and to elevate and manage the constraint as necessary. The theory is founded on the belief that an organization that take full

advantage of the output of every machine will not accomplish as much as one that ensures optimization of the movement of materials and value made via its operational performance. For manufacturing firms to ensure that the bottlenecks on their operations run smoothly they have to embrace the use of inventory control systems that can facilitate operational efficiency. This may result in the procurement of extra capacity or new technology of inventory control systems that revitalization the constraints. Enhancing the performance of the constraint leads to development in the operational performance of the entire system.

Systems theory: Fariza, etc., perceive systems as a set of two or more elements where the outlook of one elements can affect the outlook of the other systems as a whole and each of the elements are self-governing. Therefore, systems theory provides the idea of, behavior of such a systems is inter-dependent among the elements that form the organizations. Amagoh (2008) stated that the operational aspects of the systems is reliant to the systems elements itself which include the elements of input, transformation, output, control, feedback, boundaries and environment. This study aims the manufacturing firms as a system, performance of manufacturing firms as output after going through transformational process and proper inventory control as input

Lean theory: Lean production principle was pioneered by Womack, etc. This principle was linked with reduced inventories. The argument is that as inventory is reduced there will be profit improvement due to interest savings as well as a reduction in storage fees, handling and waste. These savings have been estimated by literature to be in the range of 20-30%. Lean management is receiving more attention in today's extremely competitive environment. The proponents of Lean Inventory system argue that excess inventory will adversely affect the net cash flows of a firm.

Findings from literature: Literature was useful for understanding the topic for this conceptual study. The literature enabled this study to answer the two inquiry questions.

Inquiry question 1: Is there a relationship between vendor managed inventory and performance of a manufacturing firm?

Findings 1: The researches of Irungu, Wanjau, Weele and Raaij as identified in the literature shows that it is

probable that vendor managed inventory control method affects the performance of manufacturing firms. This suggest that a linkage between vendor inventory control method and performance of manufacturing firm exist

Inquiry question 2: Does just in time inventory control method affect manufacturing firm in Lagos State?

Finding 2: The researches of Gyampah and Gargeya (2001) and Kennedy, etc., as highlighted in the discussions and review of literature shows that it is probable that a relationship exist between just in time inventory and performance of manufacturing firm.

CONCLUSION

Only few local studies have been carried out on establishing the impact and relationship on the of inventory control on manufacturing firms performance in. Thus, the need to authenticate these in the perspective of developing countries and in specific industry of these developing countries since the implementation of inventory management systems will affect positively performance in terms in the private sector. Based on the literature, it is recommended that further empirical research should be conducted to test the influence of inventory control on performance of firms in the manufacturing

industry. This study adopted a conceptual approach based on an extended review of literature to establish the linkage between inventory control and performance of a manufacturing firm. Thus, this study has been able to show conceptual evidence from literature that inventory control positively influences performance of a manufacturing firm as well increase the effectiveness and efficiency of inventory control in these firms.

REFERENCES

- Amagoh, F., 2008. Perspectives on organizational change: systems and complexity theories. *Innovation J. Public Sect.*, 13: 1-14.
- Amoako-Gyampah, K. and V. Gargeya, 2001. Just-in-time manufacturing in Ghana. *Ind. Manage. Data Syst.*, 101: 106-113.
- Ogbo, A.I. and W.I. Ukpere, 2014. The impact of effective inventory control management on organisational performance: A study of 7up bottling company nile mile enugu, Nigeria. *Mediterr. J. Soc. Sci.*, Vol. 5,10.5901/cmjss.2014.v5n10p109.
- Williams, B.D. and T. Tokar, 2008. A review of inventory management research in major logistics journals: Themes and future directions. *Intl. J. Logist. Manage.*, 19: 212-232.