

INVENTORY CONTROL SYSTEMS AND PROFITABILITY OF SUPERMARKETS IN PORT HARCOURT, RIVERS STATE, NIGERIA.

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Abstract

This research paper examined the relationship between inventory control systems and profitability of Supermarkets in Port Harcourt. Existing literature indicated that inventory control is a determining factor for the success or failure of any firm. The purpose of this study was to bring to fore the importance of inventory control systems on profitability of Supermarkets. This paper adopted a survey method. Forty (40) Supermarkets were studied. A total of 120 copies of the questionnaire were distributed to top, middle and lower managers of the firm. Pearson's Correlation technique was employed to test the hypotheses as contained in the SPSS Version 20.0. The findings of this study indicated that vendor managed inventory, just-in-time and material requirement planning had significant relationship with profitability. The study recommended that Supermarkets should implement vendor managed inventory, just in time inventory and material requirement planning to deliver quality service to customers and achieve profitability.

Keywords: Inventory control systems, profitability, supermarkets

Introduction

The achievement of a firms' basic objective of customer satisfaction and profitability is determined to a large extent by Inventory control mechanism (Ashok, 2013). This is so because, maintaining optimum inventory reduces to the barest minimum, the general marketing cost as well as removes the incidence of shutting down operations (Dimitrios, 2008). Inventory control systems therefore will assist firms in balancing between too much and too little inventory.

There is no gainsaying the fact therefore, that maintaining optimum inventory levels is of paramount importance in the life of a firm. Various authors has reiterated this importance by suggesting that, optimum inventory assures availability of adequate stock and enhances sufficiency of stock to meet customer demands at the lowest possible cost (Lucey, 1992, Byongho, 2004). According to Thomas, Jayakrishnan, Dilip and Suriyaprakash (2014) an inventory will include, list of goods, estimated value; specifically an annual account of stock taken in any business.

Kacim, Saad and Haque (2011) posit that inventory management deals primarily with determining the size and placement of semifinished and finished items or goods within a facility or within multiple location of a supply chain network. In a similar perspective, inventory management takes into account the significance of forecasting the required inventory, availability of physical space, and carrying cost of those inventories in order to regulate the planned course of production against the random

fluctuations, or shortage of materials or goods. Lawrence (2013) states that inventory management are a vital function of every organization which ensures overall success of manufacturing and distributing companies.

Accordingly, Ellram (1996) suggested that, in ascertaining the abilities of a firm to meet its target objectives, the following inventory fallouts are used namely, high levels of customer service, low inventory investment, optimum stock throughout and low costs. Though inventory control is one of the major segments in an organization that generates excessive expenses, it is still needed to ensure that the business has the appropriate amount of goods at the right time to avoid stock-outs, prevent shrinkage, and to provide proper accountings (Khan, 2003).

In this study, inventory control systems are defined as measures that ensure the optimum investment in inventory in order to meet customer service and achieve organizational sales objectives. Profit is a critical objective which supermarkets seek to achieve. To achieve the organization profit objective, inventory must be kept at an optimum level. One of the problems faced by firms including supermarkets is that of making enough profit by controlling its inventory requirements. This study was therefore undertaken to determine the extent at which inventory control systems will impact on profitability of supermarkets in Port Harcourt, Rivers State. Pursuant to this objective, the following hypotheses were formulated for the study;

Ho1: There is no significant relationship between vendors managed inventory and profitability.

Ho2: There is no significant relationship between just-in-time inventory and profitability.

Ho3: There is no significant relationship between material requirement planning and profitability.

[Theoretical Review](#)

Two theories have been employed to bring clarification to this study on inventory control systems and profitability of supermarkets in Port Harcourt. Drawing on contingency theory and lean theory, this study was inclined to believe that inventory control systems influence profitability of supermarkets.

[Contingency Theory](#)

The hallmark of the Contingency theory is that managerial behavior is dependent upon the elements or contingencies of a situation and it focuses on how external environmental factors impact the behavior of an organization (Jaja and Obip, 2005, Jesmin and Hul, 2012). In Nigeria, the business environment is dynamic, with the attendant volatile political climate which impacts on businesses one way or the other. The economic, technological and socialcultural environment are not left out, each posing challenges that the average manager must grapple with situationally or on the basis of contingency (Jaja and Obip, 2005). By implication, changes in the business climate can affect the operations of the organizations making the manager to resort to contingency in managing his inventory.

[Lean Theory](#)

In the view of Ohno (1988), lean production is a system of organizing production processes in the most efficient and effective manner. According to Arfmann, Federico,

and Topolansky (2014), lean is a production practice that aims at minimizing waste along the entire value streams and creates more value for customers and maximizes profit for the shareholders through elimination of resource which doesn't add to customer value.

The major reasons behind the introduction of lean are to reduce the rate of wastages during production process and to increase value for the customers. Inventory control systems are aimed at eliminating or reducing waste which is in agreement with Lean concept principle.

[Empirical Review Vendor Managed Inventory \(VMI\) and Profitability](#)

Vendor managed inventory exist when the vendor is allowed to initiate orders on behalf of the customer (Gumus, Jewkes, and Bookbinder, 2008). Bailey, farmer, Barry, Jessop and David (2008) defined vendor managed inventory as all related activities that gives the manufacturer an exclusive right and responsibility to discharge inventory control functions as well as manufacturing. VMI is the binding force that integrates the manufacturers and retailers and provides a real platform to determine demand (Mogere et al, 2013). The essence of vendor managed inventory is specifically for the supplier to assume full operational responsibility of ensuring that the required number of stock is maintained at the lowest possible cost (Baily, Farmer, Barry, Jessop, and David, 2008).

The idea of VMI system was developed to meet the requirements of large retailers such as (Wal-Mart, Kmart, Target, and Sears) who worked closely with their suppliers to develop demand responsive strategies designed to lower their retail

inventory requirements. One of the key logistics function is customer service improvement. According to Wanjohi, Mugo and Wagoki (2013), Vendor managed inventory enables manufacturers or distributors to eliminate unnecessary stock outs, pilferage, damages and inconveniences arising from poor delivery system. In a VMI partnership, inventory replenishment decision is made by the supplier or the manufacturer depending on agreed terms.

According to Schmidt (2010) VMI is a mutual arrangement between a vendor and a buyer which gives the vendor the right and authority to manage inventory for the buyer. VMI provides the vendor with an ample time and opportunity to plan and execute production arrangements, make goods available at the right time and at most convenience place for customer satisfaction (Claassen et al, 2008). In vendor managed inventory, the supplier takes charge of the inventory management of products and manages the replenishment process based on the consumption pattern of the consumer (Samuel and Ondiek, 2014).

In VMI, the manufacturer is given the responsibility for monitoring and controlling inventory at the retailers distribution center and in some instances at the retail store level as well (Samuel and Ondiek, 2014). They noted that under VMI, specific inventory targets are agreed and it is the responsibility of the manufacturer to ensure that suitable inventory is available. Borade and Bansod (2009) argue that to increase profit level and enhance forecast accuracy, there must be a continuous interaction between supply chain partners along with availability of right kind of information at the right time. When agreement has been reached, it becomes the

responsibility of the vendor to deliver based on the terms of the agreement and most importantly, the vendor must ensure the maintenance of service level, and dispatch of needed goods (Waller et al., 1999).

Nachiappan et al (2005), argue that "VMI is essentially a distribution channel operating system whereby the inventory at the distributor/retailer is monitored and managed by the manufacturer/ vendor". Disney and Towill (2003) see VMI as "a supply chain strategy where the vendor or supplier is given the responsibility of managing the customer's stock". Instead of just putting more pressure on suppliers' performance, VMI is adopted as a solution that delivers faster and more accurate inventory control. In a similar vein, Kaipia et al., (2002) views VMI as a system that equips the supplier with both responsibility and authority to manage the entire replenishment process of a firm.

VMI has the capacity to benefit all parties in the supply chain equation from improved service level to to profitability due to its nature of information partnership of all parties involved (Didsney, Potter, and Gardner, 2003, Waller et al., 1999, Dong and Xu, 2002, Hall, 1998, Lee and Tang, 2002; Lee and Whang, 1999 and Metters, 1997).

Many other scholars are of the view that VMI supports profitability, improves efficiency, increases sales and reduces costs (Kulp et al. 2004, Angulo et al.2004, Turhan and Vayvay, 2012).

[Just-in-Time Inventory \(JIT\) and Profitability](#)

There are several success stories associated with JIT inventory, especially in developed countries and in large businesses especially where there are dependable transportation

and electronic information system enabling information sharing between the parties involved in the supply chain continuum (Musara, 2012). According to Musara (2012, Kaneko and Nojiri, 2008),It is widely recognized that Japanese just-in – time (JIT) inventory system has the least-cost production control tool that reduces the cost associated with keeping inventory and also, reduces manufacturing lead time. The JIT system is a philosophy of overall continuous improvement that makes inventory available at the appropriate time and this has achieved desired results in countries like Japan, USA, Germany etc by reducing lead time, eliminating wastages and ensuring speedy delivery of inventory making the system popular in recent times with the Toyota Motor boost in 1970 being a good example. The closeness and coordination of production facilities is apt to successfully implement this system, since this enhances party's cordial relationships (Coyle et al, 2003, Wanjohi, Mugo, and Wagoki, 2013, Duclos, Siha and Limmus, 1995, Ebitu, 2014).

Rao and Scheraga (1988), Schonberger (1982), Miller (2010), (Monisola, 2013), Kaynak and Pagain (2003), Kaneko and Wojiri, (2008), (Adeyemi, 2010) and Ogbo, Onekanma and Ukpere (2014) argued that "JIT achieves the following, increased productivity, reduced cost of keeping excessive inventory, elimination of waste, improved profitability, and better transparency in an organization. It also ensures competitiveness.

A number of other benefits of JIT include lower inventory investment, maximum output with minimum inventory, large space savings, quality assurance, proper integration of operations, reduced uncertainty and irregularity and customer

satisfaction (Wilkinson, 1989, Sage, 1984, Fullerton and McWatters (2001, Salehi and Alipour, 2010, (Ozpolat, Dresnor and Yoa, 2008, Shafi, 2014, Singh and Singh, 2013, Kootanaee, Babu and Talari (2013, Lai and Chang, 2009, Mahesh and Laelyn (2014).

Material Requirement Planning (MRP) and Profitability

According to Oladokun and Olaitan, (2012), materials requirement planning is a computer based production planning and inventory control system which is concerned with both production scheduling and inventory control. MRP has been one of the productivity tools used by industries in the developed economies to create competitive advantage in the global economy. This position is supported by Schuster et al (2002), Chase, Jacobs, and Aquilano (2004), **Rushton, Phil, and Baker (2011)**, Akindipe, (2014), Mabert, (2007) material requirement planning is closely related to just-in-time method of inventory control system.

MRP is a computer based system that schedules inventory and achieves efficiency in the production and distribution process. It's success is determined through better inventory turnover, better delivery lead time, increasing percent of time meeting delivery promises, reducing percent of order requiring "split" because of unavailable material among other criteria (Ghobbar and Friend, 2004, Sagbansua and Alabay, 2010, Anderson and Schroeder 1984).

The essence of MRP is to monitor and improve on manufacturers' or sellers' functions of production scheduling execution and effective management of materials thereby achieving business profit (Mathuwa, 2013, Mogere, Oloko and

Okibo, 2013, Akindipe, 2014, Inyang, Inyang and Basil, 2013).

Profitability

Profit is the primary goal of all business ventures. Profitability is defined as the state or condition of yielding a financial profit or gain using income and expenditure. It can be influenced by revenue through price (Hofstrand, 2009, Ogbadu (2009). Lysons (1996) posit that storage and handling of materials increases the cost on inventory control which reduces profitability of the firm. In other words, for a firm to increase its profitability there must be a reduction in the number of inventory.

Capkun, Hameri and Weiss (2010) concluded that, a positive correlation exists between inventory management and operational gains. They argued that inventory management has a direct and positive association with financial performance. According to Ashok (2013), the survival and long term profitability of a firm depends largely on the management of inventories. It also noted that the survival and overall performance of any business lies on the ability of the firm to effectively manage receivables, inventory and payables. The importance of this assertion is considered from both liquidity and profitability point of views.

Sekeroglu (2014) in his study argued that there is a positive relationship between inventory management and profitability. He noted that if a firm sustains their inventory management policies effectively, their profit will increase. The main objective of inventory management is to minimize the total cost on inventory investment to ensure profitable operations (Lynch, 2005) as well as maximize the customer service level (Eckert, 2007).

Methodology

The purpose of this study is to determine the extent of the relationship between inventory control systems on profitability of Supermarkets in Port Harcourt. A quasiexperimental design involving the use of questionnaire was adopted in this study. The research setting was non-contrived and both primary and secondary data were used. The population of the study was the four hundred and four (404) registered supermarkets operating in Port Harcourt out of which ten (10) of the population was considered a representative sample of 40 supermarkets wherein the manager/supervisor, one cash officer and one and one sales person was selected as sample elements by way of Judgment sampling. This gave a total of 120 respondents. Out of the 120 copies of the questionnaire distributed, 100 were retrieved and duly completed. Pearson's correlations was adopted for data analysis after a validation of the instrument through a pilot test. Reliability of the instrument was tested using the Cronbach's Alpha which gave a threshold of 0.7.

Results and Discussion

H₀₁: There is no significant relationship between Vendor-Managed Inventory and Profitability.

The correlation analysis was conducted on the above hypotheses and the results revealed a significant and positive association ($r = 0.79$, $p\text{-value} = 0.00$). Thus, the null hypothesis was rejected. The correlation was very strong in strength. Higher level of vendor managed inventory was associated with higher levels of profitability.

H₀₂: There is no significant relationship between Just-in-Time Inventory and

Profitability

A correlation analysis was conducted on the above hypotheses and the result revealed a significant and positive association ($r = 0.75$, $p\text{-value} = 0.00$), therefore the null hypothesis was rejected. The correlation was strong in strength. Just-in-time was associated with profitability.

H₀₃: There is no significant relationship between Material Requirement Planning and Profitability

A correlation analysis on the above hypotheses and the results revealed a significant and positive association ($r = 0.79$, $p\text{-value} = 0.00$). Therefore, the null hypothesis was rejected. The correlation was strong in strength. High level of material requirement planning leads to increase in profitability.

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

Conclusion

Given the findings of this study, the researcher concluded as follows:

Inventory control is a determining factor of the success or failure of any marketing firm. Inventory is the stock of goods held by a firm for its business operations. Achieving efficiency and effectiveness is dependent on the level of inventory control system implementation. Keeping excess inventory is costly, because the financial resources and space invested would have been channeled into other key areas of the organization. However, inadequate inventory can also lead to short down of operations or delays in filling customer orders. Inventory control systems therefore

will assist firms in balancing between too much and too little inventory.

That inventory is one of the critical aspects of production processes in a firm that ensures optimal production is achieved cannot therefore be over-emphasized.

Vendor Managed Inventory, Just – in – Time Inventory, and Material Requirement Planning are all vehicles that aid effective control of inventory in the supermarkets in Port Harcourt. Profitability was one of the challenges identified in this study that supermarkets in Port Harcourt are facing; this can be tackled by reducing cost associated with keeping excess inventory. This study therefore concludes that inventory control systems affects profitability of supermarkets in Port Harcourt.

Implications of the Study

This study provides an insight into supermarket firms and how to improve their profitability through proper inventory control systems. From the study, one can infer that adopting dimensions of inventory control systems outlined here can enhance supermarkets profitability.

Secondly, this study has increased the hunger for further academic research on inventory. To be a leader and strategically positioned in the ever changing supermarket sector where customers orders most time depend on income, seasons and age, a complete understanding of the most appropriate inventory plan offers a better strategy to manage out-of-stock situations.

Recommendations

This study recommends that:

- I. Supermarkets in Port Harcourt should introduce just – in- time inventory system to avoid wastages and deliver customers' orders on time.
- ii. There should be the introduction of vendor managed inventory to avoid out of stock situations
- iii. Material requirement planning should be implemented to ensured appropriate stock level of all products to avoid shortages or oversupply.

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