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# The Impact of Inventory Management and Control in the Manufacturing Company

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**ABSTRACT:** This study examines the impact of inventories control and management on manufacturing companies with particular emphasis on some manufacturing company in Nigeria. The aim of this study is to investigate and ascertain areas of lapses by the company and offer effective ways and solutions in which the manufacturing company can explore the services of inventory management to have impact on its objectives. In carrying out this study, various research instruments such as questionnaires and oral interview were used to collect data from respondents and a research design was also adopted. The statistical tool used for this work is Chi-square. Based on the analysis, it was discovered that inventory management plays a vital role in the manufacturing company. A well functional inventory management following the recommendations can bring about proper management thereby enhancing proper and effective production and it will equally ensure the effective, efficient and adequate use of materials and resources in the manufacturing company.

**KEYWORDS:** Inventory, de-compling, Policy, Manufacturing.

## I. INTRODUCTION

Inventory is one of the resources that are managed by business organizations and it was first recorded in 1601. The need for inventory control cannot be overemphasized as it is a means for improving the performance of manufacturing industries. Inventory can be defined as a record of a business current assets including property owned, merchandise on hand and the value of work in progress and work complete but not sold and it is classified as a current asset because it can be turned into liquid cash within a short period of time.

Inventory plays a major role in the operation of many businesses and manufacturing companies. In manufacturing, inventories of raw materials allow companies to operate independently of their sources of supplies. Day to day operation not dependent on deliveries from supplies since stock of the necessary materials are maintained and used as needed. Without inventory control, millions of naira could be lost year because of non accountability of stocks and inaccurate checks and balances. The process of control and management of inventory is a very important factor in the success or failure of any business for example; little stock will result in stock out which will disrupt the production distribution cycle that is crucial to the survival of all manufacturing companies while too much stock will tie down the resources of a company. Poor or inadequate inventory management can present a serious challenge to the productive capacity of a manufacturing organization. In addition to raw materials and finished goods, many companies also maintain items of assets, property, inventories of work in progress, office supplies, business firms and general operation supplies.

### 1.2 Statement of the Problem

The following problem was identifiable in the some organization use as case study which retains the desire to embark on this research.

i. Lack of Continuous arrangement of flows of material

This is the major problem of the organization, the operation of continuously arranging flow of materials so that stock balances are adequate to support the current rate of consumption with due regard to economy is unavailable.

ii. Low Increment in cost of goods sold

Inventory management and control system is the only measures for lowering cost of goods. Since they is absent of inventory management and control system, increase in cost of goods sold become obvious.

iii. High amount of obsolete and unsold product

### 1.3 Objectives of the Study

The major objective of this study is to determine of the effectiveness of inventory management in a manufacturing company. **The specific objectives of this study are as follows:-**

- i. To provide a dependable solution to the problems in the manufacturing company.
- ii. To find out the impact of inventory management and control system in purchasing and supply of inventory in the manufacturing company.
- iii. To uncover what inventory management and control system is all about.

#### 1.4 Research Hypothesis

##### Hypothesis 1

1. Ho: There is no relationship between inventory management and control system in manufacturing company
  - H1: There is a relationship between inventory management and control system in manufacturing company?
2. Ho: Inventory management and control system has no positive impact on the performance of a manufacturing company?
  - H1: Inventory management and control system has positive impact on the performance of a manufacturing company?
3. Ho: Inventory management and control system does not help organization to be more profitable?
  - Inventory management and control system help organization to be more profitable?

## II. LITERATURE REVIEW

A truly effective inventory management system will minimize the complexes involved in planning, executing and controlling a supply chain network which is critical to business success. The opportunities available by improving a company's inventory management can significantly improve bottom line business performance.

### 2.1 Concept of Inventory

Inventories are vital to the successful functioning of manufacturing and retailing organizations. This is because many companies hold inventories as part of their business operation. Inventories make up the most significant part of current assets of most companies especially the manufacturing companies. The need for management to ensure inventory control if properly managed cannot be over emphasized. A firm neglecting inventory management will be jeopardizing its long run profitability and it may end up failing in its business. The definition of inventory has been defined by many professional bodies and scholars in different ways.

The Microsoft Encarta premium defined it as the quantity of goods and materials on hand. A manufacturer's inventory represents those items that are ready and available for sale.

According to Nwaorgu (2005:123), inventory can be defined as a tangible property held to resale in the ordinary course of business, in the production for sale, to be consumed in the production of goods and services

According to Jain (1999:472), inventory is the aggregate of these items of intangible property which are held for sale in the ordinary course of the business, held in the process of production for such sales to be currently consumed in the production of goods and services to be made available for sale.

### Types of Inventory

- i. Raw Materials: Raw materials are the materials a company uses to create and finish products. When the product is completed, the raw materials are typically unrecognizable from their original form, such as oil used to create shampoo.
- ii. Components: Components are similar to raw materials in that they are the materials a company uses to create and finish products, except that they remain recognizable when the product is completed, such as a screw.
- iii. Work In Progress (WIP): WIP inventory refers to items in production and includes raw materials or components, labor, overhead and even packing materials.
- iv. Finished Goods: Finished goods are items that are ready to sell.

### What Is Manufacturing Inventory?

In manufacturing, inventory consists of in-stock items, raw materials and the components used to make goods. According to Abby Jenkins Manufacturers closely track inventory levels to ensure there isn't a shortage that could stop work. Accounting divides manufacturing stock into raw materials, WIP and finished goods because each type of inventory bears a different cost. Raw materials typically cost less per unit than do finished items.

### What Does Inventory Mean in the Service Industry?

According to Abby Jenkins Every company has stock that supports its regular business. For service companies, this inventory is intangible. A law firm's inventory, for example, includes its files. Paper on which to print legal documents is the firm's MRO.

### 2.5 Reasons for Inventory

There are many reasons why organizations maintain inventory of goods. The fundamental reasons for doing so is that it is either physically impossible or economically unsound to have goods manufactured whenever they are demanded for, without inventory of goods, customers would have to wait until the goods they ordered for are manufactured.

There are some other reasons for keeping inventory, they are; the fluctuating nature of price of raw materials may make an organization stock up inventory of raw materials when price is low, it is good and profitable for an organization to buy in large quantity and keep it in inventory so it can last through high price seasons.

According to Morgan (1960), the reasons for inventory are as follows:

- i. To give customers assurance of availability
- ii. To handle production variations.
- iii. To provide customer service in the face of sales fluctuation and other problems.
- iv. To await shipment to fill unexpected orders.
- v. To allow for batch production.
- vi. To provide raw materials storage.
- vii. To keep storage equipment operational
- viii. To protect against strike and work stoppages
- ix. To be ready when unforeseen circumstances occur.

According to Pandey (2002:885), a company should maintain adequate stock of material for an interrupted production for customer's supply.

The following are reasons for inventory:

To take advantage of seasonal fluctuations in price and price will be minimized by having inventories of raw materials.

- i. To take advantage of price discounts when orders are placed in large quantities.
- ii. To allow firms to meet orders that are placed in spite of temporary unexpected fluctuations in the rate of output.

### 2.6 Inventory Control

Control in management is the activity of determining whether resources have been provided and production carried out in accordance with plan and where this is not the case, taking corrective action is needed. Control is the process of instituting procedures and obtaining feedback as needed to ensure that all parts of the organization are functioning effectively and moving towards the overall company's goals.

Inventory control can be defined as an inventory policy designed to obtain right quantity and right quality of raw materials at the right places. It can also be defined as the system used in the firm to control a firm's investment in stock. It includes the recording and monitoring of stock levels, forecasting future demand and deciding when and how many to order. Nweze (2004:423), defined inventory control as the means of ensuring that actual flow of inventory in an organization conform to plan. Ezeani (2008:25), defined inventory control as the techniques used by store managers to ensure that materials are made available when they are needed in the quantity, quality and price that they are needed without the risk of stock out and over stocking.

However, for inventory control to be effective there must be a plan which is the development of objectives in an organization and preparation of various budgets to achieve these objectives. Planning of inventory is very essential in an organization. A firm should be able to determine its optimum level of investment in inventories. This situation can only be possible when the company ensures that stocks are sufficient to meet the requirements of production and sales, and the company must avoid holding surplus inventories that are unnecessary because it increases the risk of obsolescence. Against this, a company cannot afford loss of sales because of insufficient inventories and at the same time, it is expensive to have more inventories on hand than necessary.

### 2.7 Purposes of inventory control

The following are the purposes of inventory control:

- i. To minimize cost
- ii. To maximize profit



- iii. To maximize the return on investment.
- iv. To avoid running out of stock.
- v. To prevent surplus stock that are unnecessary
- vi. To keep inventory with an available storage capacity.
- vii. To control capital investment in order to avoid mismanagement and misappropriation of funds.
- viii. To maximize sales.

## 2.8 Inventory Model

The real need for the analysis was recognized by industries by which items were produced in lots and the stored at a factory warehouse.

Formulas were obtained which was known as the simple lot size formula and it was further developed by dependent authors, but the most widely accepted formula is the fixed order quantity system referred to as the Wilson formula since it was derived as an integrated part of the inventory control scheme which was sold by him to many organizations. In this system, the re-order quantity is fixed and the re-order is placed for quantity whenever the inventory is hand drops to the re-order point. Another model was later introduced and it is known as the “replenishment system”. In this system, the re-order date is fixed and the re-order quantity varies depending on the inventory on hand.

## 2.8 Methods for Valuing Inventories

This paper will highlight some of the methods used in valuing inventories.

### i. First in first out (FIFO)

According to IvyPanda. This is an inventory method that is used to value stock based on the assumption of first in first out. Stock that is purchased first is the one that is issued first. The price of the inventory issued is determined by the price of the first stock. In addition, the value closing stock is done at the latest cost. This method ensures that the closing stock value reflects the latest cost (Khan & Jain, 2008). Thus, it reflects the current market values relating to the product of an organization. What is more, this method is accepted by many tax authorities because of its consistency with accounting concepts. For instance, it complies with accounting principles such as IAS and IFRS.

### ii. Last in first out (LIFO) method

Here, the stock purchased last is issued first. This method expects stock valuation to be based on the price ruling on the acquisition of the preceding stock. This has seen its application and acceptance by many tax authorities (Epstein, Nach & Bragg, 2009). Besides, this method shows consistency with the accounting practice.

### iii. Weighted Average Method

This method applies the concept of weighted average to facilitate valuation of stock. It encompasses recalculation of the issue price after receipt of each stock. It also takes into account the quantities and the money of the stocks received. In fact, stock used, or unused is determined by the average price per unit. The average price per unit is calculated by taking the total value of the stock and dividing it by the available units.

### iv. Specific Identification Method

Here, materials issued are priced at their actual acquisition price. Thus, it involves the classification of each lot purchased by the organization. This method is straightforward but, time-consuming (Porter & Norton, 2011). It requires staff at the store to keep tags on the stock so that identification is easy.

## 2.9 Economic Order Quantity

The optimum order may be determined by the costs that are affected by either the quantity of inventories held or the number of orders placed. There is a problem of minimizing the cost of holding inventories and the cost of ordering inventories at the same time because if more units are ordered at one time, then few orders will be required within the same period of time and this will mean a reduction in the ordering costs. However, when few orders are placed, large average inventories must be maintained and this will mean an increase in the holding cost.

The aim of inventory planning is to ascertain the most efficient way to minimize the total cost of ordering and the holding cost and the model that minimizes the combined cost is the economic order quantity which was originally

formulated in 1915 by F.W.Harris.

Economic order quantity can be described as the ideal order size that is the size of an order for goods that minimizes the sum of shipping, handling and carrying costs.

Ezeani (2008) defined economic order quantity as the amount of materials to be ordered at one time. It is defined as the quantity of inventory item to order so that inventory costs are minimized over the firm's planning period. Olowe (2008), defined economic order quantity as the optimal ordering quantity for an item that will minimize cost.

However, Horngren (2007), wrote that economic order quantity model is a decision model that calculates the optimal quantity of inventory of items ordered under a given set of assumptions:

Assumptions of Economic Order Quantity According to the Horngren (2007)

The demand for the item is certain, continuous and constant over time.

The same quantity is being ordered at each re-order point.

The lead time is known and fixed and the delivery time is instantaneous.

The purchase price of the item is constant, that is no discounts is available for bulk purchases.

The inventory is replenished immediately as the stock level gets to zero.

No stock-out occurs

The per unit holding cost and the ordering cost are constant within the range of the quantities to be ordered.

### Inventory Accounting System

Store accounts facilitates materials cost in two ways. They provide prices by which any particular items can be calculated. Secondly, a comparison of the total value of materials charges to various activities provides a check that all the materials have been properly costed.

An effective inventory accounting system facilitates the provision of relevant inventory data to the management in determining the amount of inventories at the end of each accounting period and it minimized efforts used in data processing. Accountants are needed in inventory management because of the important role of the inventory accounting system in inventory management. The accounting system provides useful and accurate figures to managers for adequate inventory management. It also gives useful advice on the actual quantity of stock valued. The accounting system gathers and transmits data to the inventory managers to enable him carry out his duties effectively and efficiently.

## III. METHODOLOGY

Our research objective is to examine the impact of inventory management and control in the manufacturing company in Nigeria. The research design adopted in this work is the survey design method which comprises of the use of questionnaires and oral interviews. The population of a study is that group about whom we want to be able to draw conclusion (Asika, 1991). The population of the study comprises of staffs of selected manufacturing companies. We expect that these groups will be able to provide knowledgeable information that will be relevant in achieving the study objectives. The data collected was analyzed using simple. The results of the questionnaires were analyzed by the use of tables. The simple percentages used were computed and findings were presented, discussed and interpreted. The chi-square ( $\chi^2$ ) is used in testing the hypothesis.

The chi-square ( $\chi^2$ )

The chi-square ( $\chi^2$ ) is one of the standardized statistical distributions used in hypothesis testing. It was developed in 1930 by Karl Person. It enables one to know whether the discrepancy between the actual outcomes and the expected outcomes could be observed reasonably. This is to determine if the observed outcome can be attributed to chance.

The formula for chi-square is represented as:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where  $\chi^2$  = Chi-square

E = Expected value

O = Observed value

The degree of freedom is gotten from the rows and columns of a contingency table. It is given by the number of rows minus one, multiplied by the number of columns minus one.

DF = (R-1)(C-1) or n-1 as the case maybe. The hypothesis will be at the 95% level of confidence that is 5% error limit which is 0.05.

#### IV. PRESENTATION AND ANALYSIS OF DATA

##### Presentation and Analysis of Data According to Test of Hypotheses

###### *Hypothesis One*

**H<sub>0</sub>:** There is no significant relationship between low productivity and poor inventories management.

**H<sub>1</sub>:** There is a significant relationship between low productivity and poor inventories management.

Table 4.1.1

OPTIONS	Frequency	PERCENTAGE %
Yes	30	75%
No	10	25%
Total	40	100%

TABLE 4.1.2

Computation of  $\chi^2$  for hypothesis one

RESPONSE	OBSERVED	EXPECTED	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
Yes	30	20	10	100	5
No	$\frac{10}{40}$	20	-10	100	5

$$D.F = (R - 1)(C - 1)$$

$$= (2 - 1)(2 - 1)$$

$$= 1 \times 1 = 1$$

$$D.F = 1, \text{calculated } \chi^2 = \frac{(O-E)^2}{E} = 10$$

E

Critical  $\chi^2 = 3.841$  at 0.05 error limit less than the calculated value of 10 therefore, we reject the null hypothesis and accept the alternative ( $H_1$ ) hypothesis which state that there is a significant relationship between low productivity and poor inventories management.

###### *Hypothesis Two*

**H<sub>0</sub>:** There is no significant relationship between proper inventory policies and productivity in a manufacturing company.

**H<sub>2</sub>:** There is a significant relationship between proper inventory policies and productivity in a manufacturing company.

Table 4.2.1

OPTIONS	Frequency	PERCENTAGE %
Yes	35	87.5%
No	5	12.5%
Total	40	100%

Table 4.2.2

Computations of  $\chi^2$  for hypothesis two

RESPONSE	OBSERVED	EXPECTED	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
Yes	35	20	15	225	11.25
No	5	20	-15	225	11.25
	40				22.50

$$D.F = (R - 1)(C - 1)$$

$$= (2 - 1)(2 - 1)$$

$$= 1 \times 1 = 1$$

$$D.F = 1, \text{calculated } \chi^2 = \frac{(O - E)^2}{E}$$

Critical  $\chi^2 = 3.841$  at 0.05 error limit less than the calculated value of 22.50 therefore, we reject the null hypothesis ( $H_0$ ) and accept the alternative hypothesis ( $H_2$ ) which states that there is a significant relationship between proper inventory policies and productivity in a manufacturing company.

## V. DISCUSSION OF FINDINGS

The instrument used for data collection was questionnaires which were subjected to reliability and validity before it was being administered to the respondents.

The sample size used for this study was 52 out of 500, using a systematic random sampling. However, having analyzed the data the following are the findings which were deduced from this study:

It was discovered that some of the company makes use of replenishment model and the re-order date is not fixed rather, minimum and maximum levels are set. When stock is depleted to the minimum level, an order for replenishment is placed to bring the stock to the maximum level. It was also discovered that the company monitors the stock levels through the perpetual stock taking methods so that they can know when to re-order for stocks.

## VI. CONCLUSION

During the course of the study on the effectiveness of inventory management in a manufacturing company, it was discovered that inventory is the bedrock in the existence of any manufacturing firm and effective management of inventory will lead to effective control of the organization. However, whatever system or technique of inventory management, it must be channeled towards the reduction of stock to the barest minimum. These inventory techniques should be monitored to ensure its effectiveness. Therefore, from the results of the data analysis it is right to conclude that inventory management has not been very effective in manufacturing company and this is as a result of the fact that inventory policies are not strictly adhered to. Therefore, efforts are needed to be made in order to improve on these present situations.





## VII. RECOMMENDATIONS

Inventory is a necessary evil that every organization would have to maintain for various purposes. Optimum inventory management is the goal of every inventory planner. Over inventory or under inventory both cause financial impact and health of the business as well as effect business opportunities.

The company should employ the economic order quantity method when placing orders. The economic order quantity model puts into account the relevant costs associated with ordering and carrying inventory. Every business organization aims at reducing cost to the barest minimum and one of the avenues by which this could be achieved is adopting the economic order quantity method of placing order. Sufficient stock should be held in order to avoid stock-out so that when the ordering level is high; there will be enough stock to be delivered.

The flow of information should be increased and should be circulated adequately in order to enhance adequate updates of inventory records.

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