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CERTIFICATION

We, the undersigned hereby certify that this research work titled ***"appraisal of inventory management and control in construction firm"*** a case study of Setraco Nigeria Limited, was carried out by **IDEMUDIA JESSICA ISOKEN** with Matric No: **SBS/6041831698** in the Department of Business Administration and Management, School of Evening Studies, Auchi Polytechnic, Auchi.

We certify that the work is adequate in scope and content in partial fulfilment of the requirements for the award of Higher National Diploma (HND) in Business Administration and Management.

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DEDICATION

This work is dedicated to God Almighty.

ACKNOWLEDGEMENTS

My sincere appreciation goes to God Almighty from whom all blessings flow and to whom knowledge and understanding belong.

I appreciate the effort of my project supervisor: Dr. Eshiotses, S.G who took his time to read through my project work from the beginning to the final stage.

My gratitude also goes to my Parents: Mr and Mrs Idemudia who has always been my backbone in life, may God keep on blessing you.

I also wish acknowledgement my siblings: Jennifer, Destiny, Liberty and my cousin: Vera, Mummy Iwinosa, Vivian, Bros Denison Osasere, Iyen Efosa for their prayers and supports, God bless you.

My gratitude also goes to my friend: Prudence, Sonia, Bella, and to my boss Mrs. Erica Odia, Faith and Joe may God bless you and grant all your heart desire. Amen

Enormous thanks goes to my fiancé: Godfrey Osabouhien Ugbo, thanks for being there for me.

Finally, special thanks go to *Mr. Online* (George Ehimare) for proper manuscript of this work. God bless you all.

ABSTRACT

The study examine appraisal of inventory management and control in construction firm, using Setraco Nigeria limited as a case study. The specific objectivity of the study is to examine the effectiveness of various tools and techniques (economic order quantity or economic batch quantity) used by construction firms in inventory management. In carrying out this research work relevant literature on inventory management and control was being consulted. Information was gathered with the use of questionnaires and relevant information was collected from books relating to the topic. Having gathered the relevant data, the researcher employs table and their associated percentage, chi-square (X^2) hypothesis was used to actually reflect in calculating the hypothesis. The findings reveal that the techniques of inventory management adopted in setraco Nigeria limited are not effective in the organization. In the flash of the above findings, we therefore recommend among others that organizations should employ fixed order quantity system of inventory control as a sure way of actualizing organizational inventory management objective.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The Survival of any business concern depends on the ability to effectively manage and control its inventory. The inability to achieve this feat has caused the failure of many industries. Inventory, therefore, plays a central role in any business organization. It is the main reason for continuous existence of any business organization mostly those in construction sector. Generally, inventory control, as a management tools, is the method or methods employed in maintaining detailed lists, showing quantities and values of raw material works – in – process and finished goods held in warehouse stock. (Anichebe & Agu, 2013).

However, many management practitioners and authors have various definitions of inventory control and management. For instance, Johnson (2014) defined inventory management as the use of various techniques to optimize the level of all types of stocks, raw materials, work - -in – process and finished goods.

They observed that inventory management and control takes into consideration the following factors:

- Sales forecasts
- Economics batche technique
- Production planning
- Plants and equipments control and son on

From another perspective, Lewis, (2013) sees inventory management and control as a science- based art of ensuring that just enough inventory or stock is held by an organization to economically meet both its internal and external demand commitment. As an essential component of any organizational system, Lucey (2017) observes that boundary of inventory management and control should encompass the various elements which must work harmoniously for the achievement of the system's objective. In addition to this, Fedire (2011) notes that the ideology of material management extends from an integrated approach to planning, acquisition, conversion, flow and distribution of production material stages to the finished goods stage. Several statistics clearly point out the current significance of the inventory control function. A study of corporate balance sheet shows that a firm's inventory commonly constitutes from 15 to 25 percent of its invented capital (Imaga, 2016). He emphasized the cost element

because the central objective is to ensure that a minimum of residual stock is maintained while incurring the least possible cost.

1.2 Statement of the Problem

According to Chase (2009), Inventory plays an essential role in any organization. The larger the inventory size the easier it is to reduce cost of purchasing, construction and shipping as well as providing prompt customer services. However, a larger inventory stock requires a higher investment of money, higher carrying cost such as storage handling risk of obsolescence and data processing. These costs must be balanced off against any advantages in holding inventory. To what extent has Setraco Nig. Limited, Auchi tried to achieve this balance? What are the techniques of inventory management that are employed by the company in the pursuit of this equilibrium?

1.3 Objectives of the Study

The General objective of this is to examine the appraisal of inventory management and control in construction. The specific objective is to:

i. Examine the effectiveness of the various tools and techniques (Economic order quantity or Economic Batch Quantity) used by construction firms in inventory management.

ii. Ascertain the extent to which inventory control contribute to profitability in construction firms.

iii. To find out if inventory management has impacted on organization's performance.

1.4 Research questions

The study will be guided by the following research questions:

i. How effective are the various tools and techniques of inventory management in construction firms?
ii. To what extent has inventory contributed to profitability in construction firms?
iii. Has inventory management impacted on organization's performance?

1.5 Statement of Hypothesis

The under-stated hypotheses will be tested in the course of this study:

Hypothesis One

H_o: The techniques of inventory management adopted in Setraco Nig. Limited, Auchi are not effective in the organization's performance.

H_1: The techniques of inventory management adopted in Setraco Nig. Limited, Auchi are effective in the organization's performance.

Hypothesis Two

H_o: Inventory control has not contributed significantly to the net profit of Setraco construction organization.

H_1: Inventory control has contributed significantly to the net profit of Setraco construction organization.

Hypothesis Three

H_0: Inventory management does not have significant impact on Setraco construction company organization performance.

H_1: Inventory management has significant impact on Setraco construction company organization performance.

1.6 Significance of the Study

The significance of this study cannot be over-emphasized. It is significant because data so generated from the study are sufficient to expand further fields of knowledge. The study also, presents sufficient challenges to academics to increase their research interest in the field of knowledge. The government will also benefit from this research in the sense that they will learn of the efficacy of inventory management and control and how it contributes to the growth and development of an organization. This will therefore, make the government to encourage the adequate production and importation of raw material and spare parts. It will also help other organizations and even households to appreciate the benefits accruable

from the effective and efficient application and adoption of inventory management and control in the organization.

1.7 Scope of the Study

The scope of this study considers appraisal of inventory management and control in Setraco Nig. Limited, Auchi. Also, this study will consider inventory management systems, contributions of efficient inventory management towards profitability, material usage, cost minimization and economy of operation; and the effect of efficient inventory management for organizational growth and performance.

1.8 Operational Definition of Terms

Inventory: is a discipline primarily specifying the shape and placement of stocked goods. It is required at different locations within a facility or within many locations of a supply network to precede the regular and planned course of production and stock of materials.

Inventory management: is the management of inventory and stock. As an element of supply chain management, inventory management includes aspect such as controlling and overseeing, ordering, storages of inventory, and controlling the amount of products.

Product planning: is the ongoing process of identifying and articulating market requirement. Product planning serves as the basis for decision about price, distribution and promotion.

Sales forecasting: Is the process of estimating futures sales. Accurate sales forecasts enables companies to make informed business decision and predict short-term and long term performance. Companies can base their forecast on past sales data, industry- wide comparison, and economic trends.

Construction business: A construction business is any business that uses components or raw material to make finished goods. These finished goods can be sold directly to consumers or to other construction business that use them for making different products.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Concept of Inventory Management and Control

Inventory refers to the value or quantity of raw materials, supplies, work in progress (WIP) and finished stock that are kept or stored for use as need arises (Kwadwo, 2015). Raw materials are commodities such as steel and lumber that go into the final product. Supplies include items such as Maintenance, Repair and Operating (MRO) inventory that do not go into the final product. Work in progress is materials that have been partly fabricated but are not yet completed. Finished goods are completed items ready for shipment. Inventory management is the art and science of maintaining stock levels of a given group of items incurring the least cost consistent with other relevant targets and objectives set by management (Kwadwo, 2015). Inventory is the availability of any stock or resources used in an organization. An inventory system is the set of policies that controls and monitors inventory level and determine what level should be maintained, how large orders should be made and when stock should be replenished. Inventory control is the supervision of the storage, supply and

accessibility of items to ensure an adequate supply without excessive oversupply (Miller, 2016).

Anichebe and Agu (2016) opined that inventories are vital to the successful functioning of construction and retailing organizations. They may consist of raw materials, work-in-progress, spare parts/consumables, and finished goods. It is not necessary that an organization has all these inventory classes. But, whatever may be the inventory items, they need efficient management as, generally, a substantial share of its funds is invested in them. Different departments within the same organization adopt different attitude towards inventory. This is mainly because the particular functions performed by a department influence the department's motivation. For example, the sales department might desire large stock in reserve to meet virtually every demand that comes. The production department, similarly, would ask for stocks of materials so that the production system runs uninterrupted. On the other hand, the finance department would always argue for a minimum investment in stocks so that the funds could be used elsewhere for other better purposes (Anichebe & Agu, 2016 citing Vohra, 2021).

Inventories are basically stocks of resources held for the purpose of future production and/or sales. Inventories may be viewed as an idle resource which has an economic value. Better management of inventories would release capital for use elsewhere productively (Ghosh & kumar, 2013). Hence, inventory control

implies the coordination of materials accessibility, controlling, utilization and procuring of material. The direction of activity with the purpose of getting the right inventory in the right place at the right time and in the right quantity is inventory control and it is directly linked to production function of any organization. This implies that profitability of any organization directly and indirectly is affected by the inventory management system operated (Miller, 2016). Inventory of goods has many reasons why organization should maintain it. It is economically unsound and physical impossible to have goods arrive in a system exactly when demands for them occur. Without stock at hand customers would have to wait for long period before their orders are fulfilled.

2.1.2 Evaluation of kinds of inventories and methods of checking inventories

International Account standard (IAS 2) prescribes the accounting treatment on inventories, especially on measurement and recognition of inventories. According to IAS 2, Inventory is an asset held for sale in the ordinary course of business. It also includes asset in the process of production for such sale Work In Progress (WIP) or asset in the form of materials pr supplies to be consumed in the production process or in the rendering of services (raw materials).

Examples of Inventories

- Goods purchased and held for resale
- Finished goods produced.

- Work in progress being produced raw materials

According to IAS 2, inventory should be measured at the lower of cost and net realizable value. That is, the cost value of inventory should be compared with the net amount that would be realized from the sales of the inventory, and the lower value should represent the value of the inventory. This is to ensure that inventory must value at cost or below cost if net realizable value is less than cost.

Factors or reasons why net realizable value may be lower than cost value

- A physical deterioration in the condition of inventory.
- An increase in costs or a fall in selling price.
- Obsolescence of products.
- A decision as part of the company's marketing strategy to manufacture and sell products at a loss.
- Errors in production or purchasing

According to Idekwulim (2014), IAS 2 states that an entity should use the same method in measuring all its inventories having similar nature and use to the entity. For inventories with different nature or use, different valuation method may be justified. A difference in geographical location of inventories (and in the respective tax rules), by itself, does not justify the use of different valuation methods.

Some of these methods used to check inventories are the perpetual inventory control, actual counting method, look -it- over method, re-order level and periodic review methods, among others. Lucey (2017) states that the basic prerequisite is that stock movements (issue and receipts) are accurately recorded, and the most frequently used methods are bin cards, Stock record cards and perpetual inventory system. According to Nweze (2016), the two systems of stock taking are generally in use namely: Perpetual and Periodic. Perpetual inventory checking method is that in which complete data recorder are kept on each item of inventory and additions and subtractions are made with order or transaction. Here, there is an inventory balance plus a receipt of sale minus the actual sale to reflect the quantity at hand. Actual counting method is used to check inventories. It is used to actually count inventory, item by item. Looking it over method is such in which the items of inventories are not properly and actually counted from time to time and is always full of errors because it is hard to pinpoint the inventory levels, the item that need to be ordered, and that which the firm is overstocking.

2.1.3 Re-Order Level System

The re-order level system which is also called the two BIN systems is such in which a predetermined re-orders level of stock is set for each item of inventory. When the stock level falls to the re-order level, a replenishment order is issued. The replenishment re-orders quantity is at times economic lot size (Economic Order Quantity) (Agha, 2010). It should be noted that this method of checking

inventory is also called two BIN systems because the stock is segregated into two bins: Stock initially drawn from the first bin and a replenishment order issued when it becomes empty from the second bin. Most of the organizations operate the re-order level which triggers off the required replenishment order. The mathematical illustration bellows can help to show how re-order level system is used. An efficient organization uses the following data on a particular inventory to check its inventory levels; by using it, the maximum and minimum levels of inventory, the re-order level are determined.

Normal usage -220 units per day; Minimum anticipated usage -100 units per day; Maximum usage -280 units per day

Lead time 50-60 days EOQ (Economic Order Quantity)

(Previously calculated) -10,000 units

This is computed as follow:

Reorder level = Maximum usage × Maximum Reorder Period or Maximum usage ×Maximum Lead Time= 280 x 60 units = 16,800 units

This method of checking inventory has its merit which is the ability of being responsive to changes in demand and generates automatically replenishment order at the appropriate time by comparing inventory levels against re-order level.

However, where many different types of stock are used jointly for production, different items may reach re-order level at the same time thereby overloading the re-order system.

2.2 Inventory Management

One of the main functions of management in any system is the management of inventory; modern business organizations are increasingly aware of the impact of efficient inventory management in ensuring prompt, effective and efficient customer`s services that result to profitability. Inventory refers to the quantity of stock that kept stored for use as the need arises. It includes raw material, materials – in – process, finished products, component parts, supplies miscellaneous inventory's.

Inventory management pertains to the development and administration of policies concerning stock of inventory as well as the system and procedure by which they are implemented. The main objective of inventory management is to discover and maintain the optimum level of investment in the inventory.

According to Achison (2015), "inventory is the term for the quantity of stocks and / or its value and quality held by the authority in an organization. It includes the tangible material/assets, it comprises raw material all the items to be incorporated into the finished products, components, works in progress, finished items or saleable products that are stored for use as the need arises.

Inventory management is a system whereby the levels of supplies in stock are regulated to maintain quantities required without stock excess or stock deficiencies. It also involves techniques used to ensure that stocks are kept at levels that guarantee maximum “Stock control coverage analysis”. This can be done by making a quantitative assessment of likely “carry through” of intakes to minimize production. The techniques serve as a minimize production. The technique serves as a control mechanism with which the stocks balance is continuously up to date promptly.

2.2.1 Type of Inventories Managed in an Organization

Before going into detailed review of the literature specified under the above subject heading, we shall first examine types of inventory maintained in organizations:

(a) Raw material inventory: this refers to those units of input which have been purchased and stored for future production. They may be purely extracted materials; half- produced products, or completely produced ones which the form does not produce itself.

Their purpose to differentiate the production functions from the purchasing function so as to make the function independent of each other. That is, assuming there is a delay in the shipment of raw material, it does not cause any delay in the

production process in the event of delay in procurement of raw material by relying on its inventory.

(b) Work - in – process inventory: this consists of partially finished goods requiring additional work before they become complete finished goods

(c) MRO – inventory (maintenance, repair and operating) supplies: this consists of those consumed in the process of production, but which do not become parts of the product e.g lubrication oil, soap, machine repair parts, etc.

(d) Finished goods inventory: these are completed products ready for shipment as required by customers.

2.3 Theoretical Framework

2.3.1 Theory of Economic Order Quantity (Wilson EOQ):

Economic Order Quantity: Economic order quantity is the level of inventory that minimizes the total inventory holding costs and ordering costs. It is one of the oldest classical production scheduling models. The framework used to determine this order quantity is also known as

Wilson EOQ Model or ***Wilson Formula***: The model was developed by Harris in 1913. But still Wilson, a consultant who applied it extensively, is given credit for his early in-depth analysis of the model.

Assume that the demand for a product is constant over the year and that each new order is delivered in full when the inventory reaches zero. There is a fixed cost

charged for each order placed, regardless of the number of units ordered. There is also a holding or storage cost for each unit held in storage (*sometimes expressed as a percentage of the purchase cost of the item*).

An organization wants to determine the optimal number of units of the product to order so that it minimizes the total cost associated with the purchase, delivery and storage of the product.

The required parameters to the solution are the total demand for the year, the purchase cost for each item, the fixed cost to place the order and the storage cost for each item per year. It is notable that the number of times an order is placed will also affect the total cost; however, this number can be determined from the other parameters-

- The ordering cost is constant.
- The rate of demand is constant
- The lead time is fixed
- The purchase price of the item is constant i.e. no discount is available
- The replenishment is made instantaneously; the whole batch is delivered at once.

EOQ is the quantity to order, so that ordering cost plus carrying cost finds its minimum. (*A common misunderstanding is that formula tries to find when these are equal.*) Inventory models for calculating optimal order quantities and

reorder points have been in existence long before the arrival of the computer. When the first Model T Fords were rolling off the assembly line, manufacturers were already reaping the financial benefits of inventory management by determining the most cost effective answers to the questions of when? And how much? Long before Just In Time (JIT), total quality management (TQM), Theory of Constraints (TOC), and Manufacturing Resource Planning (MRP), companies were using these same (then unnamed) concepts in managing their production and inventory.

Corporate goals and strategies may sometimes conflict with EOQ. Measuring performance solely by inventory turns is one of the most prolific mistakes made in the name of inventory management. Many companies have achieved aggressive goals in increasing inventory turns only to find their bottom line has shrunk due to increased operational costs.

EOQ is essentially an accounting formula that determines the point at which the combination of order costs and inventory carrying costs are the least. The result is the most cost effective quantity to order. In Purchasing, this is known as the *order quantity*, in construction it is known as the *production lot size*. While EOQ may not apply to every inventory situation, most organizations will find it beneficial in at least some aspect of their operation. Anytime a firm has repetitive purchasing or planning of an item, EOQ should be considered. Obvious applications for EOQ are purchase-to-stock distributors and make-to-stock manufacturers, however,

make-to-order manufacturers should also consider EOQ when they have multiple orders or release dates for the same items and when planning components and sub-assemblies. Repetitive buy maintenance, repair, and operating (MRO) inventory is also a good application for EOQ. Though EOQ is generally recommended in operations where demand is relatively steady, items with demand variability such as seasonality can still use the model by going to shorter time periods for the EOQ calculation. Just make sure their usage and carrying costs are based on the same time period.

The basic Economic Order Quantity (EOQ) formula is as follows:

$$EOQ = \sqrt{\frac{2(\text{Annual usage in units})(\text{Order cost})}{(\text{Annual carrying cost per unit})}}$$

The Inputs

While the calculation itself is fairly simple, the task of determining the correct data inputs to accurately represent your inventory and operation is a bit of a project.

Exaggerated order costs and carrying costs are common mistakes made in EOQ calculations. Using all costs associated with your purchasing and receiving departments to calculate order cost or using all costs associated with storage and material handling to calculate carrying cost will give firm highly inflated costs resulting in inaccurate results from its EOQ calculation. Often these references

trace back to studies performed by advocacy agencies working for business that directly benefit from these exaggerated costs used in ROI calculations for their products or services. It is relevant to keep in mind that even though accuracy is crucial, small variances in the data inputs generally have very little effect on the outputs. The following breaks down the data inputs in more detail and gives insight into the aspects of each:

Annual Usage

Expressed in units, this is generally the easiest part of the equation. Firm can simply use its forecasted annual usage data for computational purposes.

Order Cost

Also known as purchase cost or set up cost, this is the sum of the fixed costs that are incurred each time an item is ordered. These costs are not associated with the quantity ordered but primarily with physical activities required to process the order. For purchased items, these would include the cost to enter the purchase order and/or requisition, any approval steps, the cost to process the receipt, incoming inspection, invoice processing and vendor payment, and in some cases a portion of the inbound freight may also be included in order cost. It is important to understand that these are costs associated with the frequency of the orders and not the quantities ordered. For example, in firm's receiving department the time spent checking in the receipt, entering the receipt, and doing any other related paperwork would be included, while the time spent repacking materials, unloading

trucks, and delivery to other departments would likely not be included. If firm has inbound quality inspection where it inspects a percentage of the quantity received, it would include the time to get the specs and process the paperwork and not include time spent actually inspecting; however, if it inspects a fixed quantity per receipt, it would then include the entire time including inspecting, repacking, etc. In the purchasing department, it would include all time associated with creating the purchase order, approval steps, contacting the vendor, expediting, and reviewing order reports; it would not include time spent reviewing forecasts, sourcing, getting quotes (unless it gets quotes each time it order), and setting up new items. All time spent dealing with vendor invoices would be included in order cost.

Carrying Cost

Also called *Holding Cost*, carrying cost is the cost associated with having inventory on hand, It is primarily made up of the costs associated with the inventory investment and storage cost. For the purpose of the EOQ calculation, if the cost does not change based upon the quantity of inventory on hand it should not be included in carrying cost. In the EOQ formula, carrying cost is represented as the annual cost per average on-hand inventory unit. Below are the primary components of carrying cost:

Interest: If firm had to borrow money to pay for its inventory, the interest rate would be part of the carrying cost. If it did not borrow on the inventory, but have

loans on other capital items, it can use the interest rate on those loans since a reduction in inventory would free up money that could be used to pay these loans. If by some miracle firms are debt free, they would need to determine how much they could make if the money was invested.

Insurance: Since insurance costs are directly related to the total value of the inventory, firm would include this as part of carrying cost.

Taxes: If firms are required to pay any taxes on the value of their inventory, they would also be included.

Storage Costs: Mistakes in calculating storage costs are common in EOQ implementations. Generally, companies take all costs associated with the warehouse and divide it by the average inventory to determine a storage cost percentage for the EOQ calculation. This tends to include costs that are not directly affected by the inventory levels and does not compensate for storage characteristics. Carrying costs for the purpose of the EOQ calculation should only include costs that are variable based upon inventory levels. If firms are running a pick/pack operation where they have fixed picking locations assigned to each item where the locations are sized for picking efficiency and are not designed to hold the entire inventory, this portion of the warehouse should not be included in carrying cost since changes to inventory levels do not effect costs here. Their overflow storage areas would be included in carrying cost. Operations that use purely random storage for their product would include the entire storage area in

the calculation. Areas such as shipping/receiving and staging areas are usually not included in the storage calculations. However, if they have to add an additional warehouse just for overflow inventory then they would include all areas of the second warehouse as well as freight and labor costs associated with moving the material between the warehouses. Since storage costs are generally applied as a percentage of the inventory value, there is need to classify inventory based upon a ratio of storage space requirements to value in order to assess storage costs accurately.

There are situations where firm may not want to include any storage costs in its EOQ calculation. If firm's operation has excess storage space of which it has no other uses, it may decide not to include storage costs since reducing your inventory does not provide any actual savings in storage costs. As firm's operation grows near a point at which it would need to expand its physical operations, it may then start including storage in the calculation. A portion of the time spent on cycle counting should also be included in carrying cost (remember to apply costs which change based upon changes to the average inventory level). So with cycle counting, it would include the time spent physically counting and not the time spent filling out paperwork, data entry, and travel time between locations. Other costs that can be included in carrying cost are risk factors associated with obsolescence, damage and theft.

2.4 Empirical Framework

Ogbo, Onekanma and Wilfred (2014) examined the impact of effective inventory control management on organizational performance: a Study of 7up Bottling Company Nile Mile Enugu, Nigeria. The researchers were motivated to embark on this study, in order to bring to fore the importance of effective inventory control system on organizational performance as it relates to the bottling company. A total of eighty-three respondents constituted the sample for the study. Four research questions and Four hypotheses were generated and tested at 10% (that is 0.10) significant level using descriptive statistics and non-parametric test (chi-square). The result of the analysis showed that flexibility in inventory control management is an important approach to achieving organizational performance. It was found that organizations benefit 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 implemented to enhance the return on investment in the organization. Effective inventory control management is recognized as one of the areas management of any organization should acquire capability. It is recommended that organizations should adopt the inventory keeping method that best suits their operations.

Anichebe and Agu (2016) examined the effect of inventory management on organizational effectiveness in selected organizations in Enugu Nigeria. Using a

descriptive research and a sample size of two hundred and forty-eight (248) respondents, they established that there is significant relationship between good inventory management and organizational effectiveness. Inventory management was found to have a significant effect on organizational productivity. There was a high positive correlation between good inventory management and organizational profitability. They concluded that Inventory Management is very vital to the success and growth of organizations. The entire profitability of an organization is tied to the volume of products sold which has a direct relationship with the quality of the product. The study recommended that Organizations should diversify their inventory system to suit specific needs of production, and that management should closely monitor and manipulate their inventory system to maintain production consistency for organizational profitability and effectiveness.

Kwadwo (2015) carried out a study on the impact of efficient inventory management on profitability: evidence from selected construction firms in Ghana. A cross sectional data from 2004 to 2014 was gathered for the analysis from the annual reports of four construction firms listed on the Ghana Stock Exchange. Measures of profitability were examined and related to proxies for efficient inventory management by manufacturers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the main variable raw materials inventory management designed to capture the effect of efficient management of raw material inventory

by a company on its profitability is significantly strong and positive and impacts on the profitability of the construction firms in Ghana. Therefore, efficient management of raw material inventory is a major factor to be considered by Ghanaian manufacturers in enhancing or boosting their profitability.

Nsikan, John and Tommy (2015) examined inventory management practices and operational performance of flour milling firms in Lagos, Nigeria, and their effects on operational performance. Five flour construction firms with aggregate staff population of 2569 constituted the unit of study. From the population space, 150 respondents were randomly selected. Structured questionnaire was the major instrument for the collection of relevant primary data while mean and standard deviation was used to analyze descriptive data. Results showed that with exception of the large construction companies, most of the medium-sized flour milling firms adopt different inventory management strategies from the scientific models. Their inventory management strategies and policies were rather based on factors such as changing level of customer demand, prevailing industry practices, forecast estimates and guesses, and available production capacity. Findings also revealed significant differences between effective management of inventory and optimal operating performance. The study recommended the need for flour construction firms to implement scientific inventory management models to adequately handle material shortages, product stock outs, and component pile up with consequent penalties.

2.5 Summary of the Review

In the past, inventory control management was not seen to be necessary. In fact, excess inventories were considered as indication of wealth. Today firms have started to embrace effective inventory management due to its strategic role. Inventory constitutes the major part of a Nigeria construction firm's current assets; due to the big size of inventories kept by firms, much of an organization's fund is being invested into it. The objectives of most businesses include survival and growth, fulfillment of social responsibilities and realization of satisfactory profit. This level of returns enables one company to take advantage of business opportunities, undertake research and inventions which further make for growth and survival on the long run, discharge its social responsibilities and its obligations to the owners. In order to maintain this status quo, it becomes important that positive effort be made to reduce operational costs of the business, increase production and boost the sales of their products. Efficient inventory control and cost management is vital for the successful functioning of construction and retailing organizations. Inventory Management is a system used in a firm to control the firm's investment in stock. This includes the recording and monitoring of stock levels, forecasting future demands and deciding when and how many to order.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study adopted the case study and survey research design. The survey research design was used in this study due to the fact that the variables cannot be manipulated by the researcher, hence the use of questionnaire, personal interview and observation.

3.2 Population of the Study

A population is a full group of potential participants on whom the researcher wants to conduct the research for the study. The target population comprised all employees working at Setraco Nig. Limited, Auchi. The population for the study was 100.

3.3 Sample and Sampling Techniques

Due to the size of the population, a sample size of 50 was used which comprises management, staff and customers of Guinness Nigeria plc, Benin City. However, the Yamane (1967) model was used. Formula of Yamane is presented as follows;

$$n = \frac{N}{1 + N(e)^2}$$

Where,

n = Sample size required

N = Number of people in the population

e = Allowable Error (%)

The simple random sampling technique was used by the researcher in selecting the respondents in order to avoid bias. In this kind of sampling method, every element in the population has an equal chance of being included in the sample.

3.4 Sources and Method of Data Collection

The primary source of data collection was adopted in this study. The primary source was through the administration of questionnaire and conducting personal interview with staff and management of the firm.

3.5 Method of Data Collection

To aid analysis and enhance understanding and comprehension on the part of the reading public, the data collected were presented in tabular form. This method is chosen because it is simple and straight to the point posture.

3.6 Method of Data Analysis

The chi-square was used to analyze the data obtained from the questionnaire and interviews. Simple percentage method was also used to analyze the individual question while the chi-square was used to test the hypotheses stated in chapter one.

Formula for chi-square:

$$X^2 = \frac{\sum (Fo - Fe)}{Fe}$$

Where,

Fo = Observed frequency.

Fe = Expected frequency of an event under the null hypotheses.

X^2 = Calculated chi-square.

$\sum$ = Summation.

$$\text{Simple percentage} = \frac{\text{Number of Occurrence}}{\text{Total Number}} \times \frac{100}{1}$$

3.7 Validity of Instrument Used

To validate the instrument used the questionnaire used for the study was presented to my supervisor for approval.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Data Analysis

The study's data are presented and analyzed as shown::

Table 4.1: Age distribution of respondents

AGE IN YEAR	NO OF RESPONDENT	PERCENTAGE (%)
Below 24years	5	10
25-34years	15	30
35-44years	20	40
45years and above	10	20
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it is evident that the respondents below the age of 24years constituted 10%, and 25-34years constituted 30% and 35-44years constituted 40% and 45years and above constituted 20%.

Table 4.2: Sex Distribution of Respondents

SEX	NO OF RESPONDENT	PERCENTAGE (%)
Male	15	30
Female	35	70
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, distributions of respondents denoted from the table 30% of the respondents were male while 70% were female. This shows that there are more females in the department.

Table 4.3: Marital Status Distribution of Respondents.

MARITAL STATUS	NO OF RESPONDENT	PERCENTAGE (%)
Single	15	30
Married	30	60
Divorced	-	-
Widowed	5	10
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that married people constituted bulk of the respondents used in this study. These are 60% of the respondents while unmarried are 30% of the respondents; widowed are 10% of the respondents, no response from the divorced. This shows that there are more married people in the personnel department.

Table 4.4: Qualifications of Respondents

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
WAEC/NECO	10	20
NCE/ND	15	30
Bsc/HND	15	30
MBA/Msc	7	14
OTHERS	3	6
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that NCE/ND and Bsc/HND have equal respondents, which is 30% each, WAEC/NECO had 20%, MBA/Msc had 14% while others have 6%. Therefore, the above shows that NCE/ND and Bsc/HND have the highest respondents and are more in the personnel department.

SECTION B

Table 4.5: Does inventory management have any impact on your construction Process?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	46	92
No	4	8
TOTAL	50	100

SOURCE: Field survey, 2021.

From the table above, it shows that 92% agreed that inventory management has impact on their construction Process and 8% of the respondents disagreed.

Table 4.6: Does inventory management and control have impact on construction firm?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	12	24
No	38	76
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that 24% agreed that inventory management and control have impact on construction firm 76% of the respondents disagreed.

Table 4.7: Are there problems encountered in inventory management of raw material in the Organization?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	25	50
No	20	40
TOTAL	50	100

SOURCE: Field survey, 2021.

From the table above, it shows that 50% of the respondents agreed that there are problem encountered in inventory management of raw material in the Organization, 40% Disagree.

Table 4.9: Do you have an indepth understanding and knowledge of what inventory management is all about?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	35	70
No	15	30
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that 70% of the respondents say yes, while 30% No.

Table 4.8: Does inventory management have any impact on your company's construction process?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	40	80
No	10	20
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, its shows that 80% of the respondents agreed that inventory management has impact on your company's construction process, while 25% disagreed.

Table 4.9: Do you encounter problems in the implementation of the organizations strategies?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	30	60
No	20	40
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that 60% of the respondents agreed that they encountered problems in the implementation of the microfinance strategies, while 40% disagreed.

Table 4.10: Do the properly applied principles of cyclical order quantity model of inventory control permit continuous flow of products to customers, continuous flow of production in the organization?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	40	80
No	10	20
TOTAL	50	100

SOURCE: Field survey, 2021

From the table above, it shows that 80% of the respondent agreed that principles of cyclical order quantity model of inventory control permit continuous flow of products to customers, while 20% disagreed.

Table 4.11 Does the suitably employed fixed order quantity system of inventory control assure continuous flow of input materials, decrease in overheads, check in abrupt halt in production operations and ensure optimal inventory level?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	45	90
No	5	10
TOTAL	50	100

SOURCE: Field survey, 2021

From the above table, it shows that 90% of the respondents agreed that inventory control assures continuous flow of input materials, while 10% disagreed.

Table 4.12: Does appropriate adoption of the principles of the material requirement planning method of inventory control certainly reduce costs associated with holding resources in inventory reserve, decrease in overheads and check halt in production schedule?

RESPONSES	NO OF RESPONDENT	PERCENTAGE (%)
Yes	35	70
No	15	30
TOTAL	50	100

SOURCE: Field survey, 2021.

From the table above, it shows that 70% of the respondents agreed that inventory cost reduces costs associated with holding resources in inventory reserve, while 30% disagreed.

4.2 Test of Hypothesis

Hypotheses are tested using the data gathered from the questionnaire.

Hypothesis One

Ho: The techniques of inventory management adopted in Setraco Nig. Limited, Auchi are not effective in the organization performance.

Hi: The techniques of inventory management adopted in Setraco Nig. Limited, Auchi are effective in the organization performance.

Chi-square (X^2) was used to test hypothesis one at 5% level of significance.

Table 4.4.1 Contigency Table

QUESTION	YES	NO	UNDECIDED	TOTAL
2	81	03	0	84
8	75	06	03	84
COLUMN TOTAL	156	09	03	168

SOURCE: Field survey, 2021.

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

Computation of Expected Frequency (E)

$$E = \frac{RT \times CT}{GT}$$

Where RT = Row Total

CT = Column Total

GT = Grade Total

$$1,1 = \frac{84 \times 156}{168} = 78$$

$$1,2 = \frac{84 \times 04}{168} = 4.5$$

1,3 = $\frac{84 \times 03}{168} = 1.5$

2,1 = $\frac{84 \times 156}{168} = 78$

2,2 = $\frac{84 \times 09}{168} = 4.5$

2,3 = $\frac{84 \times 03}{168} = 1.5$

Table 4.4.2 X^2 = Chi-square

OPTION	**Fo**	**Fe**	**Fo - Fe**	**$(Fo - Fe)^2$**	**$\frac{(Fo - Fe)^2}{Fe}$**
1,1	81	78	03	09	0.16
1,2	03	4.5	-1.5	2.25	0.5
1,3	0	1.5	-1.5	2.25	0.5
2,1	75	78	-03	09	0.16
2,2	06	4.5	1.5	2.25	0.16
2,3	03	1.5	1.5	2.25	0.5
TOTAL					2.32

SOURCE: Field survey, 2021.

Degree of freedom (df) = (R-1) (C-1)

= (3-1)(2-1) = 2

The value of chi-square (X^2) at 2 degree of freedom at 5% level of significance is 5.99

Decision Rule

From the above computation, it can be observed that the calculated value of X^2 which is 2.32 is less than the table value of X^2 which is 5.99. Hence, we reject the alternative hypothesis and accept the null hypothesis. Thus, the study concludes that the techniques of inventory management adopted in Setraco Nig. Limited, Auchi are effective in the organizations performance.

Hypothesis Two

Ho: Inventory management has not contributed significantly to the net profit of Setraco construction organization.

Hi: Inventory management has contributed significantly to the net profit of Setraco construction organization.

Chi-square (X^2) was used to test hypothesis two at 5% level of significance.

Table 4.4.3 Contingency Table

QUESTION	**YES**	**NO**	**UNDECIDED**	**TOTAL**
1	83	01	0	84
2	59	19	06	84
COLUMN TOTAL	156	09	03	168

SOURCE: Field survey, 2021.

Computation of Expected Frequency (E)

$$E = \frac{RT \times CT}{GT}$$

$$1,1 = \frac{84 \times 142}{168} = 71$$

$$1,2 = \frac{84 \times 20}{168} = 10$$

$$1,3 = \frac{84 \times 06}{168} = 03$$

$$2,1 = \frac{84 \times 142}{168} = 71$$

$$2,2 = \frac{84 \times 20}{168} = 10$$

$$2,3 = \frac{84 \times 06}{168} = 03$$

Table 4.4.4 X^2 = Chi-square

OPTION	**Fo**	**Fe**	**Fo - Fe**	**$(Fo - Fe)^2$**	**$\frac{(Fo - Fe)^2}{Fe}$**
1,1	83	71	12	144	2.03
1,2	01	10	-0.9	81	8.1
1,3	0	03	-0.3	09	03
2,1	59	71	-12	144	2.03
2,2	19	10	09	81	8.1
2,3	06	03	03	09	03
TOTAL					26.26

SOURCE: Field survey, 2021.

Degree of freedom (df) = (R-1) (C-1)

= (3-1)(2-1) = 2

The value of chi-square (X^2) at 2 degree of freedom at 5% level of significance is 5.99

Decision Rule

From the above computation, it can be observed that the calculated value of X^2 which is 26.26 is greater than the table value of X^2 which is 5.99. Hence, we accept the alternative hypothesis and reject the null hypothesis. Thus, the study concludes that inventory management has contributed significantly to the net profit of Setraco construction organization.

Hypothesis Three

Ho: Inventory management does not has significant impact on setraco construction organization.

Hi: Inventory management has significant impact on setraco construction organization.

Chi-square (X^2) was used to test hypothesis three at 5% level of significance.

Table 4.4.5 CONTINGENCY TABLE

QUESTION	**YES**	**NO**	**UNDECIDED**	**TOTAL**
1	79	02	03	84
2	75	08	01	84
COLUMN TOTAL	154	10	04	168

SOURCE: Field survey, 2021

Computation of Expected Frequency (E)

$$E = \frac{RT \times CT}{GT}$$

$$1,1 = \frac{84 \times 154}{168} = 77$$

$$1,2 = \frac{84 \times 10}{168} = 5$$

$$1,3 = \frac{84 \times 04}{168} = 02$$

$$2,1 = \frac{84 \times 154}{168} = 77$$

$$2,2 = \frac{84 \times 10}{168} = 05$$

$$2,3 = \frac{84 \times 04}{168} = 02$$

Table 4.4.6 X^2 = Chi-square

OPTION	**Fo**	**Fe**	**Fo - Fe**	**$(Fo - Fe)^2$**	**$\frac{(Fo - Fe)^2}{Fe}$**
1,1	79	77	02	04	0.05
1,2	02	05	-3	9	1.8
1,3	03	02	1	1	0.5
2,1	75	77	-02	04	0.05
2,2	08	05	03	09	1.8
2,3	01	02	-1	1	0.5
TOTAL					4.7

SOURCE: Field survey, 2021

Degree of freedom (df) = (R-1) (C-1)

= (3-1)(2-1) = 2

The value of chi-square (X^2) at 2 degree of freedom at 5% level of significance is 5.99

Decision Rule

From the above computation, it can be observed that the calculated value of X^2 which is 4.7 is less than the table value of X^2 which is 5.99. Hence, we reject the null hypothesis and accept alternative hypothesis. Thus, the study concludes that Inventory management has significant impact on Setraco Construction organization.

4.3 Discussio n of Findings

From the hypotheses and answers to the questions in the questionnaire administered, it was found that;

i. It was discovered that the techniques of inventory management adopted in Setraco Nig. Limited are not effective in the organizations performance.

ii. It was observed that inventory management has contributed significantly to the net profit of Setraco Construction organization.

iii. It gathered that Inventory management has significant impact on Setraco Construction organization.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

This study has established:

i. That the techniques of inventory management adopted in Setraco Construction Nig. Limited are not effective in the organizations performance.

ii. That inventory management has contributed significantly to the net profit of Setraco Construction organization.

iii. That Inventory management has significant impact on Setraco Construction organization.

5.2 Conclusion

From the analysis of the data and findings the researcher would like to conclude as follows:

It is only when the various principles of inventory control methods, which include cyclical order quantity models of inventory control; fixed order quantity system, and the materials requirement planning methods of inventory

control are adequately and appropriately used/ applied, that the continues flows of Products to customers, continuous flows of production in organizational profits, continuous flows of inputs materials, decrease in overheads, checks in abrupt halt in production operations, cost reduction associated with holding in overheads and checks in halt in production schedules etc. can be assured and guaranteed. Therefore, anything contrary to the above (i.e the adequate and proper application of the principles of inventory control methods/ technique) will obviously defeat the aim/objectives of organizational inventory management

5.3 Recommendations

Based on the data analyzed, and findings made, the researcher would like to make the following recommendations:

i. For there to be continuous flow of products to the customers, continuous flow of production and growth in organizational profit, there should be proper and appropriate application of models of inventory control.

ii. Organization could suitably employ fixed order quantity system of inventory control as a sure way of actualizing an organizational inventory management objective.

REFERENCE

Achison, O. E. (2015). *Elements of production management*, Enugu: Oktek Publishers

Agha, G.A.N (2010). *Management and cost accounting: current theory and practice*. Aba: Amsson publishers.

Anichebe, N.A & Agu, O. A. (2013). Effect of Inventory Management on Organizational Effectiveness. *Information and Knowledge Management* , 3(8), 2-10.

Chase, R. B.(2009). *Production and operations management*, USA: Von Hoffmann Press, Inc.

Fedire, O.E. (2011). *Project writing: research best practices*, Enugu: ADELS foundation publishers.

Ghosh, A.K. & Kumar, P. (2013). *Production management*, New Delhi: Anmol Publication Pvt. Ltd.

Idekwulim, N.C. (2014). Inventory management and cost control in manufacturing industries in Nigeria. *The Nigeria Journal of Management Research*, 5(2), 173-188.

Imaga, C. (2016).*Teach yourself IFRS*, Akota Yaba, Lagos State: Piccas Global Concept.

Johnson , A. (2014). Inventory control and performance of manufacturing firms, *Journal of Engineering and Applied Sciences*, 11(2), 199-203.

Kwadwo, B.P. (2015).The impact of efficient inventory management on profitability: evidence from selected manufacturing firms in Ghana. *Munich Personal RePEc Archive, 1-7.* https://mpra.ub.uni-muenchen.de/67889/.

Lewis, C.D (2013). Scientific Inventory Control, Hiffe, London, (Forthcoming).

Lucey, T. (2017). Costing (DP Publication 1989) P. / 29 Van Hees, RN and N Manheim's, *Introduction to Production to Production and Inventory Control; Theory and Practice P. Macmillan. 1972*.

Miller, R. (2016). *Inventors control: theory and practice*, New Jersey: Prentice Hall.

Nsikan, E. J., John J. E. & Tommy, U.I. (2015). Inventory management practices and operational performance of flour milling firms in Lagos, Nigeria, *International Journal of Supply and Operations Management*, 1(4), 392-406

Nweze, A. (2016). *Profit planning: a quantitative approach*, Enugu: M'cal Communication International.

Ogbo, M., Onekanma, D., and Wilfreda. T. (2014). Optimization of effective inventory control and management in manufacturing industries: case study of Flour Mills Company Calabar, *Nigeria Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)* 5(4): 265-276.

Vohra, N.D. (2008). *Quantitative techniques in management*, New Delhi: Tata Mc Graw- Hill Publishing Co. Ltd.

Appendix I

Dept. of Bus.Admin & Mgt.
School of Business Studies,
Auchi Polytechnic,
P.M.B. 13,
Auchi.
24th January, 2022

The manager,
Setraco Nigeria Ltd
Auchi,
Edo state.

Letter of Introduction

I am a final year student of the department of Business Administration and Management in the above institution and am currently undertaking a research on ***"appraisal of inventory management and control in construction firm"***. This research is purely on academic purpose as part of the requirements for Higher National Diploma (HND).

Information you will give will be treated in the confidence, please kindly tick (x) in the box that best appeal to you for each question in the questionnaire section. A quick response would be most appreciated.

Thanks for your anticipated cooperation.

Yours faithfully,

IDEMUDIA JESSICA ISOKEN

Appendix II
Questionnaire

Instruction: Please tick (x) in the appropriate space provided below.

1. For how long have you been in the organization?
   (a)Below 2 years [ ] (b) 2-5 year [ ]
   (c) 6-10 years [ ] (d) 10 years above [ ]
2. What categories of staff?
   (a) Management [ ] (b) Senior staff [ ]
   (c) Junior staff [ ] (d) Unskilled worker [ ]
3. Have you ever been sent on inventory control training by the organization?
   (a) Yes [ ] (b) No [ ]
4. If your answer to 3 is yes state the form of training _____
   _____
5. What you observed immediately into the service after training
   (a) Yes [ ] (b) No [ ]
6. When you return from training did you experience improvement in your performance to work?
   (a) Yes [ ] (b) No [ ]
7. Were you updated to commensurate, your new Skill?
   (a) Yes [ ] (b) No [ ]
8. If have been sent for training, Why? _____
   _____
9. If given the chance are you willing to leave your immediate environment for inventory training?
   (a) Yes [ ] (b) No [ ]
10. If your response to 9 is No, why?_____
    _____
11. Do you agree that limited fund is responsible for management inability to train all disserving staff?
    (a) Yes [ ] (b) No [ ]

12 Are there problem of inventory in your organization?

Yes [ ] No [ ]

13 Do you agree that the needs for inventory management should first be identified in the organization? (a) Agree [ ] (b) Disagree [ ]

16 what are the inventory management problems of the organization?_____

_____

17 what are the problem encountered in the management of raw material in the organization?_____

_____

18 are there sources and quality of raw material that are available in the organization? Yes [ ] No [ ]

19. Does the properly applied principles of cyclical order quantity model of inventory control permit continuous flow of products to customer, continuous flow of production in the organization? Yes [ ] No [ ]

20. Do you have an indebt understanding and knowledge of what inventory management is all about? Yes [ ] No [ ]