Dama International Journal of Researchers (DIJR), ISSN: 2343-6743, ISI Impact Factor: 0.878
Vol 1, Issue 6, June 2016, Page 32-54, Available @ www.damaacademia.com

The Impact of Effective Inventory Control in the Private Sector Organisation in the Private Sector

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Abstract
Most private companies have not been able to recognise the impact of inventory management and proper stock control in spite of its great savings. Due to this unprofessional conduct and control of stock handling Total Petroleum Ghana Limited has been selected as an ideal model to be delving into and evaluate this concept. Most companies may run into losses as a result of waste, theft and stock deterioration if it does not exercise nor execute inventory management policies. In most manufacturing industries, the management of finished goods inventory is the pivot of the day to day problems of coordinating sales and production. Inventory loses are one of the primary direct causes of business failure and has been widely showing most cyclical business declines and depressions. Planning and executions of inventory control should involve all stakeholder and department of the organization by taking into account the needs and interest. The end result achieved has a major bearing on the company's financial strength and its competitive position. Since it directly affect quality service customers production cost earnings and so undress of the working capital position.

Keyword: *Inventory Management, Inventory Control, Efficient Management of Inventory*

I. INTRODUCTION

The management of inventory is one of the complex and far feat of all business activities. Many seemingly conflicting interest and consideration both short and long range between sales and production department and a very vocal point. (Baily, P. Farmer David, David Jessop And David Jones (1994),) The sales department believes that finished goods inventory are unlimited resources and a few production department have failed if an order received are not quickly made available. The financial department often thinks that inventory ties up capital which could better be used for a profitable venture and turn to call it a necessary evil. Production has difficulty in understanding the cost associated with carrying inventory and further from the factory point of view; raw material inventory are unlimited resources. (Charles T. Horngren 2007) In most manufacturing industries, the management of finished goods inventory is the pivot of the day to day problems of coordinating sales and production.

Inventory loses are one of the primary direct causes of business failure and has been widely showing most cyclical business declines and depressions. (Ahuja, K.K. 2002). Planning and executions of inventory control should involve all stakeholder and department of the organization by taking into account the needs and interest. The end result achieved has a major bearing on the company's financial strength and its competitive position. Since it directly affect quality service customers production cost earnings and so undress of the working capital position. Money invested in inventory forms about 25 – 50 percent of the assets of an organization, this mean inventory is very necessary and must be sustained at a level to help organization serve its customers (Ballou R. H. 2004).

II. LITERATURE REVIEW

A. Inventory

According to lysons (1993), inventory is an American Accounting term for the value of quantity of raw material, components, work-in-progress and finished product that are kept or stored for use as the need arises. It also refers to detailed list of goods or articles in a given place or a stock taking. Inventory control as the techniques used to ensure that stocks levels of raw materials of other suppliers, work-in-progress and finished goods are kept at such levels which provides maximum service level at minimum cost. (Kenneth Lysons 1996). Also Leenders Fearon (1993), defined inventory control as that which involves the planning, ordering and scheduling of materials used in the manufacturing process. It exercise control over three types of inventory; raw materials, work- in- progress and finished goods. Inventory control is a management technique for ensuring that materials of the right quantity, and quality are made available as and when required with due regard to the economy in storage and working capital, this is as defined by Baku (1998).

B. Classes Of Inventory

According to Leenders and Fearson (1993), inventories are classified according to conditions during processing. These are explained below:

- **Raw Materials and Purchasing Parts Inventories**: This is the stock of raw materials (such as steel, copper, cocoa etc.) and purchased part and component waiting to be processed.

- **Work – In- Progress:** This includes part in progressive stage of completion, such as raw materials issued from stores, materials from different stages of processing and parts of assemblies awaiting final acceptance as finished stocks.

- **Finished Goods:** Finished goods comprises of units of manufactured or completed product awaiting sales or consignment if inventory to be controlled. Managers should understand the functions of the services and its purpose, the following desire capable of different functions. (Bertolini & Rizzi A.A 2014)

- **Anticipation Inventory:** Anticipatory inventories are built for future demands. The seasonality of customer demand where sale is high one time and low on other times has given rise to anticipatory inventory, this is built prior to seasons to satisfy and to maintain a stable flow of production and workforce. Some aspects like promotions, strikes and vacation shut downs has necessitated these type of inventory. (Stock J.R. & Lambert D. M. 2001)

- **Fluctuation Inventory:** These inventories are essential when supply oscillate. Typical example of fluctuation inventory is safety stock. Customers demand is not constant but will vary, work center in a manufacturing plant may not produce at the same level, this normally result in the buildup of queues in the work – in –progress inventories (Bertolini & Rizzi A.A 2014).

- **Lots Side Inventory**: Most manufacturing companies do not produce or purchase items exactly at the rate they are used or sold because of set up chases or manufactured items or ordering cost for purchased

items. Items in excess of immediate needs provide an example of lot side inventory (Kenneth Lysons 1996).

- **Transportation Inventory:** These inventory are necessary because materials are moved from one place to another. Most manufacturing companies sell on regional or national basis. Where regional warehouse are used or where product is transferred between plants prior to or during the selling process, the inventory to support the transit time is known as transportation inventory

C. Inventory Control

Lysons (1996), refers to inventory control as the technique used to ensure that stock of material or other supplies, work in progress and finished goods are kept at the level which produces maximum services levels at minimum cost. Inventory control is the implementation of management's inventory policies in the manner that assures that the goals of inventory management are met. Effective control of inventory is often a major factor in the success of organizations in which inventories are important. To ensure minimal stock out (ie. Running out of stock), reduce overstocking and maintain inventory at a safe secure level and place that is always made readily available to the proper personnel. (Brackus, D. 2000)

Policies narrate to what levels of inventories are to be maintained and which vendors will be supplying the inventory, when and how inventory will be replenished, how inventory record are created and controlled and analyzed and what aspect will be outsourced; are important components of proper inventory management. (Bowersox D J, Closs D J & Cooper M B. 2002)

In the eighteenth century, possessing inventory is a sign of wealth, the more inventory one had the more prosperous one was. Inventory exists in many forms e.g. Herds of castles, room full of poultry and other manufacturing goods. Communication was difficult and unreliable, easily interrupted and often took long periods to complete. Stock was difficult to obtain and supply as uncertain, erratic and subject to a wide variety of pitfalls. Quality was inconsistent. More often than not, receiving credit for a purchase as not an option and a buyer had to pay for merchandise before taking possession of it. (Gourdin K N. 2001). The financial markets were not as complex or as willing to meet the needs of business as they are today. The pace of life was a lot slower. Because changes occurred gradually, it was relatively easy to forecast market needs, trends and desire. Businesses were able to maintain large quantity of goods without the fear of sudden shift in the market and these inventories served as buffer in the supply chain. (Kotabo, K. 2002)

Customers had a sense of security, knowing that here was a ready supply of merchandise in storage and the comfort often helped to minimize hoarding. In the eighteen and nineteenth centuries markets were specialized, there as often one supplier for each market in each area of business. Except the basic necessities of life which were specialized locally in regions. For example, although there might be more than one grist-mill in a community there would often be only one general store. If the customer was unhappy with the existing supplier, they had to suffer some inconveniences to find and alternative source because of the monopoly that existed. This made it easier for business to market their product and allow them to maintain large stocks if they had the capital to do so. (Lambert, K. 2003). Inventory management was concern then, as it is now. Inventory had to be monitored for accuracy and quality. They had to be protected from element, from theft, from spoiling and from change in the economy. Tax loss could have an enormous impact on inventory levels. (Laugero, J. 2002)

Today's business world share few similarities with yesterdays. Communication is quick, easy, reliable and available through a host of media. Supply is certain and regular in most environment of merchandising and

manufacturing. Tax loss is general consistent and reliable. However, market changes can be abrupt and difficult to forecast. Global competition exists everywhere for almost everything. Products are available anywhere in the world, with delivery possible within one day in many cases. (Lucey, C. 1992). Competition is driving prices of most products down to minimum profit level. Inventory is managed from minimum stock levels and maximum turnover. In the twenty-first century, high inventory is a sign of either mismanagement or a troubled economy. It is expensive and wasteful to hold and maintain high inventory levels. Proper utilization of space is also a critical component in today's business world, whether one is a retailer, wholesaler and manufacturer. (Lynch, K. 2005)

Modern retailers and manufacturers are equipped with array of tools and support mechanism to enable them to manage inventories. Technology is used in almost every area of inventory management to help control, monitor and analyzed inventory. Computer, especially play an important role in the modern inventory management (Martand T.T. 2009). Ongoing analysis of both inventory management and manufacturing processes have led to innovative management systems, such as in just – in – time inventory or economy order quantity decision model. Just – in – time inventory is a process developed by Japanese base on process invented by Henry Ford. Wren (1999) describes how the process started. Henry Ford managed to cut his inventory by forty million dollars by changing how he obtained materials to produce automobiles. Through a process called vertical integration, Ford purchased mines and smelting operations to better control the source and supply of materials to produce cars

In any way, he was able to reduce his standing inventory and increase turn over. In 1950's Taiichi Ohno, a mechanical engineer working for Toyota Motors Car Company, refined this process into what we know today as just – in – time inventory. Just – in – time usually require a dominant face: a major partner that has the resources to start the process and keep it organized and controlled – that organizes the flow and communication so that all parties in the supply chain process know exactly how many parts are needed to complete a cycle and how much time is needed between cycle. By having ensuring this information, companies are able to deliver just the right amount of product or inventory in a given time. This requires a close relationship between all parties involved and greatly minimized the amount of standing or idle inventory. (Pandey, M. 1995)

In the economic order quantity decision model, an analysis is made to determine the optimum quantity of products needed to minimize total manufacturing of product cost. In other words through a complex analysis , management attempts to determine the minimum amount of product need to the job and still keep the cost of inventory as low as possible. This analysis considers the amount of time needed to generate an order; process, manufacture, organize and ship each product; to receive inventory, store and consume each product and to process the paper work upon receipt through the final payment process. (Stock J.R. & Lambert D. M. 2001)

This is more independent process than just – in – time; by allowing for the variety of suppliers to participate, it ensures competiveness. Many companies today employ a mixture of both processes in order to maintain independent yet still have a close relationship with suppliers. Retailers for example work closely with suppliers to maintain the lowest possible inventories but still have enough products to satisfy consumer demand. Often, companies have access to information about each other's inventory level, allowing management to further analyze inventories to ensure that each is carrying the correct amount of stock to satisfy market needs and maintain levels. (Hugo W M J. Badenhorst-Weiss J A & Van Rooyen DC. 2002)

D. Inventory Management

Inventory management deals with when to order and how much to order. It aims to minimize the total cost of inventories so as to generate high return. If we hold more than the optimum level of inventory, we are incurring considerable opportunity cost because the funds are tied up in inventories. There are other explicit costs of holding inventory such as storage costs, insurance costs, etc. If we hold too little inventory we might have to place more orders and incur more communication and transportation costs. Then is another category of inventory costs: the stock out of costs. If we are too low inventories we might run out of stock and might not be able to lose sales and customers. We have some tools to minimize the above mentioned costs. These include:

- Economic order quantity model
- Just-in-time system

Traditionally companies would keep high level of inventories in accordance with the just-in-case system .They would keep high inventories just in case they are faced with high demand. Such risk-averse companies intended to keep ordering costs and stock out costs low. In JIT system on the other hand companies try not to keep inventories in hand and order only when a sales order is received. Such a system is called pull system because inventories are pulled through the system by sales order received.

a. The Aims Of Inventory Management

Although Stock holding at whatever level has become very expensive, there are several reasons that have been advanced to support this expensive venture. These may include the following.

i. **Unreliable deliveries of stock;** Most organisation find it impossible to rely totally any of their suppliers to delivery every order exactly on Time, every time an order Is placed .Few suppliers could boast that they had never been held up by strikes, transport delays, bad weather or administrative errors. (Pandey, M. 1995)

ii. **Reduction in operational risk**; because more stock held than is needed, there is less risk of a nil stock situation coming about which could then stop production. If a supplier does fails to deliver the goods needed, the factory can still be supplied from stock. The cost of stopping production because of nil stock can be very high. (Baku 1998). In addition to the fixed cost there will be:

- Loss of profit
- Cost of sales
- Loss of suppliers reputation
- Labor cost

iii. Reduced purchasing cycle; the purchasing cycle is the sequence of event that a supply has to go through before an item is finally delivered. When an organisation holds high stock, it reduces the number of times this cycle has to be repeated. This cut down both management and administrative resources needed for ordering an item or product. Kenneth lysons (1996) refers to the following as the aims of inventory management;

- To provide both internal and external customer with the required service level in terms of quantity and order rate full.
- To ascertain present and future requirement of all type of inventories to avoid over stocking whiles eluding bottlenecks in production.

- To keep stock to a minimum by reducing economical lot size and analysis of cost incurred in obtaining and carrying inventory.
- To ensure that correct quantities of goods are available as and when it is required for smooth and efficient running of the organisation.
- Apply appropriate methods for the most efficient use of space in stores example using the ABC Analysis stock rotation and coding.
- Taking reasonable steps to prevent loses due to pilferage, theft, damage, breakages, evaporation and rusting.
- Maintaining proper stock control records that provide for
    1. Current records showing actual physical inventory and inventory allotted to specific projects.
    2. Maximum, minimum, reorder and expediting levels, outstanding amount of order and scheduled delivery Dates.

E. Inventory Associated Cost

Exactly the same principles apply in commercial order quantity decision as in the domestic situation. IN MAKING DECISION ON How much to purchase, the purchasing manager first try to identify the cost that will affect their decision to buy. A number of costs associated with inventory have been enlisted below

Cost Of Placing Order: every time and order is needed to replenish stock, a number of transactions are needed which incur cost of the buying organisation, these costs includes clerical cost in order preparation and all associate documentation. Arranging for delivery and the general cost of keeping all the information which allows us to do this. If we are placing and order on part for our own operation, these are still likely to be the same types of transaction concerned with internal records keeping. But there could also be 'change over' cost incurred by the part of the operation which is to supply the items and caused by the need to change from producing one type of item to another. (Bertolini & Rizzi A.A 2014)

Stock Out Cost; if misjudge the order quantity decision and our inventory runs out of stock, there will be cost for to incur by failing to supply our customers. If the customers are external customers, they may take their business else and eventually dissatisfied. But if they are internal customers stock out could lead to idle time at the next process and inefficiencies.

Workout Cost; soon after replenished order, suppliers will demand payment for their goods. Naturally, when we supply our own customers we turn to receive payment from our supplied customers. However, there is probability for time lag between receiving payment from our customers and paying our suppliers. During this time we will have to fund the cost of the goods we have in stock. This is called working capital which we need to run the inventory. The cost associated with it interests we pay to our bankers for borrowing or the opportunity cost of not investing elsewhere.

Storage Cost; these are the cost associated with the physical storage of goods. Renting, heating and lighting the warehouse can be expensive, especially when special conditions are required such as low temperature or high security storage.

Obsolescence Cost; if we choose and ordering policy which involves very large order quantities which means that the risk stock item will spend a longer time stored in inventory ,there is a risk that the items might either become obsolete or deteriorate with age example change if fashion taste and slow moving items. (Baily, Farmer, Jessop and Jones 1994),

Production Inefficiencies Cost; According to just in time philosophies high inventory levels prevent seeing the full extent of problem within the operation. This argument is fully explored.

F. Methods Of Controlling Inventory Management

According to Baily, farmer, Jessop and Jones (1994), although there are many systems for inventory control but the most two basic are manually and automated approach on which most methods are based. Reordering will either take place when stock fall to the predetermined levels are reviewed on periodic basis. Sometimes these approached will be used in combination for example; it might be the case that the re-order level approach is employee with the backup of regular review of the physical inventory levels. The two approaches are commonly called the action level method and the periodic review approach.

The fixed order point system is used when demand for inventory is constant and known. The time and quantity to order is determined by a number of stock control levels. Under this system of stock control there is a predetermined quantity of stock to be held. When stock on hand falls to this predetermined level or inventory quantity, certain action is taken. For example when stock on hand falls to the reorder level a fresh order for a fixed or viable quantity is placed with the supplier. (Baily, Farmer, Jessop and Jones 1994),

This is also known a continuous review system or the two bin system due to the fact that this approach provides a simple non mathematical approach to checking inventory. Under the tow bin system the stock of a particular item is segregated into two bins. Inventory is initially taken from the first bin. The reorder level, is triggered by storekeeper after issuing a requisition for new supplies when that bin is empty, the purchased order is therefore a fixed order.

a. *Action Level Methods*

The basic method of controlling inventory by quantity is by fixing for each commodity, stock level which are reordered in the stock control systems and subsequently used a means of indicating when action is necessary. (Baily, Farmer, Jessop and Jones 1994),

- The minimum stock level is the amount expressed in units of issued below which the stock of any giving commodity should not be allowed to fall. When the level is red, it triggers off urgent action to bring forward delivery of the next order and to it is sometimes called the ‘danger level’. In fixing a minimum level the main factors to be taken into account is the effect which a run out of stock would have upon flow of work or operations. For many times this effect is negligible and it may be desirable to have minimum inventory level of ‘nil’

- The reorder level is the amount expressed in units of issues at which ordering action is indicated in time for the material to be delivered before stock falls below the minimum. Two main factors are involved in deciding the ordering levels. First, the anticipated rate of consumption and second the estimated time which will elapse between the raising of provisional demand and actual availability of goods in stores after receipt and inspection i.e. the ‘lead time ‘.when ordering level is reached for any item before arrangement are finally made to buy a fresh supply, a check should be made to see if there are deliveries outstanding in respect of any existing order.

- The hasting buffer or safety stock level is the amount expressed in units of issue at which it is estimated that hasting or quick action is necessary to request suppliers to make early delivery. It is fixed between the minimum and the reordering levels and covers unforeseen delays during the lead times periods.

- The maximum stock level is the amount expressed in unit of issues above which the stock should not rise. The purpose of this level is to curb excess investment or lock up capital. In fixing a maximum the main consideration is usually financial and the figures is arranged so that the value of the stock will not become obsolete as a result of operational changes, shortages of space and the danger of deterioration of perishable items. When the level is reached it is a signal to defer or cancel outstanding deliveries if any. (Baily, Farmer, Jessop and Jones 1994)

- Lead time periods ; This is the period of time taken from deciding an item needs reordering until the goods have been received and are ready for sale on the shelf. It comprises of the following operations
    - Preparing of requisition
    - Forwarding of requisition to purchasing
    - Processing by purchasing from enquiry to prepare the order
    - Placing of order with supplier
    - Execution of order by supplier
    - Transportation of order
    - Receipt, inspection and storage
    - Issue to production or sales.

G. Determination Of Inventory Levels

Dobler et at (1992), state that ‘’inventory levels cannot be determined unless two factors are available

a. We should know the rate of consumption of an item such as movement or demand for inventory in a store house or stockyard.

b. We ought to know when the next consignment will be received (lead time).It must be noted that lead time and delivery time are two different things.

a. Lead Time

The interval between the moment the need for materials is determined and the moment the materials is actually delivered or when the materials arrives and made available for utilization by the user department upon user department raising a requisition such as internal purchase order (I.P.O) and materials demand voucher (M.D.V).

b. Delivery Time or Period

This is the time taken or required for shipment of consignment by the supplier up to the time when goods are actually received by the purchaser or the originator of the need. That is it occurs when the supplier or contractor receives the contract (purchase order) from the buyer agency up to the time the goods finally arrived for inspection and received at the store or designated location of the buyer agency. Detailed activities here may include dispatch date expected arrival date, mode of transport and the carrier or transporting vessel (Company). Since we have known the rate of consumption and the lead time then it will be possible for us to determine stock level in store or stock yard. One quickest and best practical way of determining is using the 1, 2, 3 method or the action methods.

Example

A medium size fruit juice company consumes 60killograms of orange per day; it takes four working days to receive the next supply for production.
Determine the following.

- Minimum inventory level
- Reorder level
- Maximum inventory level

Solution
Formula;

- **Minimum inventory level:** Rate of consumption x Lead Time
- **Reorder inventory level:** Rate of consumption x Lead Time X 2
- **Maximum inventory level:** Rate of consumption x Lead Time

CALCULATIONS

I. Minimum inventory level = 60KG X 4 days
= 240

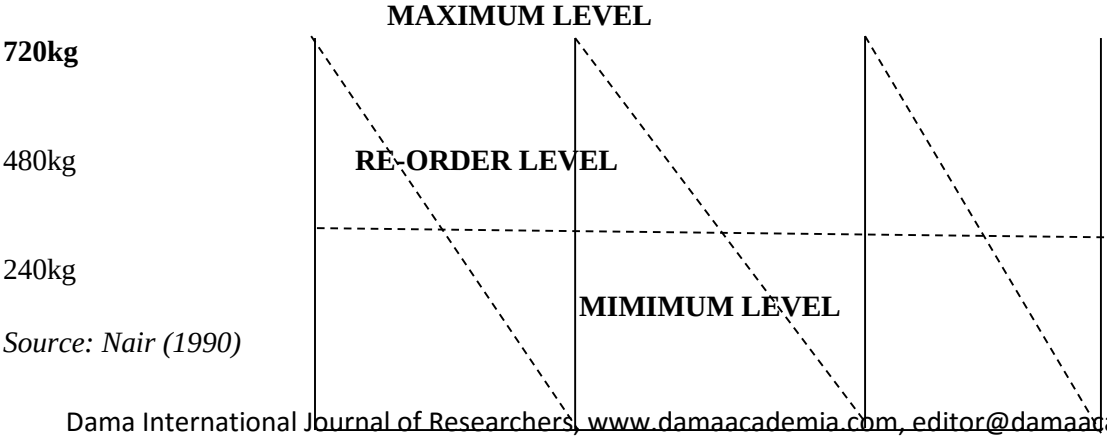
II. Reorder inventory level = 60kgs X 4 days X 2
= 480

III. Maximum inventory level = 60Kgs x 4 days x 3
= 720

Explanation
The above calculation shows the minimum inventory level should not descend below 240 kilograms. Fresh stock should be reordered when stock get to 480killograms and inventory should not shut above 720killograms which the required maximum stock the company needs. Anything above level will lock up working capital as well as it associated cost such as storage handling ,ordering etc. will also arise consequently affect cost of production, the basic requirement of a sound stock keeping systems are that;

1. Stock should not be permitted to fall below the minimum level, buffer or safety stock.
2. An order must be placed when the stock are to reach the reorder level.
3. Stock must not be allowed to rise above maximum inventory level.

Figure 2.1: INVENTORY LEVEL



Source: Nair (1990)

H. Economic Order Quantity

According to Nair (1990), economic order quantity (EOQ) is that quantity at the cost of ordering the annual requirement of an item and the inventory carry cost are equal, that is when the total of the two cost is the lowest. One of the major inventory management cankers to be resolved is how much inventory should be added when product is being replenished. If the firm is planning a production run, the issue of how much production to schedule (how to make) is called the order quantity problem and the firm's headache is to determine the optimum or economic order quantity or lot size. The economic order quantity is that inventory level which minimizes the total of ordering and carrying cost. The aim of EOQ is to find the lowest acquisition cost which is the sum ordering and the cost of holding stock. The factors that defeat economic order quantity decisions are reliability of estimated requirement and availability of storage space. A formula which is generally accepted and used worldwide for calculating Economic order quantity is given as

1. On the basis of annual requirement

EOQ = $\frac{\sqrt{2AO}}{C}$

Where A= represent Annual requirement

- O= ordering cost
- C= carrying cost expressed as percentage

To illustrate, if A is 2400, O is 7 and C is 20 percent (%) then

EOQ = $\frac{\sqrt{2x2400\ x\ 7\ x100}}{20}$

$=\sqrt{168{,}000}$

$= 410$

That is an approximate 6 orders, each to cover two months requirement.

Another example

According to Bailey, farmer David, Jessop and Jones (1994). The demand for the year is 5000 pieces; per unit cost is $6.00. The acquisition cost is $10.000, holding stock cost is 25% per stock value

Formula

EOQ = $\frac{\sqrt{2up}}{CS}$

Where U is annual usage or demand

- P is for the paper work or acquisition cost
- C is the unit cost or price per item
- S is the cost of holding the tock as decimal fraction of average stock value.

SOLUTION

EOQ = $\frac{\sqrt{2x5.000\ x\ 10}}{6\ x\ .025}$

$=\frac{\sqrt{50.000}}{75}$

$=\sqrt{66666.7}$

$= 258$

How many times are to buy the 358?

U = 19.38 (i.e. 20 times)
This means you have to order 20 times the whole year.

I. Physical Distribution Inventories

According to Coyle Bard Lanley (1992), the second inventory type consists of principally of finished goods awaiting shipment to customers. Reason for accumulating physical distribution inventory include transportation saving, production savings, seasonal demand, customers service, stable employment and providing goods for resale.

J. Transportation Savings

The second reason for firm to accumulate physical distribution inventory or finished goods resembles a reason for accumulating raw materials; transportation economics. By shipping in car loads or truck loads quantities rather than less than carload or truck load Shipment. Companies may experience lower transportation rate. As long as transportation cost is less than warehouse cost the firm will ship more economically in larger quantities.

K. Production Savings

The second reason for firms to accumulate physical distribution inventory is to achieve of production economic. A firm may minimize it product cost for an item. This means that the firm will sometimes produce in advance of demand to store. That is it will not immediately sell the items it produces.

L. Season Demand

The third demand for accumulating finished goods is that a company may have seasonal demand for its product. Having productive capacity to meet the peak seasonal demand may not be efficient and the company would be better off producing more regularly throughout the year with smaller plant.

M. Customer Service

The forth important reason from a marketing view point is that, a firm may hold physical distribution inventory to improve customer service or reduces cost such as sales cost.

N. Stock Taking

Baily (1987) said that stock taking means counting or weighting what is actually held in stock in order to verify records or provides a factual basis for the value of stock shown as an asset in the balance sheet of a trading company. The security and accountability for all materials and equipment held within the stores system is the direct responsibility of the store manager and his staff. Stock represent the organizations cash and must be controlled and accounted for as such, the responsibility for stock demand that the stores performs regular and complete physical checks of all the items of the calculated stock figures contained within the stock records system.

a. Benefit Of Stock Taking

According to carter and pin prince (1993) stock taking involves valuing and expertise man hours to arrange and carry out ,plus a great deal of management times needed to investigate almost inevitable list of stock discrepancies. However, the cost and effort are more than justified by the following benefits.

- Stock records and stock control systems will be tested for verification by physical count will act as a form of performance check on these systems and needed adjustment can be made.

- Computerized control system can be verified. Computer is only as good as data supplies to then, so the data being supplies from stock records and control must be accurate and relevant

- Financial reports (including the balance sheets) produced by the organisation auditors will demand some form of verification to back up the value of stock. If the written balance sheet stocks which are not back up by physical counting have little relevance to the auditors the account managers of their organisation.

- The security aspect of store management demands that regular physical check be made to ensure that any possible theft of fraud is quickly detected and investigation carried out.

- Stock taking is an indicator of overall store efficiency and management control. The magnitude of stock discrepancy is a good indication of either efficiency or inefficiency. A high incidence of stock discrepancies usually warrants a close look at the personnel and the systems in use.

- Accurate stock level shown within the stock records system backed up by regular physical counting will ensure that all requirement of the user department covered by existing stock level will be issued promptly and efficiently. This avoids the common situation of stock where stock in the records system not being physically present.

III. METHODOLOGY

A. Introduction

In order to achieve the research objective stated there is the need to gather information and ideas from the organisation on the impact of effective inventory control

B. Research Methodology

This refers to the various methods that will be deplored to facilitate data collection and analysis and presentation.

a. Data Collection Methods

The study was cross sectional and involved a combined use of mainly qualitative techniques and complement ted by limited used of qualitative data collection instruments. The former enlisted entailed structured interviews with the research participants. The interviews covered perceptions and experiences of the impact of effective inventory control in the private sector organization. We describe the process involved in the use of both methods below.

b. Research Participants

The key research participant were stores officers, stores manager and procurement officers

C. Quantitative Methods

a. Sampling Of Participants

The study made use of a convenience sampling methods to select the oil sector and individual participant for both the interview and the questionnaires for the study. According to Bryman (2004) a convenient sample is one that is sample available to the researcher by virtue of its accessibility. In this study ,it involved approaching stores managers, store keepers and procurement officers who are willing to participate in the

study and then conducted stricture interviews with some of them later .A disadvantage of this technique is that it limited the scope of generalizing the finding Bryman (2004). However, it also has many advantages that make it appropriate for the present study. First, it is neither costly nor time consuming and therefore made it possible for the study to be completed on time. Second, convenience sampling does not require a sample frame (that is a complete list of all subjects) from which the respondents were then selected. A sampling frame would have been difficult to obtain in study like the present one because not every oil industry would be willing to participate in sensitive study of this kind. A convenience sampling process overcomes this difficulty. Third convenience sampling is a prominent technique in most organisation studies such as the present study Bryman (1989).

b. Sample Size

The present study involved a sample of 15 participants from total Ghana Limited. There were two main reasons for the choice of this sample size. The first time constrains and financial constraints. Time constrains here refers to the amount of time or during within in the research was to be submitted was relative short and therefore a larger sample size would have thwart the success of this research within it limited duration. In the sphere of financial capabilities this research was seriously subject to financial limitation leading to a smaller sample size. In spite of these difficulties it is hoped that the analysis of the data produced from this sample size would help thrown more light on the impact of effective inventory control in the private sector organisation.

c. Data Analysis

We analyses the survey data from the questionnaires using the using statistical software such as Microsoft office tools the data was coded entered unto a spread sheet cleaned and analyzed. The results are presented using pie chart simple frequency tables and cross tabulations. The data from the interview was analyzed using a method thematic analysis. This is a method foe identifying analyzing and reporting pattern (themes) within data. It minimally organized and described our data set in (rich) detail Braun and Clarke (2006:79).the themes in this context refers to something important about the data in relation to the research question. Once these were identified the data was then examined in order to classify the responses under each of the them such as the method of stock taking, security system used in the stores department, control of obsolescence and redundant stock and how often stock is replenished

D. Company Profile - Total Ghana History

Total operations in Ghana have spanned 50 years, beginning when the company first made an entry into Ghana under the name Total Oil product. Since then, Total has undergone various transformations in Ghana taking over from the British Petroleum through Elf Oil and French Total Final Elf; an ultimately culminating in the incorporation of Total Petroleum Ghana Limited (TPGL) when Total acquired Mobil in Ghana. This metamorphosis, coupled with a great respect for quality, standards, achievement and safety, has propelled the subsidiary to the forefront of the industry. With 50 years of Total operation in Ghana, came a huge recognition of the Total brand as number one and the market leader amongst the Ghanaian investing and consuming public. Today, the company is more visible and very well presented across the ten regions of Ghana, having strategic location in major cities and towns.

Total Petroleum Ghana Limited in its organization structure has following department; fuel department herbs department, human resources and legal department, customer services department and controller department. Each of these departments is headed by a manager and an assistant. The manager is in charge at each department is responsible for that unit only and reports directly to the General Manager who is the overall Boss. Prices competiveness has proved crucial too. In this regard, Total Oil Ghana Ltd has thread

competitively despite very high inflation and cedi fast depreciation. To achieve this, the company combats the effects of the cedi depreciation by pricing their product to meet its profit margin. Growth is a primary objective of Total and the company does not just have the franchise and skills to make the most of its best the stability as well. The fact that some of the stuff are shareholders in the company, their share held in trust for them by Total it becomes easy to see why there is industrial peace in the company

IV. DATA COLLECTION ANALYSIS AND PRESENTATION

This is a practical study with the aim of studying how companies cope with their inventory management and it rippling effect on the organization at large. It is a bear fact that companies our days strive continuously to improve the inventory management set up into a world class in a bid to achieve delivery precision, reduced cost and competitive edge. This study is set up to examine how the private sector defines inventory management. Here, collection, analysis and presentation of the data were collected from Total Petroleum Ghana limited and aimed at their inventory control administration.

A. Method and Data collection

The study is based on the answers from leading inventory management pro from Total Ghana limited. They were contacted through interview (personal), phone interview and questionnaires. In all 20 questionnaires were distributed and all the twenty were responded to or retrieved. Responses were grouped into the following in line with the stated objectives.

- Section A: Personal Data.
- Section B: Inventory Safety and Security.
- Section C: Inventory Control Management.
- Section C: Inventory Storage and Safety.
- Section D: Inventory Cost and Effectiveness

Each question is weight and allocated the deserving group based on framed and expected impact on the study.

B. Data Analysis

Data concerning the five segments of the questionnaires were gathered and analyzed in the same five different segments. The first five question on the questionnaires deals with personal data where gender, age, education, experience and job position were classified into this domain.
The figure 4.3.1 below deals with the personal data that has been analyzed.

Figure 4.3.1 PERSONA DATA

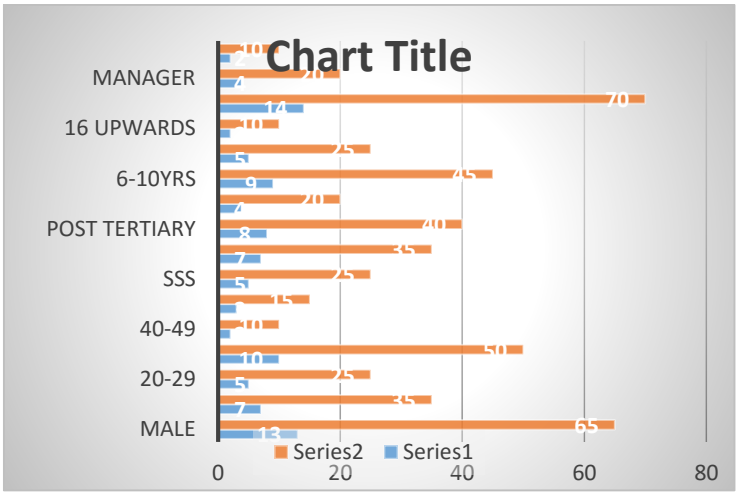


Figure 4.3.1 Personal Data Source: Researcher's collected data

From the diagram above, regarding the response to gender females were allotted 7seven slot as against 13 for men which represent (35%) thirty five percent and (65%) sixty five percent respectively. However, scored 10 which is (50%) of the labor four falls within the age range of (30-39) thirty to thirty five years. Whiles twenty to twenty nine (20-29) years was ranked second in terms of labor force at Total petroleum representing twenty five (25%) percent with 5 scores. Accordingly (50-59) fifty to fifty five years scored 3 ranked third with the percentage of (15%) fifteen percent and finally 40- 49 represent (10%) ten percent of the labor force with a score of 2.

Again, from the data above total petroleum mostly engages the services of pro and encourage skills upgrading. As it can be seen post tertiary ranked first followed by tertiary and secondary certificate I that order with 40 percent, 32 percent and 25 percent respectively. In spheres of job experience, most staffs of total petroleum Ghana has experience of 10years translating to 45% forty five percent whiles (25%) twenty five percent have 11 to 16years and over experience. Whiles 20% percent of the labor forces have 5years experience. This means that recruitment in total petroleum concentrate much more on job experience. Finally from the data one can easily infer that the level of experience indicate ones status in terms of position in the company.

C. Inventory Safety And Security

Inventory represents a proportion of a company's working capital in a form of goods and services. Therefore, the safety and security of such good are keen to the success of any corporate entity. Below is figure 4.3.2 which refers to the ranting and importance that the case study attaches to in inventory department. From the illustration below, one can easily conclude that total petroleum makes use of art of the state technology in inventory security. This includes the use of Gprs tracking system in tracking good from on point to another, close circuit television (CCTV) system just to mention a few. From the diagram most staff ranked the security system as very safe with the score of fifteen of the total score of twenty. It is trailed by safe with a score of three and not sure with the score of two. The inference from the above indicates that security is paramount to total petroleum's inventory activities.

On the other hand, monitoring of goods was also given the attention regarding security; the analysis shows that though Total is advanced in inventory safety but has little or nothing to do with radio Frequency Identification System (RFID) which is very popular in many advance nations. Recorded zero in grading security. Meanwhile mobile phones gain a value of seven. In summary, it is evidential from the survey that the best tool for monitoring movement of good and vehicles from one point to another was judges to be GPRS tracking system. It undeniably scores the most favorite point of thirteen.

Another sector under inventory management safety and security is the secure manner in which good and services and transported from the upstream to the ordinary consumer at the downstream of the chain. Since most product of total petroleum is liquid in nature, there were a number of standardized means used it the conveyance of goods. Here, we had a look at the road transport which plays a significant role. It had a record tally of thirteen slot, it was by far the largest mode of transport good within Totals outlet in Ghana .whiles the deep sea transport is mostly used for international shipment of movement of goods across Geographical boundary globally. It was ranked at par with the opinion that both road and deep sea are intertwined and the supply chain will not be complete or successful without the other. Both achieve 4 point each during the survey. In conclusion, Store safety and security was also accessed to ascertain people view about the relevance of ensuring safety, security, reducing danger and damages, shrinkage and physical harm.

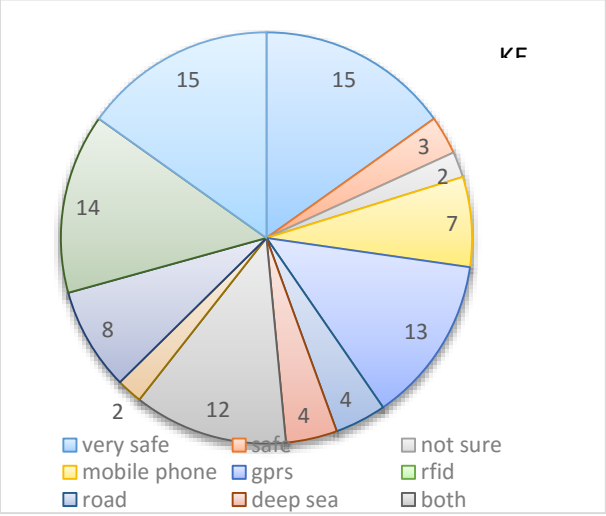


Figure 4.3.2 Source: Researcher collected data

D. Inventory Control Policies

Inventory control policies are mostly strategic rule that govern the administration of inventory in a particular set up. These are the rules and regulation that ascribes the does and don'ts of inventory management. Therefore efficient and effective control leads to lower cost of operation, free of working capital for other ventures and just to mention a few.

Assessing the importance of inventory management at Total petroleum Ghana, it was clear that proper control policies are implemented to ensure effectiveness. In this regard, it was ranked based on strongly agreed, agreed and don't agree. From the diagram, below the yardstick above was scored 14, 5 and 1 presenting seventy percent (70%), twenty (20%) and five (5%) respectively. This means that total attached a greater sense of importance to inventory management. In the circles of effective inventory management,

the operational and supporting activities of the inventory department and their contribution toward the overall organization performance was also tested. Most participant were of the view the inventory administrations are of high quality they kept the tally at thirteen (13) for high effectiveness, four (4) for average effectiveness, one (1) for below average and two for (2) for poor. Percentage wise it translate into sixty five (65%), twenty (20%), five (5%) and ten (10%) percent respectively.

In the same vain, stock auditing was also pursue during the survey .As an essential component of inventory management it crucial that we ascertain the needed view in this regards. Below are the responses from the sample during the survey. Stock auditing was graded as follows by the participants. From the illustration below inventory auditing was judge one of the best approach to stock management with the score of fifteen recording seventy five percent (75%) whiles five (5%) percent of the participant taught it was of less relevant and three (3%) percent said it was not relevant or not need at all.

once more, making reference to the demonstration below, we sought to find out stock are replenished to ensure free flow of good and service without breakdown the supply chain and production with it adverse effect. Stock scheduling and reordering are undeniably inseparable section of inventory management. It is clear from the diagram below that reorder; minimum, maximum stock control were implemented at Total petroleum Ghana. Maximum, minimum and reorder were tallied accordingly as follows 4, 0, 0 and 16 sixteen respectively. This correspond to a proportion of twenty (20%), zero (0%), zero (0%) and eighty (80%) percent in that array. In reality is more convincing to conclude form the diagram that Total petroleum is in 'bed' with the simultaneous used of these procedures.

To end with, stock ordering is done periodically and continuously reviews as against annual ordering of goods and services. Sixty five (65%) percent of the participant believed that periodic ordering was a 'milky juice 'for ensuring a smooth and free flow of Goods and services. However (35%) percent also contended on the ground of continuous ordering of good and services whiles none ascribed to annually ordering because of its complexity, vague and error prone nature.

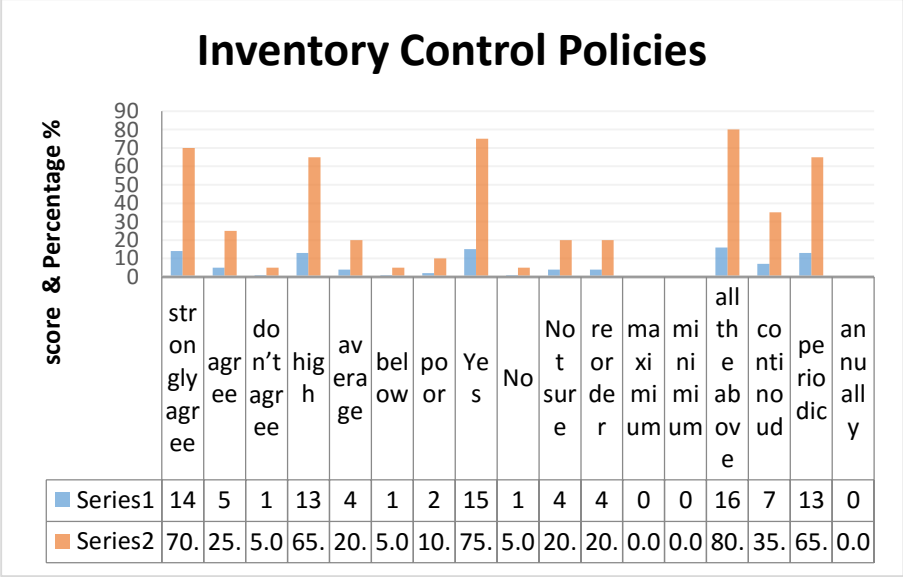


Figure 4.3.3 inventory control policies Source: Researcher collected data

E. Inventory Storage

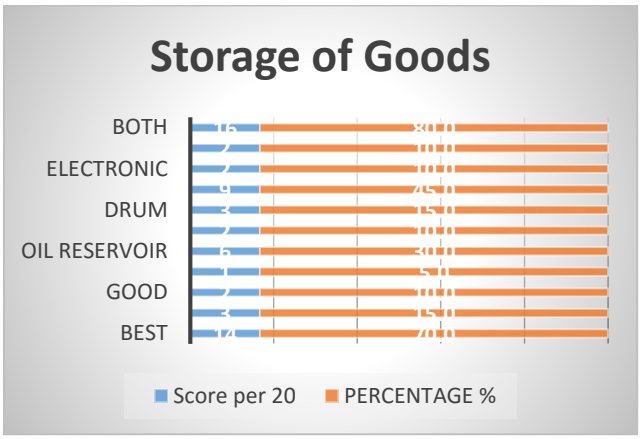
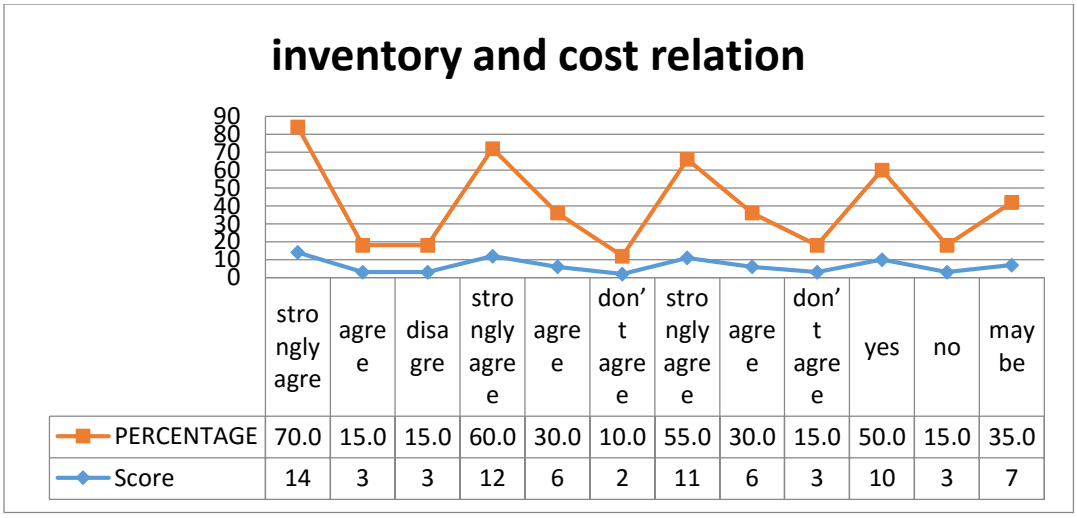


Figure 4.3.4 Storage of Goods Source: Researcher collected data

Next in line is storage of goods, Total petroleum implement a wide range of storage these includes electronic and manual procedure, oil reservoir, drums, tankers etc. Form the illustration above, it was unmistakable that Total petroleum has moved from the use of manual procedures tools and implement to the use of electronic storage procedure. Nevertheless because they have not phased the usage of manual procedure completely they make use of both system. Both system was score 16 ranking 1st and (80%) eighty in percentage terms. followed by both manual and electronic system slashing 2 each and a percentage of (10%) percent each. The use of storage material such drums was graded with the score of three (3), underground tanker (2) two and all the above (9) nine. This translate to (45%) percent, fifteen percent (15%) was allocated to drum usage and oil reservoir was grades with 6 point representing (30%)

Conversely, on the method of delivering goods the assessment was done with the remark of poor, good, better and best. The method of delivery was dotted as the best with the highest score of (14) fourteen signifies seventy (70%) percent, better three (3) with fifteen percent(15%) good was ranted two(2) and in percentage term is (10%) ten. only one person deemed the system is poor with a percentage 0f (5%). In total we it was conclusive that the method of delivery was best according to participant score.

F. Inventory And Cost Relation



	strongly agree	agree	disagree	strongly agree	agree	don't agree	strongly agree	agree	don't agree	yes	no	may be
PERCENTAGE	70.0	15.0	15.0	60.0	30.0	10.0	55.0	30.0	15.0	50.0	15.0	35.0
Score	14	3	3	12	6	2	11	6	3	10	3	7

Figure 4.3.4 Inventory and cost relation Source: Researcher collected data

Finally inventory ,saving and cost relation participant .participant of the survey were asked to rant the inventory system been man as either effective and cost saving in nature (70%) percent strongly agreed, fifteen (15%) percent agreed and the other fifteen percent disagreed. On the question on if inventory management has brought saving to the organization. Most participants believed that their system has led to savings and they judge it with (60%) which is a strong agreement. (30%) percent of participant also agreed whiles only 10 percent disagreed. from the diagram and the information collected was clear that the participant were 'popping Champaign' of the inventory set up.

In conclusion, total petroleum looked on top of their inventory management. This can be ascribe to the level of professional been engaged. The over whelming response tilted in favour of their system which was a plus.

V. SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

A. *Findings from the Analysis of the Study*

Based on the responses to questionnaires from target group on the effectiveness of inventory management in the private sector organisation. (Total petroleum Ghana Limited). The researcher brings into being the organisation recognised the fact that materials management is paramount in every facet of the business process and for this reasons management has employed as system of inventory control which was satisfactory to most of their staff through their responses to the questionnaire.

In addition to the above, the researchers unearth the fact that Total Petroleum employs young and dynamic personnel with a higher sense of integrity and professionalism. They are full of experience with an overwhelming experience of 10 year and above in inventory management.

Moreover, issues of security also came to light. We realised that Total Petroleum Ghana made used of modern security technology such as GPRS tracking system for their multi modal transport system. The serves a mean of monitoring movement of goods from on destination to another. A modern and conventional methods of inventory control policies were been implement to ensure smooth flow and safe administration of inventory management. A combination of policies like periodic ordering and stocking auditing was undoubtedly a great success story.

Again, proper storage system for goods was also in place for proper inventory system. They combined efficient and multiple storage system such as oil reservoir, oil tanker, drums just to mention a few. Both electronic and manual storage process was also in used to ensure cost effective management of inventory.

Obviously, there were some challenges raised by the inventory staffs. This was in the light of redundant and scraps management on one side. Here we observed that scrape and redundant canister, gallons drums and so on were accumulated without any proper documentation and storage.

On the other hand, residue of oil or dirty oil was also left at the receiving bay unattended to. A little pushed reveals that there not and formal procedure for disposal of such remains of oil. This can breed the tendency for pilfering and theft.

B. Recommendation

Inventory management is a complex discipline with interesting techniques. Therefore materials management and control must be given much attention. Every business or entity owes it existence not only to the strategic policies but also the nature of inventory system adopted. For continuity and future growth of organisation in future management must give inventory a priority. This must also takes into consideration the environmental impacts. Based on the findings from the survey, we therefore recommend the following to the organisation (Total Petroleum Ghana).

To begin with, from the findings we realised that the organisation makes use of experienced graduate at the detriment of fresh graduates. We therefore recommend that the organisation should have in place internship program that will train more graduate from most universities and polytechnics. We believed this will be a door opener for most fresh graduate to upgrade the experience for future employment.

Again, we recommend an equal opportunity for females to be employed as inventory administrators. From the presentation on personal data, female employees amounted to 35% percent which can still be improved. Again we will like to recommend to management to employ electronic data interface (EDI) or an enterprise resource planning software which are user friend to manage their inventory. The reason being that, the flows of inventory ‘’to and fro’’ their stations are voluminous for which manual control will expose the system to errors.

In addition to the above, we recommend to management to supplement their GPRS tracking system with radio frequency identification (RFD) for easily Identification and tracking of good within their storage area and warehouse as well.

Furthermore, we recommend proper administration and management of scraps (empty gallon drums, canisters etc) to ease congestion, reduce the danger of accident and ensure proper administration of inventory and staff safety. All redundant and unused material must be cleared of the inventory storage area

Besides the above, we recommend continues training on inventory staff on materials handling techniques especially chemical storage and handling and safety which includes putting on safety dresses such as helmet groves, safety boot etc.

Finally, on the residue of oil or what is popularly termed as ‘dirty oil’. We recommend that management should outsourced to a third party with the request know how and capacity in liquid and oil waste management or an official application should be sent to the Environmental Protection Agency for advice on the procedures necessary for the disposal of waste oil chemicals. Training of personnel to monitor such disposal must also be encouraged so that their operation will not endanger nature and it spices.

C. *Conclusion*

This piece of survey or research was conducted through intensive exploration and widespread research from text books, other relevant, related materials and documents. The data was collected on inventory management and it essential study areas. The study talks about the effectiveness of inventory management in the private sector. Since most private sector until today has ignored as well as it immense benefits. Inventory management system of total Petroleum Ghana is robust, efficient and future oriented.

It was also obvious that the system is efficient because of the level of professionalism exhibited by their staff. It was organised into five distinct chapters namely introduction in chapter one, literature review in

chapter two, research methodology in chapter three. Whiles data collection, analysis and presentation are in chapter four and finding recommendation and conclusion in chapter five.

We hope that the recommendation given here will be given serious attention, adoption and implementation by management.

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