ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

DETERMINANTS OF EFFECTIVE INVENTORY MANAGEMENT PRACTICES IN THE MANUFACURING FIRMS IN ETHIOPIA: THE CASE OF DH GEDA BUSINESS GROUP

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A THESIS SUBMITTED TO ADDISABABA UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS, DEPARTMENT OF ACCOUNTING AND FINANCE IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE MASTERS OF DEGREE IN ACCOUNTING AND FINANCE

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DECLARATION

I declare that the work done in the research thesis entitled "Determinants of effective Inventory Management practice at DH GEDA Business Group" is my original work. This paper has not been earlier in it's entirely or in partial been submitted to any university in order to acquire an academic qualification or professional requirement. Lastly I have fully cited, recognized and referenced all material.

Declared by

Dema kemalo Signature: _____ Date_____

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Assessment of Inventory Management Practices at DHGEDA Business Group

In Partial Fulfillment of the Requirements for the Masters of Degree in Accounting and Finance

APPROVE BY ADVISORS & BOARD OF EXAMINERS:

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List of Abbreviations and Acronyms

ANOVA	Analysis of Variance
DHG	Duguma Hunde Geda
DRP	Distribution Resource Planning
EOQ	Economic Order Quantity
EPOS	Electronic Point of Sale
ERP	Enterprise Resource Planning
GDP	Gross Domestic Product
IT	Information technology
IM	Inventory Management
IMP	Inventory Management Practice
JIT	Just in Time
MRP	Material Requirements planning
RFID	Radio Frequency Identification
SPSS	Statistical Package for social sciences
VIF	Variance inflation factors
VMI	Vendor Management Inventory
WMS	Warehouse Management System

ABSTRACT

This study focuses on the assessment of inventory management practice of DHGEDA Business Group. The study adopted descriptive and explanatory research design in which mixed research method. Stratified and purposive sampling techniques were employed. Data collection instrument questionnaire and interview was applied. The target population was 104 DH Geda Staff from different departments, from these 83 respondents were used as sample. Out of the 83 questionnaires distributed, 81 questionnaires were collected and examined that representing 97.6% response which considers being excellent. The SPSS version 26 and excel 2010 was used to process the primary data which is collected through questionnaire. Statistics applied included Pearson correlation coefficient & linear regression analysis. The result of the study shows that the main challenges faced in inventory management practice of the company such as unavailability of input, quality problem, lack of coordination between department and Lack of good warehouse management. Also company does not apply scientific inventory management techniques. Effective inventory management practice help to increase competitiveness through quality of product, speed of delivery and equivalent price of product. The study found that funding, staff and information technology have a positive correlation and significant influence on the effectiveness of inventory management. Procurement procedures have a positive correlation and insignificant influence on the effectiveness of inventory management. Lastly, the study recommends that company should ensure effectiveness of inventory management practice through allocate sufficient fund, improve procurement procedure, develop technology with qualified staff and apply scientific inventory management techniques. This help to undertake significant cost minimization, product quality, speed of delivery and increase profitability to create sustainable competitiveness.

Keywords: Inventory Management Practices, manufacturing firms, Ethiopia

CHAPTER ONE

INTRODUCTION

This chapter provides to the reader the necessary background information regarding inventory management practice and the case company used in this thesis is then introduced and a background description to the statement of problem, research objective and research questions, research significance, scope of research, method of research, limitation of research and organizations of paper are presented.

1.1 Background of the Study

Inventory is an essential resource and the life or backbone of companies needed for day to day operations. Inventory is defined as an idle resource of any kind that has potential economic value and considered as locked up capital and a practical definition from the material management angle would be an item of store or materials kept in stock to meet future demands of production, repair and maintenance and Sales. Inventory is a list of goods and materials or those goods and materials themselves held available in stock by a business and considered as an asset (Mercado, 2007).

Inventories are resource of any kind having an economic value consist of a raw materials, work in progress, finished goods consumables and stores which the largest proportion of current asset on the balance sheet for performing business activities, inventory considerable influence the profitability and liquidity of industrial units and also all industrial undertaking expect a return from their investment in inventories (Bose, 2006).

Inventory is the raw materials, work-in-process goods and completely finished goods that are considered to be the portion of a business's assets that are ready or will be ready for sale. Inventory represents one of the most important assets that most businesses possess, because the turnover of inventory represents one of the primary sources of revenue generation and subsequent earnings for the company's shareholders. Inventory is an asset that is owned by a business that has the express purpose of being sold to a customer. This includes items sold to end customers or distributors. It includes raw materials; work in process, and finished goods (Ackah and Ghansaha, 2016).

Inventory Management is a process of overseeing and controlling of ordering, storage and use of components that a company will use in production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale. Keeping inventory level too high will lead to idle capital reposition without utilization and too little will result with costly interruptions. The best inventory policy should optimize the ordering level and capital investment at opt time. Visualizing and adapting a best inventory policy is a challenging task for an organization (Panneerselvam, 2006).

A good inventory management system provide information to efficiently manage the flow of materials ,effectively utilize people and equipment ,coordinate internal activities and communicate with customer, inventory management does not make decision or manage operation but to provide information to managers who make more accurate and timely decisions to manage their operation of company and also inventory management must be designed to meet the dictates of market place and support the company strategic plan the changes (Narayan &Subramanian,2008) .

Inventory management is a coordinating function responsible for planning and controlling materials flow to maximize the use of the firm's resources, to provide the required level of customer service and to improve a company's profit Chapman et al., (2006).

Inventory management is to find the right middle point in order not to have too much inventory because it will result in sunk cost. If the inventory is too low, it will affect production that may not be sufficient to produce. But if the raw material is purchased in large quantities, there may be a lower cost of purchasing raw materials. Therefore, inventory management is a sensitive matter and requires an understanding of the context and function of the inventory. Finally inventory management is to minimize the cost of managing inventory because inventory has both advantages and disadvantages. To increase the efficiency and reduce costs to improve competitiveness; inventory management is the first priority Kaewchur et al., (2021). This study therefore sought to provide detailed information on the assessment of inventory management practices among manufacturing firms in Ethiopia in case of DHG Business Group.

1.2 Background of the Company

Duguma Hunde Geda, the founder of DHG, started his career in 1970 as a tailor with a mere capital of 85 birr (USD 8) and built his empire in to fortune. DHG Trade and Industry has become one of the leading establishments involved in a broad spectrum of industries. DHG is involved in the production and marketing of paints (Zemilli paint Factory plc.), minerals (DHG Trade and Industry plc.), blankets (DHG Blanket Factory plc.), wheat flour (DHG Flour Factory plc.), acrylic yarn (DHG Dyeing plc.), and galvanized sheets (DHG GIS Factory plc.). It also runs its newly built commercial center, DHG Tower, where its headquarters is stationed. The marketing and sales division operates out of headquarters with its ten shops in Merkato and its branches which are locatedinmajortowns,Mekele,Harrer,Desse,Gonder,BahirDar,D/Markos,Shashemene,Jim ma,Diredawa,Adama , Nekemte and wolayita as its sales distribution outlets . DHG strives to better serve its clients by implementing backward and forward integrations, such as; chemicals to paints, farming to flour, warp to blankets, and galvanization to sheet. By strengthening its R&D, DHG aspires to maintain its competitive advantage in all of the sectors it is involved in. The company aims to provide quality product at an affordable price with short delivery time (http://paint Dhgeda.com).

1.3 Statement of Problem

In recent years, the manufacturing sector has played an important role in developing countries such as Ethiopia. These include the transition from agriculture to industry, create job opportunity, technology transfer and increase country GDP. Inventory and Inventory Management is a very important topic for all organization that use Inventory on a daily basis and Inventory management is the backbone of the manufacturing industry.

In Ethiopia the manufacturing sector contribution has high proportion for country development and GDP. According to National Bank of Ethiopia report, the contribution of manufacturing share to industry sector GDP has shown to 23.4% in 2020/2021, 23.9 % in 2019/2020, 24.3% in 2018/19 and 25.3 percent in 2017/18 (https://nbebank. com).

Inventory is a vital part of current assets mostly in manufacturing concerns. Huge funds are committed to inventories as to warrant smooth flow of production and to meet consumer demand. However, maintaining inventory also involves holding or carrying costs along with opportunity cost. Inventory management, plays a crucial role in balancing the benefits and disadvantages associated with holding inventory. Efficient and

effective inventory management goes a long way in effective running and survival of a business firm, when organizations fail to manage their inventory effectively they faced to stock out, the decline in productivity and profitability and also customer dissatisfaction Agu et al., (2016).

Inventory constitutes the most significant part of current assets in any organization and because of the relative largeness of inventories maintained by most organizations, a significant sum of an organization's fund is being committed to them (Wangari and Kagiri,2015).

Effective inventory management requires continuous interaction between marketing, sales, manufacturing and supply departments. Despite the fact that firms develop detailed plans for production and supply, the actual volume of sales or their structure often differ significantly from those planned (Khan &Ahmed ,2019).

Inventory constitutes a major section of total investment, it is vital that good inventory management be practiced to ensure organizational growth and profitability. Inventory management of a business can go a long way in determining the success or the failure of the business. Ineffective inventory management can lead to stock out which will definitely lead to loss of customer and goodwill, which will make the profit of the business decline and outcome in final collapse of the organization. In most organizations, direct materials represent up to 50% of the total product cost, as a result of the money entrusted on inventory, thus affecting the profitability of the business (Hamed, 2021).

Inventory Management practice affects the company operation such as production activity, sales volume and overall organizational performance and poor inventory management practice in any organization especially in manufacturing if the product outputs are not meet customers' requirements, that can lead to risk a profitability and competitiveness of company. Some of factors effectiveness of inventory management practice and helps to achieve create sustainable competitiveness and profitability of organizations are include information technology, finance system, inventory policy, procurement procedure, inventory cost, efficiency of warehouse management, stock shortage and overage, suppliers selection, delivery speed, skilled staff and inventory management techniques.

In the DH Geda Business Group, from the company's' current asset the amount of inventory is significant. External audit reports the past three years the share of inventory from total current asset shown to 75% in 2018/2019, 82% in 2019/2020 and 73% in 2020//2021. So inventory and inventory management a practice is important topic for DH Geda. However, there are many researchers study at manufacturing companies about inventory management practice by many angles and Most of academic researches focused on the specific topic of inventory management practice rather than comprehensive topic. Still, to the best knowledge of the researcher, there are no previous studies related to inventory management practices in case of DH GEDA Business Group.

1.4 Research Questions

This study tried to answer the following basic research questions.

1. What are the challenges encountered during practicing inventory management in DHG Business Group?

2. What Techniques of inventory management are used by DHG Business Group?

3. Is effective inventory management practice improves the organizational competitiveness?

4. What are the factors that influence effectiveness of inventory Management in DHG Business Group?

1.5 Objective of the Study

1.5.1 General Objectives

The general objective of the study is determinants of inventory management practices at DH GEDA Business Group.

1.5.3 Specific Objectives

The specific objectives of the study are to achieve the following;

1. To identify the challenges faced while practicing inventory management in DHG Business Group.

2. To assess the techniques of inventory management used in DHG Business Group.
3. To explore effective inventory management practices improves the competitiveness of DHG Business Group.
4. To examine the factors that influence effectiveness of inventory management in DHG Business Group.

1.6 Significance of the Study

Inventory management practices are an important topic area on the manufacturing industry, so the results of this study will help policy makers and decision makers to formulate strategies to better understand the impact of inventory management practices and their impact on the company's profitability**.** Lastly, the study not only fulfills the partial requirement for the award of the Degree of Masters it is hoped that the study findings would form the basis to which upcoming researches in the area of IMP.

1.7 Scope of the Study

The study conducts Determinants of IMP at DH Geda Business Group. The discussion challenges faced to implement of IMP ,inventory management techniques, is effective inventory management practice improve competitiveness and concerning to the factors influences effectiveness of inventory management practice and the researcher has chosen focus on four information technology, procurement procedures, financial resource (funding) and qualified staff. The study did not cover the other Ethiopian manufacturing firm and more variables those influences effective inventory management practices..

1.8 Limitation of the Study

The research and the result limited to DHG Business group. The independent variables focus only on four factors that influence the effectiveness of inventory management (information technology, procurement procedures, funding and qualified staff).The one limitation is the problem of including all employees in study and the time constraints of employees to respond to the questioner as fast as expected. In the future; similar research will be focus on the factors that affect determinant of IMP and others variables related inventory management practices.

1.9 Definitions of Terms

1**). Inventory** is defined as an idle resource of any kind that has potential economic value and considered as locked up Capital. And also a list for goods and materials or those goods and materials themselves held available in stock by a business Saxena, (2009).

2**). Inventory management** is one of the key elements of the supply chain management and can greatly affect the performance of a business(Priniotakis &Argyropoulo,2018).

3). Inventory control is a process that entails supervising the warehouse, the supply of products and its accessibility so that there is an adequate supply of the goods to customers and raw materials to the manufacturing company Marand et al., (2019).

4). Inventory management techniques are carrying unnecessary stock of goods and a material adds to the operational cost of the organization and reduces its profitability. Therefore, the solution to reducing overall cost of holding inventory lies with adopting the use of efficient procedures to manage and control physical inventory of goods Lambert et al., (2001).

1.10 Organization of the Study

This research has five chapters. The first chapter deals with the introductory part about overview of study which contains background of the study, back ground of the company , statement of the problem, research questions, research objectives, significance of the study, scope of study, limitation of the study and organization of the paper. The second chapter contains the literature review which was include two parts that theoretical literature review, empirical review done by other researcher and same studies topic resulting to the research gap within conceptual framework.

The third chapter deals with the research methodology which include research design, population, sample and sample size, data collection methods, reliability and validity of study. The forth chapter reveals data presentation, analysis and interpretation of findings. Lastly, the fifth chapter concerned with summary, conclusion, recommendation and areas for further studies.

CHAPTER TWO

LITERATURE REVIEW

This chapter including three parts First part consists of theoretical part which discusses the meaning of inventory and inventory management, model of inventory control techniques, objective of inventory management, problems of inventory control and role of inventory management. Second part is the empirical part provides other similar research evidences which support the study issues. The third part is presents the research gap and conceptual framework of the study.

2.1 THEORITICAL LLITERATURE REVIEW

2.1.1. Concept of Inventory Management

Inventory management states the process of managing the stocks of finished products, semi-finished product and raw materials by firm and when done well can bring down costs and increase the income of companies (Mercado, 2007).

Inventory management is very important purposes that determine the health of the supply chain as well as the impacts the financial health of the balance sheet and every companies constantly strives to maintain optimum inventory to be to meet its requirements and avoid over or under inventory that can impact the financial figures (Samanta, (2015).

Inventory management is the process of monitoring and controlling inventory level and ensuring adequate replenishment in order to meet customer demand. Determining the appropriate inventory level is crucial since inventory ties up money and affects performance. Having too much inventory reduces the working capital and impacts the company's liquidity and having too little inventory leads to stock outs and missed sales which leads to less profit. Inventory management should be focused on keeping inventory level in between, striving or increased customer satisfaction and minimum stock outs while keeping inventory costs as low as possible (Priniotakis & Argyropoulos, 2018).

Inventory management system is a method that includes all elements of managing a firm's of inventories, buying, shipping, receiving, monitoring, warehousing, turnover, and reordering process (Kithinji, 2015).

2.1.1.1. Role of Inventory Management

The role of inventory management is to maintain a desired stock level of specific products or items. The desired level is a function of customer service requirements and the cost of inventory investment. Once the parameters are determined, the challenge is how much to order, when to order, and how to control ongoing activities. The mission is to address the activities and techniques to best manage inventories. The determination of desired inventory levels requires the consideration of the attributes of each item (Toomey, 1996).

Inventory management plays a significant role in every company and ineffective inventory system will result in loss of customers and sales. An effective inventory management is able to generate more sales for the company which directly affects the performance of firm. Therefore it requires a systematic inventory management which is managed by a group of employees who are experts in this area (Mohamed et al., 2016).

The role of inventory management is to determine policies that create and distribute inventories most effectively. These policies, to a major extent, reflect the environment in which a company operates. The environmental factors, in turn, result in the roles inventories play in supply chain's strategy and to meet current demand from stock which was created earlier because of the cyclic nature of the incoming supply of inventory (Muckstadt and Sapra, 2009).

Inventory management is involvement in all about ensuring the availability of the production inputs of materials and effectively and efficiently controlling the costs of the operation (Olakunle, 2004).

Inventory management is also defined as it is the science and art of managing the level of stock of group of items which incurred least costs and also reach the objectives set by the firms. The primary objective of inventory management is to improve the customer satisfaction level by keep adequate amount of inventory for demand fluctuations and variability and secondary objective is to increase the production efficiency, means that the production control, maintaining the level of inventory for efficient materials management (William,2021).

Inventory management systems play a vital role in minimizing costs and maximizing profits, also meeting customer demands by making sure there is sufficient stock at the

right quantity, quality and available at the right time and the right place. To make sure inventory is managed properly, there needs to be adoption of inventory management systems that have played a role in the business operations for many years in the global arena. Inventory management systems play a vital role in enhancing performance in controlling inventory in manufacturing companies Ngugi et al., (2019).

2.1.1.2 Responsibility to Inventory Management

According to Anderson & Bragg, (2005) the responsibility for inventory may generally be assigned as follows, with variations based on the company's organizational structure and products. **(1) Manufacturing-related inventories**: such as raw materials, manufacturing supplies, and work-in-process, should be the responsibility of the chief manufacturing executive, so that the position has complete command over the materials needed to manufacture the finished product. **(2)Sales-related inventories**: such as finished goods, can be the responsibility of either the chief manufacturing executive or the sales executive. A better job of estimating sales requirements will result from assigning these inventories to the sales executive to will pay greater attention to disposing of obsolete or slow-moving items. Regardless of who is assigned the responsibility, the assignment must be clear, so that inventories are kept at manageable levels. There must also be full coordination among the purchasing, and production functions, so that parts are purchased only as needed and based on accurate bills of material**. (3)The controller: -** is rarely responsible for the inventory but should be responsible for related internal control issues and inventory valuation methods

According to Althaqafi, (2020) Inconsistency can also arise due to not dividing duties equally, thus one employee being over relied upon to shoulder the burden of a significant number of tasks. This eventually leads to erroneous work, and possibly even fraud. Leaving work to one single department will not lead to a proper manufacturing process. However, integrating workers and departments to each become part of the whole firm will ensure that they are responsible for production. Communication should also be enhanced throughout the whole manufacturing system in order to effect these changes.

According to Hakan et al, (2019) Materials management is responsible for purchasing the highest quality equipment and products at the lowest possible cost for the organization

and also responsible for managing purchasing, inventory control functions, shipping and receiving, also planning and administering department budgets.

According to Susan & Michael, (2000), warehouse staffs (store keepers) are accountable for the distribution of inventory materials to all storage or using sites. They are also responsible for the physical security and protection of material at all stores locations and for all storekeeping activities, including material receiving, put-away, and material picking and shipping. Other responsibilities include: keeping accurate inventory records, managing the physical layout of storehouses, including bin location assignments, determining the physical movement and distribution of material throughout the organization, receiving and storing material; issuing stock material in response to a material request from customers, conducting cycle counts, annual physicals, or both, reconciling discrepancies between cycle count and annual physical inventory, developing and operating truck and route schedules for distribution of material, and working with purchasing departments to resolve vendor-related problems with timing, quality, quantity, and delivery.

2.1.1.3 Importance of Inventory Management

According to Pagare et al., (2016) Inventory management helps in maintaining an exchange between transport costs and ordering costs which results into minimizing the total cost of inventory. Inventory management facilitates maintaining adequate inventory for smooth production and sales operations. Inventory management avoids the stock-out difficulty that a firm otherwise would face in the lack of proper inventory management. Inventory management suggests the proper inventory control system to be applied by a firm to avoid losses, damages and misuses.

2.1.1.4 Challenge of Inventory Management

Inventory management is becoming more complex due to new challenges. To name a few, product life cycles become shorter, demand becomes more unpredictable, green supply chain and relevant new topics adding complexity to the issue.

According to Agu et al., (2016) the challenge grows even bigger when we think about the diversity of products in terms of their color/design, package type, and size and so on. To further explain the problem, we assume there is an accurate demand forecast. However,

the aggregate demand needs to be broken down by various specifications of the product into sub-total demand forecast to guide the stock keeping units (SKUs) in the company in order to fulfill the final customer's order. But the sub-total demand forecasts could be diverse, reaching dozens, hundreds, or even thousands of categories; in that case, they become truly difficult, complex and time-consuming. The difficulty of forecasting demands accurately naturally results in two problems, which are in opposite extreme, overstock and stock-out of inventory. As companies strive to avoid lost sales from stock-out of inventory, there is a tendency to overstock.

According to Althaqafi, (2020) the problem potentially arises when there is a very fixed management system in place. As such, problems concerning inventory may arise, but rigid management may not correct them on sight. This problem overspills into the future, hence affecting the profits of the company. The rigid regime could be corrected by creating an easy-flowing structure that could lead to an effective quality management system. The company also needs to change alongside evolving systems that constantly change due to technological advancements. Also the supply chain in the inventory system may also have problems due to the effects of globalization. Although globalization has enabled the expansion of many industries by lowering productions costs, supply chain problems have often subsequently developed, because inventory has to be procured from a variety of different sources. Moving the finished goods to customers also requires higher levels of expertise, which is more difficult to achieve. Manufacturing industries also face the problem of inadequate resources and not enough time. This problem has brought about a lower quality of materials, which reflects poorly in the financial statements. Therefore, the company needs to concentrate its strengths and resources on improving quality for optimum results.

2.1.2. Definition of Inventory

Inventories are current assets. These are tangible assets held by an organization. In manufacturing concerns, inventories include stock of Materials, semi-finished goods, (work in progress), finished goods, packing materials, factory supplies and spares. Cost of unsold goods is inventories for trading concern. Service organizations like schools, campuses, hospitals etc. also need in the form of office materials/supplies. All form of inventories hold some economic value. Thus the sum of raw materials, semi-finished

goods, finished goods, spare parts, office supplies and other consumable stores is known as inventory (Bhandari, 2007).

Inventories are materials stored, waiting for processing, or experiencing processing. They are universal throughout all sectors of the economy. Observation of almost any company balance sheet, for example, reveals that significant portion of its assets comprises inventories of raw materials, components and subassemblies within the production process, and finished goods. Most managers don't like inventories because they are like money placed in a drawer, assets tied up in investments that are not producing any return and in fact, incurring a borrowing cost. They also incur costs for the care of the stored material and are subject to spoilage and obsolescence (Samanta, 2015).

Inventory is defined as an idle resource of any kind that has potential economic value and considered as locked up Capital. And also a list for goods and materials or those goods and materials themselves held available in stock by a business (Saxena, 2009). Inventory is a totally essential thing in every organization and it requires severe managerial attention because it ties up a variety of companies' capital Samuel & Ondiek, (2014).

Inventory is a large and costly investment. Better management of corporate inventories can improve cash flow and return on investment. Nevertheless most companies like retailers, wholesalers and manufacturers suffer through periodic inventory rituals that are crash inventory reduction programs are instituted every year Lambert et al., (2001).

2.1.2.1 Types of Inventory

According to Narayan & Subramanian, (2008) there are four types of inventory.

(1)**Raw Material Inventory** is components those are directly used in the production process and go into making the final product. They may either consist of standard items sourced off the shelf or special tailor made items, two important factors that determine the size of raw materials. Firstly internal factors include the technology of production, the critically of the item and the lead time required for procurement and secondly External Factors the supplier lead time to manufacture availability of the raw materials in the market seasonality if any credit situation and government restrictions.(**2)MRO Inventory** is stands for maintenance, repair and operating supplies. These items are very much required in the production process although they do not go into making the final product.

They include Consumable, spare part and packing materials. (3) **In process Inventory** is sometimes called work-in process inventory comprise of the semi-finished product formed at various stages of the production process. Typically the output of one stage in an assembly line is the input for the next stage and (4) **Finished goods Inventory** is this comprises of all the final products made by the company ready for shipment or sales the purpose of this inventory is to assure a constant supply to the distribution channel.

2.1.2.2 Purpose of Inventory Handling

According to Chase et al., (2001) & (Muller, 2003) some of the more important reasons for obtaining and holding inventory are:

1. To maintain independence of operations is a supply of materials at a work center allows the center flexibility in operations. Therefore, it is desirable to have a cushion of several parts within the workstation so that shorter performance times can compensate for longer performances times. This way the average output can be fairly stable.

2. To meet variation in product demand is if the demand for the product is known precisely, it may be possible (though not necessarily economical) to produce the product to exactly meet the demand. Usually, however, demand is not completely known, and a safety or buffer stock must be maintained to absorb variation. supply of inventory on hand is protection when companies don't always know how much is likely to need at any given time, but still need to satisfy customer or production demand on time.

3. To allow flexibility in production scheduling is a stock of inventory relieves the pressure on the production system to get the goods out. This causes longer lead times, which permit production planning for smoother flow and lower-cost operation through larger low-cost production. High set up cost. In order to engage in capacity planning and production scheduling, companies need to control how much raw material, parts, and subassemblies that processes at a given time.

4. To provide a safeguard for variation in raw materials delivery time when material is ordered from a vendor, delays can occur for a variety of reasons; normal variation in shipping time, a shortage of material at the vendor's plant causing backlogs, an unexpected strike at the vendor's plant or at one of the shipping companies, a lost order, or a shipment of incorrect or defective materials. Inventory protects you from unreliable

suppliers or when an item is scarce and it is difficult to ensure a steady supply. Whenever possible unreliable suppliers should be rehabilitated through discussions or they should be replaced.

5. To take advantage of economic purchase order size there are costs to place an order, labor, phone calls, typing, postage, and so on. Therefore, the larger each order is, the fewer the orders that needs be written. Also, shipping costs favor larger orders, the larger the shipment, the lower the per-unit cost. If you buy a larger quantity of an item less frequently, the ordering costs are less than buying smaller quantities over and over again. Often bulk discounts are available if you buy in large rather than in small quantities.

6. Price protection is buying quantities of inventory at appropriate times helps avoid the impact of cost inflation. Contracting to assure a price does not require actually taking delivery at the time of purchase. Many suppliers prefer to deliver periodically rather than to ship an entire year's supply of a particular stock keeping unit (SKU) at one time.

2.1.2.3 Types of Inventory Cost

Inventory is a contemporary asset to a firm, but it is expensive will uphold as it sits tight will transformed into future revenue. At the same time as extra inventory does growth costs, a scarcity of Inventory can also bring about misplaced sales Shin et al., (2015).

Holding Costs is simply the amount of rent a business pays for the storage area where they hold the inventory. This can be either the direct rent the company pays for all the warehouses put together or a percentage of the total rent of the office area utilized for storing inventory. Include Inventory services cost , Inventory risk costs ,Opportunity cost money invested in inventory, Storage space costs and Inventory financing costs(Durlinger,2015) .

Ordering Costs are these include payroll taxes, benefits and the wages of the procurement department, labor costs and etc. these costs are typically included in an overhead cost pool and allocated to the number of units produced in each period. Such as Transportation costs, Cost of finding suppliers and expediting orders, receiving costs, Clerical costs of preparing purchase orders, Cost of electronic data interchange (Adeniyi &Damilola, 2019).

Unit cost is total cost spent on purchasing divided by number of items. It is difficult to gain the accurate unit cost because suppliers sell different goods in different conditions. The unit cost helps companies to know the actual cost spent on the goods and improve the cost effectiveness (Muckstadt, & spara, 2009).

Shortage or stock out cost is occurs when businesses become out of stock for various reasons. Some of the reasons might be are Emergency shipments costs, Disrupted production costs and Customer loyalty and reputation (Muckstadt, & spara, 2009).

Spoilage Costs is Perishable inventory stock can rot or spoil if not sold in time, so controlling inventory to prevent spoilage is essential. Products that expire are a concern for many industries. Industries such as the food and beverage, pharmaceutical, healthcare and cosmetic industries, are affected by the expiration and use-by dates of their products Adeniyi &Damilola, (2019).

Inventory Carrying Costs is the lesser-known aspect of inventory cost. This cost requires a certain amount of calculation to understand the extent of its impact on organization profit &loss statement. Inventory carrying costs refers to the amount of interest a business loses out on the unsold stock value lying in the warehouses (Durlinger, 2015).

2.1.2.4 Classification of Inventory

According to Lambert et al., (2001) inventories can be categorized into six by depend on the they are accumulated are list as follows

(a). Cycle stock is inventory that results from the replenishment process and is required in order to meet demand under conditions of certainty, that is, when the firm can predict demand and replenishment times (lead times) almost perfectly, no inventory beyond the cycle stock would be required. While assumption of constant demand and lead time remove the complexities involved in inventory management.**(b). In-transit inventory** are items that are en route from one location to another. They may be considered part of cycle stock even though they are not available for sale and /or shipment until after they arrive at the destination. For the calculation of inventory carrying costs, in-transit inventories should be considered as inventory at the place of shipment origin since the items are not available for the buyer, sale, or subsequent reshipment.

(c). Safety or buffer stock is held in excess of cycle stock because of uncertainty in demand or lead time. The notion is that a portion of average inventory should be devoted to cover short-range variations in demand and lead time. Average inventory at a stock keeping location that experiences demand or lead time variability is equal to half the order quantity plus the safety stock. **(d). Speculation stock** is inventory held for reasons other than satisfying current demand because of a forecasted price increase or materials shortage, or to protect against the possibility of a strike.

(e). Seasonal stock is a form of speculative stock that involves the accumulation of inventory before a season begins in order to maintain a stable labor force and stable production runs or, in the case of agricultural products, inventory accumulated as the result of a growing season that limits availability throughout the year. **(f). Dead stock** is inventory that no one wants, at least immediately. The question is why any organization would incur the costs associated with holding these items rather than simply disposing of them. One reason might be that management expects demand to resume at some point in the future. Alternatively, it may cost more to get rid of an item that it does to keep it. But the most compelling reason for maintaining these goods is customer service.

2.1.2.5 Inventory Valuation

According to Muller, (2003) there are five common inventory valuation methods :(1). **First-in, First-out (FIFO)** is inventory valuation assumes that the first goods purchased are the first to be used or sold regardless of the actual timing of their use or sale. This method is most closely tied to actual physical flow of goods in inventory. (2)**. Last-in, First-out (LIFO)** is inventory valuation assumes that the most recently purchased/acquired goods are the first to be used or sold regardless of the actual timing of their use or sale. Since items you have just bought often cost more than those purchased in the past, this method best matches current costs with current revenues.

(3)**. Average Cost Method** is inventory valuation identifies the value of inventory and cost of goods sold by calculating an average unit cost for all goods available for sale during a given period of time. This valuation method assumes that ending inventory consists of all goods available for sale. (4). **Specific Cost Method (also Actual Cost Method)** is inventory valuation assumes that the organization can track the actual cost of an item into, though, and out of the facility. That ability allows you to charge the actual

cost of a given item to production or sales. Specific costing is generally used only by companies with sophisticated computer systems or reserved for high-value items such as artwork or custom-made items.

(5). **Standard Cost Method** is inventory valuation is often used by manufacturing companies to give all of their departments a uniform value for an item throughout a given year. This method is a best guess approach based on known costs and expenses such as historical costs and any anticipated changes coming up in the predictable future. It is not used to calculate actual net profit or for income tax purposes.

2.1.2.6 Obsoleted Inventory

In IMP one of the main challenges in the inventory control is to minimize obsolete stocks or balancing inventory availability. The obsolete inventory is a product can occur from external factors such as customer demand or occur due to internal operations.

According to Anderson & Bragg, (2005) obsolete inventory can constitute a large proportion of the total inventory, so consider giving controls a high priority in this area. Controls fall into four areas: these are Prevention of obsolete inventory, detection of existing obsolete inventory, rapid disposal of obsolete inventory before its value drops to minimal levels, and appropriate recognition of obsolescence reserves.

According to Brown et al., (1964) Obsolescence may occur for a particular item because the function served by that item is no longer required because units replaced as they are consumed by a substitute item which performs similar or identical functions or because of a program of systematic replacement by a substitute item.

According to Muller, (2003) for the reasons most often given as to why the obsolescence inventory can't be disposed of are:-it's already paid for organization might use it someday and Organization might sell it someday.

2.1.2.7 Impact of Material Excess

Excess inventory refers to products, raw materials, and components that have yet to be sold or used, and therefore remain in storage, awaiting their future, tying up working capital. Also known as overstock, excessive stock, excess inventory can be the result of a poorly executed demand forecast and inventory management strategy (www.unioncrate).

According to Silver & Willoughby, (1999) Excess stocks may arise due to subsequent design changes in a facility or to the inherent uncertainty in certain types of projects. Options for disposal include return to supplier (using a buyback clause in the purchase contract), sell (usually at a discount), or trade-in on a future purchase.

According to (Nnamdi**,** 2018) Excess inventories as the name implies are Stock Keeping Units (SKU's) that has a significant amount of inventories on-hand compared to average annual consumption. Root causes of excess inventory were shown to be due to data errors in inventory planning parameters, inappropriate demand forecasting methods, lack of ownership, lack of part life-cycle management and part life-cycle pricing as well as internal practices within the organizations.

According to Priyank & Hemant, (2015) the potential causes of excess stock are legion. An abrupt decrease in demand or changing business conditions may lead to an excess stock situation. Similarly, price increases, forecasting errors, customer cancellations, the introduction of a new (competing) product, production overruns, over purchasing (to protect against stock outs), or even simple goofs (e.g. errors in the transmission of an order request) may be the basis for the excess occurrence. Poor quality in final product assembly could lead to an over-supply of a sub-component. Ultimately, inadequate materials planning and execution systems are central to the problem of excess stocks.

2.1.3. Inventory Control System

Inventory Control System is a plan approach to determine what to order how too much to order and how much too stock .so that cost associated with buying and storing will be optimal without interrupting production and sale. Inventory control is the supply of goods and services at the right time with the right quality and quantity. It is a reliable means in which businesses are been managed to ensure customers are satisfied and organization remains in operations via minimization of losses (ogbo, 2014).

Inventory control is vitally important to almost every type of business, whether product or service oriented. Inventory control touches almost every facet of operations. A proper balance must be struck to maintain proper inventory with the minimum financial impact on the customer. Inventory control is the activities that maintain stock keeping items at desired levels. In manufacturing since the focus is on physical product, inventory control

focus on material control. In order to have clear inventory management, a company should not only focus on logistic management but also on sales and purchase management. Inventory management and control is not only the responsibility of the accounting department and the warehouse, but also the responsibility of the entire organization Afolabi et al., (2017).

Inventory control is a process that entails supervising the warehouse, the supply of products and its accessibility so that there is an adequate supply of the goods to customers and raw materials to the manufacturing company. The main goals of the process are to control the stock and to accurately provide information on inventory. Moreover, inventory control is defined as observing the materials needed for production and working to provide them according to the planned timelines in order to ensure the regularity of operations and the use of capabilities, which leads to reducing costs and the regular flow of ready-made products to customers on specified dates Marand et al., (2019).

According to Pagare et al., (2016) an inventory lays a very important role in the determination of the profile of the Business. The management should make a decision to when the quantities to order according to the requirement & the number of units to be kept in hand. There are three basically of inventory control system. Maintenance of proper record with regard to the units and the value of Various Items of the Inventories, to ensure proper control over the receipt and of issue of the materials and Materials should be properly identified and proper storage of facilities should be made.

According to Anderson & Bragg, (2005) Inventory Control Systems should be concerned about three issues: The physical quantity of goods in stock (its design should minimize the risk that inventory will be lost through any number of means), The cost at which they are valued (Inventory control system should ensure that costs are fairly and consistently applied to inventories) & The proper billing of shipped goods:-it should ensure that goods shipped are appropriately billed to customers. An inventory control system is less concerned with billing the correct amount to customers; instead, the main point is to ensure that the billing transaction is appropriately triggered by a shipment action.

2.1.3.1 Types of Inventory control

According to (Dowler ,2016) Every organization has its own specific inventory control system that is used to integrate all aspects of overseeing its inventories including; re-ordering, tracking, turnover, receiving, shipping, warehouse storage and retrieving, however systems vary by the type of business being run. There are two main types of inventory systems

The perpetual inventory system is by far the most favored method of tracking inventory in stretch film packaging. In this system, inventory data is entered perpetually or continuously. Once an order is placed or received, the data is updated into the system right away. Compared to the periodic inventory system, a perpetual inventory system is superior because it allows real-time tracking of sales in addition to monitoring individual inventory levels for each item.

However, the calculated inventory levels obtained from a perpetual inventory system may steadily deviate from the actual inventory levels due to theft or unrecorded transactions. It is therefore vital to periodically compare the physical inventories to the actual on-hand quantities and adjust accordingly.

Periodic inventory system in this system, inventory data is not kept consistently up to date. Instead, inventory information is updated after a particular interval of time (usually once a year). Although this method is not as efficient as the perpetual system, it appeals to many people because you do not have to expend as much cash upfront to set up the technology and software needed to keep track of data. One major shortcoming with this system is that for the entire year, you do not have access to inventory data. For stretch film packaging business, this system can prove humongous especially when there is an increase in sales

2.1.4. Inventory management techniques

According to Lambert et al., (2001) inventory management techniques are carrying unnecessary stock of goods and a material adds to the operational cost of the organization and reduces its profitability. Therefore, the solution to reducing overall cost of holding inventory lies with adopting the use of efficient procedures to manage and control physical inventory of goods. Thus, the organization must invest carefully in ensuring that

the right stock is available when and where it is needed. This helps to reduce the loss of sales opportunities and thereby improve upon the profitability of the organization. Some of inventory management techniques are discussed as follows:

2.1.4.1 Just in Time (JIT)

Just-in-time organizes operations to occur at exactly the time they are needed. This approach is based on an aim of eliminating all waste. Stocks are seen as a waste of resources that can be eliminated by coordinating supply and demand. The characteristic approach is to identify problems and then solve them, rather than hiding them under excessive stock (Water, 2003).

JIT is very similar to lean manufacturing and a Japanese management philosophy which has been applied in practice since the early 1970's in many Japanese manufacturing organizations. It was first developed and perfected within the Toyota manufacturing plants by Taiichi Ohno as a means of meeting consumer demands with minimum delays. JIT manufacturing has the capacity when properly adapted to the organization to strengthen the organization's competitiveness in the marketplace substantially by reducing wastes and improving product quality and efficiency of production, reducing flow times within production and response times from supplier and customers, also helps control variability in their process and increase productivity while lower costs (Tajari,2018).

Just-In-Time (JIT) production has received a great deal of attention, worldwide, since its introduction in Japan a few decades ago. It has been well documented that some of the main benefits of JIT implementation are reduction of inventories, lead-time reduction, and cost savings Biggart, & Gargeya, (2002).

2.1.4.2 Vendor Managed Inventory

Vendor managed inventory is the process where the vendor assumes the task of generating purchase orders to replenish a customer's inventory. VMI is a term that is used to describe many types of supply chain initiatives. In all if its forms VMI should be about improving visibility of demand and product flow in supply chain facilitating a more timely and accurate replenishment process between a supplier (vendor)and an inventory site (customer distributer). The VMI process is a combination of e-ecommerce, software

and people. The e-commerce layer is the mechanism through which companies communicate the data (Saxena, 2009).

The objective of implementing VMI programs is to decrease costs for inventory control and management, and create transparency, possibility to collaborative planning and replenishment and efficient consumer response. In supplier-customer relationship VMI is currently used to monitor the customer's inventory replenishment and implies consequences on the collaboration process that links the different planning processes of each partner Marques et al., (2008).

2.1.4.3 ABC Analysis

ABC analysis is an inventory management technique where inventory items are classified into three categories namely: A (high price& Less quantity), B (moderate price & quantity, and C (Low price &high quantity).

According to (Water, 2003) ABC analysis gives some guidelines for this the origin of the ABC analysis sometimes called Pareto analysis, or the 'rule of 80–20' came in the nineteenth century when Vilfredo Pareto found that 20 per cent of the population owned 80 per cent of the wealth. In different forms, this is a widely used result, and in inventory control terms it means that 20 per cent of the inventory items need 80 per cent of the attention, while the remaining 80 per cent of items need 20 per cent of the attention. In particular, ABC analyses define the following: A. items are the few most expensive ones that need special care; B. items are ordinary ones that need standard care & C. items are the large number of cheap items that need little care.

According to Lysons and Gillingham,(2003) the purpose of this classification is to ensure that purchasing staff use resources to maximum efficiency by concentrating on those items that have the greatest potential savings. Selective control will be more effective than an approach that treats all items identically.

2.1.4.4 Materials Requirements Planning (MRP)

Materials Requirements Planning (MRP) is a computer-based production planning and inventory control system which is concerned with both production scheduling and inventory control. It is a material control system that attempts to keep adequate inventory

levels to assure that required materials are available when needed. The main purpose of MRP software is to facilitate the calculation of requirements of materials and timing. Thus it is a technique for determining the quantity and timing for the acquisition of dependent demand items needed to satisfy master production schedule (MPS) requirements by converting three inputs, bill of material, inventory data and master production schedule into time-phased requirements for subassemblies, component parts and raw materials, working backward from the due date using lead times and other information to determine when and how much to order Islam et al., (2013).

A material requirement planning (MRP) uses a bill of material to explode a master schedule and find the gross requirements for materials needed to support production. Information about current stocks, orders outstanding, reserved stocks, etc. are then used to find order quantities. Lead times are used to time phase these orders so that materials arrive in time for use. The resulting stocks are matched directly to production plans (Waters, 2003).

Material requirements planning (MRP) is a technique used to determine the quantity and timing requirements of dependent demand materials used in a manufacturing operation. The materials can be purchased externally or produced in-house. The important characteristic is that their use be directly dependent on the scheduled production of a larger component or finished product, hence the term dependent demand Burt et al., (2010).

2.1.4.5 Distribution Resource Planning (DRP)

Distribution resource planning (DRP) plans the flow of products out to customers in the same way that MRP plans the flow of materials in from suppliers Water, (2003). Distribution Resource Planning (DRP) is a general framework for planning and managing inventory in distribution networks. The DRP framework can be applied to complex distribution networks with thousands of unique stock-keeping units and hundreds of stocking locations Feigin et al, (2002)

Distribution Resource Planning (DRP) has developed as a natural of MRP methodology toward distribution techniques. The purpose of DRP system is to reduce distribution channel as a whole entity rather than single warehouses and attempts to optimize

inventory at each point in the distribution channel and also forecasts the needs of warehouses throughout the distribution channel using the same time phasing technique that is used by MRP and plans replenishment orders by altering the master production schedule of the manufacturing plant if the company uses both systems and has integrated them properly Schrader & Sower ,(1997).

Distribution Resource Planning is as an inventory control scheduling technique that applies material requirements planning principles to distribution inventories. It may also be regarded as a method of handling stock replenishment in a multi-echelon environment Lysons and Gillingham, (2003).

2.1.4.6 Enterprise Resource Planning (ERP)

ERP extends the approach to other organizations in the supply chain and uses the characteristic approach of MRP, but it focuses on the whole supply chain. It extends MRP beyond a single organization, to include suppliers and customers. This allows organizations in a supply chain to improve their overall performance by co-operating, exchanging information and co-coordinating their operations. ERP obviously relies on complete trust between organizations, and a free flow of information. In principle, this is relatively easy to organize, using the Internet and e-commerce. However, you can imagine the complexity of systems needed, and the practical problems that arise. Although many systems suppliers will disagree, at the moment it is fair to say that ERP is still developing (Water, 2003).

Enterprise Resource Planning (ERP) is an integrated management system that enables the efficient use of resources such as labor, machinery and materials required for the production of goods and services. ERP, as a system designed to integrate all the functions of the enterprise and to use the resources efficiently, has a wide area of use in production enterprises, non-profit organizations such as foundations and government institutions. ERP aims to monitor all processes and resources of institutions ((Hakan et al., 2019).

2.1.4.7 Economic Order Quantity (EOQ)

This model is known as Economic order quantity (EOQ) model because it established the most economic size of order to place. It is one of the oldest classical production scheduling models. In 1913, Ford W. Harris developed this formula whereas R. H.

Wilson is given credit for the application and in-depth analysis on this model. By using this model, the companies can minimize the costs associated with the ordering and inventory holding. It can be a valuable tool for small business owners who need to make decisions about how much inventory to keep on hand, how many items to order each time, and how often to reorder to incur the lowest possible costs. There are two most important categories of inventory costs are ordering costs and carrying costs (Kumar, 2016).

EOQ technique focuses on taking a decision regarding how much quantity of inventory should the company order at any point of time and when should they place the order. In this model, the store manager will when it reaches reorder the inventory the minimum level. EOQ model helps to save the ordering cost and carrying costs incurred while placing the order. With the EOQ model, the organization is able to place the right quantity of inventory (water, 2003).

According to (Arnold, et al, 2008) EOQ model is a mathematical approach to the ordering of inventories where the combined costs of ordering and carrying inventory are kept at minimum. While the ordering cost are costs associated with the purchases of inventory, the carrying costs are cost incurred from receipt inventories to the sale point.

The optimum order quantity is found where annual holding costs = annual holding costs as shown in the figure below. EOQ occurs at an order quantity, in which the ordering cost equal to holding costs Solving mathematically then,

EOQ = $\sqrt{\frac{2*D*O}{H}}$

Where;

- EOQ = Economic order quantity
- D = Annual demand of units
- O = Ordering Costs per order
- H =Annual holding cost (Carrying cost) of one unit of stock

According to (Muller, 2003) this formula and its variations allow determining the following: the optimal quantity to order, when it should be ordered, the total cost, the

average inventory level, how much should be ordered each time and the maximum inventory level and also The EOQ model is based on several assumptions:

The demand rate is constant (no variations), recurring, and known.
The carrying and ordering cost are independent of the quantity ordered (no discounts).
The lead time is constant and known. Therefore, the ordering times given result in new orders arriving exactly when the inventory level reaches zero.
Formula can handle only one type of item at a time.
Orders arrive in a single batch (no vendor stock outs or backorders).

According to (Kumar, 2016) **Ordering costs** is the costs that are incurred on obtaining additional inventories. They include communicating the order, traveling allowance and daily allowance to purchase officers, printing and stationary, salary of purchase department, cost of inspection, cost of receiving the material, transportation cost etc. all above cost, other than transport costs remain unchanged per order irrespective of the order size and it is assumed that ordering cost per order remain constant. The more frequently orders are placed, and fewer the quantities purchased on each order, the grater will be ordering cost and vice versa.

Total No. of order for the period = $\frac{\mathbf{D}}{\mathbf{EOQ}}$

Total ordering cost for the period = $\frac{\mathbf{D}}{\mathbf{EOQ}} * \mathbf{O}$

Carrying cost: It is the cost incurred for holding inventory in hand. Including interest on the money locked up in stocks, storage costs, deterioration spoilage costs, insurance, evaporation, go down rent, pilferage, shrinkage, obsolescence, other overhead of stores department etc. They are assumed to be constant per unit of inventory. The large the volume of inventory, the higher will be the inventory carrying cost and vice versa.

Average inventory = $\frac{\mathbf{EOQ}}{\mathbf{2}}$

Carrying cost of average inventory = $\frac{\mathbf{EOQ}}{\mathbf{2}} * \mathbf{H}$

This formula is derived from the following cost function**:**

At EOQ, Total Carrying Cost = Total ordering Cost

$$\frac{\mathbf{EOQ}}{\mathbf{2}} * \mathbf{H} \quad = \quad \frac{\mathbf{EOQ}}{\mathbf{2}} * \mathbf{O}$$

$$EOQ \times EOQ \quad = \quad \frac{(\mathbf{2} * \mathbf{D} * \mathbf{O})}{\mathbf{H}}$$

EOQ = $\sqrt{\frac{2 * D * O}{H}}$

We can say, Total ordering cost + Total carrying cost = $\sqrt{2 * D * O * H}$

2.1.5 Effective inventory Management practices and increase competitiveness of organization

Competitiveness is a strategy that defines the set of customer needs that it seeks to satisfy through its products and services. Competitive strategy targets one or more customer segments and aims to provide products and services that will satisfy these customers' needs Wangari and Kagiri, (2015).

Competitiveness is the established ability to design, produce and commercialize an offer that fully, uniquely and continuously fulfills the needs of targeted market segments, while connecting with and drawing resources from the business environment, and achieving a sustainable return on the resources employed (www.intracen.org).

The competitiveness of an organization depends on a number of factors which are interrelated and cannot be looked at in isolation. The main factors include: customer values, shareholder values and ability to act and react within a competitive environment Feurer and chaharbaghi, (1994).

Inventory management delivers competitive advantage, yet Inventory turn trends suggest that little seems to change. Sustainable improvement through increasing control of systems and processes generates savings that can, in turn, be invested in growth initiatives. Inventory is not something that just concerns planning, production and finance. By working to better understand and control their inventory-related processes, everyone can drive improvements that will harness inventory's potential to become a source of sustainable competitive advantage (Jones, 2020).

There are many different definitions of competitiveness. Although, a general definition of competitiveness is not yet provided, some scholars know competitiveness as a macroeconomic phenomenon and consider factors such as exchange rates, interest rates and budget deficits of countries as its origin; from other perspective, competitiveness is due to the abundant labor force and low wages in the country Karimi et al., (2013).

Competitiveness is a key feature for the management of the modern organizations. Its development and sustainability are based on the use of the available resources with optimal efficiency, the organization's ability to adapt to the fast changing environment, as well as the speed and efficiency of the implementation of innovations. The purposeful increase of an organization's competitiveness is connected with investments in human resources development, technological renovations and improvement of the work conditions as a whole (Angelova, 2018).

2.1.6 Warehouse Management

Warehouse is a place space for the storage and handling of goods and material. Warehouse is any place for storing materials and most organizations keep their stocks in warehouses. People use different terms for these, and when dealing with stocks of materials the most common are distribution centers and Logistics centers (Karimi, 2014).

Warehousing is one of the main compasses of logistics. The very broad meaning of it is storage of finished goods or materials for manufacturing, agricultural or commercial purposes. In fact, warehousing contains numerous functions, like acceptance of products (loading, unloading), inspection, and proper storage. It is the whole system that includes warehouse infrastructure, tracking systems and communication between product stations (Afolabi et al., 2017).

When the companies cannot control the location of the product or raw materials from a physical and a record keeping standpoint, then the company's inventory accuracy will suffer. To sustain inventory accuracy on an ongoing basis by formalize the overall locator system used throughout the facility, track the storage and movement of product from a receipt to storage and order filling to shipping or to staging at a point-of-use and maintain timely records of all item storage and movement(Muller,2003).

2.1.7 Factors influence effectiveness of Inventory management

The some essential factors influence the effectiveness of inventory managements are as follows:

Information Technology:-According to (Kumar, 2014) Information Technology is pronounced "I. T." it includes all the anything identified with registering technology, for example, such that networking, hardware, software, the internet, or the individuals that worth of effort for these technologies. Large number organizations presently have IT offices for Dealing with the computers, networks, and different specialized foul ranges of their organizations. According to (Ali, 2011) Technology makes methods of inventory management and methods of evaluating inventory management more efficient, more precise, and more accurate.

According to the Zengwa &Choga, (2016) the organizations appropriation of IT stock administration enhanced the stock capacity through constant preparing of exchanges, availability of data from a brought collected database, profitability and productivity over every one of the offices. The device enabled tests and balances on all stock transactions. Also IT helped in advancing standardized stock management actions, fading on work-load as nicely as on enhancing the nice for the inventory function.

According to (Dhodi,2018) the information technology effects inventory management through information sharing with suppliers, correctness on inventories, reduces cost of ordering stock, improving order processing, improving speed of service to customers and enhancing stock availability to customers.

According to (Jessop, 1999) The Electronic Data interchange (EDI) is a system which enables direct communication between organizations without there being any human intervention. This technology has revolutionized inventory management.

According to (Lambert et al., 2001) EDI is the electronic, computer to computer transfer of standard business documents between organizations and transmission allow a document to be directly processed and acted upon by the organization without human intervention.

According to (Lysons, 1984) Electronic point of sale, EPOS is another technology used in inventory management. The purpose of EPOS is to scan and capture information relating

to goods sold. An EPOS system verifies checks and provides instant sales reports, charges transactions and sends out intra- and inter- stores messages. The EPOS technology allows substantial cost savings and gives "real time" information on sale of goods patterns of stores traffic, and popularity and profitability of every line carried. It enables stock to be limited to demand, reduces the risk of obsolescence and deterioration of stock.

According to Lwiki et al., (2013) bar coding is a technology that is employed in counting raw materials and finished goods inventory. It gives the level of inventories, facilities faster data entry with greater accuracy. Its benefits include reduced labor costs through time saving and productivity. It also enables greater responsiveness to customers and supplies.

Radio frequency identification (RFID) works in a way similar to bar codes, but rather than light it uses reflected radio waves from a small device or tag to receive its information. Unlike bar codes, RFID devices do not require a line of sight between the label and the reader and can accurately identify products that are within containers or otherwise hidden from view. This feature makes RFID suited for use as a security device or under conditions where labels are hard to read or access. RFID tags are more costly than printed bar codes, but the price is falling rapidly, encouraging their use in wider applications Arnold et al., (2008).

Planning and scheduling:-One of the serious elements in maintaining effective inventory management is planning. Manufacturing business must formulate a plan and schedule to ensure adequate inventories are on hand for production of a finished product.

Planning is the method which is used to control and manage the inventory such as forecast the market demand, make the plan for maintaining the safety quantity of materials, setting reorder point and manage the stock level in an organization. Without the coordination of sellers in inventory planning, the probability of failure in predicting the inventory requirement in the future market demands will raise Jonsson & Mattsson, (2008).

Inventory planning and control are crucial in most organizations, including manufacturing, wholesale, grocery stores, retail businesses, the auto industry, military, and government. In traditional manufacturing companies, this ratio is about 40% of

capital investments. Therefore, it is not surprising that inventory planning is one of the oldest fields of study in production, manufacturing and operation systems (Behnam, 2014).

Funding (Financial Recourses):- In business cash out flow must to pay their bills and cash is generated by sales and the flow of cash into a business must be sufficient to pay bills as they become due. The good financial flow shows the cash flows into greater than cash flow out of the business. Any shortfall of cash must be provided for perhaps by borrowing or in some other way. The stature of financial management in the organization can affect adversely its effectiveness and in the finance resource application in various activities (Ng'ang'a, 2013).

The inventory investment for a small business takes up a big percentage of the total budget, yet inventory control is one of the most neglected management areas in small firms. Many small firms have an excessive amount of cash tied up to accumulation of inventory sitting for a long period because of the slack inventory management or inability to control the inventory efficiently. Poor inventory management translates directly into strains on a company's cash flow Atnafu & Balda, (2018).

Financial constraint in inventory management can be considered as a supply capacity constraint on ordering quantity; Production-inventory problems with supply capacity constraints and Operational decisions interact with and are affected by cash flows in a dynamic setting. The objective of the firm is to maximize its expected wealth level at the end of the planning horizon Chao et al., (2008).

Without adequate cash flow, a firm can become technically insolvent even though assets are sufficient to manage liabilities. To reduce the chances for a firm becoming technically insolvent firms to be employed in evaluating the effectiveness of a cash management system. This includes cash conversion cycle that is actual cash payment/expenditure for the purchase of productive/operational resources and the ultimate collection of cash from the sale of products/services and it is measured with the average time period (Pandey, 2019)

Adopted working fund cycle approach in working fund management, also suggested that investment in working fund can be optimized and cash flows can be improved by

reducing the time frame of physical flow starting from the receipt of raw material to the shipment of finished goods, i.e. inventory management, and by improving the terms and conditions on which firm sells goods as well as receipt of cash Lambrix &Singhvi, (1979). .

Skilled and Competent staff:-Competence is defined as the sufficiency of related abilities, commitments, knowledge and skills that enable an employee or an organization to act effectively in particular jobs. The realizations of objective by organizations private or public greatly depend on the skill, caliber, competence and experience of its workforce karani & Osoro, (2020).

Qualified staff that is competent and skilled will help the organization to achieve its goals and objectives by being efficient and effective when carrying out their various functions. For an organization to succeed, qualification is therefore a pre-requisite and must be matched with job requirement, hence the need to hire and develop ambitious personnel. The loss of staff has resulted in the loss of specialist staffs with most institution employing clerks, and this has affected the individual services (Ng'ang'a, 2013).

Training of staff as a planned process to modify attitudes, knowledge or skill behavior through learning experience to achieve effective performance in an activity or range of activities. Its purpose in the work situation is to develop the abilities of the individual and to satisfy the current and future human resource needs of the organization Lyson &Gillingham, (2003).

To improve efficiency in training programs, organizations should give special attention to employee's participation in designing training methods and modules. Participatory training design motivates the workforce to learn objectively leading to incremental performance development and accelerated professional commitment. To ensure effectiveness of participative training programs, post training evaluation works as an uncompromising tool to design, correct and improve existing and future training needs and methods karim et al., (2012).

Procurement Procedures: - Procurement commonly involves purchase planning, standards determination, specifications development, supplier research and selection, value analysis, financing, price negotiation, making the purchase, supply contract

administration, inventory control and stores, and disposal and other related functions Nyawanga & Otinga, (2021).

Procurement is the purchase of materials and services from outside organizations to support the firm's operations from production to marketing ,sales and logistics procurement ,also referred to as purchasing, supply management and by a number of other names , includes activities such as supplier selection ,negotiation of price ,term as and quantities, and supplier quantity assessment . As organizations form longer term relationships with fewer key supplier, procurement continues to grow in importance and contribution to the organization Lambert et al., (2001).

Purchasing is one of the basic processes that are common to all organizations. It is the process of acquiring goods, services, and equipment from another organization in a legal and ethical manner. Professional purchasing addresses five rights: purchase of the right item or service, in the right quality, in the right quantity, at the right price, and at the right time Burt et al., (2010).

Procurement is the process of obtaining products and services from suppliers. Procurement and inventory management are critical to production companies as well as to service companies, as spending in procurement is often one of the biggest parts of the company's budget. This means knowledge about strategies, concepts, process, methods and technical system in the areas of procurement and inventory management (Pushpakumara,2018).

Purchasing includes selection of sources of supply, finalization of terms of purchase, placement of purchase orders, follow-up, maintenance of smooth relations with suppliers, approval of payments, evaluating and rating of vendors, etc. It ensures continuity of supply of raw materials, sub-contracted items and spare-parts and at the same time reduce the ultimate cost of finished goods. Such important terms like right price, right quality, right contractual terms, right time, right source, right material, right place and right mode of transportation, right quantity and right attitude are referred as purchasing parameters Dessalegn & Roy, (2002).

2.1.8 Effectiveness of Inventory Management

The key measure of effective inventory management is the important that inventory has on corporate profitability. Effective inventory management can improve profitability by lowering costs or supporting increased sales Lambert et al., (2001).

Effective management of materials can lead to a reduction in cost, resulting in a significant saving; hence improve organizational performance. Every dollar saved by reducing cost is more valuable than dollar sales. A dollar profit cannot be made from a dollar sale; hence cost reductions positively impact an organization bottom-line profit. In order to achieve this, organizations must avoid incurring unnecessary cost and prioritize managing materials Masudin et al., (2018).

Effective Inventory management practice is essential in the operation of any business effective inventory as an asset on the balance sheet of companies has taken on increased importance because many firms are applying the strategy of reducing their investment in fixed assets, like plants, warehouses, equipment and machinery, and so on, which even highlights the significance of reducing inventory. From the financial performance tables, there are varied growth pattern for every firm. Specific performance indicators have been proved to depend on the level of inventory management practices Ajayi et al., (2021).

An effective inventory management is able to generate more sales for the company which will directly affect the performance of the company. Efficient inventory management system provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities and communicate with customers Christopher et al., (2017).

Inventory management is a challenging area in supply chain management of any business, especially in the manufacturing or production industry. Organizations need to have inventories in warehouses to fulfill customer demand meanwhile; these inventories incur holding costs to the organizations. Therefore, effective inventory management is needed to find and maintain the right levels of the inventories that will fulfill the demand without incurring the unnecessary cost to the company and to avoid overstocks (Kumar, 2020).

2.2 Empirical Literature Review

There are many studies conducted by varies researchers, regarding the practices of inventory management aim to investigating with the general practices in manufacturing companies. These are:

1. **The Recent researches shown that Information technology, funding, procurement procedures and competent staff** a**re the influence factors on effective inventory management practices** (Bahadur, (2017); Godana&Ngugi, (2014); Hamid & Dhar, (2021) Gebisa &Ram, (2021). Empirical evidence from recent research largely supports that Information technology, funding, procurement procedures and competent staff a positive influence on effective inventory management practices.

Bahadur, (2017) studies on factors affecting the efficiency of inventory management of Janapriya Multiple Campus; study revealed Proper inventory record, stock information and competent & qualified store employees are very important for the effectiveness of inventory management. Sufficient fund, skillful store clerks, training and development for store staff, few quality suppliers and easy process of budget release are inevitable for superior inventory management.

Godana&Ngugi, (2014) studied on Determinants of Effective Inventory Management At Kenol Kobil Limited and the study was shown by four objectives information technology, distribution channels, Staff Competency and material handling equipment's. The study found out that information technology reduces lead times on effective inventory management and study also found that most employees have basic Staff competency on inventory management.

Hamid & Dhar, (2021) conducted study factors influencing effective inventory management in the textile industries of Bangladesh. The study found out that planning for inventory management, staff characteristics and storage system have positively and significantly influenced the effective inventory management.

Gebisa and Ram, (2021) the study was The Effect of information sharing and inventory management in the Supply Chain Practices on Firms' performance: Empirical Evidence from Some Selected Companies of Ethiopia, The study concludes that information

sharing has both direct and indirect effects on a firm's performance in the supply chain practices; whereas inventory management practices have a direct effect on the firm's performance.

2. The Recent researches publicized that effective inventory management practices affect the organizational competitiveness (Kaewchur et al., (2021); Wangari and Kagiri, (2015); Atnafu & Balda, (2018) & Wako, (2018). Empirical evidence from recent research mostly ensures effective inventory management practices help to improve organizational competitiveness.

Kaewchur et al., (2021) study titled by Role of Inventory Management on Competitive Advantage of Small and Medium Companies in Thailand the study was revealed that the inventory control systems had the greatest influence on the competitive advantage, followed by inventory control practices, and information technology.

Wangari and Kagiri, (2015) studies on Influence of inventory management practices on organizational competitiveness a case of safaricom Kenya, Ltd the study concludes that inventory management practices are very vital to the competitiveness of organizations. As such, inventory management practices affect profit maximization, customer satisfaction, market share growth and product quality targeting return on investment, Inventory shrinkage, inventory investment and inventory turnover affects the competitiveness of organization.

Atnafu & Balda, (2018) studies on the impact of inventory management practice on firms' competitiveness and organizational performance evidence from SME in Ethiopia and study implies that enhanced competitive advantage and increased organizational performance could have improved the levels of inventory management practice. Due to enable a firm to implement higher level of inventory management practice, need to outperform its competitors constantly and keep its competitive position. On the other hand, enhanced organizational performance provides a firm increased capital to implement various scientific inventory management techniques.

Wako, (2018) studies Assessment of Inventory Management Practice in Case of Hawassa Textile Factory, Ethiopia. The study revealed that a proper and effective management of

the inventory practices were able to enhance a competitive advantage of the company and lead it to improved competitiveness.

3. The Recent researches investigate challenges of practicing inventory management practices these leads to ineffective inventory management practices (Chan et al., (2017); Negash, (2020) & Akande & Abraham, (2018) & Munyao et al., (2015). Empirical evidence from recent research supports challenges faced the practicing inventory management consequences poor inventory management and customer dissatisfaction.

Chan et al., (2017) studied on Factors Influencing the Effectiveness of Inventory Management in Manufacturing SMEs in Malaysia, study found problems of inventory management faced by manufacturing organization were underproduction, overproduction, stock out situation, delays in the delivery of raw materials and discrepancy of records. The factors have shown to significantly influence the effectiveness of inventory management.

Negash, (2020) the study was Assess inventory management practices in the case of manufacturing firms in Hawassa city, Ethiopia. The study found company have a very good inventory management practices and challenges faced the contribution of weak management impact inventory management, long lead time, bureaucratic procedures in ordering parts leading cancellation of purchase orders and losing customers.

Munyao et al., (2015) the study was Role of Inventory management practices on Performance of production department, a case of manufacturing firms, Kenya. The study found out that ineffective inventory management leads to incidences of overproduction, underproduction, excessive stocks, and stock out of spare parts for machines, production bottlenecks and delays in delivery of raw materials.

Akande & Abraham, (2018) studied the effect of Inventory Management System on Operational Performance in Manufacturing Firms: Study of May and Baker Manufacturing Industry Nigeria Ltd, Lagos. Study reveals that, there is significance relationship between poor inventory management system and organizational performance, failure to maintain a proper, adequate and accurate inventory control management will

results in fall in profit and performance and vice-versa. There is also the need for organizations to train their personnel in the area of inventory control management.

4. The Recent researches investigate Techniques of inventory management techniques these leads to ineffective inventory management practices (Ngugi et al., (2019), Assefa, (2019); Lawrence & Chiromo, (2020) & Mishra & Anil, (2018) Empirical evidence from recent research supports organization make benefit from adoption of modern inventory management techniques.

Mishra & Anil, (2018) studies examined A Study of Inventory Management System of Linamar India Pvt. Ltd, Pune, India .study concludes Techniques undertaken by the organization are helping it in continuous flow of its production activities, smooth running of its activities and in reducing the cost of managing the inventory. EOQ, safety stock analysis, ABC analysis are being undertaken efficiently and effectively.

Ngugi et al., (2019) studies examined effect of inventory management systems on performance of manufacturing companies in Eldoret Town, Kenya. The study found out that Material Requirement Planning (MRP), Distribution Resource Planning (DRP), Vendor Managed Inventory (VMI) and Just in Time (JIT) System affects performance of manufacturing companies and concluded that manufacturing companies benefit from adoption of inventory management systems.

Assefa, (2019) the study was Inventory Management Practices, Challenges and Prospects the Case of Asella Malt Factory, Ethiopia. Study revealed that the factory did not give an emphasis to inventory management practices like EOQ, and JIT. And also the main challenges reluctant to invest in modern technologies which enhance effective inventory management and in adequate resource for implementing inventory management practice.

Lawrence & Chiromo, (2020) the study was An Analysis of the Inventory Management Challenges: The Case of Gypsum Plasterboard Manufacturing Company in South Africa. Study revealed Lack of application of inventory management techniques has resulted in trends of inventory losses namely increased inventory holding slow moving stock, inventory damages and scrapping.

2.3 Research Gap

A research gap is a topic or area for which missing or inadequate information limits the ability of reviewers to reach a conclusion on a given question (Robinson et al, 2011).In manufacturing firms inventory management practice has developed as a fundamental component of every organization. The researcher motivated to select this topic; the previous studies done on the inventory management practices of manufacturing companies in Ethiopia are insignificant in terms of topic importance.

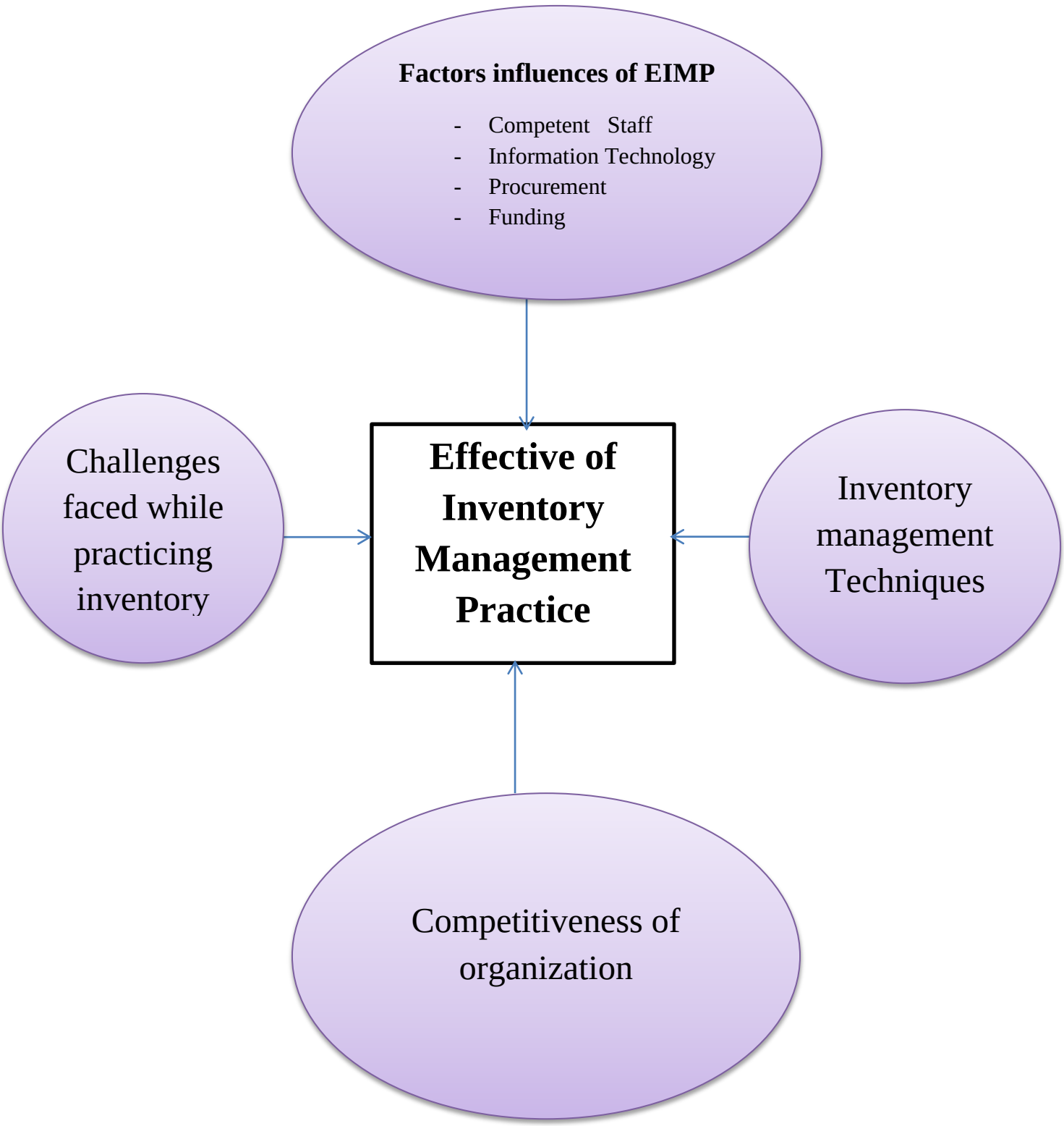
The little studies have been done to attempt find out about inventory management practices by many angles and Most of academic researches focused on the specific topic of inventory management practice rather than comprehensive topic. However my research will have contribution even if it's as small as a drop of water.

2.4 Conceptual Framework

Conceptual framework analysis offers a procedure of theorization for building conceptual frameworks based on grounded theory method. The advantages of conceptual framework analysis are its flexibility, its capacity for modification, and its emphasis on understanding instead of prediction (Jabareen, 2009). Conceptual framework is a hypothesized model identifying the relationship between the independent and dependent variables (Mugenda &Mugenda, 2003).

Conceptual framework shows the general literature review part by using frame work to give clear understanding for theoretical and empirical review on the main factors influence the effectiveness of inventory management practice. The figure conducts the objectives of study.

Figure 1: Conceptual Frameworks of this Study



Source: Researcher's Construct, 2021

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a set of methodical technique used in research, a guide to research and how it is directed. It defines and analysis methods, throws more light on their limitations and resources, clarify their assumptions and consequences, relating their potentialities to the twilight zone at the frontiers of knowledge (Igwenagu, 2016). Research methodology is a way to systematically solve the research problem and understood as a science of studying how research is done scientifically (kotari, 2004).

The research methodology used in the study is described. The research design, population and sample methods are described. The instrument used to collect the data, including methods implemented to maintain validity and reliability of the instrument are also described.

3.2 Research Design

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure and the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data (Kothari, 2004).

In this research the information was collected through interview with key departments manager and questionnaires distributed personally to the respondents by the researcher. The descriptive study allowed the researcher to describe those data and helps to know the event that has been taking place whereas explanatory study examined the relationships and associations between variables (Independent and Dependent Variables) and to provides an accurate increase and understanding of topic; ascertain how or why a particular phenomenon is occurring, and researcher to collect data from the companies' staff and management. The study developed descriptive and explanatory research design

element that enables the researcher easily to determinants the inventory management Practice in case of DHG Business Group.

3.3 Research Method

Research Methods are the methods which are used by the researcher during the course of studying his research problem and which conduct research into a subject or a topic of experiments, tests, and surveys and the various procedures, schemes, algorithms and help us collect samples, data and find a solution to a problem (Goundar, 2012).

Data collected applied by both mixed research method. Qualitative data was gathered through interviews & Quantitative data is gathered through questionnaires because of to provide the best understanding of a research problem.

3.4 Population of the study

A population is a well-defined or set of people, services, elements, and events or group of things that are being investigated Mugenda and Mugenda, (2003). This study contained of management of different department and staff of DHG Business Group with targeted population of (104) skilled staffs from eight departments. This research targeted the departments which have a direct relation to the inventory management Practice.

Table 1: Targeted Populations

Targeted Department	**Targeted Population**
Procurement Department	8
Production Department	20
Warehouse staff	13
Technical Department	10
Planning Department	5
Marketing Department	19
Audit and Control Department	5
Finance Department	24
Total	**104**

Source: survey, 2021

3.5 Sampling techniques and Sample Size

Sampling techniques is the procedure the researcher would adopt in selecting items for the sample. Size of sample refers to the number of items to be selected from the universe to constitute a sample. The size of sample should neither be excessively large, nor too small. It should be optimum which fulfills the requirements of efficiency, representativeness, reliability and flexibility (Kothari, 2004).

Sampling is defined as a procedure to select a sample from individual or from a large group of population for certain kind of research purpose. Probability sampling is a known probability of each member of the population of being selected in the sample. Probability sampling includes Simple random, stratified, systematic, cluster and multistage sampling. Nonprobability sampling is where each member of the population does not have known probability of being selected in the sample. These include purpose, convenience, snowball and quota sampling (Bhardwaj, 2019).

The researcher applied probability (stratified random sampling) sampling techniques and the purposive sampling technique used for this study. Stratified random sampling technique was proportionate stratified based on department group of target Population their perspective responsibilities to the company and purposive sampling techniques selected a high management level who relates inventory management practices. Staff and departmental personnel who related to inventory management practice at the DHG. Key participants of the study include of respondents 8 departments which are related to inventory management practice and the total population size of selected target department sample size consist 83 staff members. The sample size determined from the following formula developed by (Yamane, 1967).

$$n = \frac{N}{1+N(e)2}$$ Where n = Sample size

N = Population number of staff at DH Geda which is 104

e = Level of precision of sampling of error which is 5%

Therefore: $$n = \frac{104}{1+104(0.05)2}$$ n = 83

Table 2 : Sample Size

Target Department	**Target Population**	**Sample Size**
Procurement Department	8	7
Production Department	20	16
Warehouse staff	13	10
Technical Department	10	8
Planning Department	5	4
Marketing Department	19	15
Audit Department	5	4
Finance Department	24	19
Total	**104**	**83**

Source: survey, 2021

3.6. Sources of Data

The study depends on both primary and secondary data. Primary data have been collected with the use of questionnaires and interviews and secondary data have been also obtained from external sources such as the internet, Journals, books and other documentations. The purpose of sourcing for secondary data is to help in the formation of problems, literature review and construction of questionnaire.

3.6.1 Primary Sources

According to Collins & Hussey, (2014) primary data can be defined as the kind of data that is generated from an original source and it is commonly collected from surveys, interviews, observations and own experiments. The primary data are data collected anew and for the first time, and thus happen to be original in character and collected by researcher for particular need to summarize in the research purpose.

This study directed using the case study method of research self-administered questionnaires (close ended question and open ended question) and semi-structured interviews (open ended question) were the techniques used in gathering data.

3.6.2 Secondary Sources

According to Saunders, (2007) Secondary data include both quantitative and qualitative data and they are used principally in both descriptive and explanatory research. The data may be raw data, where there has been little if any processing, or compiled data that have received some form of selection or summarizing. The secondary data are those which have already been collected by someone else and which have already been passed through the statistical process.

The researcher collected data from the DHG Business Group files and unpublished Company browser along with different related studies about inventory management practice to addition the research.

3.6.3 Data Collection Instrument

Questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents. In questionnaire respondents read the questions, interpret what is expected and write down the answers (Kumar, 1999). The study raised structured questionnaires with Self-administered questionnaires and close ended questions as provided the flexibility for specific and individual responses to get the reliable and valid data regarding to determinants of effective inventory management practice at DH GEDA business group.

Interview is a method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. This method can be used through personal interviews and, if possible, through telephone interviews (Kothari, 2004). For this study applied semi structure interview question when to selected respondents as key management and department head.

3.7 Data Analysis

According to (Kothari, 2004) after the data have been collected, the researcher goes to the task of analyzing data. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences.

The raw data collected was coded to being input into SPSS software. When coded the data pure to ensure accuracy and fullness of the information obtained. In analyzing the data collected, the descriptive and inferential statically was used. The quantitative data that were obtained from the questionnaires was coded and set into SPSS analysis software. Data was be presented in the form of frequency distribution, graphics and chart of tables to make simple description and explanation of the study findings.

3.8 Reliability and Validity of the Data Collection Instrument

3.8.1 Reliability

According to (Kothari, 2004) Reliable measuring instrument does contribute to validity, but a reliable instrument need not be a valid instrument. According Collis & Hussey, (2014) When studies contains a high reliability, the several same framework and other researchers can reproduce the study methodology without the significant different results.

Table 3: Rules of thumb Cronbach's alpha

Description	Measure
Cronbach's Alpha > .9	Excellent
Cronbach's Alpha >.8	Good
Cronbach's Alpha > .7	Acceptable
Cronbach's Alpha > .6	Questionable
Cronbach's Alpha > .5	Poor
Cronbach's Alpha < .5	Unacceptable

Source: George & Mallery, (2003)

Accordingly, as indicated in the below table 3.3 the result of Cronbach's alpha coefficient are above than 0.7 which indicates the internal consistency and good reliability of the instruments.

Table 4: Reliability of variables based on Cronbach's alpha

Reliability Statistics		
Description	**Cronbach's Alpha**	**N of Items**

Challenges faced while practicing IM	0.798	7
Inventory management techniques	0.868	7
Competiveness of organization	0.908	7
Effective inventory management practice	0.780	5
Information Technology	0.809	6
Procurement procedures	0.908	6
Financial Resource(funding)	0.814	6
Qualified& competent staff	0.899	6

Source: Survey Result, 2021

3.8.2 Validity

According to (Kothari, 2004) Validity is the extent to which differences found with a measuring instrument reflects true differences among those being tested. In this study, the validity is applied by consulting the Advisor. In order to improve the tools the research advisor looked at every question in the questionnaire and forward comments to discover that the questions answer research objectives. To achieve content validity, questionnaires included a variety of questions on the knowledge of the top management officials and their senior staff about inventory management, its challenge, technique and it's effective i DHG Business group.

3.9 Ethical Considerations of the Study

According to (Saunders, 2007) Ethics refers to the appropriateness of researcher behavior in relation to the rights of those who become the subject of research work, or are affected by it. Therefore relates to questions about how to formulate and clarify the research topic, design the research and gain access, collect data, process and store data, analyze data and write up the research findings in a moral and responsible way.

All the primary data collection in the organization was under the permission of the managers and without any misconduct in ethical rules during the entire research process and the researcher didn’t ask the study contributors to involve into risks as a result of participating in this study.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSION

Presentation of the Data

The findings of the study are presented in this chapter. Needed discussions of the findings are also made to establish understanding and the data are classified into two parts. The first part is the demographic of the respondents which describe the study population by gender, educational background and service year in company and the second part deals with the analysis of findings of the study that were gathered through questionnaire and interview. The data gathered was analyzed descriptively and quantitatively to provide understanding into the assessment of inventory management practices. The statistical analysis tools are performed in SPSS version 26 and Excel Microsoft 2010**.**

4.1 Response Rate of Respondent

Responses were gathered from staffs of DHGEDA Business Group. Eighty one (81) responses in all were gathered out of the Eighty three (83) questionnaires administered. This represented 97.6% response rate

According to (Mugenda and Mugenda, 1999) this represents response rate of 50% is adequate for analysis and reporting, a rate of 60% is good and a response rate of 70% and over is excellent. Based on the statement, the response rate was considered to be excellent. The response rate is as illustrated in Table 4.1

Table 5: Response Rate

Response Rate	**Frequency**	**Percentage**
Response	81	97.60%
Nonresponse	2	2.40%
Total	83	100%

Source: Survey result 2021

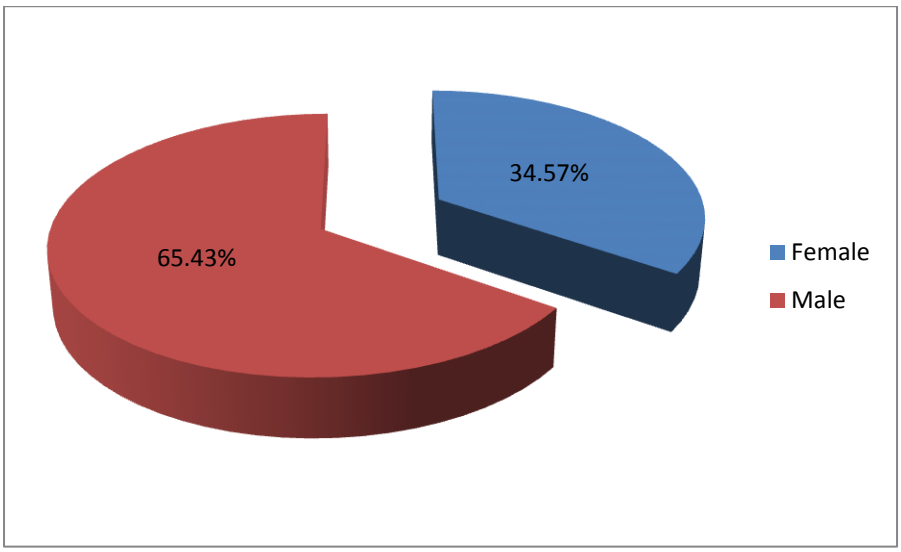
4.2 Demographic information of the respondents

The results obtained from demographic information of the designed questionnaires includes their gender, level of education, years worked at the DHG Business Group and positions held at the company were presented through frequency and percentage**.**

4.2. 1. Gender of the respondents

The study sought to establish the number of men and women working at DHGEDA Business Group. The findings of the study are as indicated in bottom figure

Figure 2: Gender of the respondents



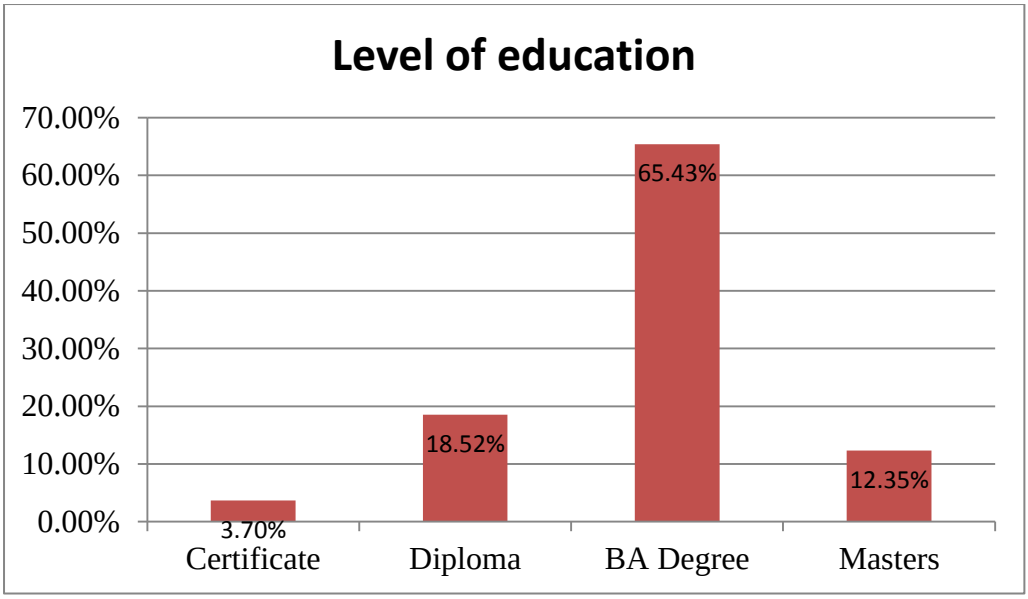
Source: Survey Result (2021)

As shown in figure 4.1 Gender distribution of the respondents 53 (65.43%) of the total respondents are male and 28(34.57%) are female. The finding indicates that the proportion of male employees is larger than that of female employees in DHG Business Group.

4.2. 2. Academic background of the respondents

From Certificate up to highest level of education attained by the respondents was also sought by the study.

Figure 3: Academic backgrounds of the respondents



Source: Survey Result (2021)

The findings from Figure 4.2 show that majority of the respondents had obtained a BA degree as shown by 65.43%, 18.52% of the respondents had a diploma, 12.35% of the respondents had a Master's Degree, certificate holders composed of 3.7% of the respondents.

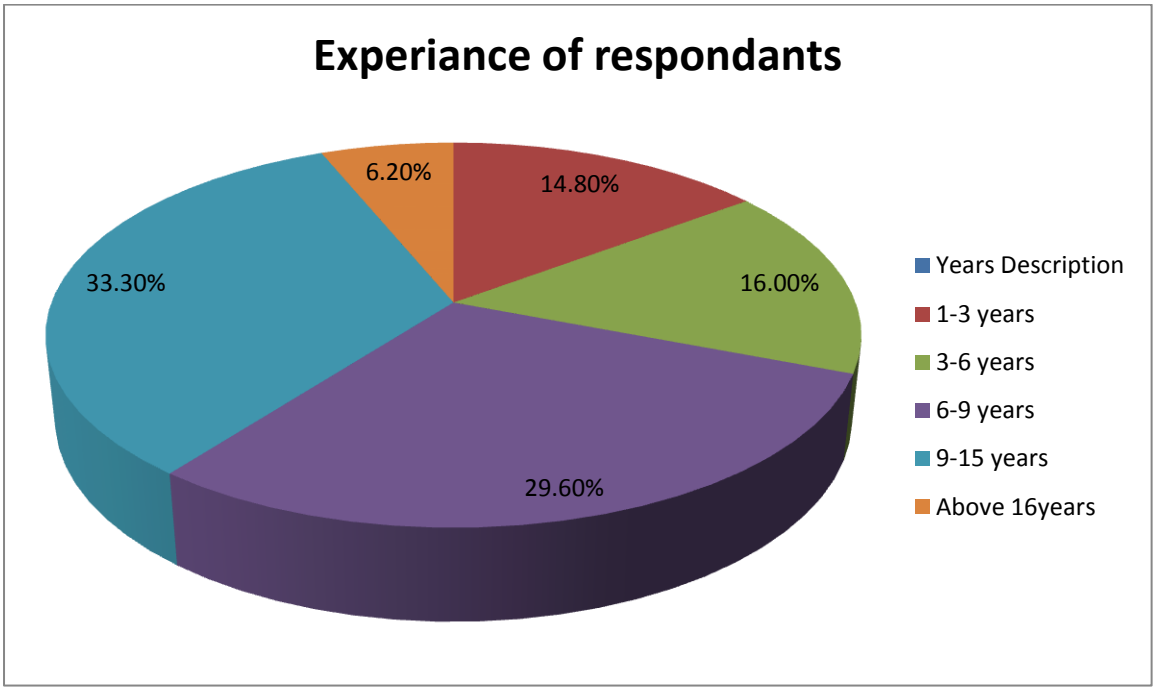
The respondents with Diploma, first degree and Second degree qualification level accounts 96.3% of the total respondents. This confirm that majority of all respondents had a Diploma and above. So, the researcher trusts that the respondents could simply understand the questionnaires and respond the correct answers.

4.2. 3. Work Experience of Respondents in the Company

As shown in the below figure 4.3, 27 respondents (33.%) had 9-15 years' work experience whereas,24 respondents (29.6%) had 6-9 years' work experience,13 respondents (16%) had 3-6 years' work experience,12 respondents (14.8%) had 1-3 years' work experience and 5 respondents (6.2)had above 16-year experience at their current position.

This implies majority of the respondents have high work experience in company. Therefore they had enough information and were aware about inventory management practices of manufacturing firms, and also the researcher believes that the respondents have enough experience and skill to respond the right answer for each question.

Figure 4: Work Experience of Respondents



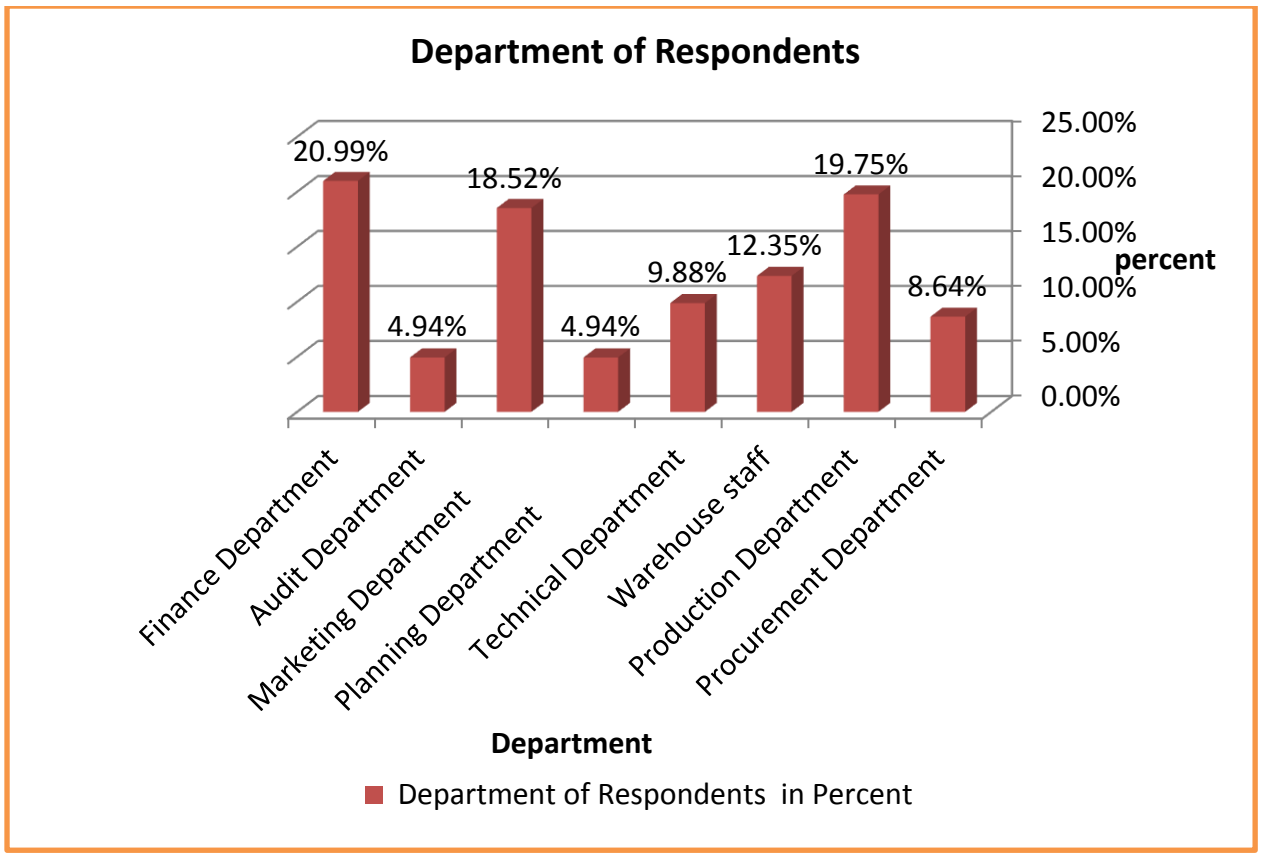
Source: Survey Result (2021)

4.2. 4. Department of Respondents

The study sought to determine the departments of the respondents in DHGEDA. The findings indicate that (7) 8.64% of the respondents are from procurement department, (4) 4.94% of the respondents are from planning department, (16) 19.75% of the respondents are from production department, (15) 18.52% of the respondents are from marketing department,

And also (10) 12.35% of the respondents are from warehouse staff, (17) 20.99% of the respondents are from finance department, (8) 9.88% of the respondents are from Technical department and (4) 4.94% are from audit department. The findings indicate that the study involved participants from across most of the departments who have relation with inventory management practices. The findings are shown in below figure 4.4

Figure 5: Department of Respondents



Source: Survey Result (2021)

4.3 Descriptive Analysis

In this part of the study's report, analysis conducted on data gathered to assess inventory management practice of the DHG Business Group is presented in relation to the objectives of the study. Descriptive statistics was used to examine the data in this study is based on the responses of respondents.

Respondents required to rate their level of agreement on items related to their attitude towards themselves that are believed to be a factor using a five point Likert scale (i.e. strongly dis agree = 1, dis agree = 2, neutral= 3, agree =4, and strongly agree = 5).

Based on the responses of respondents the descriptive analysis was assessed to examine the mean scores and the consistent standard deviations under the individual scales of each of the dimension items of the sizes. According to Chih-Hui (2011), the mean value provides the idea about the central tendency of the values of a variable. Standard deviation is to give the idea about the dispersion of the values of a variable from its mean value.

Table 6 : Mean score measurement assumptions

Description of Mean	**Mean Score**
Very low mean	1-1.9
Low mean	2-2.8
Moderate mean	2.9-3.4
High mean	3.5-3.9
Very high mean	4-5

Source Chi Hui, (2011)

4.3.1 Challenges of inventory management practices

The first objective of the study was to identify the challenges faces to inventory management practices in DHG Business Group. Total inventories held by DHG constitute mostly Input and output of products. These include Raw materials, finished goods, laboratory equipment for quality test as well as other office supplies consumable such as printing stationery, fuel and lubricants, Vehicles batteries, different technical material and spare part of machinery etc.

Table 7: Descriptive Analysis of Challenges of inventory management practice

Challenges of effective inventory management practice			
Description of Statement	**N**	**Mean**	**Std. Deviation**
Many types of items of inventory(stock) in stores	81	4.44	0.671
Lack of Coordination between different departments	81	3.84	0.732
Quality of Production of input and out put	81	3.31	0.903
Lack of good warehouse management system	81	3.86	1.046
Holding Obsolete and damage inventory in same store	81	4.32	0.864
Discrepancy within annual/monthly/inventory record	81	2.25	1.043
Non availability of sufficient raw materials and spare parts	81	4.56	0.57
Valid N (list wise)	81		
Grand Mean& Standard deviation		3.80	0.833

Source survey result (2021)

As shown in the above table, majority of the respondents disagreed that there is a discrepancy within annual/monthly/difference between inventory record balance and inventory count or on hand shown by a mean 2.25 and standard deviation 1.043.

The challenges faced in organization that majority of the respondents agreed with high score mean there is Holding Obsolete and damage inventory in store handle together with active inventory shown by a mean 4.32 and standard deviation .864.

Unavailability of sufficient raw materials and spare parts shown by a mean 4.56 and standard deviation .570, there are many types of items of inventory (stock) in stores shown by a mean 4.44 and standard deviation .671, and there is Lack of good warehouse management shown by a mean 3.86 and standard deviation .903.

Lack of Coordination between different departments of management shown by a mean 3.84 and standard deviation 1.046 and the problem of quality of production and raw materials mean 3.31 and standard deviation .903. From the result of study revealed that the aggregate mean 3.80 high extents and standard deviation .833 this implies there was significant variables has a significant effect among respondents.

4.3.2 Inventory management Techniques

The second objective of the study was to assess inventory management techniques on DHG Business Group firms. This section of the study was designed to assess the inventory management techniques in the organization and designed to meet the research objectives.

Table 8: Descriptive Analysis of inventory management Techniques

Inventory management Techniques			
Description Statement	**N**	**Mean**	**Std. Deviation**
DHG uses Just in time (JIT) System - where no safety stocks are kept is the practice	81	1.62	0.644
DHG uses an order is placed only when inventory reaches	81	3.04	0.828

minimum level			
DHG uses Agreements with supplier for short cycle deliveries	81	4.78	0.447
DHG uses Economic Order Quantity (EOQ) - reorder inventory when it reaches the minimum level apply	81	2.72	1.003
Vendor managed inventory(VMI)- suppliers to manage inventory on behalf of the firm & Material Requirement planning (MRP) System-where bills of materials are 100% accurate	81	1.78	0.725
Company order stock in bulk to take advantage of trade discount	81	3.90	1.020
Use Periodic inventory system for inventory control	81	4.35	0.674
Valid N (list wise)	81		
Aggregate mean &S, Deviation		3.17	0.763

Source: survey result (2021)

The above table shown majority of the respondents agreed within Very high mean Company uses Agreements with supplier for short cycle deliveries shown by a mean 4.78 and standard deviation .447, Periodic inventory system for inventory control shown by a mean 4.35 and standard deviation .674. High mean shows Company applied order stock in bulk to take advantage of trade discount mean 3.90 and standard deviation 1.020, Moderate mean shows Company uses an order is placed only when inventory reaches minimum level shown by a(mean 3.04 and standard deviation .828.

Although majority of the respondents disagreed that with low mean DHG uses EOQ apply shown by a mean 2.72 and standard deviation 1.003 and very low mean DHG uses JIT System shown by a mean 1.62 and standard deviation .644.Again applying of VMI& MRP System shown by mean 1.78 and standard deviation .725. From the study finding the grand mean for the study of inventory management techniques was mean 3.17 moderate and standard deviation .763.Therefore this given variable were most of respondents strongly agreed as survey response described.

4.3.3 The effective IMP and improves competitiveness of organization

The third objective of the study was to found out how effective inventory management practices improve competiveness of DHG Business Group.

Table 9: Descriptive Analysis of the effective IMP and improves competitiveness of organization

Effective inventory management practice and competiveness of organization			
Description statement	**N**	**Mean**	**Std. Deviation**
Providing quality products will create the company more competitive	81	4.28	0.762
Price of product has great role on company competitiveness	81	4.06	1.065
product delivery at the right place and time is increase the competitiveness	81	4.02	0.758
lack of product discrepancy from the competitors	81	4.23	0.826
effective inventory management practice help to create sustainable competitiveness	81	4.42	0.668
Ensuring availability of adequate stock at all-time increase competitiveness	81	4.22	0.725
Inefficient inventory management led to increase cost of production and reduces profitability	81	4.43	0.706
Valid N (list wise)	81		
Grand mean and standard deviation		4.24	0.79

Source: Survey result (2021)

According to the above table the respondents highly agreement by the statement of question inefficient inventory management led to increase cost of production and reduces profitability shown by a mean 4.43 and standard deviation .706. The providing quality products will make the company more competitive shown by a mean 4.28 and standard deviation .762.

Price of product has great role on company competitiveness shown by a mean 4.06 and standard deviation 1.065, delivery at the right place and the right time is increase the competitiveness by a mean 4.02 and standard deviation .758.

Lack of product discrepancy from the competitors shown by a mean 4.23 and standard deviation .826, effective inventory management practice help to create sustainable competitiveness shown by a mean 4.42 and standard deviation .668 and lastly Ensuring availability of adequate stock at all-time increase competitiveness by mean 4.22 and standard deviation .725.

From the result of study revealed that the respondents strongly agree inventory management practice related to organization competitiveness by grand mean 4.24 very highly score and standard deviation .79. This implies there were most of respondents strongly agreed on the variables.

4.3.4 Factors influence effectiveness of inventory management practices

The fourth objective of the study was to identify the factors influence effectiveness of inventory management practice on DHG Business Group firms.

4.3.4.1 Information technology

Table 10: Descriptive Analysis of information technology

Effect of Information Technology			
Description of Statement	N	Mean	Std. Deviation
Use Computerization system (including network and hardware infrastructure)	81	3.70	1.409
DHG employed bar coding technology at inventory counting & Radiofrequency identification(RFID)	81	2.07	1.046
Companies used electronic point of sale(EPOS) at all outlet	81	4.58	0.756
DHG used IT to record transaction of inflow and out flow of materials	81	4.67	0.632
IT able to provide greater data accuracy on inventories on time to stake holder	81	4.36	0.795
The DHG uses Electronic Data Interchange Technology (EDI) computers are linked with both suppliers and customer	81	2.06	1.041

Valid N (list wise)	81		
Aggregate Mean & Standard deviation		3.57	0.946

Source: Survey result (2021)

From the table of above shown Majority of respondents strongly agree that the Company used electronic point of sale (EPOS) at all sales place by mean 4.58 and standard deviation .756, Organization used information technology to record transaction of inflow and out flow of materials within(mean 4.67 and standard deviation .632.

Company by using information technology able provided greater data accuracy on inventories on time mean 4.36 and standard deviation .795 and Use Computerization system (including network and hardware infrastructure) respondents moderately confirm by mean 3.7 and standard deviation 1.409.

Additionally most of respondents disagree that organization employed bar coding technology at inventory counting & Radiofrequency identification (RFID) inventory control with mean 2.07 and standard deviation 1.046 and uses Electronic Data Interchange Technology (EDI) by mean 2.06 and standard deviation 1.041.

Generally, based on the above concept the average mean and standard deviation of the total item of information technology represents 3.57 and .946 respectively. which shows that information technology highly effect inventory management practice and standard deviation indicating that it is a high value thus respondents were agreeing to the same idea.

4.3.4.2 Procurement procedures

Table 11: Descriptive Analysis of procurement procedures

Procurement procedures			
Description of statement	**N**	**Mean**	**Std. Deviation**
Lack of match between plan for procurement of material& actual performance	81	4.19	0.963

Company policy of procurement procedure has great impact on effective of inventory management	81	4.28	0.898
Lack of efficiency of the procurement process has led to high cost inventory in the organization	81	4.16	1.006
Length of procurement procedure raw materials affect production and customer requirement satisfaction	81	4.12	0.941
complexity in managing diverse stakeholder interest influences procurement procedures	81	4.09	0.938
Unreliable suppliers are great significance on procurement procedures	81	4.26	0.905
Valid N (list wise)	81		
Aggregate mean and standard deviation		4.18	0.941

Source: Survey result (2021)

As above table could see all respondent strongly agree to confirm the very high mean is Lack of match between plan for procurement of material& actual performance with mean 4.19 and standard deviation .963, the company policy of procurement procedure has great impact on effective of inventory management practice within mean 4.28 and standard deviation .898.

In company Lack of efficiency of the procurement process has led to high cost inventory in the organization mean 4.16 and standard deviation 1.006, Length of procurement procedure raw materials affect production and customer requirement satisfaction within mean 4.12 and standard deviation .941.

Complexity in managing diverse stakeholder interest influences procurement procedures within mean 4.09 and standard deviation .938 and Unreliable suppliers are great significance on procurement procedure within mean 4.26 and standard deviation .905.

From the above concept the average mean and standard deviation of the total item of procurement procedures represents 4.18 and .941 respectively, which shows that procurement procedures very high affect inventory management practice and signifying that it is a high value thus respondents were agreeing to the same idea.

4.3.4.3 Funding (Financial resource)

Table 12: Descriptive Analysis of funding (Financial resource)

Funding/Financial resource			
Description of statement	**N**	**Mean**	**Std. Deviation**
Company borrow money from bank to additionally finance its operation activities	81	4.14	1.022
Delay of fund releasing increase length process of any activity of inventory management practice	81	4.17	0.891
Company provide petty cash for urgent purchase at all station (not more than Br 5,000)	81	4.30	0.813
Companies has sufficient allocated fund for all operational activity from operation income	81	2.14	1.081
Company age , loyalty and Reputation help to contact bank market make too easy to borrow money from banks	81	4.38	0.860
Sufficient fund is necessary to maintain sustainable relation with suppliers and customers	81	4.38	0.784
Valid N (list wise)	81		
Aggregate mean and standard deviation		3.91	0.908

Source: Survey result (2021)

In this regard, the data gathered from the questionnaires were disclosed Majority of respondent strongly agreed the company borrow money from bank to finance its operation activities to prepare fund in addition as shown by a mean 4.14 and standard deviation 1.022.

Age , loyalty and Reputation of company help to contact bank market make too easy to borrow money from banks as shown by a mean 4.38 and standard deviation .860, company provide petty cash fund for urgent local purchase not more than Br 5,000 as shown by a mean 4.30 and standard deviation .813.

Sufficient fund is necessary to maintain sustainable relation with suppliers and customers as shown by a mean 4.38 and standard deviation .784, Delay of fund releasing increase length process of any activity of inventory management practice also shown a mean 4.17 and standard deviation .891.

Finally under this title the respondents were asked majority of respondents disagreed with Companies has sufficient allocated fund for all operational activities as shown by a mean 2.14 and standard deviation 1.081. From the study findings, the aggregate mean of the study was 3.91 high levels and standard deviation of .908. This implies there was significant independent variables has a significant effect on the dependent variable among respondents.

4.3.4.4 Qualified and competent Staff

Table 13: Descriptive Analysis Qualified and competent Staff

Qualified and competent Staff			
Description of statement	**N**	**Mean**	**Std. Deviation**
Lack of Qualification matched with job requirement in inventory management practice	81	4.11	1.000
Lack of basic knowledge of accounting, management principles, practices and procedures of inventory management	81	4.10	0.982
Training, motivation and development program is necessary to improve qualification of staff	81	4.11	0.975
Adequate professional skill ability to store moving inventory to minimize holding cost	81	2.02	1.012
Qualified staff that is competent and skilled helps the organization to achieve its goals and objectives by many angles	81	4.44	0.851
Lack of staff in the inventory management and accounts are experienced	81	4.15	1.026
Valid N (list wise)	81		

Aggregate mean and standard deviation		3.82	0.974

Source: Survey result (2021)

The study sought to determine the extent to which respondents strongly agreed with the above statements relating to the influence qualified staff on the effectiveness of inventory management practice. The majority of respondents agreed qualified staff that is competent and skilled helps the organization to achieve its goals and objectives by many angles shown by a mean 4.44 and standard deviation .851.

Lack of staff in the inventory management and accounts are experienced staff in effective inventory management practice shown by a mean 4.15 and standard deviation .1.026, Training, motivation and development program is necessary to improve qualification of staff shown by a mean 4.11 and standard deviation .975.

Lack of Qualification matched with job requirement in inventory management practice shown by a mean 4.11 and standard deviation 1.000, Lack of basic knowledge of accounting, management principles, practices and procedures of inventory management shown by a mean 4.10 and standard deviation .982.

The respondents were also disagreed with a point that adequate professional skill ability to store moving inventory to minimize holding cost shown by a mean 2.02 and standard deviation 1.012. From the result of study revealed that the respondents strongly agree qualified staff effective inventory management practice the aggregate mean 3.82 moderate score and standard deviation .974. This implies there was significant independent variables has a significant effect on the dependent variable among respondents.

4.3.4.5 Overall effectiveness of inventory management practice

Table 14: Descriptive Analysis of the overall effectiveness of IMP practice

Effectiveness of inventory management practice			
Description Statement	N	Mean	Std. Deviation

The DHG effectiveness if inventory management practice is poor	81	2.05	0.986
DHG document handling is well (good)	81	4.26	0.721
Work environment is encouraging for inventory management practice	81	4.19	0.792
Lack of Clear Practices and Procedures policy on inventory control and management	81	3.56	0.949
effectiveness of inventory management practice enables to meet on time performance	81	4.38	0.663
Valid N (list wise)	81		
Aggregate mean and standard deviation		3.68	0.822

Source: Survey result (2021)

The study sought to established the extent to which respondents agreed with the above statement, Majority of the respondents agreed that the organization document handling is well or good condition as shown by a mean of 4.26 and standard deviation .721, effective Inventory management practice enables to meet on time performance as shown by a mean of 4.38 and standard deviation .663.

Work environment is encouraging for inventory management practice shown by a mean of 4.19 and standard deviation .792, in organization Lack of clear Practices and Procedures policy on inventory control and management shown by a mean of 3.56 and standard deviation .949.

On other hand majority of the respondents disagree within that the organization effective inventory management practice is poor shown by a mean of 2.05 and standard deviation .986. From the study findings the average mean of the study was high extent of effectiveness inventory management practice shown by a mean 3.68 and standard deviation of .822. This implies there was significant independent variables has a significant effect on the dependent variable among respondents.

4.4 Correlation Analysis

Correlation is degree of relationship between two variables and analysis the strength and way of the linear relationship between two variables. Pearson r correlation coefficient normally stated as a decimal number between +1.00 and -1.00.

Table 15: Pearson's product –Moment correlation coefficient (r)

Correlations					
		IT	Procurement	funding	staff
Effectiveness of IM	Pearson (r)	.615**	.565**	.725**	.712**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	81	81	81	81
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Survey result (2021)

The Pearson's product results were statistically significant and strong positive correlation between effectiveness of inventory management practice and information technology (r (79) =.615, P<, 001), although moderately positive correlation and statically significant between effective of inventory management practice and procurement procedure (r (79) =. 565, P<, 001).

The strong positive correlation and statically significant between effective of inventory management practice and financial resource (funding) (r (79) =. 725, P<, 001). Lastly statically significant and strong positive correlation between effective of inventory management practice and qualified and competent staff (r (79) =. 712, P<, 001).

4.5 Multiple linear regression assumptions

Regression analysis is statistical technique for estimating the relationship among variables which have reason and result relation. Also multi linear regression is a regression models with one dependent variable and more than one independent variable (Uyanik &Guler, 2013). Multiple linear regressions are the process of a linear approach to modeling the relationship between a scalar response and one or more explanatory variables (also known as dependent and independent variables).

4.5.1 Multicollinearity Test

In statistics, Multicollinearity is a situation in which two or more independent variables in a multiple regression model are extremely correlated, implying that one can be linearly predicted from the others with a considerable degree of accurateness (Hair et al., 2010).

Tolerance % of variance shows the tolerance measures the influence of one independent variable on all other independent variables and calculated with an initial linear regression analysis. Tolerance ($T = 1 – R^2$) for these first step regression analysis (Daoud 2017).

Table 16: Test for Variance Inflation Factors (VIF)

Model		Collinearity Statistics	
		Tolerance	VIF
1	Information technology	0.631	1.584
	Procurement procedures	0.533	1.875
	Financial resource(funding)	0.411	2.431
	Qualified & competent staff	0.675	1.482

Source: Survey result (2021)

According to the results above the value of variance inflation factor (VIF) are less than 10 but more than 1 (VIF of 1 < VIF and VIF < 10). The values of tolerance for each independent variable are less than 1 and greater than 0.1. This means the results show that there is no Multicollinearity problem happen in the study.

4.5.2 Model Fit Analysis

Model fit analysis using the (adjusted) R^2 and significance of the F-value. The R^2 (or coefficient of determination) shows the degree to which the model explains the observed variation in the dependent variable, relative to the mean (Mooi, 2014). The analysis was conducted to establish the combined influence of IT, procurement procedure, Funding, Qualified and Competent Staffs on effective of inventory management of DHG Business Group. The study performed a Model fit analysis resulting in the tables discussed below.

Table 17: Regression analysis model summary

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.839[a]	0.704	0.688	0.17482	0.704	45.09	4	76	.000
a. Predictors: (Constant), competent staff, Information technology ,Procurement & funding									
b. Dependent Variable: Effectiveness of inventory management									

Source: Survey result (2021)

As above table shown the model summary table contains multiple correlations in the study shows the R^2 =0.704 and the adjusted R^2 =0. 688.

This is a clear indication that the model explains(R^2 value) 70.4 % of the effects in the study as a result of the factors under study leaving out 29.60 % unexplained which form part of the recommendation to other researchers to find out in future or explained by other variables outside of the model. Therefore the model provided a good fit.

The R- value of 0.839 indicates that there is a strong positive correlation between the dependent variable (Effectiveness of inventory management) and the set of independent variables (Information technology, Procurement procedures, Funding and Competent staff).

4.5.3 Analysis of variance (ANOVA)

The study of these total sum squares is known as analysis of variance (ANOVA) from regression point of view and to test the implication of the relationship. ANOVA is a statistical tool used to detect differences between experimental group means. ANOVA is experimental designs with one dependent variable that is a continuous parametric numerical outcome measure, and multiple experimental groups within one or more independent variables (Sawyer, 2009). The findings were as presented in table below.

Table 18: Analysis of Variance (ANOVA)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.512	4	1.397	45.09	.000[b]
	Residual	2.323	76	0.031		
	Total	7.835	80			
a. Dependent Variable: Effectiveness of inventory management						
b. Predictors: (Constant), competent staff, Information technology, Procurement &funding)						

Source: Survey result (2021)

Table above shows significance of the model. The resulting F (4, 76) =45.09, P (0.000) <0.05, shows the model predicted variable by independent variable (Information technology, Procurement procedure, Funding and Competent staff) statistically significantly predict the effectiveness of inventory management.

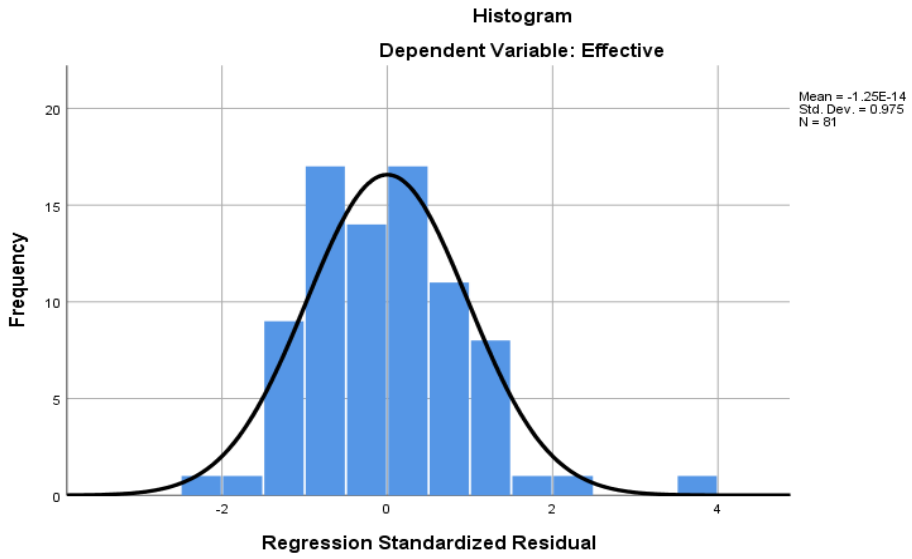
The Total sum of square (7.835) is equal to the sum of explained sum of square (5.512) and residual sum of squares (2.323). The value of F is 45.090 (mean square of regression divided by mean square of residual) and it is significant at p value 0.000 (p<0.05).

This indicates that the overall mode was reasonably fit and statically significant association between independent variables and effectiveness of inventory management at DHG Business Group.

4.5.4 Normality test

A normal distribution, sometimes called the bell curve, is a distribution that occurs naturally in many situations where successive standard deviations from the mean establish benchmarks for estimating the percentage of data observations (https://www.statisticshowto.com/). As shown in the below Figure the researcher used histogram in order to test the normality of data distribution, the normality test result shows the sample distribution produced bell shaped curve and approximately normal between balanced skewness of -2 and 4.

Figure 6: Normal distribution Histogram results



Source: Survey result, (2021)

4.5.5 Regression Coefficients

A regression coefficient is a ways of calculation of change independent variables in one unit increase or decrease dependent variables.

Table 19: Analysis of Coefficient

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.808	0.158		11.455	.000
	Information technology	0.162	0.053	0.243	3.092	0.003
	Procurement procedures	0.018	0.035	0.044	0.518	0.606
	Financial(funding)	0.151	0.046	0.317	3.256	0.002
	competent staff	0.165	0.03	0.421	5.533	.000
a. Dependent Variable: Effectiveness of inventory management						

Source: Survey result (2021)

From the analysis Information technology has a positive relationship with effectiveness of inventory management practice and the relationship is statistically significant at the 5% significance level shown (β = .162, P=0.003<0.05). Financial resource (funding) has a positive relationship with effectiveness of inventory management practice and the relationship is statistically significant at the 5% significance level shown (β = .151, P=0.002<0.05). Qualified staff has a positive relationship with effectiveness of inventory management practice and the relationship is statistically significant at the 5% significance level shown (β = 165, P=0.000<0.05). However Procurement procedures has a positive correlation with effectiveness of inventory management practices but the relationship is not statistically significant at the 5% significance level (β = .018; p = .606 >.05).

From the above model the linear relationship of research the coefficients suppose that variation in information technology by one unit leads to increases effectiveness of inventory management practice by 0.162%. At the same time Change in procurement procedures leads to change effectiveness of inventory management practice by 0.018%, Change in Financial resource (Funding) leads to change effectiveness of inventory management practice by 0.151%. Again change in Qualified and Competent Staff changes effectiveness of inventory management practice by 0.165%.

From the research findings, the following multiple regression model is developed;

Where; Y: - effectiveness of inventory management

X1:- Information Technology, X2:- Procurement procedures, X3:-Financial resource (Funding), X4:-Qualified &Competent staff and E:-error term.

The dependent variable (Y) and independent variable (X) variables relationship can be explained as; $Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4e$, where β_0 is constant, β_n is the coefficient of independent variables ,$Y= 1.808+0.162X_1+0.018\ X_2+0.151X_3+0.165X_{4+e}$

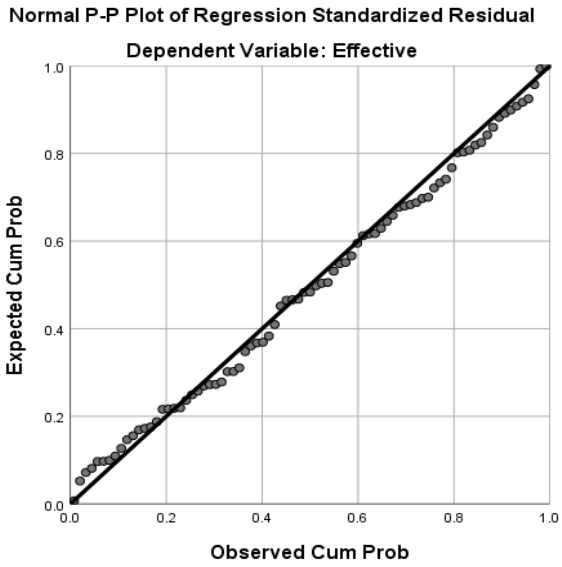
According to the finding, the multiple linear regression equation established that all independent variables taking to be zero (information technology, procurement procedure, funding and qualified staff), the dependent variable that effectiveness of inventory management practice would increase by 1.808 constant.

4.5.6 Linearity Test

Q-plots, and P-plots are a more exacting methods to spot deviations from normality, and are relatively easy to interpret as departures from a straight line and Linearity is used check whether all the estimates of regression including regression coefficients, standard errors and tests of statistical significance are biased or not (Keith, 2006).

The normal probability plot of the residuals is approximately linear supporting the condition that the error terms are normally distributed (Chambers et al., 1983). The below figure indicates the straight line departure from normality and a data set is approximately normal distributed.

Figure 7: p-p plot; Linearity test results



Source: Researcher survey result, 2021

4.6. Information from Interview

The information obtained from the interview of different key managers on inventory management practice of DHG are summarized as following

The warehouse staff still now uses manual system (Bin card) to control inventory, codification and description label of the stock is not clear and insufficient of forklift and truck to perform good warehouse management activities. Damage and obsolete, slow moving material not disposed and these items count at every counting period, also handle

together with active items materials. The problem of insufficient store, when raw materials purchase from foreign in bulky the company warehouse is not enough so warehouse staff uses the compound as store.

DHG Business Group Company not implementing of modern inventory management techniques such as JIT, EOQ & VMI. Company uses EOQ traditionally: this means the materials re-order when it reaches the minimum level but there is no the computerized data base calculation applied. Because most of our supplier are abroad and the purchase procedure take time. In addition by different causes like foreign currency exchange problem, internal fund problem , transit and shipping logistic.

Our companies frequently use agreements with local supplier for short cycle deliveries, when the foreign purchases late, faces shortage of production input. But it is difficult to get the reliable supplier.

Company applied order stock in bulk to take advantage of trade discount for purchase of stationary materials and raw material, Cost of goods sold and inventory on hand count and valuation calculate at the end of period by using average moving method for all inventories.

Nowadays due to the shortage of raw materials, downtime of production and electric power shortage it becomes too difficult to maintain competitiveness and keep reputation of our company. The quality problem of finished goods happens because of quality of input and of machinery breakdown and result brings customer dissatisfaction.

IT for inventory control and management employed by company is Peachtree Accounting system used for recording transaction activity, for inventory reconciliation system, inventory valuation and also used for inventory reporting at different factory station and finance department, also between branch (shop) and finance department.

The Company purchases most of Raw materials and spare parts greater than 90% from foreign purchase. Recently company faced shortage raw materials at all factory because of shortage of foreign currency problem. The foreign exchange crisis has continued to hamper our organization's operations. Our company was forced to look for another option to purchase raw materials from importer traders; this led to high raw material cost and products price and challenges to competitive.

The procurement procedures meet the reliable supplier is critical point. That starting from Performa invoice, sample and delivered items same as within quality although length of time at procurement. Again quality of purchased raw material both (locally &imported) has great burden on production department and customer dissatisfaction the case of quality of finished goods. Also there is problem of clear the procurement policy in organization and most of procurement process activity depends on production requirements or planning, based on urgency demand of product and situation of environment and changing program.

The allocated fund for inventory management practices was not sufficient in the company. because of insufficient resource organization lead to shortage of raw material inventory ,shortage of supply, decline of current sales items, new product, consumables, spare parts items and all other supplies.

Because of fund shortage of budget many materials that are very important for inventory management are not fulfilled (such as lack of modernized shelf, lack of store space, lack of different modernized software on inventory control and storing materials.

In company there is no short term or long term training to employee and no improvement qualification of staff and also organization does not support or covered educational fees to employee. Also there is no motivation and promotes program like award to talented and top staff based on professional skill and to motivate creativity. The most of assigned employees in inventory management and warehouse management does not have an education background related with to inventory management practice.

4.7. Discussion of Finding

4.7.1. Finding from challenges of effectiveness of IMP

The finding shows the challenges faced on inventory management in organization that majority of the respondents agreed Non availability of sufficient raw materials and spare parts(4.56),many types of items of inventory(stock) in stores(4.44), Holding Obsolete and damage inventory in same store(4.32),Lack of Coordination between different departments(3,84), Quality of Production of input and output(3.31) and Lack of good warehouse management system(3.86) The warehouse staff still now uses manual system (Bin card) to control inventory, lack of clear codification and description of the inventory

identification and insufficient of forklift and truck to perform good warehouse management activities. Damage and obsolete, slow moving material not disposed immediately and the problem of insufficient store. These challenges consequence poor inventory management practices and decrease competitiveness.

The above challenges impact on inventory management practices, this result was consistent with the finding of (Akande & Abraham, 2018) Failure to maintain a proper, adequate and accurate inventory control management will results in fall in profit and performance. (Lawrence & Chiromo ,2020) despite the challenges on inventory control, a warehouse design advantage to manage inventory efficiently, the warehouse is designed with a warehouse management system in place to support efficient flow of inventory in and out of the warehouse. (Munyao et al, 2015) ineffective inventory management leads to incidences of overproduction, underproduction, excessive stocks, and stock out of spare parts for machines, production bottlenecks and delays in delivery of raw materials.

4.7.2. Finding from Inventory management Techniques

The finding shows Company use Agreements with supplier for short cycle deliveries (4.78), apply Periodic inventory system for inventory control (4.35),Company order stock in bulk to take advantage of trade discount (3.90), Uses an order is placed only when inventory reaches minimum level(3.40),Economic Order Quantity (EOQ) system (2.72), Vendor managed inventory(VMI)& Material Requirement planning (MRP) System(Apply Just in time (JIT) System (1.62) and Company uses traditionally guess or estimation materials re-order when inventory reaches the minimum level rather than computerized data base calculation applied.

The literature surrounding inventory management techniques done by(Lawrence & Chiromo, 2020) Lack of application of inventory management techniques has resulted in trends of inventory losses by increased inventory holding, slow moving stock, inventory damages and scrapping.(Kumar, 2020)The implementation of effective inventory management techniques in manufacturing in terms of inventory turnover ratio and inventory conversion period and the reflective analysis of the implementation of the effective inventory management.(Mishra& Anil, 2018) Inventory management techniques undertaken by the organization are helping it in continuous flow of its production activities.

4.7.3. Finding from effective IMP and Increase competitiveness

From the finding effective inventory management practice help to create sustainable competitiveness(4.42), inefficient inventory management practice led to increase cost of production and reduces profitability shown by a (4.43), Providing quality products make the company more competitive (4.28),lack of product differentiation from the competitors(4.23),Ensuring availability of adequate stock at all-time increase competitiveness(4.22),Price of product has great role on company competitiveness(4.06), product delivery at the right place and time is ensure the competitiveness(4.02), shortage of raw materials, downtime of production and electric power shortage it becomes too difficult to maintain competitiveness.

These finding agrees with findings of previous study (Namusonge, 2015) inventory control systems played a vital role in achieving competitive advantage, and as such, organizations must ensure that inventory control system be highly involved in inventory management activities. (Atnafu, 2018) study concludes that the higher levels of inventory management practice can lead to an enhanced competitive advantage and improved organizational performance.

4.7.4. Finding from Factors influence effectiveness of inventory management practices

Correlation analysis and Linear multiple regression was performed to test the independent variables to answer the research questions based on the research problem and objectives. The four independent variables included in analysis with effectiveness of inventory management and influence effectiveness of inventory management practices. Each of them were evaluated and presented as below.

Information technology:- DHG used IT to record transaction of inflow and out flow of materials (4.67), Companies used electronic point of sale(EPOS) at all outlet (4.58), IT able to provide greater data accuracy on inventories on time (4.36),Use Computerization system (including network and hardware infrastructure)(3.70), DHG employed bar coding technology at inventory counting & (RFID)Radiofrequency identification(2.07), apply Electronic Data Interchange Technology (EDI) computers are linked with both suppliers and customer(2.06) and apply information technology to record transaction of inflow and out flow of materials apply Peachtree Accounting system for recording transaction

activity, for inventory reconciliation system, and also used for inventory reporting at different factory station and finance department, also between branch (shop) and finance department.

The Pearson's correlation result shows relation between information technology and effectiveness of inventory management (r=.615) and coefficient model result show that has a positive and significant effect on effectiveness of inventory management practice of the organization at (p-value .0.003<0.05) and beta value of 0.162. The variation in information technology by one unit leads to increases effectiveness of inventory management practice by 0.162%.

These finding agrees with findings of previous study Onchoke &Wanyoike (2016) study reveal that computerized inventory control management leads to easy storage and retrieval of material, improved sales effectiveness and reduced operational cost. Dhodi (2018) study shown the information technology effects inventory management through information sharing with suppliers, accuracy on inventories, reducing cost of ordering stock, improving order processing, improving speed of service to customers and enhancing stock availability to customers. (Yator & Moronge, 2018) IT Infrastructure is the key to the improved inventory control systems implementation in the Manufacturing Industries, (Mwangi, 2015) study concludes that ICT application had a positive influence on performance of manufacturing firms. Munyao et al., (2015) Use of computerized inventory management practices such as computerized warehousing, computerized inventory record, bar codes, inventory management software, and automated replenishment and radio-frequency identification device influence production efficiency.

Procurement procedure: - Most of respondent strongly agreed Lack of match between plan for procurement of material& actual performance (mean 4.19), the company policy of procurement procedure has great impact on effective of inventory management practice within (4.28),Lack of efficiency of the procurement process has led to high cost inventory in the organization (4.16), Length of procurement procedure raw materials affect production and customer requirement satisfaction within (4.12),Complexity in managing diverse stakeholder interest influences procurement procedures within (4.09),Unreliable suppliers are great significance on procurement procedure within (4.26). Most of raw materials and spare parts greater than 90% purchased from abroad. The

foreign exchange crisis has continued to hamper organization's operations and purchase raw materials from importer traders; this led to high raw material cost and products price and challenges to competitive. Lack of clear the procurement policy and most of procurement process activity depends on production requirements or planning, based on urgency demand of product and situation of environment and changing program.

The correlation between Procurement procedures and effectiveness of inventory management Pearson's result shows(r=.565) and coefficient model result show that has insignificant effect on effective inventory management practice of the organization at (p value .606>0.05) and beta value of 0.018. The change in procurement procedures leads to change effectiveness of inventory management practice by 0.018%. The previous studies that support this study Pushpakumara, (2018) Procurement and inventory management are critical to production companies as well as to service companies, as spending in procurement is often one of the biggest parts of the company's budget.

Ng'ang'a (2013) study also revealed that delays in procurement of goods, frequent stock outs /under stocking, poor inventory management, uncertain change of prices were some of the effects of long bureaucratic procedure which have a negative effect on effectiveness of inventory control. Okwaro et al., (2017) the long bureaucratic procedures have various negative effects that include delays in procurement of goods, frequent stock-outs /under-stocking, and poor inventory control.

Fredrick et al., (2017) procurement policies had a positive and significant association on the efficiency of inventory management; the long bureaucratic procedures have various negative effects that include delays in procurement of goods, frequent stock-outs /under-stocking, and poor inventory control

Financial Resources (Funding):- The finding shows Borrow money from bank to finance its operation activities to prepare fund in addition(4.14),Age , loyalty and Reputation of company help to contact bank market make too easy to borrow money from banks (4.38),company provide petty cash fund for urgent local purchase not more than Br 5,000 (4.30),Sufficient fund is necessary to maintain sustainable relation with suppliers and customers (4.38), Delay of fund releasing increase length process of any activity of inventory management practice (4.17),Companies has sufficient allocated fund for all operational activities (2.14).

The finding shows correlation between Funding and effectiveness of inventory management Pearson's result shows(r =.725) and coefficient model result show that has a positive effect on effectiveness inventory management practice of the organization at (P value .002<0.05) and beta value of 0.151 The beta value implies that an change in funding by one unit increase the effectiveness of inventory management practice by 0.151.

The findings concur with Mohammad et al., (2016) the financial constraints do affect inversely the adjustment speed, and makes the financially constrained firms reduce their level of inventory beyond the target level by more than other. (Yator & Moronge, 2018) better funding leads to better and successful implementation of inventory control systems (Ondari and Muturi, 2016) that funding positively affects the efficiency of inventory management among firms. Ng'ang'a (2013) revealed when allocated funds are not enough to cover the whole financial year the result may have an effect in inventory control in that it may cause failure to achieve the set targets (goals), under stocking of goods leading to poor customer service; poor staff morale and poor utilization of both human and physical resources.

Qualified and competent staff: The finding shows qualified staff that is competent and skilled helps the organization to achieve its goals and objectives by many angles (mean 4.44),Lack of staff in the inventory management and accounts are experienced staff in effective inventory management practice (4.15), Training, motivation and development program is necessary to improve qualification of staff (mean 4.11),Lack of Qualification matched with job requirement in inventory management practice(4.11), Lack of basic knowledge of accounting, management principles, practices and procedures of inventory management shown by a (4.10), adequate professional skill ability to store moving inventory to minimize holding cost(2.02).The warehouse management staffs are lack of education background related with to inventory management practice. Lack of motivation and promotes program like award to talented and top staff based on professional skill and to motivate creativity. This led to ineffective and inefficiency of inventory management practice and overall organization activities.

The correlation between qualified staff and effectiveness of inventory management Pearson's result shows (r= .712) and coefficient model result show that has a positive effect on effectiveness of inventory management practice of the organization at (p value

.000<0.05) and beta value of 0.165 The beta value suggests that change in qualified staff by one unit increase the effectiveness of inventory management practice by 0.165.

The findings concur with (Yator & Moronge, 2018) Staff training had a statistically significant positive influence on inventory control systems implementation.(Ondari and Muturi, 2016)The study revealed that the skills possessed by staff had a positive effect on the efficiency of inventory management among firms.(Hamid &Dhar, 2021) Staff characteristics have positively and significantly influenced the effective inventory management. Fredrick et al., (2017) Staff training had a positive and significant association on the efficiency of inventory management, Staff skill and experience contributed to ineffectiveness of inventory control due to deficient of stores officer qualifications, lack of training & record procedure violation. Joseph and Susan (2017), Study concludes that staff competency has a positive and significant influence on the management of inventory and the staff in the procurement and accounts is experienced and employees dealing with inventory have skills required.

Effectiveness of inventory management practice: - Majority of the respondents agreed that the organization document handling is well or good condition (4.26), effective Inventory management practice enables to meet on time performance (4.38), Work environment is encouraging for inventory management practice (4.19), Lack of clear Practices and Procedures policy on inventory control and management (3.56) effectiveness of inventory management practice is poor (2.05) Effective inventory management practices helps to succeed organization performance cut down costs incurred by an organization.

The literature surrounding Effectiveness of inventory management practices done by Ajayi et al., (2021) Effective inventory management practices must maintain an appropriate inventory levels to enhance turnover and minimize the inventory costs associated with value of stock. Richard et al., (2021) Proper inventory management could lead to improved firm performance with respect to high product quality, speed, flexibility, dependability while minimizing production costs. (Christopher, 2017) An effective inventory management is able to generate more sales, provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities and communicate with customers.

CHAPTER FIVE

SUMMARY OF FINDING, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter indicates the summarized, conclusion and recommendation on the objectives of the study. The objectives of the study are identifying the challenges faced while practicing inventory management, identify the factors that influence effectiveness of inventory management, assess the techniques of inventory management and assess the relation between competitiveness and effective inventory management in DHG Business Group.

5.2 Summary of major findings

After analyzing the data gathered through questionnaires and interviews the summary of findings are as follows:

5.2.1. Challenges faced whereas practicing inventory management in DHG

The analysis made on challenges of implement inventory management practice in organization, unavailability of sufficient raw materials and machinery spare parts, many types of items of stock placed in stores without clear codification or description label, holding Obsolete and damage inventory in same store, Lack of Coordination between different departments, Quality problem of Production of input and output and Lack of good warehouse management system, use manual system (Bin card) to control inventory, insufficient of forklift and truck to perform good warehouse management activities, lack of disposal damage on time and the problem of insufficient store. The result implies the above challenges faced organization led to poor of inventory management practice.

5.2.2. Examine Techniques of inventory management applied by DHG

The summary drawn from the result of the second objective of the study is to examine techniques of inventory management used in DHG Business Group. studies found that company uses Agreements with supplier for short cycle deliveries, apply Periodic system for control inventory and Average moving for inventory valuation method and company applied order stock in bulk to take advantage of trade discount like stationary materials

and Raw material. In the contrary company does not apply scientific inventory management techniques like EOQ, JIT, MRP and VMI. This consequence ineffective of inventory management practice, increase manufacturing cost and become bottleneck to the competitiveness of organization.

5.2.3. Assess IMP and improve Competitiveness of DHG

The result related to the third objective of the study is to assess effective of inventory management practice and competitiveness of DHG Business Group studies found that effective inventory management practice help to create sustainable competitiveness through providing quality products, Price of product, product delivery at the right place and time, availability of adequate stock. However lack of product differentiation from the competitors, shortage of raw materials, downtime of production and electric power shortage it becomes too difficult to effective inventory management practice. Ineffective inventory management practice led to failure of organization competitiveness.

5.2.4. Examine the factors that influences effectiveness of IMP in DHG

Information technology: - company used IT (Peachtree Accounting system) to record transaction flow of materials, used electronic point of sale (EPOS) at all outlet, Computerization system including network and hardware infrastructure able to provide greater data accuracy on inventories on time. Contrary DHG do not applied technology like bar coding, RFID and EDI.

The correlation between information technology and effectiveness of inventory management Pearson's result shows (r=.615) and coefficient model result show that has a positive and significant effect on effectiveness of inventory management practice of the organization at (β =.162, P=.003<0.05).

Procurement procedures:-The study result shows policy of procurement procedure has great impact on effective of inventory management practice, Lack of match between plan for procurement of material& actual performance, Lack of efficiency of the procurement process has led to high cost inventory, Length of procurement procedure raw materials affect production and customer requirement satisfaction, Complexity in managing diverse stakeholder interest influences procurement procedures, Unreliable suppliers are great

significance on procurement procedure. Lack enough foreign exchange and Lack of clear the procurement policy.

The correlation result revealed that procurement procedures were positively correlated with effectiveness of inventory management practice by (r=.565) and Regression result shows that, procurement procedures had relatively positive and insignificant relationship with effectiveness of inventory management by (β =.018, P=.606>0.05).

Financial resources (funding):- The Sufficient fund is necessary to maintain sustainable relation with suppliers and customer, Company has insufficient allocated fund for all operational activities and Borrow money from bank to finance its operation activities to prepare fund in addition. company age, loyalty and Reputation help to contact bank market make too easy to borrow money from banks ,company provide petty cash fund for urgent local purchase not more than Br 5,000 and Delay of fund releasing increase length process of any activity of inventory management practice.

The correlation result revealed, the financial resources or funding positively and high correlated to effectiveness of inventory management practice by (r=.725).Regression finding added show that, funding had positive relationship and strong significant effect on effectiveness of inventory management practice by (β = .151, P=002<0.05) .

Qualified & competent staff: - The qualified staff helps the organization to achieve its goals and objectives by many angles, Training, motivation and development program is necessary to improve qualification of staff. In the contrary Lack of staff in the inventory management and accounts are experienced staff, Lack of Qualification matched with job requirement ,Lack of basic knowledge of accounting, management principles, practices, inadequate professional skill ability to store moving inventory, lack of education background of warehouse staff , Lack of motivation and promotes program like award to talented and top staff based on professional skill and to motivate creativity led to ineffective and inefficiency of inventory management practice and overall organization activities. The correlation result revealed that the qualified staff has high positively correlated to effectiveness of inventory management practice by (r=.712). Regression finding shows that, qualified staff had relatively strong and significant effect on the effective inventory management practices by (β =.165, P=000<0.05).

In this study the analysis of the selected model (Information Technology, procurement procedures, funding and qualified staff) explained 70.40 %(R^2) the variation on effectiveness of inventory management practice, indicating that 29.6% of the effectiveness of inventory management practice could be explained by another factors which are not considered by this study.

5.3 Conclusion

Based on the findings, the researcher had drawn the following conclusion:

The Inventory and inventory management practices are lifeblood of manufacturing organization. Also ways of income generate and ensures profitability. The study concluded that, some of the challenges of inventory management practice that minimize company operation and performance those are lack of good warehouse management, lack of enough foreign currency exchange ,lack of coordination between departments, lack of sufficient raw materials, forklift and truck shortage, using manual bin-card inventory control at warehouse. The above challenge consequences poor inventory management practice and failure of organizational competitiveness.

Adoption of scientific inventory management techniques help to maintain good activity of production department, ensure quality of product, control time managements ,minimize inventory cost (holding, order and Labor cost) that increases company productivity and increase profitability. Study out that the application of inventory management techniques improperly is led to inessential inventory cost and manufacturing overhead cost.

Study concludes that competitiveness is ensured by effectiveness of inventory management practice and measured by providing quality products, equivalent product price, and speed of delivery and by brand and differentiate product. Effective inventory management practices help to create Competitiveness and expanded market share of organization.

The result also revealed that implementation of IT properly is help to successive of intercommunication between different department, managements, suppliers and customers. Also support to immediate update of inventory balance, stock flow mechanism, minimize lead time, reduce inventory costs, update information sharing,

speed orders of procurement, speed delivery and help company to improve effectiveness of inventory management and coordinate its supply chain system. The study reveals that information technology has a positive and significant effect on effectiveness of inventory management.

Study concludes that procurement procedures are plays a vital role of inventory management success of organizations enhancing effectiveness and efficiency. Procurement is one factors and the combination activity of many department that starting from planning to receiving material. A making company procurement policy clear is effective inventory management practices that improve organization productivity by minimizing inventory shortage and overage. Study concluded that a procurement procedure has positive but insignificant influence on the effectiveness of inventory management practices.

Study concludes that the capability of any ordinary organization evaluation depends by their funds system and budgets depend on minimizing Cost, maximizing the sales volume and customer satisfaction. The effectiveness of IMP ensured by provide sufficient fund by organization operation, loan minimize and repayment to minimize financial charge and also avoid length process of funding procedure. The study concluded that funding has positive and significant influence on the effectiveness of IMP.

Study concludes that qualified employees are most vital in organization to achieve effectiveness of inventory management practice and organizational performance, assign qualified and adequate staffs. Training, motivations &develop personnel skill helps to considerate work atmosphere, organization structure, culture and to do better job. Accordingly the study concluded that the qualified staff has a positive and significant influence on the effectiveness of IMP.

The indication of effective inventory management practices apply modern techniques, method of inventory controlling and technology with qualified staff, good warehouse management, healthy procurement procedure, that help to ensure productivity and competitiveness.

Effective and efficient inventory management practice help Company to increase sales, delivers information on time to decision maker about the flow of materials, effectively

use manpower, coordinate internal and external activities and improve customers satisfaction put visible role on competitive and growth of organization.

5.4 Recommendation

Based the above study findings and conclusions the following recommendation forward to the Management and stakeholder of DHG improve the effectiveness of IMP.

As effectiveness of inventory management practices plays significant role in the improvement of efficiency and competitiveness, the company needs to ensure effectiveness of inventory management practices as a set strategy to assure their success of business operation.

Company should handle Obsolete, slow moving, non-moving and damage inventory separate from fast moving items in store and dispose these item immediately by selling or disposing to improve warehouse management. Warehouse should be equipped with all necessary facility materials, prepare classification of the inventory coding for all stock items which suitable to all departments and ensure information technology to maintain the standard and good warehouse management. The Company needs to improve coordination between departments, focus on teamwork and segregate the duties of inventory management practice hierarchy within responsibility. DHG need to adopt modern and scientific inventory management techniques to determine material quantity and cost using inventory management techniques such as JIT, MRP, VMI and EOQ, rather than traditional and estimated.

The company in order effectiveness of inventory management practice ,customer satisfaction, improve supply chain and to create competitiveness, should be apply modern information technology like EDI,RFID & Bar coding also use properly the exist technology.

In order to improve effective inventory management, management should evaluate the gap between plan and actual purchase. That needs to be improving the company's procurement procedure by select reliable suppliers that help reduce production costs and to maintain good product quality. Company needs to supplies enough spare of machinery,

substitute the oldest machinery by new and modern machinery, to ensure quality of finished product and minimize product cost.

The researcher suggested that the organization need to allocate sufficient fund, as it is essential for the effectiveness of inventory and company should focuses on mobilizing internal fund operation through speed inventory rotation and increasing sales volume.

From the finding the allocating fund for company operations are not enough.so the organization needs to allocate fund properly for different departments especially on procurement of raw material that affect production. So the researcher recommended that the organization has to allocate sufficient budget for inventory and inventory management practice. The main source of fund in manufacturing firms is a sale of finished goods product.so to solve the fund problem and also improve effectiveness of inventory management; company should focus on the quality of product, improve customer service satisfaction and increase the local market share.

Organization human resource management must prepare Staff training and motivation programs by (increasing salary, incentives, praise, promote and appreciation) also Assign experienced staff to share their experience are help to create skilled staff and develop staff skill. This help to understand the importance of inventory management, introduce to modern technology and to create qualified employee.

The company should give attention to minimize the foreign purchase problem to solve the foreign currency exchange problem, company should focus to export the local product and substitute overseas input by local materials. The researcher forward two methods that help to solve the problem of foreign exchange and to solve the root problem of raw material inventory shortage in the company as recommendation. First the short term plan, Company should start to export the local product (own or others product) Second Company need to focus in future on the additional expansion project which supplies (manufactories) the raw material to the other sisters company. This help to solve the root problem of raw material inventory shortage in the company and downtime production of machinery.

Lastly to ensure effectiveness of inventory Management practices and competitiveness Company should give attention to minimize the rigid management, bring forward the professional and experienced management.

5.5 Suggestion for Further Studies

Based on the findings, the study suggests that further studies should be conducted on the Assessments of Inventory Management practices and the factors of influence effectiveness of IMP beyond (IT, procurement procedure, funding and qualified staff) that not addressed in study. Further study should be undertaken to consider other factors on the Ethiopian manufacturing industry.

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ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

Appendix I: QUESTIONNAIRE

Dear respondents:

This survey is developed with an objective to conduct a research on Assessment of Inventory Management Practices for the Case of DHGEDA Business Group. It helps to complete Master of Accounting and Finance at Addis Ababa University. Therefore, your response in this regard has a very importance for the achievement of the research objectives. Your response will kept strictly confidential and it will be used for this research purpose only. Finally, I hugely appreciate in advance for your willingness in responding to the questionnaire.

If you would like further information about this study, or have problem in completing this questionnaire please contact me via +251-912-80-93-96 or Email demearsi80@yahoo.com.

This is a study on the seeking: Inventory management practice of manufacturing companies: case of DHGEDA Business Group

Kindly answer all questions by putting a tick (√) in the appropriate box

SECTION 1: General Information

1. What is your gender? Male ☐ Female ☐

2. What is your level of education?

Certificate ☐ Diploma ☐

Bachelor's Degree ☐ Masters ☐

3. How long have you been working in the DH GEDA Business Group manufacturing industry?1-3 year ☐,3-6 years ☐,9-15 years ☐6-9 years ☐ above 16years ☐

4. What is your department in the DH GEDA Business Group?

Procurement☐, Planning☐, Production ☐ , Marketing ☐

Warehouse Staff ☐ Finance ☐ Technical ☐ Audit ☐

Please give your response for the following questions according the instruction given below. Strongly agree= 5: Agree =4: undecided = 3: Disagree = 2: strongly Disagree = 1

Statements	**Put √ marking your response**				
	5	4	3	2	1
1.Challenges of inventory management					
1. Many types of items of inventory (stock) in stores					
2. Lack of Coordination between different departments					
3. Quality of Production of input and out put					
4.There is lack of good warehouse management system					
5. Holding Obsolete and damage inventory in same store					
6. Discrepancy with annual/monthly/inventory record					
7. Non availability of sufficient raw materials and spare parts					
2.Inventory management Techniques					
1. DHG uses Just in time (JIT) System - where no safety stocks are kept is the practice					
2. DHG uses an order is placed only when inventory reaches minimum level					
3. DHG uses Agreements with supplier for short cycle deliveries					
4. DHG uses Economic Order Quantity (EOQ) - reorder inventory when it reaches the minimum level apply					
5. Vendor managed inventory (VMI)- suppliers to manage inventory on behalf of the firm & Material Requirement planning (MRP) System-where					

bills of materials are 100% accurate					
6. Company order stock in bulk to take advantage of trade discount					
7. Use Periodic inventory system for inventory control					
3.Effective IMP and increase of Competitiveness					
1.Providing quality products will make the company more competitive					
2. Price of product has great role on company competitiveness					
3.Product delivery at the right place and time is increase the competitiveness					
4. Lack of product differentiation from the competitors					
5.Effective inventory management practice help to create sustainable competitiveness					
6.Ensuring availability of adequate stock at all-time increase competitiveness					
7. Inefficient inventory management meet increase cost of production and reduces profitability					
4. Factors influence Effective of inventory management practice					
4a. **Information Technology**					
1.The company use Computerization and Information Technology(including network and hardware infrastructure)					
2. DHG employed bar coding at inventory counting & Radiofrequency identification (RFID)					
3. The companies used electronic point of sale(EPOS) at all outlet					
4. DHG used IT to record transaction of inflow and out flow of materials					
5. Information system able to provide greater data accuracy on inventories on time					
6. DHG uses Electronic Data Interchange Technology (EDI) computers are linked with both suppliers and customer					
4b Planning and procurement Procedures					
1.Lack of match between plan for procurement of material& actual performance					
2. Company policy of procurement procedure has great impact on effective of inventory management					

3. Lack of efficiency of the procurement process has led to high cost inventory in the organization					
4. Length procurement procedure of raw materials affects production and customer requirement satisfaction					
5.Complexity in managing diverse stakeholder interest influences procurement procedures					
6.Unreliable suppliers are significance impact on procurement procedures					
4c Funding/ Financial resource/					
1. Company borrow money from bank to finance its operation activities					
2.Delay of fund releasing increase length process of any activity of inventory management practice					
3. Company provide petty cash for urgent purchase at all station (not more than Br 5,000)					
4. Companies has sufficient allocated fund for all operational activity from operation income					
5. Company age, loyalty and Reputation help to contact bank market make too easy to borrow money from banks					
6.Sufficient fund is necessary to maintain sustainable relation with suppliers and customers					
4d Qualified and competent Staff					
1.Lack of Qualification matched with job requirement in inventory management practice					
2.Lack of basic knowledge of accounting, management principles, practices and procedures of inventory management					
3.Training, motivation and development program is necessary to improve qualification of staff					
4. Adequate professional skill ability to store moving inventory to minimize holding cost					
5. Qualified staff that is competent and skilled helps the organization to achieve its goals and objectives by many angles					
6. Lack of staff in the inventory management and accounts are experience					

4.Effectiveness of Inventory Management					
1. The DHG effectiveness if inventory management practice is poor					
2. DHG document handling is well (good)					
3.Work environment is encouraging for inventory management practice					
4. Lack of Clear Practices and Procedures policy on inventory control and management					
5.Effectiveness of inventory management practice enables to meet on time performance					

Please provide any additional opinion or comments with respect to the inventory management practice by your company.

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Appendix II : INTERVIEW

Question for the different key department managers Semi-structured Interview

- What are challenges (problem) of inventory management practice at DHG?
- What modern technique or method of inventory management employ by DHG?
- How do you explain inventory management practices improve competitiveness at DHG?
- What do you think about factor influence of Information technology on effectiveness of inventory management practice in your company?
- How factor influence of procurement procedures on effectiveness of inventory management practice at your company?
- What do you think about factor influence of fund or financial resource on effectiveness of inventory management practice in DHG business Group?
- What do you think about factor influence of skilled staff on effective of inventory management practice in your company?
- How do you explain effectiveness of inventory management practices of your organization?