THE EFFECT OF INVENTORY MANAGEMENT ON CUSTOMER SATISFACTION IN THE CASE OF ETHIO-NIPPON TECHNICAL COMPANY S.C

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The effect of inventory management on customer satisfaction in the case of Ethio-Nippon Technical Company S.C

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This is to certify that this thesis entitled "**The effect of inventory management on customer satisfaction in the case of Ethio-Nippon Technical Company SC"** submitted in partial fulfillment of the requirements for the award of the Degree of Master of Arts in Marketing Management in Addis Ababa University is done by Abdissa Aga Gamtessa is an authentic work carried out by him under my guidance.

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Acronyms

BOP: Bought –out-parts

ENITCO: Ethio-Nippon Technical company s.c

UK: United Kingdom

EOQ: Economic order Quantity

JIT: Just-In-Time

JCB: Joseph Cyril bamford

MFTBC: Mitsubishi Motors and Mitsubishi Fuso Truck and Bus Corporation

MMC: Mitsubishi Motors Corporation

MRO: Maintenance, repair, and operating

PLW & F: Procurement, Logistic, Warehouse & Facilities

SPSS: Statistical Package for Social Scientist

WIP: Work-in-progress

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ABSTRACT

The general objective of the study is to examine the influence of inventory management practices on Customer Satisfaction of Ethio-Nippon Technical Company S.C in Ethiopia. Regarding the study methodology, the study used explanatory research design.

Data was collected from employees of Ethio-Nippon Technical Company S.C using questionnaires. The data collected was then summarized by descriptive and inferential statistics using Statistical Package for the Social Sciences (SPSS) version 26 software.

Findings of the study shows that there is a poor Inventory management practice in the company. Majority of the respondents disagree in the availability of good service and product delivery system in the company to fulfill the customer satisfaction. With this regard,the descriptive statistics result for the variables examined in the study, namely, Inventory Control practice, Process Auditing, Inventory Investment Practice, Warehouse Management Practice and the overall Customer Satisfaction show a subordinate level that is indicated by the lower average mean of less than 2.50 which is subordinate level of inventory management and provision.

The Multiple linear Regression analysis result regarding the effect of Aspect of Inventory Control on Customer Satisfaction show a significant and positive effect on customer satisfaction ($B = 0.642$, $p < .05$). . In addition, the Aspect of Process Auditing show a significant and positive effect on Customer Satisfaction ($B = 0.193$, $p < .05$). Finally, the Aspect of warehouse management influence on Customer Satisfaction is positive and significant ($B = 0.091$, $p < .05$).However, multiple linear regression Analysis result regarding the Aspect of Inventory Investment has a non-significant effect on Customer Satisfaction ($B = -0.072$, $p > .05$).

The Study concluded that the company has weak inventory management system and because of this it was not good at delivery product and service on time and this led to increase customer complaint in the company time to time. Therefore, the study recommends that Ethio-Nippon Technical Company S.C should enhance inventory management practices ; process auditing,inventory control and warehouse management to enhance efficiency in product and service delivery.

Keywords: Inventory management, customer satisfactions, Process auditing, warehouse management,

CHAPTER ONE

1. Introduction

1.1. Backgrounds of the Study

Customer satisfaction is very important because it has a positive effect on customers repurchase intention in any business sector (Ruiying Cai & Chrisitina Geng-Qing chi 2018).Customer satisfaction refers to an internal feeling which cannot be directly observed. A customer feels satisfied when a product or service and behavior meets his/her needs and exceeds his/her expectation (Kortler 2008).

One approach to increase the customer satisfaction is through holding large inventories to avoid shortage of inventories (Saleemi, 2011). These large inventories caused manufacturers or to stockpile large amounts of raw materials, work in process, and finished goods. The extra finished goods would be to protect them from going out of stock.

Saxen (2013) argues that, it is important to put in mind there are several functions of inventory management: raw materials, meaning the raw materials and the company must keep on hand for production:Work in progress inventory which include any of the goods that are in the production process and finished goods inventory or products that are already to ship to customers. Without inventory management it would be difficult for any company to maintain control and be able to handle the needs of the customers.

Pandey (2016) asserts that stock of finished goods has to be held because production and sales are not instantaneous. A firm cannot produce immediately when goods are demanded by a customer therefore to supply finished goods on a regular basis their stock has to be maintained for sudden demand from customers, in case the firm's sales are seasonal in nature substantial finished goods

inventories should be kept to meet the peak demand. Failure to supply products to customers when demanded would mean loss of the firm's sales to competitors.

Saleemi (2011) adds that having an adequate supply of a particular product to meet customer demand is crucial to both sales increase and customer service, if customers come to business to purchase a product and it is out of stock the sales are lost forever and the customer will probably go to competitors to find what they need.

However, holding large inventories are not the preferred choice to handle the shortage of big companies. As we know that large inventory incurs three different types of costs i.e., holding costs, when the inventory comprises of raw materials; work in process, or finished goods. In Indian perspective, the inventory cost is the range of 20 to 40 percent of the total annual inventory (Lucy, 1996). It involves the recording and monitoring of stock levels, forecasting future demands and decides when and how many to order.

Thus, having effective inventory management practice is essential. Effective inventory management involves; Inventory control, Process Auditing, Inventory Investment and warehouse management.

Though there are several manufacturer and importer companies in Ethiopia, little is known about the practice of inventory management and its impact on customer satisfaction. The aim of this research is to fill the gap in the literature by examining the inventory management practice of Ethio-Nippon technical company s.c and its impact on customer satisfaction. This is important because as alluded earlier inventory management affects not only customer satisfaction but also the cost of the company incurs.

1.1.1. Backgrounds of Company

Established in May 1969, Ethio-Nippon Technical Company S.C. (ENITCO) is one of the pioneer Automotive Distributors in Ethiopia which started business as Distributor of Mazda Motor Corporation, then known as Toyo Kogy Ltd., covering passenger cars and medium duty commercial vehicles (Tsion,2017).

In 1981, ENITCO signed Distributorship Agreement with Mitsubishi Motors Corporation (MMC) for the supply of wide range of Motor Vehicles, including heavy duty FUSO trucks and buses with which it made its debut into the market and soon followed by passenger cars, pickups and station wagons. When MMC split into Mitsubishi Motors and Mitsubishi Fuso Truck and Bus Corporation (MFTBC) in 2003, ENITCO signed a separate Distributorship Agreement with MFTBC/FUSO and Continued the Truck Business.

As part of its diversification strategy, ENITCO entered into Distributorship Agreement with JCB of the United Kingdom in 2010 for the supply of construction Machinery and Power Products. JCB has factories in the UK, Spain, India, China and the USA from where ENITCO sources the products suitable to the market. ENITCO's extensive experience in the trade has given it the opportunity to understand its customers and win their genuine confidence. Management and employees are fully committed to serve their customers and maintain a fair share of the market for the products the company distributes.

Its head office is located in front of the new African Union Conference Hall; easy to reach from any corner. To meet the ever-growing demand for after sales support of the products ENITCO supplies, construction of additional facilities is underway in the capital, about 10km from the head office on the road to Kality. Parts and service dealers are also appointed in major regional capitals

to deliver after sales support at close proximity to their customers (Tsion,2017 cited on Amare,2019).

1.2. Statements of the Problem

As organization strives to provide products, services, and information that leads to customer satisfaction, the role of inventory management cannot be undermined in these competitive business eras and it also adds value for the stakeholders needs (Tsion, 2017).

However, due to lack of knowledge or not giving proper attention to the Inventory management practice, many companies lack the capacity to deliver the intended service on time as it is required.

For instance, the current researcher used pre-analyzation to observe stock administration practices and operational execution of spare part importers and distributors in Addis Ababa, where the vast majority of imported spare parts are supported different stock administration methodologies from logical models, with exception of significant arranging by Ethio-Nippon Technical Company. The stock management processes and approaches took into account the increasing size of customer requests, assumption and guesses, and the available creation limit, and then went over stock.

The number of customer complaints increased from 23% to 58% as evidenced by ENTCO survey reported in years of 2019 and 2020 respectively. This Survey report shows that as this customer complaint was due to poor service delivery in Ethio-Nippon Technical company s.c. which is insisting to study as substantial. Though complaining behavior helps the organization to have a second chance in righting the wrong that customers have encountered, doing things right the first time is better (Ruiyingcai&ChrisitinaGeng-Quing Chi 2018) Thus having effective inventory management comes a long way in reducing customer complaint and improving customer satisfaction.

Therefore, the aim of this research is to examine the inventory management practice of Ethio-Nippon technical company s.c and its impact on customer satisfaction .This research seeks to examine inventory management in terms of company should emphasize on quality service through good inventory management to reduce the level of customer complaints. In other hand, its effect on customer satisfactions which is need pair wise for gap get together in other automotive industries need to study on it.

1.3 Research Question

1. What is the effect of Inventory control on customer satisfaction in Ethio-Nippon Technical Company s.c?
2. What is the effect of Process Auditing on customer satisfaction in Ethio-Nippon Technical Company s. c?
3. What is the Effect of Warehouse management on customer satisfaction in Ethio-Nippon Technical Company s.c?
4. What is the effect of inventory investment on customer satisfaction in Ethio-Nippon Technical Company s. c?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective of this study was to examine the effect of inventory management practice on customer satisfaction in Ethio-Nippon Technical Company S.C.

1.4.2. Specific Objectives

1) To examine the effect of inventory control on customer satisfaction in Ethio-Nippon Technical company s.c.

2) To determine the effect of Process auditing on customer satisfaction inEthio-Nippon Technical company s.c.
3) To assess the effect of warehouse management on customer satisfaction in Ethio –Nippon Technical company s.c.
4) To examine the effect of inventory investment on customer satisfaction in Ethio-Nippon Technical company s.c.

1.5. Significance of the Study

Customers of ENITCO are currently dissatisfied with the service they are receiving. Customer are dissatisfied when products and service are not delivered on time. This research can assist the company in determining the current level of inventory management practice and its effect on customer satisfaction.

The study will be critical to the management of Ethio-Nippon Technical Company S.C. in order to successfully improve the quality of inventory management system to overcome delivery delays, based on the recommendations presented. The study will assist Ethio-Nippon Technical Company S.C. management in employing efficient/competent individuals in inventory management area.

Different approaches of managing inventory levels will assist other organizations as a result of the study. Furthermore to serve as a foundation for future scholars or academics conducting study in the field of inventory management improvement.

1.6. Scope of the Study

The study geographically delimited to Addis Ababa Ethiopia. The study in subject matter is to examine the effect of inventory management on customer satisfaction in Ethio-Nippon Technical Company S.C.

Researcher has developed conceptual delimitation in Inventory management techniques include Inventory Control, Stock and Process Auditing, Inventory Investment, Warehouse Management and can be measured by quality of service or product, feedback analysis, customer retention and service delivery.

The study methodologically delimited using explanatory research design to indicate the casual relationship between inventory management and customer satisfactions effect which is using inferential statistics instead.

1.7. Limitations of the Study

Most of the time, every researcher passed through different limitation but the degree of limitation depends on the situation that the researcher involved to conduct the research study. The researcher has faced a variety of challenges, including COVID 19, which restricts movement and causes a company to lay off its employees for a few weeks, as a result of this e, the respondents did not return the questionnaire on time, and it takes a long time to conduct the survey without missing it. In addition to this, the study was limited to use only closed ended questioners rather than adding interview with the respondents because this pandemic disease COVID19

1.8. Organization of the Study

The study organized in to five chapters. Chapter one is an introduction part which background of the study, statement of the problem, objectives of the study, scope, significance and limitation of the study were presented. Chapter two is review of literature in which theories, empirical evidence and conceptual frame work were identified. Chapter three contained research design and methodology of the study variables were covered. Chapter 4 dealt with data analysis and presentation. And the final chapter presents about conclusion and recommendation

CHAPTER TWO

2. Review of Related Literature

2.1 Introduction

This chapter gives a view of the selected existing knowledge from literature on the effect of inventory management on customer satisfaction.

2.1. Theoretical Review

Theories are analytical instruments to understand the study, to elaborate and make assumption about the subject matter. It can also help us to compare the conceptual framework are evaluating and comment on the research gap of the given study (Mwangi&Nyambura, 2015).

2.1.1 Concept of Inventory

Inventories are materials or resources of any kind having some economic value. It is also a major asset that should provide return for capital invested and either awaiting conversion or use in future. Apart from these, there are many indirect materials such as maintenance materials, fuels and lubricants, and other materials which are used in a manufacturing or service rendering organizations. They are also classified as inventories of materials for future use. But they differ only in their use and classification from raw and other direct materials. All required items are stocked in to warehouse to be used when the needs arise (Datta, 2003).

Inventory is one of the main parts of the major business's assets that is ready to use or will be ready for sale. It can be the raw materials, work in progress, good and finished goods. Inventory turnover represents one of the primary sources that enable businesses to generate revenue and continuous earnings to the company's stakeholders. Inventory is an asset and owned by a business that has an advantage of being sold to a customer which is includes items sold to end customer or

retailers (Acquah&Ghansah, 2016).

According to Godana, &Ngugi (2014), inventory is essential to organization for production activities, maintenance of plant and machinery as well as other operational requirements. This results in tying up of money or capital which could have been used more productively. The management of an organization becomes very concerned in inventory stocks are high. Inventory is part of the company assets and is always reflected in the company's balance sheet.

2.1.2 Types of inventory

Most of inventory items are categorized as the following.

a) Raw materials inventory as input to manufacturing system.

b) Bought-out-parts (BOP) inventory which directly go to the assembly of product as it.

c) Work-in-progress (WIP) or work-in-process inventory or pipeline inventory.

d) Finished goods inventory for supporting the distribution to the customers.

e) Maintenance, repair, and operating (MRO) supplies. These include spare parts, indirect materials, and all other sundry items required for production/service systems (Varta, 2014, p. 23).

2.1.3. Reasons for Holding Inventory

Stock and Lambert (2001) outlined five reasons for holding inventory. The first is to enable the firm achieve economies of scale. Inventory is required if a firm is to realize economies of scale in purchasing, transportation, and manufacturing. Secondly, it balances supply and demand. Seasonal supply and/or demand may make it necessary for a firm to hold inventory. Thirdly, inventory enables specialization in manufacturing. Inventory makes it possible for each of a firm's plants to specialize in the products that it manufactures. Fourthly, it provides protection from uncertainties in demand and

order cycle.

Inventories in excess of those required to support production can result from speculative purchases made because management expects either a future price increase or a strike, for example. Finally, inventory acts as a buffer between critically interfaces within the supply chain. Since members of the supply chain are separated geographically, it is necessary for inventory to be held throughout the supply chain in order to successfully achieve time and place utility. Though these reasons for holding inventory are very good and important for organizations, holding of inventory still draws some skepticism.

Ballou (1999), lists 3 reasons why holding inventories attracts skepticism. the primary is that inventories are thought of wasteful as a result of they absorb capital that may otherwise be place to smart use; second, inventories control, if not properly hold on may end up in deterioration of other wise high-quality merchandise resulting in poor client satisfaction and loss of revenue; third, why holding inventories attracts skepticism is that keeping inventories promotes insular attitudes inside the whole logistics chain.

Schroeder (2000), additionally stressed that there are 3 motives for holding inventories, which are transactional, preventative and speculative motives. The group action motive happens once there's a desire to carry stock to meet production and sales necessities. A firm may also conceive to hold additional amounts of stock to hide the possibility that it should have below calculable its future production and sales necessities. This represents a precautionary motive that applies only if future demand is unsure. The speculative motive for holding inventory may tempt a firm to get a bigger amount of materials than traditional in anticipation of creating abnormal profits. Advance purchase of raw materials in inflationary times is one kind of speculative behavior. These theories are relevant to the present study, in this it suggests that though inventory is very important in a company, it should

be properly managed to avoid wastage and deterioration, since the capital employed in the procurance of inventory will rather be used productively.

2.1.4 Importance of Inventory to Public establishments

Inventory management worries with each aspect of the movement or flow of commodities in a Company. This can be done by:

- Eliminating handling wherever possible.
- Minimizing travel distance.
- Providing uniform flow free of bottlenecks.
- Minimizing losses from waste, breakage, spoilage, and theft.

A company together with public establishments incur prices on every occasion Associate in Nursing item is handled. Since handling usually adds no price to product or service, it ought to be unbroken to a lowest minimum. By carefully analyzing material flows, internal control will save a public establishment important quality of cash. It is a major use of capital and for this reason; economical inventory management is to extend structure profitableness, to predict the impact of structure policies on inventory levels, and to reduce the entire of provision activities.

Stock and Lambert (2001) explained that, company profitableness will be improved by increasing volume or cutting inventory prices. Exaggerated sales are usually attainable if high levels of inventory result in higher in-stock accessibility and a lot of consistent service levels. Low inventory levels will cut back fill rates on client orders and lead to lost sales. Stock and Lambert (2001) additional explained that, higher inventory management will increase the power to regulate and predict the reaction of inventory investment to changes in management policy. Therefore, inventory managers should confirm how much inventory to order and once to put the order. Chopra

and Meindl(2003) explained that inventory exists in an structure operation due to the mate between provide associate in Unsigned demand. Therefore, inventory's role is to increase the number of demand which will be happy by having the merchandise or service prepared and on the market once the customer needs it. Another necessary role, inventory plays is to cut back price by exploiting economies of scale that will exist throughout production and distribution, however managers ought to use actions that lower the number of inventory required without increasing price. Chopra and Meindl (2003), Suggests that since inventory plays a major role during a provide chain's ability to support a firm's competitive strategy which the firm's competitive strategy needs terribly high level of responsiveness, a corporation are able to do this responsiveness by locating massive amount of inventory on the point of the customer . Another important role that inventory plays in company is to avoid stock-out prices (the prices of being out of inventory). This can be important to all or any organizations, particularly within the electrical service delivery wherever delay by a number of second will price an operation.

2.1.5 The Usage of Inventory

Inventories are the stock of an organization that the company keeps on store for future usage (Pandy, 2003). Inventory helps the organization to make Significant decision that has a concrete impact at all level of activity, distribution, and sales, and is a major component of many firms' overall current assets (Moore, Lee and Taylor, 2003).It is essential to keep on hand a physical stock in the system to protect the uncertainty because non availability of material may lead to dalliance in production or project or service delivered.

Keeping inventory also has an opportunity cost of "carrying "or "storage" inventory to the organization. So, the contradiction is though we want inventory, it is not easy to have inventory. These

conditions make inventory management a difficult problem area in materials management. It also makes high inventory turnover ratio which can be the indicator of enviable performance (Vrat, 2014).

Effective inventory management provides organizations with the opportunity to maintain a competitive advantage and strengthen their competitive position. This leads to reduced storage costs by refilling only sufficient inventory at the right place, at the right time, and at the appropriate cost. High levels of Inventory has a negative impact on an organization's cash flow, efficient, and capital procurement effectiveness. For restocking and controlling materials in the store, the inventory system aids the operating policies and organizational work flow. An effective inventory management system necessitates a system for marking choices and keeping track inventory goods and how much the order will cost and when it will be implemented the facts regarding the balance of inventory on hand, anticipating demand information, lead time and time variation, stock cost, and shortage cost are all used to make inventory decisions in every company (Naliaka& Namusonge,2015).

2.1.6 Inventory Costs

Inventory represents an investment in the company whether as result of deliberate policy or not, (Lucey, 2009) .According to Coyle et al. (2003) Inventory costs are essential for three reasons, First, inventory cost represents a significant component of total logistics cost in many companies. Second, the inventory levels that a company maintains at various stages across its logistic system will have an impact on the degree of service it can deliver to its consumers. Third, logistics cost trade-off considerations are frequently influenced by and effect inventory carrying costs. The cost of keeping stock, like any other investment, must be proportional to the advantages to be acquired. To do so efficiently, the costs must be reduced. Costs must be determined in order to achieve this successfully. The costs of keeping stock (Carrying costs), procuring stock (ordering costs), stock out costs, and the cost of the stock itself are the many types of costs involved with inventory.

2.1.6.1 Costs of Holding Stock

Cost of holding stock also known as carrying costs, is the variable cost of keeping inventory on hand, and is a combination of the costs associated with opportunity costs, interest on capital invested on the stock, storage charges (rent, lighting etc.), taxes, equipment maintenance and running cost, insurance and security, shrinkage, and other variables. It represents one of the highest costs of logistics (Lucey 2009).

If a company can calculate the cost of holding one unit of inventory for a year, it can calculate its annual holding cost by multiplying the cost of holding one by, the average inventory was kept.

The average inventory can be calculated by multiplying the amount of products ordered by two time an order is placed. As a result, average inventory is denoted by Q/2, while annual holding costs are denoted by H (Q/2). Where H denotes the holding costs and Q denotes the quality (Coyle et al.,2003).

2.1.6.2 Costs of Obtaining Stock

The costs sometimes known as ordering or procurement cost is the expense of placing an order for additional inventory and does not include the cost or expense of the product itself. It includes the clerical and administrative costs associated with the purchasing, accounting and goods received departments; transport cost; and set up and tooling costs associated with each production run where goods are manufactured internally. Set up cost refers more specifically to the expense of changing or modifying a production or assembly process to facilitate product line change over's.

The fixed portion of set up cost must include use of the capital equipment needed to change over production facilities, while the variable expense might include the personnel costs incurred in the process of modifying or changing the product line (Coyle et al., 2003; Lucey,2009).

2.1.6.3 Stock-out Costs

Goods out cost is define by Lucey (2009) as “the costs associated with running out of stock.” It is also the cost of not having a product available when consumer requests or needs it, according for purchase, a consumer may place a back order for future availability, or purchase (or substitute) a competitor’s goods directly profiting on the company’s stock out situation. The financial loss will be indirect but longer lasting if the company permanently loses a customer to a competitor. A stock out on the physical supply side could mean no new materials, semi-finished goods, or parts, resulting in idle machine time or even the closure of whole production plant.

However, calculating the cost of not having an item for sale might be difficult. A greater challenge for a business that deals with raw materials, When it comes to materials or supplies for a production line, a stock out might imply completely or partially shutting down operations. This is especially important for companies who undertake just-in-time manufacturing or assembly.

According to Lucey (2009),Stock out costs include lost contribution through the lost sale caused by the stock out, loss of future sales because customers may go elsewhere, cost of production stoppages caused by stock out of work-in-progress and raw materials, and extra costs associated with urgent, often small quantity, replenishment orders. Lucey (2009) further asserts that stock out cost may be difficult to quantify. The avoidance of stock out cost is the basic reason why stocks are held in the first place.

2.1.6.4 Cost of the stock

The cost of the stock, also known as the purchasing cost, and is the price of the purchased item. According to Coyle et al(2003), these expenses are either buying in pricing or the direct cost of manufacturing. When discounting, these expenditures must be taken into account.

2.1.7 Inventory Management

Inventory management is the active control program which allows the management of sales, purchases and payments. According to Coyle et al (2003), inventory is a critical factor for success in many companies They further stressed that inventory plays a dual role in companies. Inventory impacts the cost of sales, but it also supports order fulfillment (customer service).

As stated earlier in chapter one, Inventory management is vital for the successful operation of most organizations due to the cost inventory represents. Effective management of inventory is a major concern for firms in all industries (Mentzer, et al., 2007). In order to achieve this, there is the need for firms to effectively and efficiently manage their inventories. There are two main concerns about inventory management. First, inventory management concerns the level of customer service, that is, to have the right goods in sufficient quantities, in the right place and at the right time. Another concern is the cost of ordering and carrying inventories (Stevenson, 2009).

2.1.8. Inventory Management Techniques

Inventory management relates to the tracking and management of commodities which includes the monitoring of commodities moved into and out of stockroom locations and the reconciling of the inventory balances. Some of the techniques used in managing inventories were discussed below:

2.1.8.1 ABC Analysis

This technique assigns items to three groups according to the relative impact or values of the items that makes up the group. Those thought to have the greatest impact, or value, for example, constituted the ‘A’ group, while those items thought to have a lesser impact or value were contained in the ‘B ‘and ‘C’ groups respectively (Coyle et al.,2003).

In many ABC analysis, a common mistake is to think of the ‘B’ and ‘C’ items as being for less important than the ‘A’ items and, subsequently, to focus most or all of management’s attention on the

'A' items. A decision might be made to assume very high in-stock levels for the 'A' items and little or no availability for the 'B' and 'C 'items. The fallacy here relates to the fact that all items in the A, B and C categories are important to some extent and that strategy to assure availability at an appropriate level of cost.

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 (Lysons and Gillingham, 2003). The relevance of this theory to this study is that it suggests that though all categories of inventory is important, inventory must be categorized or classified in accordance to their relative impact or value and treated differently.

2.1.8.2 Economic Order Quantity (EOQ)

Plasecki (2001) defines Economic Order Quantity as an accounting formula that determines the point at which the combination of order costs and inventory costs are the least. Lysons and Gillingham (2003), also defines Economic Order Quantity as the optimal ordering quantity for an item of stock that minimizes cost.

According to Lysons and Gillingham (2003), to calculate the Economic Order Quantity, a mathematical model of reality must be constructed. All mathematical models make assumptions that simplify reality. The model is valid only when the assumptions are true or nearly true. When an assumption is modified or deleted, a new model must be constructed.

Economic Order Quantity approaches have proven to be effective inventory management technique when the demand and lead time are relatively stable, as well as when significant variability and uncertainty exist. This theory is relevant to this study in that it suggests that the appropriate or optimum level of stock or inventory that an organization should keep or store must help to reduce the cost of

doing business.

Just-In-Time System (JIT)

Coyle et al. (2003), defined Just-In-Time (JIT) System as an inventory control system that attempts to reduce inventory levels by coordinating demand and supply by the point where the desired item arrives just in time for use. Ideally, products should arrive exactly when a firm needs it, with no tolerance for late or early deliveries.

Lysons and Gillingham (2003), also defined Just-In-Time System as an inventory control philosophy whose goal is to maintain first enough material in just the right place at just the right time to make just the right amount of product.

It is a lean production system used mainly in repetitive manufacturing. The Just-In-Time System suggests that inventories should be available when an organization needs them, not any earlier, nor any later. Stock and Lambert (2001), defined Just-In-Time System as a program which seeks to eliminate non-value-added activities from any operation with objectives of producing high- quality products, high productivity levels, lower levels of inventory, and developing long- term relationships with channel members.

Stock and Lambert (2001), further explained that in Just in time (JIT) System, anything over the minimum amount necessary for a task is considered wasteful. Thus, Just-In-Time (JIT) attempts to minimize inventories through the elimination of safety stock.

This theory is relevant to this study because it focuses on the identification and elimination of manufacturing system. This therefore helps to eliminate unnecessary inventory and reduce cost throughout the entire supply chain system.

2.1.9 Inventory Control method

Inventory control method is the management activities that attempt to maintain the uphold stocks at their estimated levels. It is practiced by planning necessary stock sizes at usual intervals, by taking two stocks then counting and valuing it at the same interval comparing the two sets of feedback margining of variances (Sharma, 2006).

Inventory is a major asset that should be the sources of returns on capital investment. The marginal profit on sales got from return on inventory investment accordingly, this would not occur without inventory. Accounting experts stated that to accepting corporate profit-and-loss, without measuring the true cost and a benefit of inventory is difficult. Because lack of measurement clarity it makes complex to evaluate the trade-offs between service levels, operational activeness, and inventory maximum or minimum level, while the cumulative of inventory levels have decreased, the inventory carry of much enterprise still it is greater than their basic requirement (Bowersox,2002).

Sharma (1997), stated that the inventory control is a very important activities of inventory management and it plays an essential role for managing economic operation. “To achieve higher operational efficiency and profitability of an organization, it is very vital to reduce the amount of capital locked up in inventories. this will not only help in achieving return on investment by minimizing tied-up working capital, but will also improve the liquidity position of the concern.

And also, Benedict and Margarida’s (1999) described that inventory control means anytime and anywhere the required availability of materials in stock. The sum total of those activities of an organization is important to procurement, storage, sales, disposal or usage of materials can be identified by material management. Inventory management is ready when required and utilize available storage space and the items are in balance.

The maintain accountability and responsibility of inventories asset is the inventory management. Inventory management, before decision they must be checked plan budget and also must know how to order and when to be order. Therefore, without any problem the stock is available easily in store at an optimum (Costsmaros, 2003). Hence, inventory management must practice on the activities of planning system through the operation of the service points and distribution.

2.1.10 Effects of Slow-Moving Inventory

The two primary inventory challenges for utilities are inactive inventory and lack of visibility into critical spares. Inactive inventory includes materials that have not moved in a specified length of time (typically one to five years) and that the utility no longer needs. Critical spares are inactive assets that must be kept on hand because in the event of an emergency an outage might occur if these spares were not distributed to the field quickly (Wilding, 2003).

To be useful, however, utilities need good visibility into the location and condition of critical spares even though these assets are rarely needed. The main problem of the slow-moving products is the lack of historical data. For Industry producing different types of products, large quantity of the items is typically slow-moving items. These items should have intermittent demand character and uncertainty about the lead time. It is difficult to predict the reorder point of the slow-moving items which results in the increased carrying costs. To avoid this problem, firm must know the manufacturing quantity and retention period of the inventory, (Jesse and Kraushaar, 1985).

Due to over stock situation, managing the slow moving or obsolescent items is the main problem for manufacturing, distribution and retail industries. Every item should liquidate before the salvage value otherwise it will become obsolete. Effective inventory control method for slow moving items could be developed and implemented in order to improve the customer service and to reduce

production, inventory and holding costs. A regular review reorder-based inventory control system was inappropriate for slow moving items.

Economic order quantity formula is the best well known one in inventory theory in which the demand should be uniform and lead time is constant. In this case shortages are not considered. In the case of slow-moving items, the demand seems to be fluctuating (Haneveld and Teunter, 1998).

2.1.11 Scrap and surplus disposal

Disposal of scrap and surplus are very important aspect of material management function, and if effectively done can contribute to the profitability of the firm. Scrap, according to Carter (2006) is the residue of process materials left behind during production while surplus is the materials from purchases which were not wholly consumed in the production. To achieve profitability in disposal of scrap and surplus, it involves managerial decisions in the areas of return to suppliers, selling to suppliers, selling to other firms, selling to dealers, etc.

2.1.12 Knowledge and Skills Possessed by the Staff

Stock Control is no longer considered a clerical function performed independently by untrained individuals within a governmental agency (National Institute of Governmental Purchasing, 2001). 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.

If staff involved in stock control is not qualified and competent, then there will be ineffectiveness in inventory control. Bailey and Farmer (1982) say that for inventory management function to achieve a superior performance, it's necessary to recruit, train and develop personnel with the capacity and motivation to do better job. Incompetent employees can render stock control virtually ineffective.

According to Susan & Michael (2000), people in warehouse (that is, stores) are responsible for the distribution of inventory materials to all storage or using locations. They are also responsible for the physical security and safekeeping of material at all store's locations and for all storekeeping activities, including material receiving, put-away, and material picking and shipping.

Other responsibilities include: maintaining 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.

2.1.13Determinate of Inventory management (Just in Time (JIT) Model)

This model relates to the inventory management on service delivery. JIT is a Japanese management philosophy which has been applied in practice since the early 1970s in many Japanese manufacturing organizations. Other names for just in time system are Zero stock inventory and production. For the just in time method to work successfully the quality of inventory management system part which is **Inventory control Process auditing; Inventory investment; Warehouse management** the parts must be very high because defective materials could up halt the operations of the assembly line, there must be dependable relationships and smooth co-operation with suppliers, ideally this implies that the supplier should be located near to the company with dependable transportation available (Hendrick & Signhal, 2005;Borade& Sweeney, 2015, WATO,2010).

2.1.13.1. Inventory Control

Inventory control is a reliable means in which businesses are been managed to ensure customers are satisfied and organization remains in operations via minimization of losses. Inventories are basically stocking of resources held for the purpose of future production and/or sales. Inventories may be viewed as an idle resource which has an economic value. Better management of inventories would release capital for use elsewhere productively (Wilding, 2003).

Hence Inventory control implies the coordination of materials accessibility, controlling, utilization and procuring of material. Throughout the inventory chain from raw material through to retail stocks, inventories are planned and controlled item by item. For each item in every inventory, two questions must be answered again and again: How many of this item should be ordered and when should it be ordered? (Borade& Sweeney, 2015).

According to Chalotra (2013) the purposes of inventory control include cost minimization, profit maximization, avoidance of running out of stock and to prevent surplus stock that are unnecessary. One of the most efficient ways of inventory control is the use of Just-in-Time system. This system is explained by Borade and Sweeney (2015) as the inventory control method designed to minimize inventory, and move it to the field for use exactly when needed. The key principle with this system is to eliminate excess inventory. By using this system, a manufacturing company for instance, stays lean by minimizing waste wherever possible.

2.1.13.2. Process Auditing

Proactive source error identification starts with process auditing. One of the most important principles of inventory management is process auditing which should be done often. Process auditing should take place at every transactional step from receiving and to shipping inventory including all the inventory transactions that takes place in between the processes (Oballah, Waiganjo&Wachiuri,

2015). In most firms, optimal production management aims to minimize work in process. Work in process requires storage space, represents bound capital not available for investment and carries an inherent risk of earlier expiration of shelf life of the products (Ogbo, Onekanma&Ukpere, 2014).

A queue leading to a production step shows that the step is well buffered for shortage in supplies from preceding steps, but may also indicate insufficient capacity to process the output from these preceding steps. Work in progress (WIP) is a stage in between the raw material and finished goods. It is no longer raw material because it has undergone some processing in the production process. It is also not yet finished goods because more processing has to be done to put it into its salable condition. WIP includes the items that are being fabricated or waiting in a queue for further processing or in buffer storage (Seungjae, Ennis &Spurlin, 2015). The aim of optimal production management is to minimize the work in progress because it has costs associated with it (Muller, 2011).

Work in progress requires storage space, represents tied-up funds not available for investment and carries an inherent risk of earlier expiration or damage of shelf life of the products. The accounting of work in progress is similar to the accounting of inventory. Like any other stock it is valued at the lower of cost and net realizable value (Seungjae, Ennis &Spurlin, 2015). Cost includes the cost of the raw materials, labor cost and other processing costs. Net realizable value is the price for which an item could be sold less costs involved in selling.

2.1.13.3. Inventory Investment

The objectives of inventory management practices are to minimize inventory investments and to maximize customer service. It is a plan to see that, the goals came be inconsistent or even indirect conflicts the role of the materials management is thus to balance the objective in relation to the existing conditions and environmental limitations (Thummalapalli, 2010). The basic object of inventory management is to maximize customer service through maintaining appropriate amount of inventory

with minimum possible cost. Inventory costs are costs associated with the operation of an inventory system.

According to Chopre et al (2007) in order to achieve a strategic fit between supply chain and competitive strategies, a business must understand the customer. The characteristics which need to be understood include: time required, quality of the item required, quantity of the item required, and price of the item. Information sharing is a powerful tool in effective inventory management at all levels of supply chain network. Information must be accurate on stock levels, costs, decisions, shipment, customer preferences. According to Chopre et al (2007) customer forecast, sales history, print of sale, ordering costs, quality and quantity are some of the quality information required. Hamisi 2010, Chopra et al (2007) Timely and accurate information enhancing coordination which is intern aligns demand patterns, orders, inventory levels and price. Currently proper and accurate information sharing, flow reduces inventory costs. These are costs of holding goods in stock which are usually expressed in a percentage of the inventory value. It includes capital, warehousing, depreciation, insurance and shrinkage.

Inventory management is associated with costs of procurement which are ordering costs, hold (2015) Ordering, holding and shortage costs make up three categories of inventory related costs. Scope (2010) indicated that a lot of working capital is kept in inventory. Inventory costs come about from holding costs, stock out acquisition costs for example preliminary costs, for preparing requisitions, vendor selection, regulation cost order preparation, inspection costs.

Holding costs may also be storage costs, cost of space, electricity, labor costs, handling costs clerical costs deterioration costs, obsolescence and pilferage. According to Tersire (2012) demand variations affect inventory levels, costs and profits. When demand forecast is low and demand is high then stock out arises therefore realized by customers' responsiveness (Hamisi 2010).

High stock levels during low demand period may result high inventory costs. Therefore, demand variability is due to inaccurate information on supplies inaccurate demand forecast, batch ordering

Price variation which stimulate formed buying (overstocking). Hamisi (2010) has indicated that inadequate information flow allows various partners to coordinate their long term and short-term plan. Information sharing is key to supply chain coordination which maximizes supply chain profitability through cost containment and responsiveness.

2.1.13.4. Warehouse Management

The principles of any inventory management require a proper, formal standardized process to ensure correct results (Lwiki et al., 2013). It is necessary to allocate warehouse resources efficiently and effectively to enhance the productivity and reduce the operation costs of the warehouse.

One vital area determining the efficiency of warehouse is the determination of the proper storage locations for potentially thousands of products in a warehouse (Seungjae, Ennis &Spurlin, 2015). Various factors affecting the storage assignment like order picking method, size and layout of the storage system, material handling system, product characteristics, demand trends, turnover rates and space requirements are being extensively studied. It has been suggested that selecting appropriate storage assignment policies (random, dedicated or class-based) and routing methods (i.e., transversal, return or combined) with regards to above factors is a possible solution to improve the efficiency (Muller, 2011)

2.1.14 Customer Service and customer satisfaction

2.1.14.1 Definition of Service

According to Murdick (1990), “service can be defined as economic activities that produce time, place, form, or psychological utilities”. Many service firms have become successful by identifying a

previously unrecognized or unsatisfied customer wants. Stanton (1994) stated that "services are identifiable, intangible activities that are the main object of a transaction designed to provide want satisfaction to customers". He also stated that the travel, hospitals, finance, entertainment, health care communications, utilities and professional services fields are prime examples. The world service industry leaders such as General Electric and the like have shared common denominators that are always pursue to serve their customers. They are never satisfied with what they have. Sing (2002) stated that services are difficult to define while services can be defined as intangible tasks that satisfy consumer needs when efficiently developed and distributed to chosen consumer segments.

Therefore, in order to attain its organizational objectives, a business is to meet customers' needs. Customers' desire has always been a vital issue in a company not only to maintain sales but also to increase it. Harrison (2001) notes that 'to understand the customer there must, first, be some direct link with the customer and second, it is essential that these information channels speak the language of the customer.

2.1.14.2 Importance of Customer Service

Customer service is the most important component of the logistics system. Not only do customer service decisions have a direct impact on the firm's customers and employees, but they also determine how the rest of the logistics mix will be structured (Gourdin 2001).

Bloomberg, Lemay and Hanna (2002) are of the opinion that customer service defines the effectiveness of integrated logistics in the channel of distribution. Seng, Qinhai and Su (1999) sum up the importance of service by underlining the fact that the growing importance of the service sector in almost every economy in the world has created a significant amount of interest in service operations.

In practice, many services sectors have sought and made use of various enhancement programs to improve their operations and performance in an attempt to hold competitive success. As most

researchers recognize, service operations link with customers. The customers as participant's act in the service operations system driven by the goal of sufficing his / her added values. This is one of the distinctive features of service production and consumption (Wilding, 2003).

2.1.14.3 Attributes for Customer Service

Customer service and delivering quality service is the major issue determining the competitive edge of organizations. Lack of or failure to meet quality will lead an organization to lose all or some of its customers. A great emphasis is needed for a service to retain all its qualities that customers need. Quality in a service business has become a measure of the extent to which the service provided meets the customer's expectations. In the modern highly competitive business world, the key to sustainable competitive advantage lies in delivering high quality service that will in turn, lead to satisfied customers. Customer satisfaction is considered a pre requisite of customer retention and loyalty, and can help to boost profitability, market share and return on investment.

Monczka, Trent and Handfield (2002) add that customer service includes a wide set of activities that attempt to keep a customer satisfied with a product or service after the initial sale. Often, this means that a business has dedicated customer account managers who help in managing customer promotions, inventory control and delivery schedules. This may require providing customer training or having technical support personnel available to answer phone questions 24 hours a day. Customer service may also include a network of spare parts distribution centers that provide rapid replacement of parts and components. Bowersox, Closs and Cooper (2002) have underlined five fundamental attributes for customer service. These attributes were briefly analyzed in order to enlighten the theoretical part of this study.

2.1.14.4 Availability

Availability is the capacity to have inventory when desired by a customer. As simple as this may seem it is not at all uncommon for an organization to expend considerable time, money and effort to generate customer demand and then fail to have products available to meet customer requirements. The traditional practice in organizations is to stock inventory in anticipation of customer orders. Typically, an inventory stocking plan is based on forecasted demand for products and may include differential stocking policies for specific items as a result of sales popularity, profitability and importance of an item to the overall product line and the value of the merchandise.

It should be clear that achieving high levels of inventory availability requires a great deal of planning. In fact, the key is to achieve these high levels of availability for selected or core customers while minimizing overall investment in inventory and facilities. Exacting programs of inventory availability are not conceived or managed on average; availability is based on three performance measures: stock out frequency, fill rate and orders shipped completed.

2.1.14.5 Operational Performance

Operational performance deals with the time required to deliver a customer's order. Whether the performance cycle in question is market distribution, manufacturing support, or procurement, operational performance is specified in terms of speed of performance, consistency, flexibility and malfunction recovery.

2.1.14.6 Service Reliability

Service reliability involves the combined attributes of logistics and concerns a firm's ability to perform all order- related activities, as well as provide customers with critical information regarding logistical operations and status. Beyond availability and operational performance, attributes of reliability may mean that shipments arrive damage free, invoices are correct and error-free; shipments

are made to the correct locations; and the exact amount of product ordered is included in the shipment (Wilding, 2003).

It confirming that while these and numerous other aspects of overall reliability are difficult to enumerate, the point is that customers demand that a wide variety of business details be handled routinely by suppliers. Additionally, service reliability involves a capability and a willingness to provide accurate information to customers regarding operations and order status.

2.1.14.7 On-time Delivery

According to Wallin (2006), customers are more satisfied if the time taken to deliver their products is less than the time, they are willing to wait once they have placed an order. Flexibility is paramount in meeting the delivery deadlines and therefore information sharing is required to enable the members of the supply chain to meet specified delivery dates by the customers.

Similarly, Yin- mei (2013) also shows that effective customer delivery influences customer satisfaction and service quality. Customers are said to be more satisfied if their suppliers are able to meet and fulfill their orders within the required time.

2.1.14.8 Customer Satisfaction

Satisfaction is simply meeting the customer requirements to meet the customer requirements is vital for a firm success. According to Oaklan (2006) by constantly meeting customers' requirements, we can move to a different plane of customer satisfaction. Douglas and John (2010) also define customer satisfaction/dissatisfaction as a comparison of customers' expectations regarding the actual service come upon. Customer's satisfaction depends on the products perceived performance relative to buyer's expectations. If the service quality falls short of expectations, the customer is dissatisfied or there is a quality gap. If performance matches expectations, the customer is satisfied.

If performance exceeds expectations, the customer is highly satisfied or delighted. According to Michael (2003), consumer's satisfaction/dissatisfaction is determined by the overall feeling of attitude, a person has about a product after it has been purchased. It is more than a reaction to the actual performance quality of a product/service. It is influenced by prior expectations regarding the level of quality.

2.2 Empirical Review

Different studies have been conducted by various researchers, concerning the practices of inventory management both public and private Companies. And study shows that most of them have a problem of managing their inventory items.

2.2.1 Inventory Control

Ackah &Ghansha (2016) by their study, on the title of Assessment of Inventory Management, the researchers assessed how the management of inventory would be effective and bring a lot of cost savings for the organization to increase organizational profitability. In order to reduce the cost of holding to ensure the continuity of supply at the same time shows, how the management of inventory within operational works would be effective and bring a lot of cost savings to the organization. Therefore, increasing organizational profitability since inventory represents the asset account. Despite the growing concern for non-stock procurement policies, inventory continues to play a vital role within organization supply chain (Ackah&Ghansha 2016).

According to Demissie (2015), on his study, An Assessment of the Factors Influencing Effectiveness of Inventory Control on Ministry of State for Provincial Administration, the finding shows that the level of knowledge and training of employees have an effect on inventory.

According to Nganga (2013), on the study conducted on An Assessment of the Factors Influencing

Effectiveness of Inventory Control; Ministry of State for Provincial Administration and Internal Security, the finding of the study shows that lack of knowledge and training of employees have an effect on inventory.

2.2.2 Warehouse Management

According Girma (2016), studies on title of the assessed the problems of inventory management and stock recorded handling in the warehouse. He stated his finding that the major problems of inventory management are- Lack of attention of store management, lack of assigned qualified employees to the right position on the right time, no planning mechanism to solve problems to improve inventory management and controlling system and lack of work performance evaluation of employees of the warehouse.

According to Weele (2000), studies on Assessing the Effect of the Procurement Act (663) on the Public Financial Management in Ashanti, as a result of increasing need in demand for goods by both internal and external customers, it will not augur well for any business or company to place order for each and every material or item that may be urgently needed for production or meeting customer needs. The finding shows that Warehouse/Stores play a vital role of ensuring that any material required for production or satisfying customer needs are just available to meet the exact need.

The warehouse management and employees are working on inventory management and controlling function facing with lack of knowledge or skill to meet the expected performance. The company inventory items kept unsafely, misused of some materials and improper guide lines work manual. The researcher also gave his comment on the company concerning the periodic and perpetual inventory system, company should attention to inventory management, plan and evaluate warehouse employee's performance, approve employees who are assigned in warehouse and prepare work related policies and procedures concerning to inventory management and controlling system.

2.2.3 Process Auditing

In other hand, Chan (2015) examined the association between inventory management and ineffective internal controls and hypothesize those managers found in firms with inventory-related material weaknesses in internal control are delayed in their inventory management, thus their firms experienced more stock shortages and overages. The company and have a higher possibility and magnitude of inventory impairments. It shown the weak evidence is that inventory turnovers improve when the weaknesses are -corrected.

According to Nzuza,(2015) , study on the Factors affecting the success of inventory control in

Stores, the study that the practices of inventory audit is negatively affected inventory.

Similarly, Ogbo and Ukpere(2014) studies on the effective inventory control management; according to their finding ineffective inventory control system drives high inventory cost and storage cost that decreases the organization profitability. Improving inventory control system has a benefit of cost reduction improvising sales effectiveness, reduction of waste, transparency and accountability, easy storage and high inventory utilization. In order to achieve all these, organization have to maintain flexible inventory services.

Keitany, Wanyoike&Richu (2014) show that inventory control systems and lead time in materials management, an organization can achieve the benefits of effective use of labor, providing system flexibility, increasing productivity, decreasing lead times, reduction in wastes, reduction in production costs, increased product quality .

2.2.4 Inventory Investment

According to Mwangi and Nymbura (2015), understanding of the challenges faced by organization on poor performance of inventory controlling system, has an advantage to the organization successes. The results clearly indicate the necessity to provide support to organization if they are to successfully

manage inventory. Accordingly, support to overcome the identified barriers of inventory management need to be recognized. However, most of the businesses are not confident with inventory management as technique of influencing performance of food processing companies.

Naliaka and Namusonge (2015), on their study, they conclude that the firm's computers are linked with those of the suppliers in a real time environment although with varied responses. The firm at a lesser extent has computerized all its inventory management systems.

The study concludes that Unga Group Limited has attained much through inventory control systems. Inventory control system has enhanced timely deliveries, to reduce production costs, to increase product quality, to decreased production cycle time, to reduced wastages, to reduce stock levels and to increase profitability. The ratings showed that inventory control systems played a vital role in attaining competitive advantage, and as such, organizations must ensure that inventory control system be highly involved in inventory management activities.

2.3 Summary of Empirical Review and Research Gap

Generally, in all the above studies researchers conducted inventory control management studies by different researchers in different angles, concerning the factors affecting inventory management, the assessment of inventory management, internal control system and the role of inventory control.

However, since it holds without service instead of generating income it incurs cost. There are a lot of researches done on inventory control management in different problem areas but most of them done on firm’s areas. Not Like Ethio-Nippon Technical Company S.C., maximum amount of inventory is purchased from abroad with very costly price.

In addition to these, the company role is different from other services because of the automotive service accessories and Spare parts are critical for today’s generation for transportation purpose. Those studies described on the above are not assessed the main core areas of gaps of the effect of

unavailability of inventory on customer satisfactions, challenges of inventory management, the disposal of inventory obsolete items, the excess inventory purchase and idle inventory purchases is not studied in Ethiopia. Eventually, the effect of inventory management practice on costumer satisfactions study includes those areas under Ethio-Nippon Technical Company S.C.

2.4 Conceptual Frame Work of the study

According to Rose (2008), conceptual framework acts like a map that gives coherence to empirical inquiry and is used to outline possible causes of action or present preferred approach to an idea; hence it is a structure of assumptions and principles that hold together the ideas comprising a broad concept.

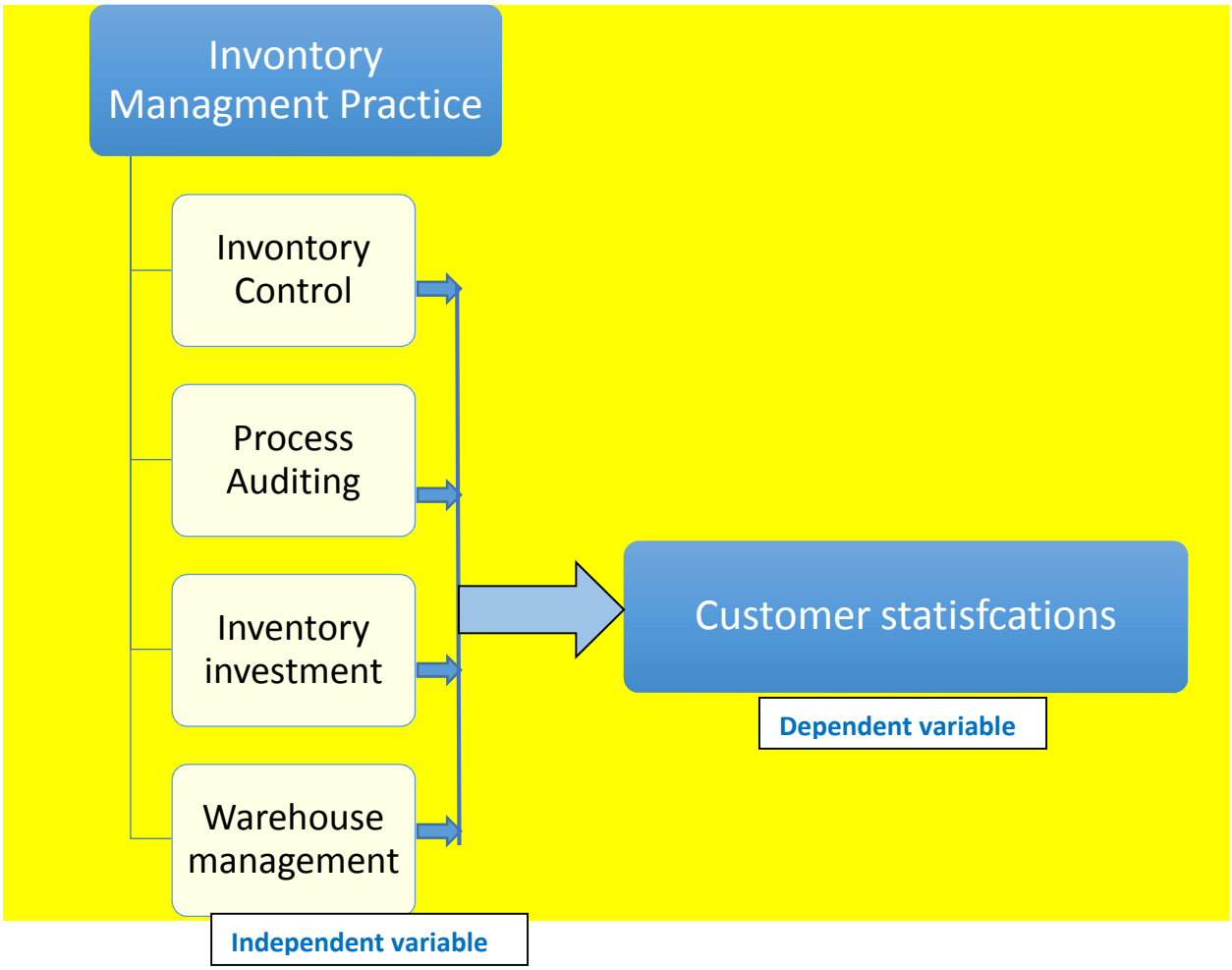


Figure 1: conceptual frame work developed in 2021: Source: Hendrick&Signhal, 2005; Borade& Sweeney, 2015, WTO,2010.

2.4.1. Research Hypothesis

Based on the above conceptual framework, the following hypothesis was developed.

H1: Inventory control has a positive significance effect on the value of Customer Satisfaction and Needs; in Ethio-Nippon Technical Company s.c .

H2: Proses auditing has a positive significance effect on the value of Customer Satisfaction and Needs; in Ethio-Nippon Technical Company s.c

H3: Warehouse management has a positive significance effect on the value of Customer Satisfaction and Needs; in Ethio-Nippon Technical Company s.c

H4: Inventory Investment has a positive significance effect on the value of Customer Satisfaction and Needs in Ethio-Nippon Technical Company s.c

CHAPTER THREE

3. Research Design and Methodology

3.1 Introduction

This chapter contains the research design, research methods, survey population, and source of data, collection of data and data analysis .

3.2 The Research Design

According to Gabrielian, et, al. (2008) it stated that on explanatory research design as an overall approach for its ability to incorporate different methods and techniques in the collection and analysis of data that focuses on the various issues of the study for explanation in a scientific way and phenomena. Therefore, explanatory research design was believed to be appropriate for this study to examine the effect of inventory management practices on costumer satisfactions of Ethio-Nippon Technical Company S.C and the study was used explanatory research design.

3.2. Research method

According to Mouton & Marais (2001), identified about Quantitative methods, the quantitative method refers to the collection of data using numbers, counts and measures of things. And most often used when the motives for research are evaluated. Therefore the study employed quantitative research method as it was appropriate to structured and semi-structured questionnaire.

3.3. Population and Sampling

According to Joseph Cudjoe (2006) in his book Business Math's defined population as "the totality of units (items or individuals) from which we take a sample", also population is considered as the number of units of the phenomenon to be investigated that exist in the area of investigation. Sample size includes the number of participants or objects in a research study.

Again, According to Singh (2006) the study of the total population is possible when the population size is relatively small and manageable to get deep insights into the phenomena the researcher is interested in (Singh, 2006).

3.3.1. Sample size and Sampling Techniques

As per the report from Human Resource Department of Ethio-Nippon Technical Company S.C (ENITCO), the total number of permanent employees who were working for ENITCO at Addis Ababa main office were 65. Since the size of the population was relatively small, and the research was focused on all permanent employees of management and non-management positions the study employed total population sampling technique

3.4. Data collection procedure

Before embarking on the data collection, the researcher made preliminary contacts with the employees of the company. The respondents confidentially were assured and no one would fall a victim because of any adverse findings in connection with their professional duties. This is done in order to motivate them to give their responses without reservation. To ensure maximum response rate, the researcher fixed a time for the collection of all questionnaires was filled by the researcher. One month was devoted to the answers. The questionnaire given to the respondents were serially coded for easy identification. The questionnaire for the employees of the company was personally delivered to them by the researcher.

3.4.1. Source and Instruments of Data Collection

The main sources of the data were from both primary and secondary. The primary sources of data were gathered through questionnaire from Ethio-Nippon Technical Company S.C. permanent staffs. The questionnaire was adopted from different literatures and previous research papers related to the study and customized in order to suit to achieve this study. The reason for the selection of questionnaire

is to acquire extensive data at reasonable cost and to cover all employees of the company in a relatively short time.

Besides, semi structured likert scale questionnaire was designed and distributed to those employees who are currently working in different sections of the Ethio-Nippon Technical Company S.C. Secondary data was also used which includes inventory management policy, published and unpublished information about the study area, books and journals from library and internet.

3.5. Validity and Reliability

Validity concerns the degree to which a question measures was intended to measure. To assure the validity of the study, the researcher reflected with the advisor and other management staffs using questionnaires before it persists to conduct pilot study was distributed questionaries' for 10 respondents. While this pilot study done reliable and generate validate data. In addition, the questions were adapted from instruments which were developed and tested by existing studies.

It was developed on the basis of internal consistency involves correlating the responses to each question in the questionnaire with those other questions in the questionnaire using pilot study distributing for 10 employees of company. The student researcher was engaged Cronbach's alpha to calculate the internal consistency of the instrument from pilot study has it.

Cronbach's alpha coefficients range in value was used to describe the reliability of effect extracted from dichotomous and or multi-point formatted questionnaires or scales.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.981	.986	27

Source: Own Survey, 2021

3.6. Methods of Data Analysis

It is unquestionable that after the collection of data; analysis, interpretation and presentation in order to give recommendation to the problem. For the purpose of this study quantitative data was analyzed accordingly.

Mainly for quantitative data, descriptive statistics was used to summarize data by using Statistical Package for the Social Sciences, (SPSS) version 26software. Statistics including mean, frequency and standard deviation also was used to analyze the data among the different groups. The mean and standard deviation was used to describe the data obtained indicted mean difference of variables Inventory Management) variable independent variable and the dependent variable (customer satisfactions).

Inferential statistics is particularly the Pearson's correlation was used to show the relationship between dependent and independent variable and the strength/degree as well as direction of associations between variables. In addition, multiple linear regression analysis was used to show up the effect.

Multiple Linear Regression Equation is an extension of simple linear regression to show up the out case and effect, factor and impact analysis. It is used to predict the value of a variable based on the value of two or more other variables.

The variable was used to predict is called the dependent variable (or sometimes, the outcome, target or criterion variable). The variables are using to predict the value of the dependent variable are called the independent variables (or sometimes, the predictor, explanatory or repressor variables).

The prediction equation is: $Y' = a + b1X1 + b2X2 + b3X3 + \cdots bkXk$

There is still one intercept constant, a, but, each independent variable (e.g., X1, X2, X3) has their own regression coefficient. Thus, both the strength of the relationship between variables and the outcome of independent on dependent variable predicted on statistical significance after result portrayed.

3.7. Model specification

$$\boldsymbol{Cu}\mathbf{Sat}=\boldsymbol{\beta_o}+\boldsymbol{\beta_{2X2}}+\boldsymbol{\beta_{3X3}}+\boldsymbol{\beta_{4X4}}+\boldsymbol{\beta_{1X1}}+\ldots\ldots\ldots+\sum$$

I. Independent Variable

β_0 = the intercept

χ_1 = Inventory control;

χ_2= Process auditing;

χ_3 = Inventory investment;

χ_4 = Warehouse management;

ε_i = error term

II. Dependent Variable

Customer Satisfactions =**CUSatS**

3.8. Ethical Consideration

Ethical consideration in research should up hold fairness, honesty, openness, disclosure of methods and the purpose for which the research is being carried out. In this case, Primary information gathered from Ethio-Nippon Technical Company S.C and permanent employee's respondents are kept until the reasonable period of time.

Confidential files and issues regarding employees' personal data, policies and strategies of the organization and other highly classified information that need to be kept confidential was given value and kept confidential**.**

CHAPTER FOUR

4. Data Presentation, Analysis and Interpretation

4.1 Introduction

This chapter deals with the analysis and presentation of the quantitative data collected through questionnaire. The questionnaires were composed of close-endedquestions that are summarized and presented quantitatively. The researcher used supplementary information from some secondary data that are published and unpublished documents of the case Ethio-Nippon Technical Company S.C.

Out of 65 questionnaires distributed, 65 of themwere collected which makes the response rate 100.0% of the questionnaires. The returned questionnaires were usable because they were filled properly. The researcher, as much as possible, made the questionnaire easy to read and answer without difficulties as per the input from the pilot study.

4.2. Socio-Demographic Characteristics of Respondents

The study analysed the demographic characteristics of respondents involved in the study. In this section the respondent's profile is presented. It includes gender, age, and level of educational, length of service; training received, and outcome to perform in the current position. Analysing these variables was meant to provide any evidence of association between these variables and the various responses.

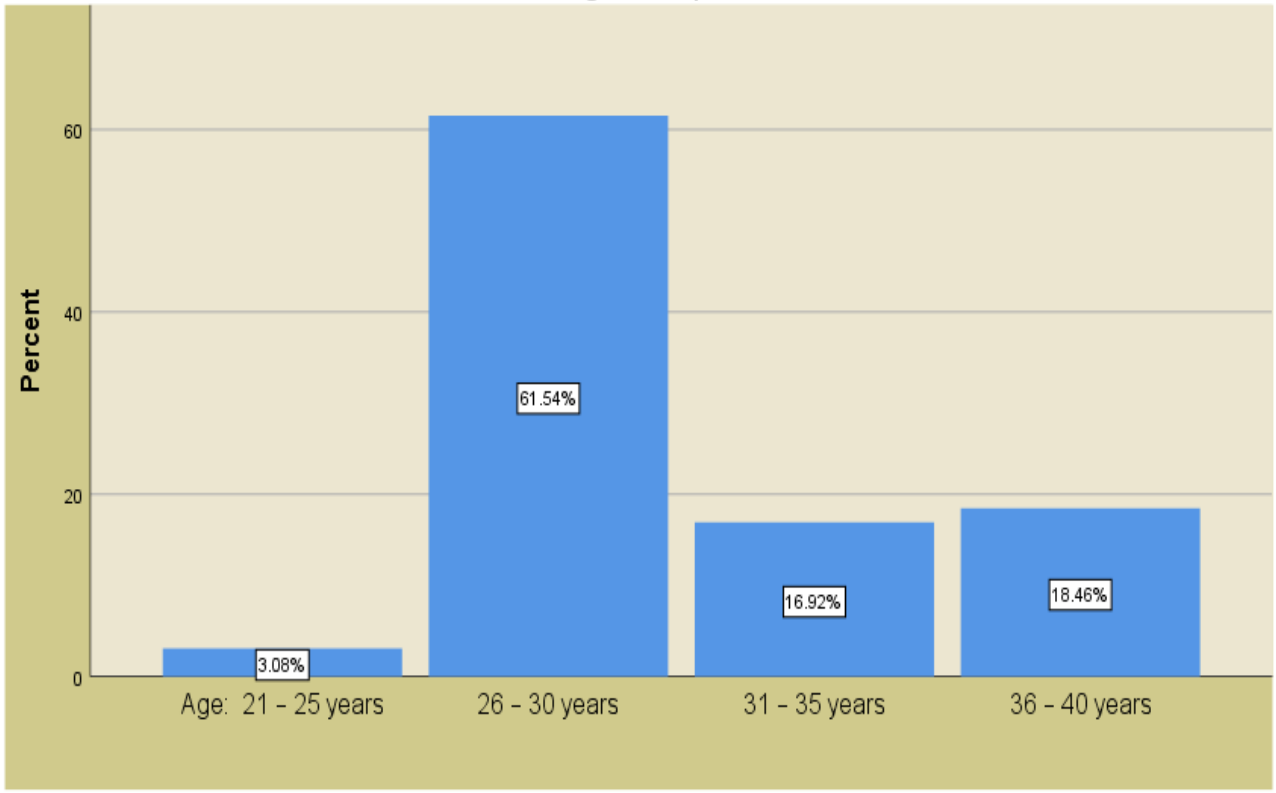
Table 2.Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	39	60.0	60.0	60.0
	Female	26	40.0	40.0	100.0
	Total	65	100.0	100.0	

Source: Own Survey, 2021

The above Table 2, regarding to respondent's gender, majority 39 of them are male while 26 of them were female. Out this we can see that 39respondents are male consisting 60.0% of the workforce while26 respondesnts are female consisting 40.0%. From the above table it can be observed that the difference in gender composition in the sector is marginally high which the respondents rating promotes gender balance in its employment practices.

chart 1: Age of Respondants



Source: Own Survey, 2021

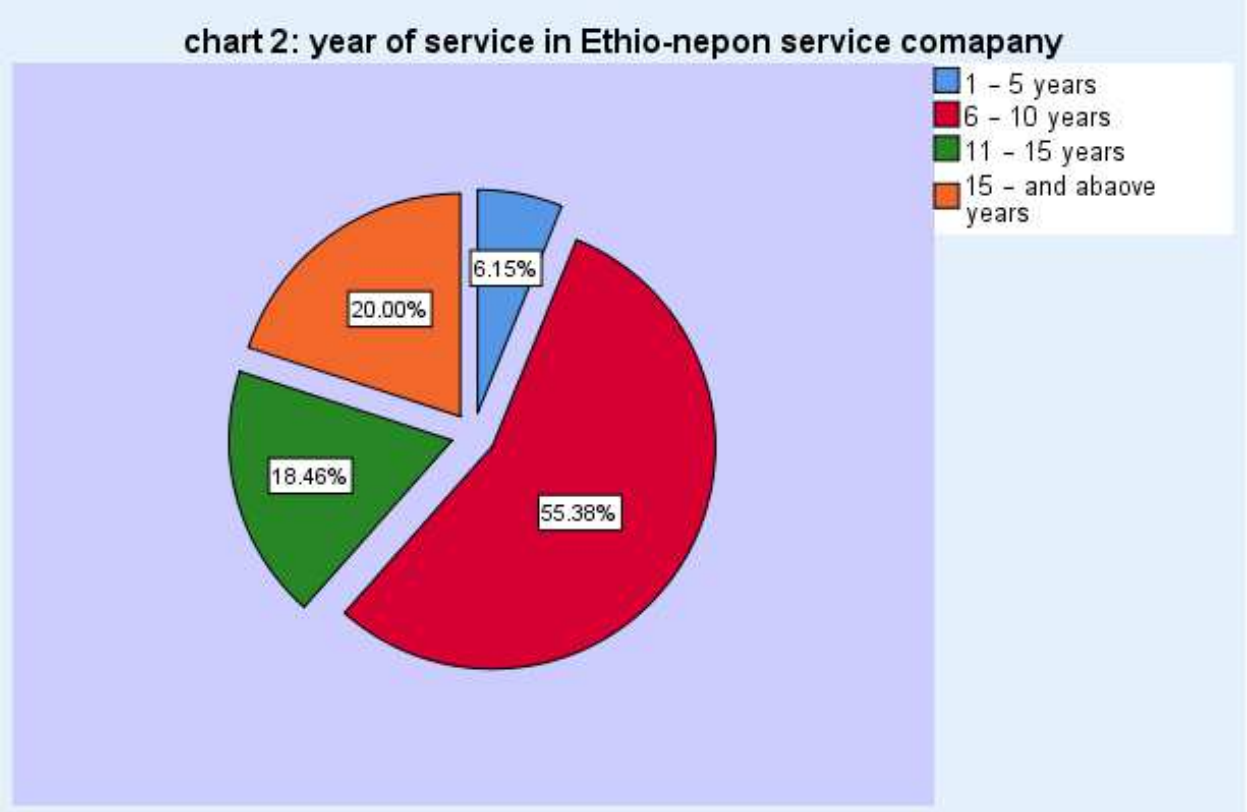
Chart 1 shows that, 61.54% were within the age group of 26-30 years. Similarly, 18.46% of the respondents were between the age group of 36-40 years and the rest of 3% of the respondents were between the age group of 21-25 years. Therefore, this implies that more than half of the respondents of Ethio-Nippon Technical Company S.C workers are between the age group of 26-30 years.

Table 3: level of education

Measurement		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	47	72.3	72.3	72.3
	Degree level	18	27.7	27.7	100.0
	Total	65	100.0	100.0	

Source: Own Survey, 2021

With regard to the level of education, 47 respondents (72.3%) have diploma and 18 respondents (27.7%) have Degree. This shows that majority of the respondents who participated in this study are educated at a diploma level.



Source: Own Survey, 2021

Following above chart 2, portrays that the distribution of length of service that respondents have been working in Ethio-Nippon Technical Company S.C.

Out of the total respondents, (55.38%) are between 6-10 years, (18.46%) are between 11-15 years, (6.15%) are between 1-5 years and finally the rest of (20%) are above 15 years.

Therefore, majority of the respondents have been working in Ethio-Nippon Technical Company S.C, between six to ten years. On the other hand, a small percent of respondents (6.15%) are between 1-5 years of work experiences in Ethio-Nippon Technical Company S.C Office. While none of the respondents have more than 20 years of experience with the same organization the study shows that majority of respondents (55.38%) are between 6-10 years of the surveyed employees.

Table 4: if employees received the training concerning to Inventory Management since they occupied Ethio-Nippon Technical Company SC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, very much	7	10.8	10.8	10.8
	Yes, but only somewhat	9	13.8	13.8	24.6
	No, not related	28	43.1	43.1	67.7
	No training received	21	32.3	32.3	100.0
	Total	**65**	**100.0**	**100.0**	

Source: Own Survey, 2021

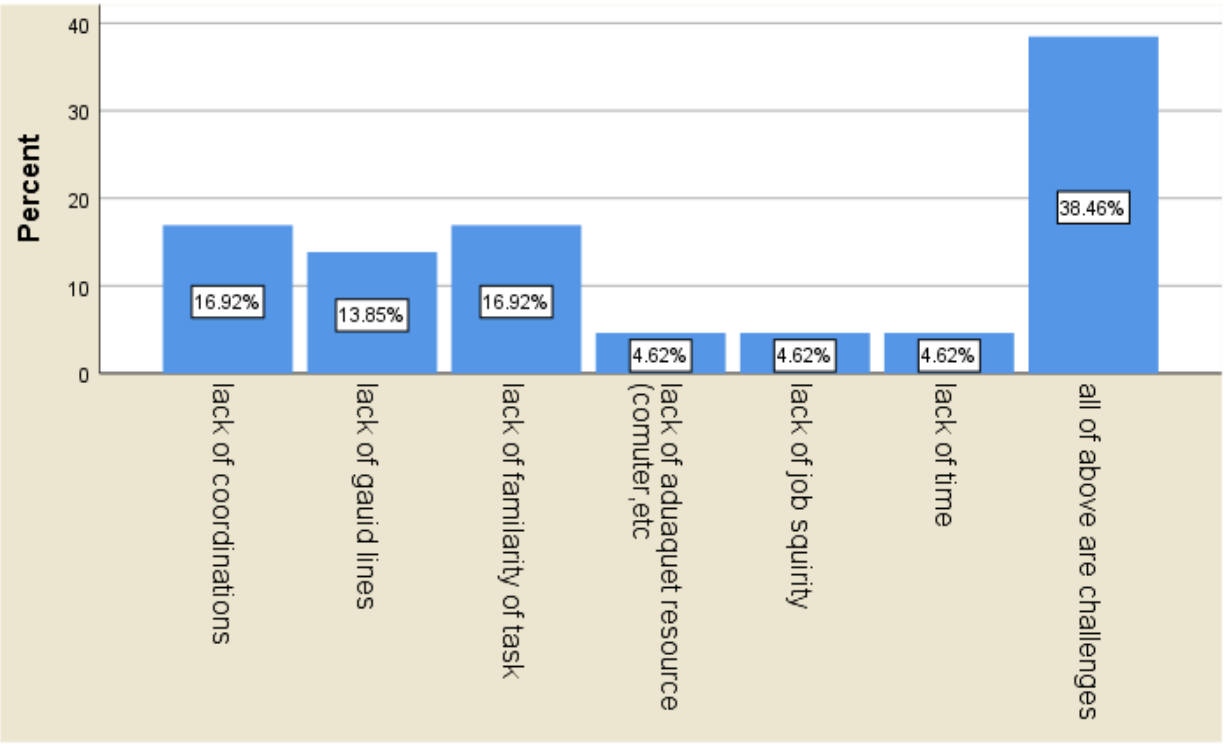
Table 4: above illustrates that a total of 7 employees representing 10.8% of respondents took inventory related training since they occupied their present position related to the tasks they are expected to perform. 9 employees consisting of 13.8% of the total respondents took short-term training about inventory management which is somewhat related to their job. On the other hand, 28 employees consisting of 43.1% of the surveyed employees received training which is non-related to their jobs.21employees consisting of 32.3% never received training in their present positions.

Table 4 above showed that the majority of the respondent took training that is not related to their work.

Training can bring tangible benefits to the organization and the employees. As elaborated by Chatterjee (1995), the major purpose of training is to establish a sound relationship between the worker and his/her job. It upgrades skills and prevents outmodedness. To keep pace with changing technology training and it develops healthy, constructive attitudes. There is a significant need for effective designing; planning and implementation of proactive training and Service Provider that provide better performance minimize the possibility of losing a sustainable work force.

4.3. Challenges of Inventory management and Customer Satisfactions in Ethio-Nippon Technical Company S.C.

Chart 5: The most difficult challenges face to perform Ethio-Nippon Technical Company Invontory managment



Source: From Ethio-Nippon Technical Company S.C survey data, 2021.

From above chart 1; demonstrates that a total of 38.46% of respondents were meet all challenges which there is Lack of coordination, Lack of guidelines, Lack of reliable data, Lack of Knowledge and skills in leadership, Lack of familiarity of tasks, Lack of adequate resources (Computers, Paper, etc.), Lack of support, Lack of job security and Lack of time (work overload) Was found Challenges of Inventory management and customer satisfaction in Ethio-Nippon Technical Company S.C.

4.4. Inventory Management practice and Customer Satisfactions

4.4.1. Inventory Control practice

Table 5: Descriptive statistics analyzing Ethio-Nippon Technical Company Inventory Control practice

Item Statistics	Mean	Std. Deviation	N
1. Ethio-Nippon Technical Company has ensured that there is tracking of inventory to enhance coordination of materials accessibility, controlling, utilization and	2.1385	.84552	65
2. Ethio-Nippon Technical Company have the correct forecasting methods thus reduction of stock outs in the	1.7692	.58012	65
3. The original equipment manufacturer is used to predict demand beyond a 4-week horizon	1.5538	.61316	65
4. The Ethio-Nippon Technical Company has advanced forecasting tools that can enable improvements in cost	1.9231	.26854	65
5. The Ethio-Nippon Technical Company has adopted Just-in-Time system as the inventory control method designed to minimize inventory, and move it to the field	1.6923	.49759	65
Grand Mean = 1.8154		.46417	65

Range Description- Mean Difference: by Bringula (2012)

1.00-2.50 = Low 2.51-3.50 = Medium 3.51-5.00= Higher

Source: school based survey data, 2021.

Table 5 above presents the descriptive statistics analyzing Ethio-Nippon Technical Company Inventory Control practice. Table 5 shows that the respondents gave a low score to the items related to the organizations' inventory control practices. The highest score is a mean of 2.1385 for the

item related to the tracking of inventory to enhance coordination of materials accessibility, controlling, utilization and procuring of materials..

The lowest score is related to the item - the original equipment manufacturer was used to predict demand beyond a 4 week horizon which has a mean of 1.5538.;

Therefore, the above descriptive statistics analyzing Ethio-Nippon Technical Company Inventory Control practice show a low mean of 1.8154 and a standard deviations of 0.46417.This result indicates insufficient capacity of the organizations' inventory control practices.

4.4.2. Process Auditing

Proactive source error identification starts with process auditing be duty-bound to take place at every transactional step from receiving and to shipping inventory including all the inventory transactions that takes place in between the processes (Oballah, Waiganjo&Wachiuri, 2015).

Table 6: Descriptive statistics analyzing Ethio-Nippon Technical Company Process Auditing

Item Statistics	Mean	Std. Deviation	N
The organization has ensured that there adequate monitoring systems for source error identification	1.4308	.49904	65
The organization work in progress tracking reduces fabricated and waiting queues for reducing production costs	1.7077	.52211	65
Ethio-Nippon Technical Company has ensured that inventory shrinkage has reduced stock shortages this reduced lead times	2.8615	.42855	65
The Ethio-Nippon Technical Company has ensured that the replenishment is not done hurriedly leading to costly inventory management and likewise low performance standards.	2.4000	.70267	65
The organization has ensured that there is no inventory shrinkage since customers will be satisfied instantly leading to improved performance rating.	3.5846	.49662	65

Grand Mean = 2.3969	.851	65

Range Description- Mean Difference: by Bringula (2012)

1.00-2.50 = Low 2.51-3.50 = Medium 3.51-5.00= Higher

Source: school based survey data, 2021.

Table 6 above presents the descriptive statistics analyzing Ethio-Nippon Technical Company Process Auditing. Table 6 shows that the grand mean score of this construct (i.e., process auditing) is considered as low with a mean of 2.39 and a standard deviation of 0.85.

4.4.3 Inventory investment practice

The objectives of inventory management practices are to minimize inventory investments and to maximize customer service. The basic objective of inventory management is to maximize customer service through maintaining appropriate amount of inventory with minimum possible cost. Inventory costs are costs associated with the operation of an inventory system (Thummalapalli, 2010).

Table 7: Descriptive statistics Analyzing Inventory Investment Practice

Item Statistics	Mean	Std. Deviation	N
The organization has ensured there is no obsolete and excessive inventory to reduce operational costs	1.7231	.62519	65
The organization has ensured that there is no overstocking to reduce taxes paid to the inventory stored	1.6308	.57471	65
The organization has ensured that there is elimination of obsolete stock promptly and use of space for something more profitable	1.6923	.65962	65
The organization ensure that the inventory management staff are properly trained on the inventory management practices	2.1385	.84552	65
Grand Mean = 1.7962		.503	65

Range Description- Mean Difference: by Bringula (2012)

1.00-2.50 = Low 2.51-3.50 = Medium 3.51-5.00= Higher

Source: school based survey data, 2021.

Table 7 above presents the descriptive statistics analyzing Inventory Investment Practice. The item that organization has ensured there is no obsolete and excessive inventory to reduce operational costs has a mean of 1.231and a standard deviation of 0.62519. While the item - the organization has ensured that there is no overstocking to reduce taxes paid to the inventory stored has a lower mean of 1.6308and a standard deviations 0.57471. On the other hand the item - The organization ensure that the inventory management staff are properly trained on the inventory management practices has a mean of 2.1385and a standard deviations 0.84552 which is low. In General, the descriptive statistics Analyzing Inventory Investment Practice is not minimized the inventory investments and unable to maximize customer service in Ethio-Nippon Technical Company.

4.4.4.Warehouse Management practice

It has been suggested that selecting appropriate storage assignment policies (random, dedicated or class-based) and routing methods (i.e., transversal, return or combined) with regards to above factors is a possible solution to improve the efficiency (Muller, 2011).

Table 8: Descriptive statistics Analyzing Warehouse Management Practice

Item Statistics	Mean	Std. Deviation	N
The firm has ensured that there is the use warehouse management system to improve cost reduction	1.5538	.61316	65
The firm has installed storage locations to enhance timely deliveries	1.9231	.26854	65
There is the use of automated tools and techniques for order processing to enhance timely deliveries in the organization	1.6615	.47687	65
The firm has ensured that there is staff competency so that there can be timely deliveries	1.4308	.49904	65
Ethio-Nippon Technical Company ensure that there is use of stock cycle counts of the items in the storage locations	1.6923	.46513	65
The supply chain department has ensured that there is integrated warehouse management to enhance cost	1.7077	.52211	65

reduction, timely deliveries, improve customer satisfaction and increase profits for*ENITCO.*			
Grand Mean = 1.6615		.492	65

Range Description- Mean Difference: by Bringula (2012)

1.00-2.50 = Low 2.51-3.50 = Medium 3.51-5.00= Higher

Source: school based survey data, 2021.

Table 8 above presents the descriptive statistics analyzing Warehouse Management Practice. The result of Table 8 shows that the score of warehouse management practice is low with a grand mean of 1.66and a standard deviations of 0.492.

4.4.5.Customer Satisfaction

Table 9: Descriptive statistics Analyzing Customer Satisfaction and Needs

Item Statistics	Mean	Std. Deviation	N
Ethio-Nippon Technical Company listens to customer	2.3385	1.50288	65
Ethio-Nippon Technical Company resolves complaints quickly	2.8154	1.10244	65
Ethio-Nippon Technical Company has new product development role	1.6923	.49759	65
Ethio-Nippon Technical Company has well trained	1.7231	.62519	65
Ethio-Nippon Technical Company's products are worth the one	1.6308	.57471	65
Ethio-Nippon Technical Company service provisions and delivery of subsequently enhances customer satisfaction.	1.6923	.65962	65
Because efficiency in service delivery reinforces trusts which, positively influence customer satisfaction.	2.1385	.84552	65
Grand Mean = 2.0044		.960	65

Range Description- Mean Difference: by Bringula (2012)

1.00-2.50 = Low 2.51-3.50 = Medium 3.51-5.00= Higher

Source: school based survey data, 2021.

Table 9 above presents the descriptive statistics Analyzing Customer Satisfaction. Table 9 shows that the performance of the organization in terms of customer satisfaction is below expectations with a mean of 2.0044 and a standard deviations of 0.960.

4.5. Analysis Measures

In this section are presented the reliability of the data. according to sign (2009) stated that impact analysis can be seen as the out sourcing rig and trust worth of the data to be able to present study reliability and study impact analysis result to continuing final output of the research.

4.5.1. Reliability Test

Test for Reliability that each instrument variable was subjected to a reliability analysis. Cronbach's alpha coefficients were used to assess the measures' reliability. For scale acceptability, Hair et al. (1998) suggested that Cronbach's alpha coefficient of construct is 0.6. If each domain obtains the value 0.6, it means that, the items in each domain are understood by most of the respondents. On the other hand, if the findings are far below from the expected value of 0.6, this might be caused by respondents' different perception toward each item of the domain.

Table 10: Reliability Test measures indicator

Variable	**Number of items**	**Cronbach Alpha α**
Inventory Control	5	0.893
Process Auditing	5	0.916
Inventory Investment	4	0.962
Warehouse Management	6	0.903
Customer Satisfaction	7	0.966

Correlation is significant at the 0.01 level (2-tailed).

Source: from field survey data, 2021

The Cronbach's alpha values are reported as follows as can be seen in Table 10 above. Aspect of Inventory Control yield Cronbach's alpha =0.893, Aspect of Process Auditing shows a Cronbach's alpha = 0.916. The Cronbach's alpha for Aspect of Inventory Investment isat 0.962, while the Cronbach's alpha for Warehouse Management isat 0.903. Finally, the Cronbach's alpha for Customer Satisfaction is 0.966. The Cronbach's alpha values for all the variables are considered asgreater than 0.6 and this indicates the items in each of the domains are well understood by the respondents. The items have measured what they were designed to measure.

Tests of assumptions of multiple regressions

Below are presented the assumptions of multiple regression, namely, assumption of multicollinearity and tests of normality.

4.5.2. Assumption of multicollinearity

Table 11: Assumption of multicollinearity under Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.292	.250		5.178	.000		
	ICPra	.642	.070	.672	9.204	.000	1.051	9.797
	ProAu	.193	.060	.188	3.192	.002	1.078	2.850
	Warman	.091	.028	.210	3.221	.002	1.063	5.799
	InInv	-.072	.051	-.070	-1.420	.161	1.110	9.087

a. Dependent Variable: Customer Satisfaction and Needs

Source: From researcher Owen survey data, 2021.

Table 11 above shows the multicollinearity from Tolerance & VIF result. The Tolerance result is above 0.1 & VIF result is below 10.The indicated result in the table fulfills the standard of multicollinearity, i.e., multicollinearity may not be a problem in this study.

Based on the Coefficients Output - collinearity Statistics, obtained VIF value of 9.797, 2.850, 5.799 and 9.087, meaning that the VIF value obtained is between 1 and 10. Therefore, it can be concluded that there are no multicollinearity symptoms.

4.5.3. Tests of Normality

Table 12: Interpretation of Results Output Kolmogorov-Smirnov normality test

Measurement		ICPra	ProAu	Warman	InInv	CSat
N		65	65	65	65	65
Normal Parameters[a,b]	Mean	8.6667	9.9974	13.1596	6.4738	9.5055
	Std. Deviation	2.09310	1.94844	4.62408	1.94986	1.99682
Most Extreme Differences	Absolute	.218	.235	.258	.267	.244
	Positive	.176	.165	.179	.225	.189
	Negative	-.218	-.235	-.258	-.267	-.244
Test Statistic		.218	.235	.258	.267	.244
Asymp. Sig. (2-tailed)		.140[c]	.121[c]	.231[c]	.234[c]	.234[c]
a. Test distribution is Normal.						
b. Calculated from data.						
c. Lilliefors Significance Correction.						

Source: From researcher Owen survey data, 2021.

From above table 12, normality test whether our data have come from a normal distribution, we can use the normal probability plot. In a normal probability plot, each observed value is paired with its expected value from the normal distribution. Based on the output of One-Sample Kolmogorov-Smirnov Test, the value of the variable Asymp on Inventory Control Sig value is 0.140. Similarly, Process Auditing shows a sig of 0.121, and Inventory Investment shows sig level of 0.231. Finally, warehouse Management shows sig level of 0.234 and the result for Customer Satisfaction and Needs is 0.234. Based on the preceding p values which are greater than .05 for all the variables examined in the study it can be concluded that the data of the sample is from a normal distribution. .

4.5.5. Pearson's Correlations between Constructs

According to shukran, (2003), a Pearson correlation is expressed by value within the range -1.00 to +1.00. Pearson correlation is +1 in the case of a perfect increasing (positive) linear relationship (correlation), while a Pearson correlation of -1 indicates a perfect negative relationship. To determine Relationship between Inventory Management Practice and Customer Satisfaction and Needs (y), Pearson correlation is computed.

Table 13: Pearson's Correlation matrix between variables

Measurements		CaSA	InvCo	ProA	InInvst	WhM
Customer Satisfaction	Pearson Correlation	1	.939**	.932**	.992**	.945**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	65	65	65	65	65
Inventory Control	Pearson Correlation	.939**	1	.960**	.961**	.986**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	65	65	65	65	65
Process Auditing	Pearson Correlation	.932**	.960**	1	.947**	.974**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	65	65	65	65	65
Inventory Investment	Pearson Correlation	.992**	.961**	.947**	1	.956**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	65	65	65	65	65
Warehouse Management	Pearson Correlation	.945**	.986**	.974**	.956**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	65	65	65	65	65

**. Correlation is significant at the 0.01 level (2-tailed).

Source: ***questionnaire and SPSS output, 2021***

The Pearson Correlation Analyses were employed among variables. Table 13shows thecorrelation analyses among all constructs for Inventory Management practice and Customer Satisfaction .

The result reveals that there aresignificant positive correlations between Aspect of Inventory Control and Customer Satisfaction and Needs (r=0.939,p<0.01). The result reveals that there are significant positive correlations between Aspect of Process Auditing and Customer Satisfaction and Needs (r=0.932, p<0.01). The correlations between Aspect of Inventory Investment and Customer Satisfaction is (r=0.992, p<0.01). From the findings, correlation coefficient demonstrates that there is a positive relationship between inventory investment and Customer Satisfaction score(r = 0.992, p <0.01). Finally, the correlation between warehouse management and customer satisfaction is strong and positive (r = .945, p < .01)

According to Hutcheson, (2011) and Daniel (2014), When Pearson's r is close to 1, it indicates that the variables have a strong association. This indicates that changes in one variable are strongly linked to changes in the other variable but this is not necessarily a multicolinarity problem.

When Pearson's (r) is close to (0), this means that there is a weak relationship between our two independent and dependent variables. This means that changes in one variable are not correlated with changes in the second variable. If our Pearson's r were 0.01, it could conclude that our variables were not strongly correlated.

From the findings, correlation coefficient shows that there is positive relationship between Inventory Control, Process Auditing, Inventory Investment, Warehouse Management and Customer Satisfaction. However, our outputs as can be evidenced from the correlation matrix above table 13, there is a positive significant relationship in between the variables and that all correlation coefficients are significant at 1% level of significance.

4.6. Multiple linearRegression Analysis on the Impact of Inventory Management practice on Customer Satisfaction

Multiple liner regression analysis was employed to analyze the association between a single dependent and severalindependent variables.

4.6.1. Regression Analysis (Independent variables as predictors to Customer Satisfaction)

Table 14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.992[a]	.984	.983	.26230

a. Predictors: (Constant), Warehouse Management, Inventory Investment, Process Auditing, Inventory Control

b. Dependent Variable: Customer Satisfaction

Source: ***questionnaire and SPSS output, 2021***

In this study, multiple regression analysis was used to test the link among the variables i.e. the dependent and the independent variables. The analysis was done to establish the effect of inventory management on Customer Satisfaction in the context of Ethio-Nippon Technical Company S.C. A regression analysis results are presented in Model Summary in table 14.

The result as shown in the model summary indicates that the Warehouse Management practice, Inventory Investment, Process Auditing, Inventory Control has explained 98.4% of change in Customer Satisfaction of Ethio-Nippon Technical Company S.C.

Table 15: ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	251.059	4	62.765	912.249	.000
	Residual	4.128	60	.069		
	Total	255.187	64			
a. Dependent Variable: Customer Satisfaction and Needs						
b. Predictors: (Constant), Warehouse Management, Inventory Investment, Process Auditing, Inventory Control						

Source: ***questionnaire and SPSS output, 2021***

From Above table 15,ANOVA result regarding the Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables. The significance value is 0.00 which is less than 0.05 thus the model is statistically significance in predicting how Warehouse Management, Process Auditing, Inventory Control shows stronger outcome of Customer Satisfaction. This shows that the overall model was significantly fitted.

Table 16: Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.292	.250		5.178	.000
	Inventory Control	.642	.070	.672	9.204	.000
	Process Auditing	.193	.060	.188	3.192	.002
	Warehouse Management	.091	.028	.210	3.221	.002
	Inventory Investment	-.072	.051	-.070	-1.420	.161
a. Dependent Variable: Customer Satisfaction						

Significance level = 99% significant at 1% (*).

P=0.000 significance value

Source: ***questionnaire and SPSS output, 2021***

From above Table 16 shows that the values of the coefficient independent variables can be retained in the model. In other word, these variables can explain the change in customer satisfaction which is

independent variables are found to be very significant and supportive to the hypotheses of regression analysis, Process Auditing, Warehouse Management, Inventory Control found statistically significance and support the hypothesis from the study. However, Inventory Investment are not statistically significant and it does not and support the hypotheses

Table 17. Summary of the overall outcome of the research hypothesis

Source: ***questionnaire and SPSS output, 2021***

Table 17 above indicates that the aspect of Inventory Control, Process Auditing, Warehouse

Hypothesis	Result	Reason
H0: Inventory control has no a positive significance effect on the value of Customer Satisfaction of the Company H1: Inventory control has a positive significance effect on the value of Customer Satisfaction of the company	H0: Rejected H1: Accepted	β = 0.642 P<0.05
H0: Process auditing has no a positive significance effect on the value of Customer Satisfaction of the Company H1: Process auditing has a positive significance effect on the value of Customer Satisfaction	H0: Rejected H1: Accepted	β = 0.193 P<0.05
H0: Warehouse management has no a positive significance effect on the value of Customer Satisfaction of the Company H1: Warehouse management has a positive significance effect on the value of Customer Satisfaction	H0: Rejected H1: Accepted	β = 0.091 P<0.05
H0: Inventory Investment has no a positive significance effect on the value of Customer Satisfaction of the Company H1. Inventory Investment has a positive significance effect on the Customer Satisfaction	H0: Accepted H1: Rejected	β = -0.072 P>0.05

Management have a significant and Positive effect on customer satisfaction.. Therefore,

hypotheses H1, H2, and H3 are Accepted at the 5 % level of significance (p -value is less than 0.05). However, Inventory investment has a non-significant effect on customer satisfaction therefore H4 is rejected (p -value of 0.161).

4.7. Discussion

From above table 16, Multiple liner regression Analysis result regarding to the effect of Aspect of Inventory Control on Customer Satisfaction was found that in the likely (coefficient of 0.642) found positively increasing Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C at significance level of (P Value=0.05). From aspect of Inventory Control towards the Customer Satisfaction is found 64.2% establish positive influences on the Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C.

Similarly study was found Chalotra (2013) the inventory control was found positive relationship in Kenya which the cost minimization, profit maximization, avoidance of running out of stock and to prevent surplus stock that are unnecessary. One of the most efficient ways of inventory control is the use of Just-in-Time system.

Similarly, Borade and Sweeney (2015) as the inventory control method designed to minimize inventory, and move it to the field for use exactly when needed. The key principle with this system is to eliminate excess inventory. By using this system, a manufacturing company for instance, stays lean by minimizing waste wherever possible.

Findings of the study were overstocking and under stocking of inventory and Customer Satisfaction of Ethio-Nippon Technical Company S.C 64.2% affecting by means of inventory control was due to inadequate forecasting of requirements, Scheduled time for deliveries, insufficient staff, scheduled

time for receiving, issuing and unorganized storage facilities affect information sharing between the customer and supplier thus is affecting effective inventory demand variability rating greatly influence inventory management.

From above table 16, Multiple liner regression Analysis result regarding to the Aspect of Process Auditing towards Customer Satisfaction and Needs Ethio-Nippon Technical Company S.C the likely coefficient is (β=0.193) at significance level of (P Value=0.05).This study therefore sought to investigate on the influence of Process Auditing as inventory management was found 19.3% positively related to the Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C.

In similar study was found by Hui et al. (2015), Aspect of Process Auditing having higher performer with their work, pay, promotion, supervisor and co-workers than their individualist counterparts. The researcher also found that job satisfaction is higher for collectivist employees and employees will be more motivated to perform better.

The study also sought to establish the influence of process auditing on Customer Satisfaction of Ethio-Nippon Technical Company S.C after sales service is 19.3% found affecting the level of process auditing. Similarly study by Onchoke and Wanyoike (2016) sought to establish the Influence of inventory control practices and procurement performance of Agrochemical Distributors in Nakuru Central Sub-County. For that reason, Ethio-Nippon Technical Company S.C has not ensured that there is elimination of obsolete stock promptly and use of space for something more profitable and there is inventory management staff are properly trained on the inventory management practices.

Multiple liner regression Analysis result regarding to the Aspect of warehouse management towards the Customer Satisfaction and Ethio-Nippon Technical Company S.C the likely coefficient is (β=0.091) found positively at significance level of (P Value=0.05). The study established that warehouse management influence towards Customer Satisfaction of Ethio-Nippon Technical

Company S.C which is found to 9.1% positive. Thus, Ethio-Nippon Technical Company S.C has lower level use warehouse management system need to improve cost reduction.

According to David Ackah PhD (2015) In his study conducted under the title of The impact of warehousing on customer satisfaction, he stated that Effective Warehouse management can help you gain visibility in the warehouse so you know exactly where your products are at all times. Good Warehouse management can help you get your products into your customers‟ hands faster. Today's customers expect to receive their products quickly. If you cannot delivery your customers‟ products into their hands in reasonable timeframe, your customers will look elsewhere for their products. For this reason, it is imperative that you increase efficiency in the warehouse so you can deliver products to your customers in a timely manner. Effective Warehouse management system can help you eliminate inefficiencies so you can get your products into your customers‟ hands faster. Warehouse management software improves your communication

According to, secondary data result, Ethio-Nippon Technical Company S.C has installed storage locations to enhance timely deliveries in most part of Addis Ababa but, not timely manageable. There is no the use of automated tools and techniques for order processing to enhance timely deliveries in the organization. Hence, Ethio-Nippon Technical Company S.C staff competency regarding to warhorse management has no ease of on timely deliveries and the stock cycle counts of the items in the storage locations pretentious 9.1% of Customer Satisfaction .

Study was foun by Biamrew (2017),The supply chain department has higher in procurement but not on timely auditable and that there is no Integrated warehouse only located outside home area and live on the grass which is enhance cost increasing, untimely deliveries service, disprove customer satisfaction and decrease profits for the organization (BIMREW,2018).

Multiple liner regression Analysis result regarding to the Aspect of Inventory Investment towards the Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C the likely coefficient is (β=-0.072) found negatively insignificance level of (P Value >0.05). The study established that inventory investment has no relationship and influence towards Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C. which means that Inventory Investment has nothing added the value of Customer Satisfaction and Needs. Unfortunately this study shows that the customer of Ethio-Nippon Technical Company S.C does concern the level of Inventory Investment as of customer services may not ensure the level of consistency of their services. This study has attempted to provide added insight into the significant variance in service quality from the eye of the customer. It also sharpened the focus on some types of industries that seem to do better than others.

In a conclusion, the current study has surfaced some evidence that service satisfaction may also vary as a result of customers' biographical characteristics. While the causes for such differences are not known, such differences in satisfaction may be indicative of an unequal level of inventory management as of the service quality that is provided those in Ethio-Nippon Technical Company S.C are charged with the obligation to be culturally competent, and the data may indicate that more needs to be done to assure that this organizational obligation is realized by seeing the discrepant challenge that facing inventory management and customer satisfactions together explained .

The majority of respondents were found to be viral that the Ethio-Nippon Technical Company S.C has to enhance the level inventory controlling to enhance coordination of materials accessibility, controlling, utilization and procuring of materials.

In general the study was found that Ethio-Nippon Technical Company S.C inventory management found influential factors due to upcoming of process auditing problem, lower level of forecasting

auditing methods thus reduction of stock outs in the organization. From secondary inventory data report, the original equipment manufacturer is used to predict demand beyond one year horizon.

The forecasting accuracy demonstrates improvements and related observations results in inventory markdowns.

In general inventory management found in influential to the Customer Satisfaction of Ethio-Nippon Technical Company S.C due to inaccuracy tools synchronize the supply and demand cycle than the use of real time information due to lower auditing process. The Ethio-Nippon Technical Company S.C has not adopted Just-in Time system as the inventory control method and there is lower level of design to minimize inventory, and move it to the field for use exactly when needed.

CHAPTER FIVE

5. Conclusion and Recommendation

5.1. Conclusion

The general objective of the study is to examine the influence of inventory management practices on the Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C in Ethiopia. The descriptive statistics result for Inventory Control practice show a weaker mean of 1.8154 with standard deviations of 0.46417.

Similarly, the Descriptive statistics result for Process Auditing found lower level of performance rating as indicated by the lesser mean of 2.3969 with standard deviations of 0.85. Warehouse Management Practice has been suggested that selecting found in appropriate storage assignment policies (random, dedicated or class-based) and routing methods (i.e., transversal, return or combined) indicated in lower mean difference of 1.6615 depicted in standard deviations of 0.492 need a possible solution to improve the efficiency.

As a final point, the Descriptive statistics was Analyzing Customer Satisfaction and Needs found that the performance after sales service go below expectations that was found that the customer satisfactions level is in a subordinate level that is indicated by lower average mean difference of 2.0044 depicted in standard deviations of 0.960 which is lower level of provision.

The multiple linear regression analysis result regarding the effect of aspect of Inventory Control on Customer Satisfaction shows that as inventory control increases by 1 unit customer satisfaction increases by 64.2%. This result is statistically significant at less than 0.05 percent level. In addition, the multiple linear regression analysis for the effect of the aspect of Process Auditing on customer satisfaction shows that as process auditing increases by 1 unit customer satisfaction increases by 19.3%. This result is statistically significant at $p < .05$ level.

Finally, the multiple linear regression analysis result regarding the aspect of warehouse management influence on Customer Satisfaction, the results show that as warehouse management increases by 1 unit customer satisfaction increases by 9.1%. This result is significant at $p < .05$ level. According to, secondary data result, Ethio-Nippon Technical Company S.C has installed storage locations to enhance timely deliveries in most part of Addis Ababa but, not timely manageable.

However, , the multiple linear regression analysis result regarding the Aspect of Inventory Investment and its effect on customer satisfaction, the result of the analysis show that inventory investment has no significant effect on Customer Satisfaction and Needs in the context of Ethio-Nippon Technical Company S.C..

Therefore, the study shows that Inventory management practice was found an influential determinates of the Customer Satisfaction and Needs of Ethio-Nippon Technical Company S.C.

.5.2. Recommendations

The findings of the research agree with existing literature that there is a relationship between inventory management practices and Customer Satisfaction and Needs. +On the basis of the findings of the data analysis the study recommends the following:

- The study recommends that Ethio-Nippon Technical Company S.C should enhance process auditing in the inventory control to enhance efficiency in service delivery.
- The Ethio-Nippon Technical Company S.C especially the spare part service running to customer in Addis Ababa should make sure that there is an effective inventory management system in their firms as this will bring much benefit to them.
- It is necessary to allocate warehouse resources efficiently and effectively to enhance the productivity and reduce the operation costs of the warehouse. There should be proper storage locations for easy order and material handling.
- Ethio-Nippon Technical Company S.C needs selecting appropriate storage assignment policies and routing methods with regards as a possible solution to improve the efficiency.
- In addition, Ethio-Nippon Technical Company S.C should pay attention to inventory control practice in order to improve its customer satisfaction.
- Finally, future research in this field should be carried out in respect of effective relationship building with suppliers and its impact on inventory management, as well as the use of integrated information systems in the inventory management of various inventories on electro-mechanical parts and service running to customer in Addis Ababa.

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APENDIX

Questionnaire filled by the Ethio-Nippon Technical Company Permanent Employees

I am a postgraduate student of the Addis Ababa University intends to collect data for Marketing management research project titled.

The Effect of Inventory Management on Customer Satisfaction in the case of Ethio-Nippon Technical Company. Sector achieve this objective your response is indispensable. This questionnaire is prepared to gather the necessary. The information you provide will be used only for academic purpose (only for the study under consideration) and will be kept confidential; hence; you are kindly requested to provide only thoughtful and honest responses that will give the most valuable information for the assessment.

I gratefully thank you for you're in valuable time you take to answer the question included in this data collection instruments.

Abdissa Aga

With Best Regards!

Dear respondents: please not that: -

- ☞ Don't write your name on the questionnaire,
- ☞ You should not contact other respondents to fill it,
- ☞ You need to respond all of the items,
- ☞ Put an (√) inside the box, and write for explain answer and give your comment on the Provided space.

PART ONE: DEMOGRAPHICS OF RESPONDENTS

1. Department _____
2. Position_____

Please circle or underline for the below questionaries'

1. Gender:
    a) Male
    b) Female
2. Age
    a) Age: 21 – 25 years
    b) 26 – 30 years
    c) 31 – 35 years
    d) 36 – 40 years
    e) 41 – above years

3. Marital Status
    a) Single
    b) Married
    c) Divorced
4. Level of Education:
    a) Diploma
    b) Bachelor degree
    c) Master degree
    d) Others, please specify _____

5. How many years have you spent in Ethio-Nippon Technical Company?

Service in years

a) 1 – 5 years

b) 6 – 10 years

c) 11 – 15 years

d) 16 – 20

e) Above 20 years

6. Have you received the training from Inventory Management since you occupied your present post related to the tasks you are expected to perform?

a. Yes, very much

b. Yes, but only somewhat

c. No, not related

d. No training received

7, what you know the challenges of inventory management and customer satisfaction in Ethio-Nippon technical company s.c?

a., Lack of coordination, b., Lack of guidelines, c. Lack of familiarity of tasks, d., Lack of adequate resources (Computers, Paper, etc.), e., Lack of job security f, lack of time (work overload) g, all of the above

SECTION B: INVENTORY MANAGEMENT PRACTICE

(Source*: Hendrick&Signhal, 2005; Borade& Sweeney, 2015)*

For the following Likert scale questions: -

Each of the following items in this section refers the effect of each modes of Inventory Management Practice in Ethio-Nippon Technical Company and carried out in each particular period since after merging of the corporation. For each statement, there are 5 alternative responses. Please tick according to the code provided below for the indicators below: 5= Strongly Agree, 4= Agree, 3= Neither Agree nor Disagree, 2= Disagree, 1= Strongly Disagree.

Inventory Control practice	**1**	**2**	**3**	**4**	**5**
1. Ethio-Nippon Technical Company has ensured that there is tracking of inventory to enhance coordination of materials accessibility, controlling, utilization and procuring of materials.					
2. Ethio-Nippon Technical Company have the correct forecasting methods thus reduction of stock outs in the organization					
3. The original equipment manufacturer is used to predict demand beyond a 4-week horizon					
4. The Ethio-Nippon Technical Company has advanced forecasting tools that can enable improvements in cost reduction					
5. The Ethio-Nippon Technical Company has adopted Just-in-Time system as the inventory control method designed to minimize inventory, and move it to the field for use exactly when needed.					
Process Auditing	1	2	3	4	5
1. The organization has ensured that there adequate monitoring systems for source error identification					
2. The organization work in progress tracking reduces fabricated and waiting queues for reducing production costs					

3. Ethio-Nippon Technical Company has ensured that inventory shrinkage has reduced stock shortages this reduced lead times					
4. The Ethio-Nippon Technical Company has ensured that the replenishment is not done hurriedly leading to costly inventory management and likewise low performance standards.					
5. The organization has ensured that there is no inventory shrinkage since customers will be satisfied instantly leading to improved performance rating.					
Inventory Investment	1	2	3	4	5
1. The organization has ensured there is no obsolete and excessive inventory to reduce operational costs					
2. The organization has ensured that there is no overstocking to reduce taxes paid to the inventory stored					
3. The organization has ensured that there is elimination of obsolete stock promptly and use of space for something more profitable					
4. The organization ensure that the inventory management staff are properly trained on the inventory management practices					
Warehouse Management	1	2	3	4	5
1. The firm has ensured that there is the use warehouse management system to improve cost reduction					
2. The firm has installed storage locations to enhance timely deliveries					
3. There is the use of automated tools and techniques for order processing to enhance timely deliveries in the organization					
4. The firm has ensured that there is staff competency so that there can be timely deliveries					
5. Ethio-Nippon Technical Company ensure that there is use of stock cycle counts of the items in the storage locations					

6. The supply chain department has ensured that there is integrated warehouse management to enhance cost reduction, timely deliveries, improve customer satisfaction and increase profits.						

Please specify any additional suggestions for the overall inventory management practice and its impact on the customer satisfactions?

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SECTION C: CUSTOMER SATISFACTION SURVEY

Source: Scott (2007);Ogonu (2016)

The survey used a Likert scale which had A) Strongly Disagree B) Moderately Disagree C) Slightly Disagree D) Slightly Agree E) Moderately Agree) Strongly Agree. The number assigned to each letter was; A=0, B=1, C=2,D=3, E=4, and F=5.

Customer Satisfaction and Needs	A	B	C	D	E	F
Ethio-Nippon Technical Company listens to customer						
Ethio-Nippon Technical Company resolves complaints quickly						
Ethio-Nippon Technical Company has new product development role						
Ethio-Nippon Technical Company has well trained employees.						
Ethio-Nippon Technical Company's products are worth the price						
Ethio-Nippon Technical Company service provisions and delivery of subsequently enhances customer satisfaction.						
Because efficiency in service delivery reinforces trusts which, positively influence customer satisfaction.						

Thank you for your help in answering these questions!!