



ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

**DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN
MANAGEMENT**

**ASSESSMENT OF CHALLENGES OF WAREHOUSING PRACTICES:
THE CASE OF ETHIO TELECOM IN ADDIS ABABA**

BY: ENDAYKIRO HAGOS

ID NO.: GSD/0628/09

**A Thesis Submitted to Addis Ababa University School of Commerce in Partial
Fulfillment of the Requirements for the Degree of Masters of Art in Logistics
and Supply Chain Management**

ADVISER: FESSEHA AFEWERK (AST. PROF.)

May 2019

ADDIS ABABA, ETHIOPIA

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CHALLENGES THE CASE OF ETHIO TELECOM

BY

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DECLARATION

I, Endaykiros Hagos, declare that this thesis is the result of my independent research work on the topic entitled “ASSESSMENT OF WAREHOUSING PRACTICE AND CHALLENGES THE CASE OF ETHIO TELECOM” in partial fulfillment of the requirements for the Degree of Master of Art in Logistics and Supply Chain Management at Addis Ababa University School of Commerce. This work was not been submitted for a degree to any other university. It is my original work and all the references used in the study have properly acknowledged.

Endaykiros Hagos: _____

Signature & Date

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LIST OF ABBREVIATION

WM: - Warehouse Management

WMS: - Warehouse Management System

IM: - Inventory Management

SKU: - Stock Keeping Unit

RFID: - Radio-frequency Identification

PIC: - Person in Charge

AGV: - Automated Guided Vehicles

ERP: - Enterprise Resource Planning

ET: - Ethio Telecom

CW: - Central Warehouse

SIM: - Subscriber Identity Module

DOI: - Digital Object Identifier

SPSS: - Statistical Package for the Social Science

LSP: - Logistics service providers

IBTE: - Board of Telecommunications of Ethiopia

FDRE: - Federal Democratic Republic of Ethiopia

ABSTRACT

The purpose of this study is to assess warehousing activities and challenges in a case of ethio telecom. To address this study descriptive analysis method had employed, in addition, this study applies mixed approach. Mainly data was collected using questionnaire, hence the nature of data obtained through this method are quantitative, in addition, qualitative type of data were also gathered using open ended questions from part of the questionnaire and through interview, these are going to be used in supporting & giving full meaning to data obtained by questionnaire. Due to the size of this studies population is few in number and below 100, which is 79, this research is a census study. A total number of 75 questionnaires were distributed, 70 were filled and returned, from this three (3) were filled incompletely, thus, 67 questionnaires were correctly filled & used. Frequency, tables and percentages has used to analyze the data, with the support of SPSS 23 version. The study mainly focused on how are warehousing activities being practiced by ethio telecom, how much emphasis given to warehousing activities, in relation to the five main activities (receiving, put-away, storage, order- picking, and shipping) and what are the major challenges in warehousing practices of ethio telecom. Accordingly, the finding of the study showed that, inadequate availability of unloading & loading space; insufficient availability of machinery's/equipment has to unload, load and move materials. The poor availability of packaging materials. Storage area of goods are also improper, uneconomical and insufficient (including insufficient & narrow sized racks & shelves). Furthermore, the time taken to perform the order – picking activity is higher in the warehouse; this is due to design of the storage area & difficult to pass-through. Low attention given to provisioning of training. Above all, there is significant delay in making decision to avoid/discard obsolete & scrape items, in which abandoned here & there.

Key Words: Warehouse, Warehousing activity, challenges in warehousing

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

A warehouse is a facility in the supply chain to consolidate products to reduce transportation cost, achieve economies of scale in manufacturing or in purchasing or provide value-added processes and shorten response time. In addition, warehousing has been recognized as one of the main operations where companies can provide tailored services for their customers and gain competitive advantage (Ramaa.A, et. al 2012). A warehouse is more than just a place where inventory is stored. The aims of warehouse management are to increase productivity & accuracy. On the other hand, to reduce and control the cost of inventory and shipping while providing good customer service.

In a supply chain, warehousing function is very critical as it acts as a node in linking the material flows between the supplier and customer. In today's competitive market environment, companies are continuously forced to improve their warehousing operations. Many companies have also customized their value proposition to increase their customer service levels, which has led to changes in the role of warehouses. Even though, many scholars the pressure remains on warehouse administrators to increase proposed different reasons as well as alternative solutions productivity and accuracy, reduce cost and inventory whilst improving customer service (Asmelash Teka 2017).

The proper functioning of warehouse activities is fundamental for operational improvement and overall logistic supply chain improvement. Some of the basic warehouse processes are the following: receiving, put-away, internal replenishment, order picking, accumulating and sorting, packing, cross-docking, dispatch and shipping.

As indicated by Tompkins (1983) in Asmelash (2017), that among others the main activities of warehousing are; Receiving, Put-away, Storage, Order – Picking and Shipment. The other activities are part of these main activities.

- **Receiving** – unloading incoming materials, quality control, and disassembling or repacking items for storage.
- **Put-away** – determine the appropriate location for goods to transfer them to the specified location to store and wait for orders.
- **Storage** – has direct relationship with the goods safety & order-picking efficiency. If materials are not stored properly/safely and in a way to ease the picking activity, they are going exposed for damaged and overall cost & time consumption increases.
- **Order picking** – pick up goods from storage area and transport them to the sorting process or directly to the shipping area.
- **Shipping** – inspecting, packing, palletizing and loading goods into a carrier for delivery.

In functioning these warehousing activities there are challenges and hindrances that make the functioning difficult, late response, product damage, high cost and so on. Some of the challenges are; inaccurate receipts and purchase orders, insufficient receiving, storage, consolidating and shipping space, lack of communication between employees, narrow aisles/walkway can make navigation with equipment hard, slow picking due to processes &/or improper storage, stock discrepancies, etc.

Previous studies that work on similar researches have discuss as follows; as discussed by Asmelash, T. (2017), during any stage of these activities, products are vulnerable for damage/brakeage, therefore, unable to fulfill orders timely, customer dissatisfaction and overall cost increases. It is the efficiency, accuracy, and overall customer orientation of the warehouse operator that ultimately influences final customer perception and reality of quality and cost.

Therefore, we can understand from the above points that, the warehouse activities have significant impact and is very critical. Such as, in linking supplier & customers, its integral part of the supply chain in distribution of goods in which requires smooth functioning and to reduce cost & time consumption that may emanate from inefficient & poorly functioning of the activity and overall impact on customer satisfaction. So that, companies shall give due attention on understanding each warehousing activities, study how it is been handled, identify activities that require correction/improvement, and then make sure that the warehouse is functioning properly and effectively

Thus, this study will assess the challenges of warehousing practice of ethio telecom, show the current warehousing practice situation, find out potential challenges and provide necessary recommendations based on the result.

1.2 Back Ground of Ethio Telecom

Emperor Menelik II has introduced telecommunications service in Ethiopia in 1894 when the construction of the telephone line from Harar to the capital city, Addis Ababa, commenced. Many important centers in the Empire had interconnected by lines, thus facilitating long distance communication with the assistants or operators at intermediate stations frequently acting as verbal human repeaters between the distant calling parties.

Under the Imperial Regime

The Imperial Board of Telecommunications of Ethiopia (IBTE) was established by the proclamation No. 131 on October 15, 1952

Under The Dergue Regime (1974-1991)

Under the Dergue regime, the Ethiopian telecommunications has renamed as follows:

- In October 1975, the organization was renamed as “THE PROVISIONAL MILITARY GOVERNMENT OF SOCIALIST ETHIOPIA TELECOMMUNICATION SERVICES”
- It has renamed again as “ETHIOPIAN TELECOMMUNICATIONS AUTHORITY (ETA) on January 1981. It retained its name as ETA up to November 1996.

Under the Federal Democratic Republic of Ethiopia

The government of the Federal Democratic Republic of Ethiopia (FDRE) has carried out an overall restructuring program to change the previously centralized command economy to a free market-oriented one, with the aim of making government owned enterprises more efficient and effective as well as encouraging the promotion and participation of the private sector in the country's economic progress.

Establishment of ethio telecom

As a continuation of the five-year plan and after concentrating its efforts on education, health and agriculture, the Ethiopian government has decided to focus on the improvement of telecommunication services, considering them as a key lever in the development of Ethiopia, Ethio telecom is born, on Monday 29th November 2010. The company has ambition of supporting the steady growth of our country, within the Growth Transformation Plan (GTP), with ambitious objectives for 2015.

1.3 Statement of the Problem

As discussed by Sneha V. (2016), warehousing takes up to between 2% and 5% of the cost of sales of a corporation and with today's highly competitive global business environment organizations are emphasizing on Return on Assets. Thus, minimizing warehousing costs has become an important business issue. Many firms are automating their basic warehousing functions to achieve the increase in throughput rates or inventory turns required for their warehousing operations to be cost effective.

Hence, companies need to give due attention to the warehouse at all and each warehousing activity's effectiveness and correctness. The activities are interrelated and dependent one another, failure in one activity will have negative impact, especially on the consecutive activities.

Ethio telecom the giant & the only telecom service providing company in the country have huge amount of resources to administer and almost all these resources are required to pass through different warehouses of the company. Some of these materials are very sensitive that they are expected to be available in the market safely, always, in mass and overall the country; like Voucher Cards & SIM Cards. Unless the materials issued swiftly, correctly as per orders and distributed, the effect on the market will be unbearable. Therefore, correct, smoothly & effectively functioning of warehousing process is mandatory, in addition to the other logistics activities.

Solomon K. (2017) has stated that; even though, the company has worked a lot to improve its operational performance, still customers complain on the services they obtained from the company. It is required to improve the planning, distribution, supplier and customer relationship approaches of the company and it is required to reduce the waste in the inventory by optimizing the supply chain practices of the company. In connection to this, the company has high waste of materials & scraps accumulated in different locations. This study assesses what causes this and if these issues have link with warehousing practice of the company.

According to Haftom (2014), in Solomon K. (2017), supply chain inefficiencies lead ethio telecom to incur additional cost and receive many complaints from the customers who lost their trust on the company. Some of these efficiency indicators; are Ethio telecom has suffered longer time lag in the process of delivering the goods to end customers, fragmented contract with suppliers and internal/external integration problem, which is all related to the operational performance of the company. Thus, this study assesses the contribution of warehousing practice on the supply chain inefficiency of the company.

Mesay W. (2017) has discussed the below points on the warehouse of ethio telecom, while

- The number of warehouses was not enough to create space and time utility and control transportation costs. Mainly such problems emanates when project teams fail to consider such factors during the planning stage.
- In addition, warehouse space was not enough to accommodate the materials in proper and safe way. However, the investigation has revealed that the warehouse space were not efficiently managed, as it was only the floor space used to store the materials. No shelving system was in place to take the advantage of vertical space.
- Order placed by the project team does not consider the required lead-time for picking, packing and shipment. Unreasonable delivery schedules were defined that puts unnecessary burdens on the warehouse team and may leads to picking and shipping errors. Document error was also a cause for wrong shipment that resulted in additional transportation costs and rework in the warehouse.

In accordance to short visit and very brief discussion with warehouse employees of the company, the researcher has learn that, there is an indication of poor warehousing practice like: poor receiving & loading/shipment area, unavailability of sufficient & proper equipment's/machines for moving, loading and unloading materials, poor storage area, etc.

Therefore, taking in to consideration the significance of warehousing activity and the gaps sought, this particular study assesses the challenges of warehousing practice of ethio telecom. Investigate the current warehousing practice and provide necessary recommendations based on the result. The study may also help future researchers to use it as a reference.

1.4 Research Question

The basic research questions this study going to addressed are:

- What are the major challenges in functioning the warehousing practices of ethio telecom?
- How are warehousing activities being practiced by ethio telecom?
- How much emphasis given to warehousing activities, in relation to the five main activities (which are *receiving, put-away, storage, order- picking, and shipping*)?

1.5 Research Objectives

1.5.1 General Objectives

The general objective of this study is to assess the warehousing practices & challenges of ethio telecom.

1.5.2 Specific Objectives

The specific objectives of the study are to:

- To assess how ethio telecom practices warehousing activities.
- To assess the extent of emphasis given to warehousing activities, in relation to the five main activities which are *receiving, put-away, storage, order- picking, and shipping* .
- To examine the major challenges of ethio telecom while practicing its warehousing activities.

1.6 Significance of the Study

Since inefficient function of warehousing, have negative impact on cost increment, too much time consumption and overall customer satisfaction (internal & external customers). Hence, revealing findings of this study will provide information to decision makers related to challenges of warehousing practice in the company and show them the potential challenges & gaps that need correction in practicing the warehousing activities, so that the decision makers could adjust or make decision according to recommendations provided in this study.

Additionally, the study is very important in expanding the body of knowledge in assessing challenges of warehousing practice and use as reference for future researchers who are interested to study similar topics.

1.7 Delimitation/Scope of the Study

The Scope of this study is mainly focuses on assessment of challenges in warehousing activities in the case of ethio telecom. Although, there are many warehousing activities, this study makes the assessment in relation to the five main activities of warehouse; ***receiving, put-away, storage, order- picking and shipping***. There are other sub – activities and are incorporated or become part of these main activities.

Due to problem of finance, time, manageability, and experience of the researcher the study is limited only in assessing the warehousing activity and challenges of the case company & cannot conduct expanded research.

In addition, though, ethio telecom have Zonal and Regional warehouses, due to these warehouses are acting as point of distribution; this study focuses only on the company's Central Warehouses (CW) located at Addis Ababa city.

1.8 Organization of the Study

The study is categorized in five chapters.

The first chapter shows the general background of the study and background of the case company, statement of the problem, objective, significance and delamination/scope of the study. The second chapter, deals on reviews of related literature. The third chapter presents the research methodology used in the study. Data analysis, discussion and interpretation has covered in chapter four. Summary of finding, Conclusions and possible recommendation presented on the last chapter of chapter five.

CHAPTER TWO: RELATED LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Warehouse Related Definitions

Supply chain management (SCM)

Christopher, (2005) in Van den Berg, J.P. et. al. (2012), has defined SCM as; Supply chain management (SCM) has been widely accepted in recent decades as industry's leading paradigm. SCM is defined as the management of upstream and downstream relationships with suppliers and customers with the objective of serving the customer as well as possible, whilst achieving the lowest possible costs for the entire supply chain.

Saleheen, F. et. al (2014) Supply chain is the process of effectively managing the flow of materials and finished goods from retailers to customers using the manufacturing facilities and warehouse as potential intermediate steps.

Warehouse Management (WM)

Explained in detailed by Van den Berg, J.P.et. al. (2012) as follows;

Warehouse management is define as the continuous effort to operate and improve the processes, organizational structure and use of information technology in the distribution center as well as collaboration with supply chain partners. Highly competitive warehouse management proposes an integral approach that examines all options for optimization. Warehouse management consists of the following four elements: People, Process, Technology and Business:

- **People:** The manager has the responsibility to ensure that the people in the warehouse execute the processes well. This involves guiding and training people, addressing and motivating them and taking their feedback seriously.
- **Process:** If there are no specified procedures in the warehouse, then each operator may perform a task in his own way. So, when there are 10 operators, one of them will have the best procedure. In fact, if we combine the best parts of each of those 10 procedures we could come up with a best practice that outperforms all others. Moreover, without specified procedures, the manager cannot tackle people on their conduct since there is no standard.
- **Technology:** Tools and technology can create a major breakthrough in performance. The tools that we use in warehouses are *automated material handling systems*, such as conveyors and automated cranes, and information technology such as warehouse management systems. *Information technology* has a major impact on warehouse performance. *Highly Competitive Warehouse Management* proposes the use of flexible and

intelligent information systems. The systems should be able to support the desired method of working. Moreover, it should be easy to modify the software to accommodate any process redesign necessary to keep the distribution center up-to-date with ever-changing market requirements.

- **Business:** Within a company, the warehouse typically plays the role of the service provider, while other departments such as sales or purchasing are its clients who decide what the warehouse should do. Thus if we could change the requirements imposed by others upon the warehouse operation, then we could achieve major benefits in the distribution center. The challenge is to align the various parties involved. This implies that their actions and decisions should aim at achieving the overall objective of the company or the supply chain rather than their individual objectives.

Explained by Nynke F. (2015), **Warehouse Management** plans, controls, and optimizes the material flows and the use of the resources in a warehouse in an everyday context, with the objective of delivering goods in accordance with customer demands while minimizing operational costs (that is eliminating unnecessary work and unnecessary movement of people and equipment).

Warehouse

Ramaa.A (2012), a warehouse is a facility in the supply chain to consolidate products to reduce transportation cost, achieve economies of scale in manufacturing or in purchasing or provide value-added processes and shorten response time. Warehousing has also recognized as one of the main operations where companies can provide tailored services for their customers and gain competitive advantage. There are various types of warehouses: they can be classified into production warehouses and distribution centers and by their roles in the supply chain, they can be classified as raw materials warehouses, work-in-process warehouses, finished good warehouses, distribution warehouses, fulfillment warehouses, local warehouses direct to customer demand, and value-added service warehouses.

Shah, B. (2017), the objective of a warehouse is to satisfy customers with effective resource utilization and delivering the right product, at the right place and at the right time in good condition. Warehouse is a means of providing functions of temporary storage, protection of goods, fulfillment of individual customer orders, packaging of goods, after sales services, repairs, testing, inspection, Just in Time (JIT) sequencing and assembly. Major warehouse operations are classified into receiving, picking, storage and shipping. The storing function includes various sub functions like department or locations assignment and zoning. Further, the batching, routing and sorting have considered as part of the picking process.

Karim, N.H et. al. (2018), a warehouse is more than just a place where inventory is stored. The aims of warehouse management are to increase productivity and accuracy, and reduce and control the cost of inventory and shipping while providing good customer service. Meanwhile, warehousing is primarily for receiving, storing, picking and shipping goods and requires labor,

capital (land, storage, and handling equipment) and information systems, all of which are expensive.

Paul, Y. and Lestari, Y.D (2015), the activity to manage the goods stored in the warehouse is called warehousing. While the warehouse has a lot of different operations, they have some common patterns in the material flow and warehouse typical operations such as receiving, put-away, replenishment internal order picking, gathering and sorting, packing, cross-docking, and delivery.

- **Receiving** – unloading, Quality Control, and disassembling or repacking items for storage
- **Put-away** – determine the appropriate location for goods to transfer them to the specified location to store and wait for orders.
- **Order picking** – pick up goods from both storage and transport them to the sorting process or directly to the shipping area
- **Shipping** – inspecting, packing, palletizing and loading goods into a carrier for delivery

Faber, N.N., (2015) stated that Warehouse performance: warehouses aim at simultaneously reducing cost, increasing productivity, and improving customer responsiveness. Measuring warehouse performance provides feedback about how the warehouse performs compared to the requirements, or compared to industry peers. As such, it can also provide feedback on the adequacy and effectiveness of an implemented Warehouse Management structure.

2.1.2 The Importance of Warehousing (Need for Warehousing)

This section views of different authors will be presented in detailed step by step:

Sneha V. (2016), provide detail explanation about the need for warehousing as, across the supply chains, warehousing is an important element of activity in the distribution of goods, from raw materials and work in progress through to finished products. It is integral part to the supply chain network within which it operates and as such its roles and objectives should synchronize with the objectives of the supply chain. It is not a ‘Stand-alone’ element of activity and it must not be a weak link in the whole supply chain network.

Sneha also shows that, warehousing takes up to between 2% and 5% of the cost of sales of a corporation and with today’s highly competitive global business environment organizations are emphasizing on Return on Assets, and hence minimizing warehousing costs has become an important business issue. Many firms are automating their basic warehousing functions to achieve the increase in throughput rates or inventory turns required for their warehousing operations to be cost effective. 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. 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 been extensively studied. It has been suggested that selecting appropriate storage assignment policies (i.e. **random, dedicated or class-based**) and routing methods (i.e. transversal, return or combined) concerning above factors is a possible solution to improve the efficiency. Various decision support models and solution algorithms have also established to solve warehouse operation planning problems.

Warehouse functionality are more properly viewed as mixing and modifying inventory to meet customer requirements, where storage of products is ideally held to a minimum, the warehousing of products occurs for one or more of the following reasons:

- Achieving transportation economies
- Achieving production economies
- Taking advantage of quantity purchase discounts and forward buys
- Maintaining a source of supply
- Supporting the firm's customer service policies
- Meeting changing market conditions (e.g., seasonality, demand fluctuations, competition)
- Overcoming the time and space differentials that exist between producers and consumers.
- Accomplishing least total cost logistics commensurate with a desired level of customer service
- Supporting the just-in-time programs of suppliers and customers.
- Providing customers with a mix of products instead of a single product on each order.
- Providing temporary storage of materials to be disposed of or recycled (i.e., reverse logistics).

In addition, Davarzani, H. and Norrman, A., 2015, has discuss the need for warehousing as below;

Warehousing is one function in the logistics process that most products are flow through. As competition for many markets is spelled as “faster,” “cheaper,” “broader assortment,” “more customized,” “home delivery,” etc. and markets at the same time are becoming more global, those requirements will also affect a logistics function like warehousing. Furthermore, different requirements from different sales channels, from different production philosophies (e.g., lean or agile);, different managerial perspectives (e.g., economic efficiency, green performance and social responsibility);, and the choice between old and new technologies [e.g., radio frequency identification device (RFID) and bar coding, different degrees of automation, decentralized control, cyber-physical systems, voice picking, warehouse management systems (WMS), etc.] impose challenges and opportunities for the warehousing operations.

According to da Cunha Reis, A., et. al. (2017), warehouses are seen as an opportunity to improve operation optimization and information flows, to reduce inventory levels and to enable more agile

distribution. The successful performance of a warehouse depends on appropriate strategy, layout, warehouse operations and material handling systems.

Faber, N.N., 2015, Value-added services by warehousing: Today's warehouses are expected to be more responsive to customer demands than ever before, for example, by providing value-added services such as last minute customization, small-scale assembly, labeling, kitting, and special packaging. With the growing success of e-commerce, warehouses increasingly have to process large numbers of small orders, which have to pick within tight time windows, which further complicates warehouse processes. In response to these developments and in particular to supply chain management initiatives, companies have either concentrated their warehouse operations in one or a few large centralized warehouse(s) with high throughputs, or have decided to outsource their warehouse activities to emergent specialized logistics companies, logistics service providers (LSPs).

All in all, warehouses are facing ever-increasing demands with respect to costs, productivity, and customer service as they become vital for the success of many companies, and simultaneously warehouse processes are becoming more complex due to developments such as value added services, e-commerce, and up-scaling warehouses. Consequently, planning and controlling warehouse processes, also referred to as warehouse management, have become a challenging task. Warehouse management operates within a framework, which is defined by decisions on warehouse location and facility design (size, handling systems and layout). Research is needed on how to structure warehouse management in order to achieve high performance and to identify related information requirements.

2.1.3 Efficiency and Effectiveness of Warehousing

Explained by Kaur, G. and Batra, N.K., 2015, the efficient management of warehouses helps to optimize the existing production and distribution processes and greatly assist in the goal of cost reduction and service enhancement. The warehouse and distribution centers are very important nodes in a supply chain network. They perform valuable functions that support the movement of materials, storing goods, processing products, de-aggregating vehicle loads and creating stock keeping unit assortments and assembling shipments

Three factors has been found to affect efficiency and effectiveness of the warehouse operations with respect to fast moving consumer goods industry such as simplicity/complexity of the warehouse management systems, product slotting/locating techniques and layout planning of the warehouse

The performance of the warehouse is judged by its operations such as timely customer service, keeping track of items, lower operating costs, damage free delivery and higher inventory turnover.

Material handling function also has an effect on the efficiency and the speed of the warehousing operations. The materials, spare and finished goods can be moved in and out of warehouse manually or using various kinds of equipment and systems. The efficiency of material handling

process adds to the performance level of the warehouse. The reduction of labor and enhancement of productivity could be achieved by using emerging technologies in material handling. The sophisticated systems such as robotics, conveyer belt, fork lift, cranes, electric bike etc could be used in warehouses and performing other functions for speedy material movement.

2.1.4 Warehouse Management System (WMS)

Ramaa, A. (2012), a **warehouse management system or WMS** primarily aims to control the movement and storage of materials within a warehouse and process the associated transactions, including shipping, receiving, put-away and picking. A warehouse management system (WMS) is a database driven computer application, to improve the efficiency of the warehouse by directing cutaways and to maintain accurate inventory by recording warehouse transactions. The systems also direct and optimize stock based on real-time information about the status of bin utilization. It often utilize Auto ID Data Capture (AIDC) technology, such as barcode scanners, mobile computers, wireless LANs (Local Area Network) and potentially Radio-frequency identification (RFID) to efficiently monitor the flow of products. Once data has collected, there is either batch synchronization with, or a real-time wireless transmission to a central database. The database can then provide useful reports about the status of goods in the warehouse.

Atieh, A.M. et. al. (2015), warehousing management system (WMS) is a necessary approach for every warehouse. An automated warehousing system provides less effort, more efficient, and reliable results compared to manual handled system. WMS is designed to help reduce costs through effective warehouse processes. The WMS granule provides functionality for handling advanced warehouse processes that involve so called zones and bins, directed picks and put-away., as well as automated data capture systems. To perform directed pick and put away, it is necessary to divide the warehouse into zones and bins. A zone could be a receiving zone or a stocking zone, and each zone can consist of one or several bins. The need for automating the warehouse arises from the fact that manual handling may cause human errors in which may affect the warehouse utilization. In order to automate the process, a thorough study on the system should conducted.

2.1.5 Warehouse Management Vs Inventory Management

SAP AG (April 2001), although it is possible for you to manage warehouse inventories using the Inventory Management (IM) application component, the primary difference between managing stocks in WM and in IM is that in IM, the system can only display the total stock of a material for a storage location. If a warehouse is small and easily manageable, then the use of IM may be sufficient to fulfill your needs. WM, on the other hand, offers the capability to manage stock quantities in each individual storage bin in highly complex storage facilities. This means that, with WM, you can optimize the use of all storage bins, mix pallets belonging to several owners in

randomly slotted warehouses and know exactly where a particular material is located in the warehousing complex at all times.

2.1.6 Challenges of Warehousing Activities

In order to present, clearly the challenges of warehousing activities, articles of different authors are presented one by one as below:

According to Christopher Moore (2016), the top five warehouse management problems are:

- Inaccurate receipts and purchase orders
- Lack of communication between employees
- Lack of cooperation between departments
- Time management
- Warehouse space and organization

When there is a breakdown in any of these points, inventory can be misplaced or lost altogether, as a direct result, customer satisfaction and trust will be compromised. There must be checkpoints, checklists, processes and rules in place in the warehouse to ensure the right product is coming in, stored in the right spot, pulled for the right customer and shipped to the right address.

Marcus Warner (2017), has discuss and list 7 warehousing problems as below:

- ✓ **Narrow aisles** can make navigation with equipment hard, and can potentially slow down operations. Not to mention the occasional damage from bumping into things.
- ✓ **High Elevation** Some warehouses require workers to put themselves in high-elevation situations, creating a need for stable, portable work platforms.
- ✓ **Higher Reach** When it comes to picking orders, you need more vertical reach.
- ✓ **Labor Intensive;** employees are always needed to transport items from Point A to Point B, which takes up valuable time that could be spent on other tasks.
- ✓ **Battery Change-** if your warehouse is busy. Changing and maintaining the batteries for your electric forklifts and other materials, handling equipment is becoming a pain.
- ✓ **Costly Refueling** you are concerned that you are spending too much time and money on just keeping your vehicles charged and fueled.
- ✓ **Leveraging Automation** Even though your operations have been running smoothly, you are concerned that you are not taking full advantage of automation opportunities to increase efficiency.

As posted on the **adaptalift Group website on** (August 06, 2013):

In today's materials handling industry, it is fundamental for companies to ensure the smooth running of their warehouses. Efficiency and organization within every aspect of the business is essential in order to gain a competitive advantage. The most common warehousing issues are discussed below:

Insufficient Warehouse Space: Providing an adequate amount of storage space and the correct planning of a warehouse is vital for the smooth running of a business. Disorganized warehouse spaces can cause unnecessary labor costs and the incorrect use of storage systems and racking arrangements result in many companies finding their warehouse shelves full, with no space to receive new inventory.

Slow Picking Processes and Stock Discrepancies: every minute that is spent on each inventory item can add up over the day, therefore having a major impact on operating costs. When inventory location is not organized and easily available, pickers will take longer to find items that need to be shipped. This can ultimately lead to a backup in labor.

Warehouse Slotting Problems: forklift operators often make multiple trips around the warehouse searching for slots in the storage racking for new inventory. This results in them slotting the pallet of inventory wherever they find an empty space. As the pallet family and size is not carefully considered in its allocation, you will eventually find a large amount of inventory slotted in an unorganized manner, with no room to reorganize due to limited warehouse space.

Ramaa.A, et. al. (2012), warehouses have been going through **various challenges** such as – supply chains are becoming more integrated and shorter, globalized operation, customers are more demanding and technology changes are occurring rapidly. In order to cope up with these challenges organizations are adopting innovative approaches such as warehouse management system.

Discussed in the **Common Challenges in Warehouse Management**, Posted at *warehousing Solutions*;

- **Managing Warehouse Space/Layout:** - Used in the best possible way, it will ensure that you can do more with all of the space you have on-hand. This means enhancing storage systems, as well as racking and pallet patterns. Make sure that receiving areas have the necessary space for speedy operations. Create pre-decided pick paths to move things through your warehouse more effectively.
- **Communication:** - lack of communication is a huge challenge within the logistical chain. Effective communication maximizes productivity. If everyone involved in making supply chain decisions is on the same page, a warehouse is going to be able to plan and execute shipments that much more quickly. This can be achieved through using the right applications, software, and other tools.
- **Time Management:** - this is an important consideration that comes down to having procedures ready to fulfill orders and ship them out. Order picking should not take so much time that it costs your business money. To effectively manage time, guesswork in the location of stock must be eliminated.

- **Inventory Accuracy/Tracking:** - Stock should always be stored in its correct place, in properly identified areas. A breakdown in accuracy or tracking of goods can be traced to several areas. There might be incorrect receipts and purchase orders. If information is recorded via manual tracking system, it should always be verified for accuracy. Your warehouse staff must also be properly trained in order to handle errors from other departments.
- **Customer Expectations:** - customers have learned to expect more than ever before, including shorter shipping times, perfect order accuracy, and amazing customer service. When you get specific requests from customers, you must give them exactly what they want. To do otherwise means risking disaster. An effective warehouse is going to account for individual customer preferences by automatically creating the right type of labels.
- **Redundant Processes:** - repeating the same processes ends up increasing your labor costs. This can all be eliminated by using barcode technology, which is found in warehouses that use modern automated systems. Cut down on the time it takes to fulfill an order by using a system to manage purchase orders that gives you all the relevant information (pick list, SKU number, and location) to increase efficiency.
- **Product Diversification:** - what are your most popular products? Generally, every business operates on the 80/20 rule where 20 percent of your inventory generates 80 percent of your sales. Look closely at the other 20 percent of products to see what else customers are demanding. Being able to continually meet their needs, while eliminating stock that is not in demand, will make your business a winner each and every time.
- **Product Picking Optimization:** - to speed up the process of picking orders, avoid manually entering SKU's, and instead, use a scanner or image capture on your smartphone or tablet in order to get the most up-to-date reading of your inventory. Automated processes and set picking routes will allow you to **optimize your warehouse management**. Also, consider changing the aisle/walkway width based on your forklift configuration.
- **Inaccurate Purchase Orders:** - it is critical that invoices match what is received on purchase orders. A business that is growing can have many things happening that are unseen or not scrutinized enough because purchase orders will be larger and more complex. Having accurate information helps remedy issues much more easily.
- **Handling Product Damages:** - in warehousing operations, whenever items are broken, it becomes expensive. While some damage is inevitable, it can be greatly reduced through proper warehouse management. Always look for pallets that have broken planks, stringers, or nails because they can break. Pallets also have to be stacked, loaded and wrapped correctly. An efficient warehouse is going to be properly lit, clean, and one that avoids overloading shelves and racks. Rack safety netting, pallet rack column protectors, accumulation conveyors, low clearance warning bars, and steel guarding are all also important to install to protect both product and people.

- **Managing Fluctuations in Demand:** - seasonality, changes in the economy, weather, and many other factors play a role in volatility of demand. For example, a global financial crisis will result in decreased consumer confidence, and therefore, more products sitting in warehouses. Warehouses must always use timely and accurate information in order to forecast demand.
- **Globalization:** - the net result of globalization has been a massive influx of competition from abroad. Products from certain countries do not always provide the same level of workmanship that you might take personal pride in offering, but their lower production costs can kill your business.

2.1.7 Types of Warehouses:

Sneha Vishnu More et. al. (2016) explained about types of warehouse in detail as follows:

Private Warehouses - The warehouses, which are owned and managed by the manufacturers or traders to store, exclusively, their own stock of goods are known as private warehouses. Generally, these warehouses are constructed by the farmers near their fields, by wholesalers and retailers near their business centers and by manufacturers near their factories. The design and the facilities provided therein are according to the nature of products to be stored.

Public Warehouses - The warehouses that are run to store goods of the general public are known as public warehouses. Anyone can store his goods in these warehouses on payment of rent. An individual, a partnership firm or a company may own these warehouses. To start such warehouses a license from the government is required. The government also regulates the functions and operations of these warehouses. Mostly these warehouses are used by manufacturers, wholesalers, exporters, importers, government agencies, etc.

Government Warehouses - These warehouses are owned, managed and controlled by central or state governments or public corporations or local authorities. Both government and private enterprises may use these warehouses to store their goods.

Discussed by Asmelash (2017), different types of warehouses as below:

Automated Warehouse: - with advances in computer and robotics technology, many warehouses now have automated capabilities. The level of automation ranges from a small conveyor belt transporting products in a small area all the way up to a fully automated facility where only a few people are needed to handle storage activity for thousands of pounds/kilograms of product. In fact, many warehouses use machines to handle nearly all physical distribution activities such as moving product-filled pallets (i.e., platforms that hold large amounts of product) around buildings that may be several stories tall and the length of two or more football fields.

Climate-Controlled Warehouse: - Warehouses handle storage of many types of products including those that need special handling conditions such as freezers for storing frozen products,

humidity-controlled environments for delicate products, such as produce or flowers, and dirt-free facilities for handling highly sensitive computer products.

Distribution Center: - There are some warehouses where product storage is considered a very temporary activity. These warehouses serve as points in the distribution system at which products are received from many suppliers and quickly shipped out to many customers. In some cases, such as with distribution centers handling perishable food (e.g., produce), most of the product enters in the early morning and is distributed by the end of the day.

2.1.8 Warehousing Practices/Activities

In order to grasp detailed knowledge, articles of different authors will present in detailed step by step as follows:

➤ Discussed by Habazin, J., et. al (2016)

Basic warehouse processes are the following: receiving, put-away, internal replenishment, order picking, accumulating and sorting, packing, cross-docking, dispatch and shipping. Receipt and storage are considered inbound processes, while others are considered outbound processes.

In various warehouses, goods, which usually enter as *units of a larger scale*, go through reorganization submitted to repackaging that results with units of a smaller scale. Large packages of items, which arrive in a warehouse as pallet quantities, are broken down into smaller quantities throughout order picking, packing and finally distribution. In this kind of warehouses, operations, which are done daily, are tied with human performance and greatly depend on it. The smaller the handling unit, the greater the handling cost. Smaller units require more labor and much more processing to be delivered. Precisely, pallet manipulation at a warehouse directly influences the time used for picking. This results with accurately collected units, which are then forwarded to the next process. The warehousing activities discussed in detail by Habazin presented below.

Receiving

First in line of warehouse processes is receiving of goods. This process does not take as much time as picking, which is shown onwards, but it is as relevant as any. Especially, if incorrect put-away occurs and causes errors in further processing. The process of receiving can begin with the notice of the goods arrival. This permits the warehouse to prepare, to schedule inbound operations so there are no uncoordinated events. With arrival, unloading begins after which units are put away with accurate documenting before.

If there is necessity for labelling, this process occurs before goods are put away. In every warehouse a place must be preordained for these actions. If there is no such place, but it is known that some of the arriving products must be labelled, a temporary place must be determined. Products typically arrive in a warehouse in larger units on pallets. If pallets are not arranged homogeneously they have to be broken down into separate cartons. It is necessary for receiving

that the method of delivery is compatible with the unloading equipment in the receiving warehouse. Otherwise, the need for additional equipment arises. Altogether, the process of **receiving accounts for only 10% of the operating costs** in a typical warehouse, but it is supposed to be reduced by the use of Radio-frequency Identification (RFID).

Put-away

Every Stock Keeping Unit (SKU) in a warehouse has its own location, determined in advance, whether the positioning is **predefined or random**. Precisely, there are several storage policies. A predefined storage policy prescribes a particular location for SKU to be stored, but random policy leaves the decision to the operator. Both of these storage policies can be used in some warehouses. Furthermore, a **class-based storage** system allocates zones to specific product which is based upon products turnover rate as **ABC zoning**.

Another storage policy includes **correlated storage of family groups**, that is, storing products at nearby positions if they are often required simultaneously.

This step in the process is of large importance. It can reduce time defined for picking and in the end decrease total duration of outbound processes. For put-away the inventory management needs to be correct and up to date. It must be known at all times what storage locations are available, how much weight they can bear, etc. In this case, the secondary inventory management must be managed, not of products, but of locations in order to know everything mentioned. After the product is placed on its location, the storage location should also be scanned to record where the unit has been placed. This kind of information will be of use when it is needed to pick orders.

There are several options for inbound SKU. First is inbound into high-density storage like drive-in racking, next is inbound into standard wide aisle reserve slots such as upper levels. The last is inbound into pick slots which are ground-level wide aisle racking. The latter is represented in a small amount of products with no current stock.

Put-away process may require a large amount of work because SKUs must be moved over significant distances to their storage position. Put-away accounts for approximately 15% of warehouse operating costs.

Order picking

The process of order picking in a warehouse involves selecting and gathering specified amount of right SKUs in accordance with the order and it is composed of lifting, moving, picking, putting, packing, and other related activities.

During the order picking process, the orders are generally assigned to several pickers. However, in order to prevent control problems, the total pick area is often divided into picking zones. After this, the zones are generally served by different pickers, through the zoning policy. Orders are picked one by one or in batches in a predetermined order. Further, order picking can be manual or automated. In **manual order picking**, the picker gathers units from their locations and then transports them to a packing area. In the case of **automated picking**, that is, automated storage

and retrieval systems, system retrieves one or more unit loads and place them to a picking station. After that, the picker takes products on orders, and the remaining items on the unit loads are transferred to storage again.

Packing

The process of packing can be demanding because every previously picked unit is generally handled separately. At this time, the process of checking the picked order is also required and convenient and there is less chance for errors to occur. **Order accuracy** is a crucial measure of service to a customer. If inaccurate orders make it to the customer, there will appear new expenses such as **returns**, which are expensive to handle. This process must be dealt with caution and awareness. The basic task of packing is to ***prepare goods for further transportation*** by any carrier in a way that does not affect shipping costs in a negative manner. If there is a complication with picking orders, there will be complication with packing. Precisely, if all items from the order are not positioned at the same time at a packing area, it is likely that the shipment will be delayed or/and costs will increase. The shipment can be sent partially resulting in higher costs.

Shipping

The process of shipping is the final process amongst warehouse processes. After packing and preparing units for shipping (consolidation), the first step is loading into transportation vehicles with the assumption that the shipping methods have been previously arranged. This process is not as complex and generally includes less labor than mentioned before, although there can be some additional activities if the product is being staged before being loaded [1]. Also outbound zone can include control, which will often occupy at least one warehouse worker to provide the activity. Depending on the warehouse information system, control can be done manually or using a scanner.

- Van den Berg, J.P **et. al** (1999) has explain about warehousing activities as follows:

Goods are delivered by trucks, which are unloaded at the **receiving docks**. Here quantities are verified and random quality checks are performed on the delivered loads. Subsequently, the loads are prepared for **transportation to the storage area**. This means that a label is attached to the load, e.g., a bar code or a magnetic label. If the storage modules (e.g., pallets, totes or cartons) for internal use differ from the incoming storage modules, then the loads must reassembled. After this, the loads are transported to a location within the **storage area**.

Subsequently, whenever a product is requested, it must be retrieved from storage. This process is called **order picking**. An order lists the products and quantities requested by a customer or by a production/assembly workstation, in the case of a distribution center or a production warehouse, respectively. When an order contains multiple SKUs, these must be accumulated and sorted before being transported to the shipping area or to the production door. Accumulation and sorting may be performed either during or after the order-picking process.

- Discussed by Nynke F. (2015), warehousing practice

Receiving

The receiving activity includes unloading products from the transport carrier at a receiving dock, identifying the products, verifying quantities, and (randomly) checking the quality of the products.

Put-Away

The direct put-away activity involves transferring of (if applicable repacked, i.e., from pallets to cases) incoming products to a location within the storage area. A product kept in stock is also called a **stock keeping unit (SKU)**.

Each product or SKU has an identification code that allows it to be tracked for inventory purposes. During the course of a year, the entire inventory of a product or SKU can be replenished multiple times. The storage area of a warehouse may consist of two parts:

- A **reserve area**, where products are stored in the most economical way, and;
- A **forward area** where products are stored for easy retrieval.

A forward storage area is replenished from a reserve storage area. A wide range of systems can be used to store products, varying from shelf racks to automated storage systems.

Order picking

Order picking (*pallet/case/broken case*) involves obtaining the products requested by a customer order from the storage area. Customer orders consist of order lines, each line for a unique SKU in a certain quantity.

- When the requested quantity of a SKU is less than the quantity contained within a case for that SKU, it is considered **broken case picking**.
- If the order requests a quantity of a SKU which is equal to or multiple of the quantity within a case, it is **considered (full) case picking**.
- **Pallet picking** involves retrieving full pallet loads for customers requesting full pallet quantities.

Picking can either be manually or (partly) automated, and it is generally recognized as the most expensive warehouse operation, because it tends to be very labor intensive or very capital intensive. When picking the products, an order picker may pick one customer order at a time (**single order picking**), several customer orders at once (**batch picking**), or parts of several customer orders (**zone-batch picking**).

Accumulation/Sortation

The *accumulation/sortation* of picked products into customer orders is a necessary activity if the orders are picked in batches or come from different storage areas. *Value adding services*, such as labeling, sampling, kitting, (assembling sets of different products into kits), testing, and repacking may be offered to customize products to customer requirements. The *packing* activity includes checking, packing, and preparing a customer order for shipping. The ***cross-docking*** activity bypasses the storage and picking activities by transferring incoming products directly from the receiving docks to the shipping docks.

Shipping

The *shipping* activity involves sorting and staging customer orders in a designated dock door area ready to be loaded to the transport carrier and shipped to the customer.

- Michał, K., et. al (2017), discussed Warehouse process in detail as shown below:

Flow of materials through all kinds of logistics facilities is a strictly defined sequence of transformations performed on these materials. These transformations may involve transformations of **time, place or form** of handled materials. In the first case, it concerns buffering/protecting and storage of materials in logistic facilities. ***Place transformation*** is understood as a movement and transport of materials within warehouse. However, during the ***form transformation***, materials are processed due to their physical form, i.e., co-packed, consolidated, unconsolidated, assembled, packaged, etc.

Warehouse process is a set of actions which are associated with receiving, storage, picking and shipping of material goods, in a suitably adapted places for this purpose, and under certain organizational and technological conditions. Therefore it can be concluded that warehouse process includes such sub-processes as receiving, storage, picking and shipping. Nevertheless, it is a very general approach, and warehouse process may take many different forms, and include multiple sub-components. Selection and appropriate connection of this process elements (sub- processes) is determined by functions and tasks of logistics facility. In fact, production warehouses, distribution warehouses or cross docking warehouses usually perform variety kinds of transformations.

Table 2.1 The most common sub-processes and activities included in warehouse process

Sub-process	Activity	Transformation
Receiving	Unloading	Place
	Cargo identification and control	Time
	Buffering	Time
Put-away	Transport to storage area	Place
	Placing unit loads in storage location	Place

Storage	Put items on specific locator	Time
Replenishment	Transport to order picking area	Place
	Transformation of unit loads to form offered in order picking	Form
	Replenishment to pick locations	Place
	Placing remaining unit loads in storage location	Place
	Placing in selected location empty bins (pallets)	Place
Order picking	Replenishment to pick locations	Place
	Preparing items for picking	Form
	Picking items	Place
	Sorting, packing, preparing picked unit loads for transport	Form
	Transport of prepared unit loads to selected place in order picking area	Place
	Transport of prepared unit loads to buffer	Place
Co-packing	Transport of unit loads to co-packing stations	Place
	Preparing items for co-packing	Form
	Creation new SKU (e.g. promotional SKU sets, combined SKU)	Form
	Packaging, labelling, tagging, foiling, etc.	Form
	Transport of prepared unit loads to selected place of buffer	Place
Consolidation, deconsolidation, sortation	—	form (quantity)
Shipping	Buffering/protecting	Time
	Cargo identification and control	Time
	Loading	Place
Material return policy, utilization	Cargo identification and control	Time
	Buffering	Time
	Loading	Place
Cross docking	Transport from input buffer to output buffer	Place

Source: Michał K., Marianna Jacyna, Konrad Lewczuk, Mariusz Wasiak 2017. The Issues of Selection Warehouse Process Strategies.

Hence, as we can see from the above discussions and list of activities presented by the different authors, we can understand the activities are presented & considered differently. Thus, in order to be specific, restricted and have comment understanding, the researcher will consider the main warehousing practices with their sub practices presented under the conceptual framework.

2.1.9 Cross – Docking

Cross docking is the process of transferring goods directly from the receiving to the expedition areas, which requires a high level of coordination to ensure that these operations can be problem free. An operational strategy can reduce costs and improve warehouse efficiency by reducing inbound materials' movement. The obvious candidates for cross docking are those products that

have already been ordered by the final customer. Other possibilities are products that require prompt delivery or high-demand products with predictable demand (**Augusto et. al. 2017**).

- **Cross – Docking** discussed by Ain, K., 2014, in detail as follows:

Cross-docking center – Focus is only on receiving and shipping activities eliminating storage and order picking activities. Goods are transferred directly from inbound to outbound docks with little or no storage. It can be named terminal, hub, sorting center etc.

Benefits

- ✚ Combining short delivery times (high customer service level) with low costs
- ✚ Minimization of warehousing and inventory carrying costs
- ✚ Economies of scale – instead of many LTL shipments fewer number of bigger (FTL) shipments are transported (lower transportation cost per freight unit)

Cross-docking preconditions

- ✚ The arriving times, quantities, articles and further destinations of inbound products should be known before receiving the shipments
- ✚ Inbound shipments should arrive by strict delivery schedule which in turn is tightly linked to outbound transport schedules
- ✚ Customers should be ready to receive goods immediately
- ✚ Implementation of more large-scale and complex cross

Cross-docking variations by complexity

One touch – products are touched only once as they are received and loaded outbound without being placed on the warehouse dock. This is the highest velocity "load as you go" and the focus is on cross-dock productivity

Two-touch - products are received and staged on the dock then loaded outbound without being put into storage. The focus is on outbound load optimization and gaining transport efficiencies

Multiple-touch – products are received and staged on the dock, then reconfigured for shipment and loaded outbound directly from the warehouse dock. This method offers greatest opportunity for customization and end-user value adding. Suppliers can sort received products by articles or not, they can be labelled for end customers or not. In addition, outbound shipments can be combined from incoming shipments and from stock.

2.2 Empirical Review

Previous studies and researches in the area explained results they found from different perspective/dimensions. Some of the researches finding related to warehousing activities are summarized as follows

Ms. Sneha Vishnu More (August 2016), find out in her study of efficiency and Effectiveness of Warehouse Management that, as a result of global competition and supply chain concepts, including a focus on integral inventory control, warehousing has become a critical activity in the supply chain to outperform competitors on customer service, lead-times, and costs. Timely and accurate information about products, resources and processes are essential to operationalize a planning and control structure that effectively and efficiently achieves the high performance of warehouse operations required in today's marketplace. The author also showed that warehouse complexity affects the planning and control structure through the comprehensiveness of the work to be done. In highly complex warehouses, feeding organizational actors with the right type of information and knowledge at the right time is difficult. Nonetheless, a complex warehousing operation requires a control structure that has a great deal of information, data, and knowledge about products, processes, customers, and resources readily available. Thus, Optimization strategies are utilized to position product availability and delivery as a competitive advantage while also optimizing the cost trade-offs associated with transportation, facilities, equipment, workforce, and other critical cost variables. Distribution center also facilitate time utility by storing product until it is demanded.

Shah, B. and Khanzode, V., 2017, identifies the tradeoffs between picking efficiency and order responsiveness could be studied with different stochastic issues (worker overtime, earliness, tardiness, penalty, order due date, costs, etc). In addition, many studies have been found solely for picking efficiency but the integrated model including responsiveness may provide better results.

Nur Hazwani KARIM et. al. (2018) show their result of on failure factors of Warehouse productivity as; to sustain economic development, the warehousing industry must be focused on positive action that should be supported by everyone at all levels of government, private and non-profit organizations as well as the people. Therefore, suggestions and recommendations on warehouse productivity performance will directly influence development to a higher level and boost competitiveness in the logistics service sector. However, these warehousing and storage strategies will be beneficial when everyone participates consistently, endeavors to innovate and improve productivity, and increases the efficiency of warehousing operations.

Saleheen, F., et. al (2014), examined warehouse Health, Safety and Environment One of the most important compliances in warehouse operations is Health, Safety and Environment. The authors also support their idea as the United States Department of Labor states, OSHA (Occupational Safety & Health Administration) The Occupational Safety and Health Act of 1970 (OSH Act) was created to avert employees from serious injury at work or even unnatural death. This law enforces, safe work environment, conducts training, and helps employees to know about their rights and

responsibilities. In addition to these, employers should also have ethical practice and must have certain compliances. Retail warehouse operation is mostly labor intensive. Therefore, a company must maintain all code of conducts imposed by the international and national bodies such as (ILO) International Labor Standards and others.

In addition, the authors also present ***Administrative and Other Factors*** that improves employee's satisfaction & initiative; there are many administrative factors, which should be handled with high level of efficiency and management skills. These also require extensive knowledge in Industrial Relations such as labor unrest, grievance, working at late hour, productivity of an employee, salary and wages, multitasking ability, theft and pilferage, collective bargaining, ability to meet emergency support with limited resource; a pre-requisite for smooth warehouse operation

Habazin J, et. al. (2016) provide their recommendation in the study of Order Picking process in warehouses" that; every process, from receiving until shipping is as well vital, while order picking is also the one that accounts for the majority of warehouse operating costs and requires the most performing time. Once the picker starts gathering products from orders, they walk, move, lift, put, pack and do other related works, which take time and in that way become costs. To perform a suggestion of a solution, the order picking process has been analyzed, regarding detailed process flow and time dedicated for its performance. In accordance to its status, it has possibility to be reduced by different strategies. Companies willing to optimize their processes tend to measure them but also tend to have objective view on the core process structure. To be open to change and to be continuous in evaluation is of crucial matter for any process optimization.

In addition, the authors also suggest that, after a detailed analysis, observed on broad data that include seasonality, KPIs, types of goods, performance and the structure of any kind of warehouse process, it can be well modified. By optimizing order picking as proposed, it is considered that the processes would run more efficiently. The optimization includes predefining WMS data and reorganization of dedicated storage locations directly influencing the time consuming order picking, which is presented with the proposed changes in the observed company's warehouse layout. The evaluation of effectiveness of a certain process, such as order picking, should be constantly supervised in the form of analysis and chronographically measured to be controlled and reduced.

Atieh, A.M, et. al (2015), examines the main purpose of automating the warehouse system is to control the movement and storage of the products, together with the benefit of enhanced security and quicker handling. The newly created software upgraded the capabilities of the warehouse management system. Currently, the stored data can be organized according to serial number, activated easily assuring the FIFO concept, and handed to the dealers accurately with the least amount of possible errors.

Van den Berg, J.P., (2012), reflect in his study of Highly Competitive Warehouse Management that; excellent warehouse performance helps companies to create competitive advantage by reducing logistics costs, by increasing internal and external customer service levels, and by aligning business activities. Research shows that best-in-class companies realize competitive

customer service levels while achieving logistics costs advantages of 20 to 30 percent over their laggard peers. Moreover, these companies are financially more successful.

Challenges of Warehousing Activities

Yericho et. al (2015), illustrates warehousing related challenges as shown below:

Receiving Related Challenge: in this stage warehouse has problems that contribute to stock inaccuracy: miscount due to human error, miswritten, misread, and mixed up goods (when there are no regulations about product placement in this section and this can cause goods to get mixed up and confuse the employee during the recording process causing inaccurate stock data).

Put-away related challenge: The problem occurring in this section is the goods arrangement and access to storage. Even though employees have already put the same product within the same goods type, this is not enough. There is another consideration for goods placement besides product type such as **order frequency** arranged goods from the highest demand/sales to the lowest. There will also be easily accessed and controlled means that the goods have to be put at the place where the employee can take the goods as soon as an order comes in and easy to notice whenever something happens to the goods such as out of stock or missing goods.

Storage Access Related Challenge: one of the problems within this stage that contributes to stock inaccuracy is due to the **uncontrolled storage access**. There are two types of storage access **authorized and unauthorized**. Employees need to do order picking having the order bill authorized by Supervisor then entering storage to do the order picking process, and the employee with unknown intention and just enter the storage unauthorized. This happened because the company's regulations before order picking process occurring in the storage section while issuing no regulations about the storage access for other employees and no control over the storage access. In addition, there may be insufficient and/or inappropriate storage area,

Order Picking Related Challenge: the problem identified during order picking are; the higher process time of certain goods, difficulties to access the goods the movement path blocking the path. The process time would be affected by the goods placement. The goods placement affected the picking process by causing the employee to have difficulties to access the goods. Difficult access is when employee has to do the extra work to take the needed goods to go through by moving some of the blocking the path, then take the moved goods back to its place.

Shipping Related Challenge: Problem in this section is the same problem in continuous workflow, delay in the predecessor activity causes another delay in the next process, continue and accumulate affecting the process output as shipment delay. However the delay in the predecessor process barely affecting the work in this section.

Asmelash Teka (2017) has concluded the result he found in his study of "ASSESSMENT OF WAREHOUSING PRACTICES" as follows:

There were several major challenges in warehousing practices of the company he studied such as; Shortage of Warehouse Space (Low Warehouse Capacity), Absence of Computerized Warehouse Management System, Lack of Training Availability, Shortage of Educated Personnel's, Nonexistence of Safety Procedures, Absence of Operation Manual, etc. In addition, Asmelash also revealed that, warehouse management theories and practices are not given attention by business managers. Still the company is doing business in long-established traditions even there is no procedures and manual to perform each warehouse activity and their information sharing practices and internal operation flexibility to address customer's demand is not satisfactory.

Asmelash explained the result of his assessment of each warehousing activities of the company as below

- ✚ **Receiving activity;** is exposed for different challenges and lower efforts have been made to enhance its receiving activity. This implies the fact that the attempts made by the company are not as such substantial in protecting accidents in the warehouse at the time of receiving and they are in a poor position regarding inspecting received materials on the reasonable time as well as in minimizing loss by inspecting items properly.
- ✚ The finding also reflects that there is moderate emphasis given put-away activity in the company and to increase its operation complexity; the company must use modern material handling tools.
- ✚ **Storage activity;** as moderate or a little bit above, as in the case of their evaluation regarding the design of the warehouse to access items, warehouse spaces availability in reducing damage of items and convenient of the warehouse spaces to load and unload item and the design of the warehouse (aisles and layout) to access item whereas regarding insufficient warehouse space between the stored items, and utilizes warehouse spaces properly is a little bit lower effort is exerted.
- ✚ **Order-picking** activity of the company shows that lower efforts have been made. This implies the fact that the attempts made by the company are not as such substantial.
- ✚ In addition, the research signifies that respondents are rating the case company shipping activity as moderate or a little bit above.

As we can see from the above reviews, little consideration or the companies give emphasis to warehousing activities, moreover most of the studies are focused on areas other than specific to warehousing practice/activity and challenges, so the researcher takes this as a gap. However, the researcher considers this study will add to the literature and can be used as reference for other researchers on similar problems.

Furthermore, in the literature the number & type of main warehousing activities are not similar which ranges from 4 – 10, in this study 5 main warehousing activities will be considered in order to be specific & organized, the other activities are to be considered as sub activities under these main activities.

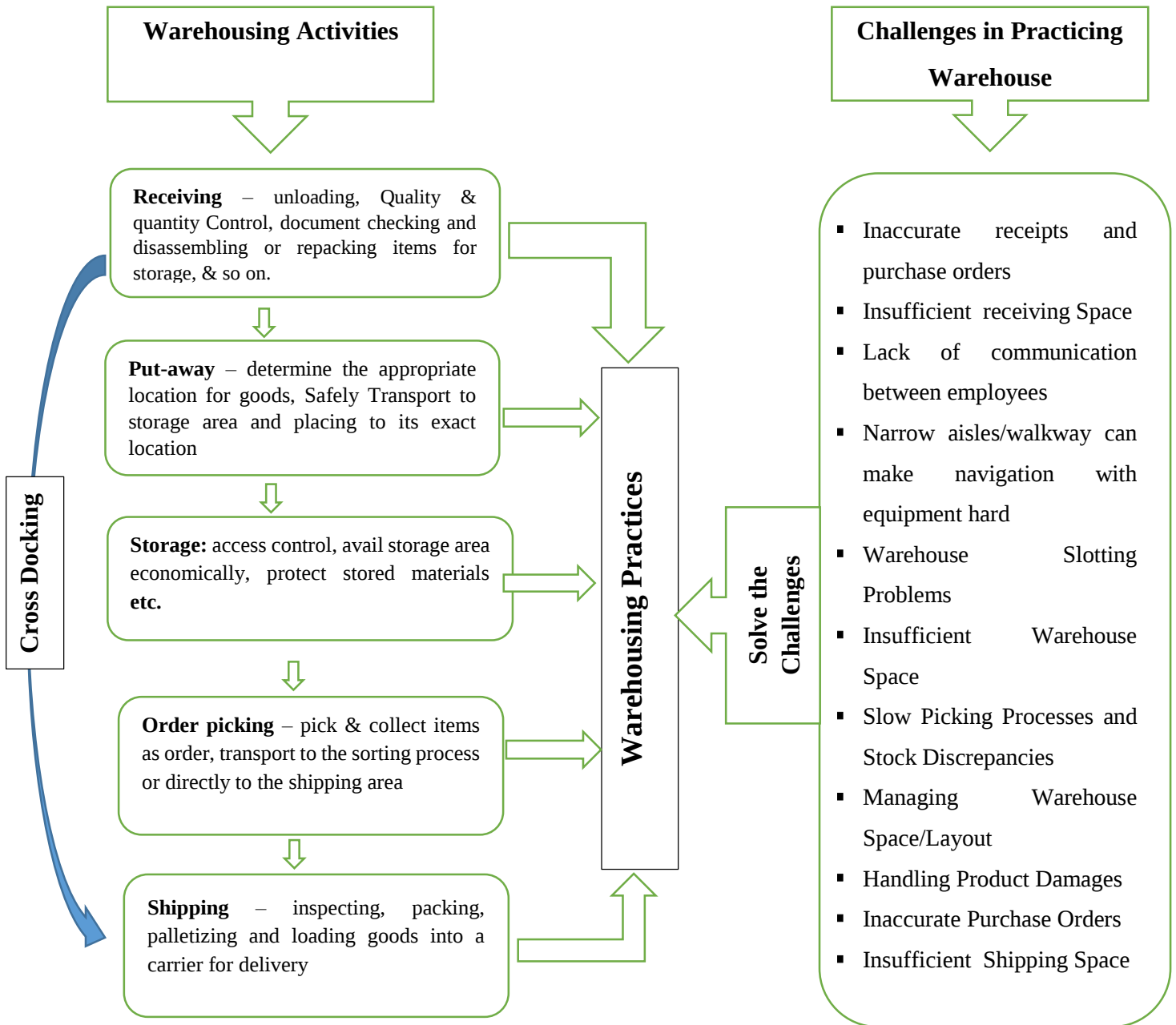
2.3 Conceptual Framework

The framework, which is developed for this study is formulated based on concepts identified in the literature review. In this study, the objective will be to assess the warehousing practices and challenges of ethio telecom with a focus on five major warehousing activities. Furthermore, it include also the concept of **Cross docking** which is the process of transferring goods directly from the receiving to order fulfillment. Here below the 5 main warehousing activities:

- **Receiving** – unloading, checking quality and quantity, and disassembling or repacking items for storage
- **Put-away** – determine the appropriate location for goods, Transport to storage area and placing unit loads in storage location.
- **Storage:** is the physical containment of merchandise while it is awaiting a demand. The storage area may consist two parts: **A reserve area**, where products are stored in the most economical way and a **forward area** where products are stored for easy retrieval.
- **Order picking** – retrieving items from their storage locations and transporting them either to a sorting process or straight to the shipping area
- **Shipping** – inspecting, packing, palletizing and loading goods into a carrier for delivery

There are challenges in performing the warehousing activities that hinder the function from smooth processing. Some of the warehousing related challenges, which are gathered from the literature, are listed below:

- Inaccurate receipts and purchase orders
- Insufficient receiving Space
- Lack of communication between employees
- Narrow aisles/walkway can make navigation with equipment hard
- Warehouse Slotting Problems
- Insufficient Warehouse Space
- Slow Picking Processes and Stock Discrepancies
- Managing Warehouse Space/Layout
- Handling Product Damages
- Inaccurate Purchase Orders



Source:

- Prepared and created by the researcher, insight is taken from Asmelash (2017)

Chapter Three: Research Methodology

3.1 Introduction

This part of the study shows the research design and methods that are used to achieve the objectives of the research. It includes description of the study area, research approach, research design, population & sample, data source & type, data collection procedures, ethical consideration, data analysis and validity & reliability test.

3.2 Description of the Study Area

Warehousing is one of the crucial activity of logistics and its efficiency affects the overall supply chain. This study focuses on assessing ethio telecom's warehousing practice and challenges. Particularly, the study is conducted on the case company's Warehouse Section. In which currently reorganized under Supply Chain Division, in which this division is responsible in managing sourcing, inventory, overall material supply and warehousing of the company. Specifically, the study covers only Central Warehouse's (CW1, CW2, CW3, CW4, CW5, CW6, and CW7 & CW8) and Akaki Warehouse located at Addis Ababa around Akaki.

3.3 Research Approach

In this study uses mixed research approach. A **mixed methods research approach** is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative methods in a single study or a series of studies to understand a research problem. The basic assumption is that the use of both quantitative and qualitative methods, in combination, provide a better understanding of the research problem and question than either method by itself (Creswell, 2012).

Mainly data was collected using questionnaire, hence the nature of data obtained through this method are quantitative. In addition, qualitative type of data are also gathered using open ended questions from part of the questionnaire and through interview, these are going to be used in supporting & giving full meaning to data obtained by questionnaire.

3.4 Research Design

In this study uses descriptive research design to assess the challenges of warehousing practice in ethio telecom, explain/describe the current warehousing activity has, and present the potential challenges of the case company.

The major purpose of descriptive research is description of the state of affairs as it exists at present (Tewodros 2016). He also discusses that, descriptive research concerned with determining the frequency with which an event occurs or relationship between variables.

Asmelash Teka (2017) has explained that **Descriptive research** allows to assessing and describing the nature; condition and degree of the present situation of warehousing practices of a selected company.

3.5 Population and Sample

The Total Population size of this study is 79 employees, who are working on warehouse related activities at **Central Warehouse's** of ethio telecom located at Addis Ababa.

Therefore, in this study uses all the population size to collect date. Israel (2013) in Tewodros Bogale (2017) stated that, if the target population is smaller (e.g. 100 or less) census survey is very appropriate and effective since virtually all population would have to be sampled in small populations to achieve a desirable level of accuracy.

3.6 Data Sources and Types

The data type in this study are both **Primary and Secondary data types**.

Primary Data Source: were collected through different primary data collection methods like, close & open-ended questioners and semi-structured interview. All the population size were used to collect date using Questionnaire and for the data collected using interview using purposeful sampling, 8 Supervisors and 2 Managers in the central warehouses were used.

Secondary Data Source: also used to fulfil this study. The secondary data has collected from the case company's *policy, procedure, different reports*, different books, articles, journals and magazines.

3.7 Data Collection Procedures

The main data collection instruments are structured questionnaires and semi - structured interview.

-  **Questionnaire** has distributed to all the respondents and collected/picked, personally by the researcher.
-  Semi-structured **face – to – face interview** with 8 of the supervisors and 2 managers of the central warehouses were targeted. The interview has scheduled first by communicating with the interviewee's convenience time.

The main reason to use interview on the study is to obtain in-depth understanding of the issue from the highly associated and authorized personnel's on the warehouse of the company.

3.8 Ethical Consideration

This research is to be used for the fulfilment of MA in Logistics and Supply Chain Management purpose, which is totally for academic purpose, the researcher has disclose this and try to convince systematically & genuinely to the respondents of both questioner and interview. Therefore, the researcher believes that no need of overstating and understating the benefit & purpose of the research. In addition, at first the respondents has also requested for their willingness in participating, this will grant for honest cooperation and getting unbiased response. In order to secure the rights and privacy of the respondents, the researcher maintains the confidentiality of the identity of each participant.

3.9 Data Analysis

As indicated in the data collection procedure for this study, data has collected via questionnaire and interview.

Once the data have collected using questionnaire, verification has conducted and complete questionnaires identified, and then been analyzed through descriptive statistics (percentages, tables and frequencies) by Statistical Package for the Social Science (SPSS) software version 23.0.

The responses obtained from interview used to substantiate the analysis. Depending on the result of analysis, interpretations and necessary discussions have made to clarify the issue. Finally, the major findings of the study presented and recommendations are drawn.

3.10 Validity and Reliability Test

3.10.1 Validity Test

In order to assure the trustworthiness of the finding and to make the data collection instruments easily understandable by the respondents, individuals who have knowledge of the mater conducted a pre-testing of the questionnaire and who work warehouse related activity in the company; after getting their advice on points that need correction, amendment has been done. In addition, an advice also obtained from advisor & the comments has taken to correct & improve the questionnaire.

3.10.2 Reliability Test

Adane Ayalew (2017) has stated that reliability is essentially the dependability of an instrument to test what it designed to test. The appropriate test for reliability is inter-item consistency reliability, which is known popularly as the ***Cronbach's coefficient alpha***. Adane also stated that Cronbach's alpha reliability coefficient (α) normally ranges between 0 and 1. Accordingly, there is a greater internal consistency of the items if the Cronbach's alpha coefficient closes to 1.0.

George and Mallery, (2003), in Adane also states that; If “ $\alpha > 0.9$ – ‘Excellent’, $\alpha > 0.8$ – ‘Good’, $\alpha > 0.7$ – ‘Acceptable’, $\alpha > 0.6$ – ‘Questionable’, $\alpha > 0.5$ – ‘Poor’, and $\alpha < 0.5$ – ‘Unacceptable’.”

Accordingly, the alpha coefficient for the Forty-five items were .867, suggesting that the items have relatively high internal consistency.

Reliability statistics

Cronbach's Alpha	N of Items
.867	45

CHAPTER FOUR: DATA ANALYSIS, DISCUSSION AND INTERPRETATION OF RESULT

4.1 Introduction

This chapter is dealt with the presentation and analysis of data gathered from questionnaires and interview, discuss the result found and interpret the data in a concise and meaningful way. Accordingly, the collected data had analyzed quantitatively and qualitatively. Hence, statistical tools like percentage, tables and frequency were employed. The survey was conducted during two weeks' time and out of 75 questionnaires distributed, 67 questionnaires were effectively used for analysis that shows response rate of 85%.

In this study, the findings presented in categorical way based on the five main warehousing practices; which are receiving, put-away, storage, order-picking and shipping; and potential challenges in warehousing practice. The demographic information of the respondents who have filled and returned the questionnaire as presented on underneath table.

Respondents Demographic Information

Table 4.2 Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	49	73.1	73.1	73.1
	Female	18	26.9	26.9	100.0
	Total	67	100.0	100.0	

As the above table 4.2, clearly shows the respondent's gender. Accordingly, Males are 49(73.1%) and Females are 18(26.9%) participants, though, this has nothing to do with this study, we can understand that, in the company's warehouse section there is male domination in number.

Table 4.3 Respondents Position in the Organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Professional/Administrator	27	40.3	40.3	40.3
	Specialist	31	46.3	46.3	86.6
	Supervisor	8	11.9	11.9	98.5
	Manager	1	1.5	1.5	100.0
	Total	67	100.0	100.0	

In connection to respondent's ***position in the organization*** the result shows; Professional/Administrator (newly assigned) covers 27(40.3%), Specialists are 31(46.3%), Supervisor 8(11.9%) and Managers 1(1.5%). This can show that, almost all the respondents are engaged directly in warehouse related activities and have the knowledge on the matter and can understand questions & respond not haphazardly.

Table 4.4 Respondents Educational Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	3	4.5	4.5	4.5
	1st Degree	52	77.6	77.6	82.1
	Masters	12	17.9	17.9	100.0
	Total	67	100.0	100.0	

Concerning the ***educational background*** majority of the respondents 52(77.6%) are 1st Degree holders while 12 of them (17.9%) were Master Degree and 3(4.5%) respondents were awarded college diploma. Hence, from this we can consider that all the respondent can read, understand and respond the questions very well.

Table 4.5 Year of experience in ethio telecom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 5 years	7	10.4	10.4	10.4
	5 - 10 years	28	41.8	41.8	52.2
	10 - 15 years	15	22.4	22.4	74.6
	15 - 20 Years	9	13.4	13.4	88.1
	20 & above	8	11.9	11.9	100.0
	Total	67	100.0	100.0	

The above table indicates respondent's ***Year of work experience in the case company***, in connection to this their response shows as: below 5 years are 7(10.4%), 5 – 10 years 28(41.8%), 10 – 15 years are 15(22.4%), 15 – 20 years are 9(13.4%) and above 20 years are 8(11.9%). This indicates the respondents have enough experience to give response.

Next warehousing practices based on the five main activities & challenges will be presented

1. Analysis on receiving practice indicators

Table 4.6 In advance notice of the goods arrival

Most of the time we have notice of the goods arrival in advance, which allows the warehouse to prepare, to schedule inbound operations so there are no uncoordinated events.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	19	28.4	28.4	28.4
	Neutral	11	16.4	16.4	44.8
	Agree	37	55.2	55.2	100.0
	Total	67	100.0	100.0	

On table 4.6 the respondents were asked their level of agreement on “the warehouse have notice of the goods arrival in advance which allows the warehouse to be prepared, to schedule so there are no uncoordinated events”. Accordingly, 37(55.2) of the respondent have agree, on the other hands 19(28.4) of the respondent have disagree while the remaining 11(16.4%) respondent remains neutral. Based on the result most of the time the warehouse have notice of the goods arrival in advance.

Further investigation from the interview also revealed that; inbound materials are known in advance through first for local procured items notification received from ERP system, as there are expected receiving goods. Second for items procured/coming from abroad, advance-shipping notice is provided by the goods shipment section. Hence, the warehouse knows incoming materials in advance.

Table 4.7 Sufficient and appropriate space

The warehouse have sufficient and appropriate area/space for loading/unloading materials.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	13.4	13.4	13.4
	Disagree	33	49.3	49.3	62.7
	Neutral	5	7.5	7.5	70.1
	Agree	17	25.4	25.4	95.5
	Strongly Agree	3	4.5	4.5	100.0
	Total	67	100.0	100.0	

On table 4.7, the respondents are requested to state their level of agreement on availability of **sufficient and appropriate area/space for loading/unloading materials** in the warehouses. In connection to this majority of the respondent 33(49.3) are disagree, 9 respondents (13.4%) strongly disagree. Whereas, 17 respondents (25.4%) agree, 3(4.5%) strongly agree the rest 5(7.5) remain neutral. In general, 42(62.7%) respondents reflect, as the warehouse have no sufficient and appropriate space for loading/unloading materials.

This result is supported by **finding obtained through interview**, which is the availability of space for unloading & loading is insufficient and in almost all the warehouse's receiving & shipping areas are the same, mainly this becomes a problem if both activities are required at the same time.

Table 4.8 Sufficient and appropriate equipment

The warehouse have sufficient and appropriate equipment's and enough labor to unload materials.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	26.9	26.9	26.9
	Disagree	29	43.3	43.3	70.1
	Agree	11	16.4	16.4	86.6
	Strongly Agree	9	13.4	13.4	100.0
	Total	67	100.0	100.0	

On table 4.8, the respondents were asked to reflect their feeling **on availability of sufficient and appropriate equipment's and enough labor to unload materials**; 18(26.9) respondents reply strongly Disagree, 29 (43.3%) respondent feels that they are disagreed with the idea, while 11(16.4%) agreed and 9(13.4) respond strongly agree. Well, in cumulative the table shows that majority of the respondents 47(70.1%) reflect their disagreement with the idea.

Interview response also shows that, the availability of proper equipment is very poor, though there are about 19 forklifts, most of the time they are broken and under maintenance, they use diesel fuel and the out-take smoke disturbs in which cannot be used for indoor service, the forklifts are very huge which cannot fit or used for indoor service.

Table 4.9 Quantities verified and random quality checks

Most of the time after the items are unloaded, quantities verified and random quality checks performed.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	13.4	13.4	13.4
	Neutral	7	10.4	10.4	23.9
	Agree	32	47.8	47.8	71.6

Strongly agree	19	28.4	28.4	100.0
Total	67	100.0	100.0	

On table 4.9 the respondents replied for the question; ***after the items are unloaded, quantities are verified and random quality checks are performed***; majority of the respondents 32(47.8%) were agreed as 19(28.4%) respond strongly agree; whereas, 9 respondents 13.4% reflect as disagree and the remaining 7(10.4) respondents remain neutral. Hence, 51 respondents (76.2%) reflect s they agreed on the case.

Table 4.10 Inspection process

Most of the time the inspection process of received materials are performed and reported in a reasonable time.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	35.8	35.8	35.8
	Disagree	17	25.4	25.4	61.2
	Neutral	3	4.5	4.5	65.7
	Agree	13	19.4	19.4	85.1
	Strongly Agree	10	14.9	14.9	100.0
	Total	67	100.0	100.0	

Table 4.10 the respondents are asked their level of agreement on ***inspection process of received materials are performed and reported in a reasonable time***. In response to this 24(35.8%) respond as strongly disagreed, 17(25.4%) respond disagree; whereas, 13 respondents (19.4%) agreed, 10(14.9) respond as strongly agree, the remaining 3(4.5%) respondents remain neutral. As a result majority of the respondents 41(61.2%) reflect that the inspection process is not performed and reported in a reasonable time.

As a result, from interview shows that, although users are informed timely to conduct the inspection, they do not give due attention and most of the time they do the inspection if the material is immediately needed; if it is not needed urgently they do not give attention. In addition, the delay is happened due to the user and the inspection maker might be from different sections, thus, inspection delays.

Table 4.11 Occurrence of accidents

At the time of receiving, occurrence of accidents are minimum. Accidents like physical accident on warehouse personnel and on received goods and other equipment's.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	11.9	11.9	11.9
	Neutral	6	9.0	9.0	20.9
	Agree	38	56.7	56.7	77.6
	Strongly Agree	15	22.4	22.4	100.0
	Total	67	100.0	100.0	

Table 4.11 shows the level of agreement obtained for the question; ***at the time of receiving, occurrence of accidents are minimum.*** Majority of the respondents 38(56.7%) agree & 15(22.4%) respondents strongly agree; whereas; 8(11.9%) of the respondents disagree with the case and the rest 6(9%) remain neutral. Accordingly, majority of the respondents 53(79.1) agreed on the minimum occurrence of accidents.

Table 4.12 Appropriate disassembling or repacking

For the incoming goods, in order to properly store, appropriate disassembling or repacking of goods is performed in the warehouse.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	39	58.2	58.2	58.2
	Neutral	5	7.5	7.5	65.7
	Agree	16	23.9	23.9	89.6
	Strongly agree	7	10.4	10.4	100.0
	Total	67	100.0	100.0	

Table 4.12 presents respondents response for; ***in order to properly store incoming goods, appropriate disassembling or repacking of goods is performed in the warehouse.*** AS such, the response was; 39(58.2%) respondents reflect disagree. Whereas, 16(23.9%) respond as agree and 7(10.4%) respondents as strongly agree the rest 5(7.5%) remain neutral. Thus, the result shows as most of the time appropriate disassembling or repacking of goods is not performed in the warehouse, this shows there is poor management of space.

Table 4.13 Submission of appropriate documents

At the time of items arrival, appropriate documents such as delivery orders (which indicate the item description, quantity, the supplier name and etc...) and Purchase Order No's brought together with the items

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	11	16.4	16.4	16.4
	Neutral	7	10.4	10.4	26.9
	Agree	29	43.3	43.3	70.1
	Strongly Agree	20	29.9	29.9	100.0
	Total	67	100.0	100.0	

In the above table respondents were asked that; ***at the time of items arrival appropriate documents are brought together with the items and their response were***; 20(29.9%) strongly agreed & 29(43.3%) agreed; whereas, 11(16.4%) respondents disagree with this case, the rest 7(10.4%) remain neutral. Therefore, majority of the respondents 49(73.2%) reflect appropriate documents are arrived.

2. Analysis based on Put – Away Indicators

Table 4.14 Availability of free storage

In the warehouse availability of free storage locations, how much space & weight they can bear, etc., is known in advance.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	38	56.7	56.7	56.7
	Neutral	5	7.5	7.5	64.2
	Agree	19	28.4	28.4	92.5
	Strongly Agree	5	7.5	7.5	100.0
	Total	67	100.0	100.0	

Respondents requested to show their feeling on the ***availability of free storage locations, how much space & weight they can bear, etc., could be known in advance***. Majority of the respondents 38(56.7%) disagreed with the issue. whereas, 19 respondents (28.4%) agree & 5 respondents (7.5%) strongly agree the rest, 5 respondents (7.5%) remain neutral. as a result most of the time availability of free storage location is unknown in advance.

As response from interview reveals, due to shortage of receiving space and delay of inspection materials are accumulated a lot, so the items are putted to the storage area temporarily, till they are inspected and received, this makes difficult to know the exact available free space.

Table 4.15 Availability of Machineries do the put-away activity

In the warehouse to do the put-away activity (transporting the goods from receiving area to storage), there is sufficient & appropriate equipment's, machineries and enough work force.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	13	19	19	
	Disagree	34	51	70	
	Agree	3	4	75	
	Strongly Agree	17	25	100	
	Total	67	100.0		

Table 4.15 request the respondents to show their level of agreement on ***the availability of sufficient & appropriate equipment's, machineries and enough manpower to do the put-away activity.***

Their response indicates 13 respondents (19%) Strongly disagree, 34(51%) were disagree. Whereas, 3 respondents (4%) agree and 17(25%) strongly agree. From this, we can understand that most of the respondents disagree (70%) with availability of sufficient and appropriate equipment/machinery and enough work force the move the goods to storage area.

Information from the interview shows as there is a problem of machinery, the available forklifts cannot be used with in the warehouse due to their size, too much out-take smoke and so on, other than this, there is no other available machine that could be used to unload, load and move goods.

Table 4.16 Storing high demand goods

Most of the time we have a practice of storing high demand goods near to the shipping area, so that there will be minimum walking time.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	34.3	34.3	34.3
	Neutral	2	3.0	3.0	37.3
	Agree	32	47.8	47.8	85.1
	Strongly Agree	10	14.9	14.9	100.0
	Total	67	100.0	100.0	

In the above table 4.16, respondents were asked whether there is ***a practice of storing high demand goods near to the shipping area, so that there would be minimum walking time***. Accordingly, 32(47.8%) agree & 10(14.9%) strongly agree with the idea, while 23 respondents (34.3%) strongly disagree the rest 2 respondents (3%) remain neutral. Summing strongly agree and agree become 42 (62.7%) response, in most of the warehouse's there is a practice of, highly demand items are stored near to shipping area.

Table 4.17 Recording of storage location

Most of the time, after a product is placed on its location, the storage location of the product is properly recorded and it is easily traced when it is needed for pick-orders.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	13	19.4	19.4	19.4
	Neutral	8	11.9	11.9	31.3
	Agree	34	50.7	50.7	82.1
	Strongly Agree	12	17.9	17.9	100.0
	Total	67	100.0	100.0	

Table 4.17 dealt with ***proper recording of storage location to easily trace at the time of picking***. In view of that, 34(50.7%) & 12(17.9%) respondents agree & strongly agree respectively, while 13 respondents (19.4%) strongly disagree with the idea and 8 (11.9) remains neutral. Thus, most of the time proper recording of storage location is performed with a response rate of 46(68.6%) as agree.

The ***finding from interview***, which states as the ERP system registers the received materials with their exact locators, so it can be easily traced when it is needed.

3. Analysis based on Storage Practice Indicators

Table 4.18 Proper and economical storage

In our warehouse goods are stored in a most proper and economical way.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	13	19.4	19.4	19.4
	Disagree	25	37.3	37.3	56.7
	Neutral	2	3.0	3.0	59.7
	Agree	18	26.9	26.9	86.6
	Strongly Agree	9	13.4	13.4	100.0

Total	67	100.0	100.0
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Under table 4.18 the level of agreement of respondents were asked on ***goods are stored in a most proper and economical way***, in relation to this, 13(19.4%) strongly disagree, 25(37.3%) respondents disagree with the idea. While, 2(3%), 18(26.9%) and 9(13.4%) reply as neutral, agree and strongly agree respectively. Therefore, by summing up 38 respondents (56.7%) disagrees with the idea.

This is also ***supported by the information obtained from interview***, due to the poorly availability of space especially the racks/shelves are old, very small or narrow, goods cannot put in to (not fit most of the time). Consequently, goods are stored on the surface, so, took too much space which makes this uneconomical.

Table 4.19 Availability of sufficient storage spaces

In the warehouse, sufficient storage spaces are usually available.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	31.3	31.3	31.3
	Disagree	28	41.8	41.8	73.1
	Agree	11	16.4	16.4	89.6
	Strongly Agree	7	10.4	10.4	100.0
	Total	67	100.0	100.0	

Table 4.19 tries to reveal the question presented to respondents, which is ***sufficient storage spaces are usually available***. Hence, their response were; strongly disagree 21(31.3%) and disagree 28(41.8%). While 11 respondents (16.4%) agree and 7(10.4%) respond strongly agree. Accordingly, availability of sufficient storage space is to the contrary with majority response rate of 49(73.1%) as disagree.

Table 4.20 Product damage

The warehouse is successful in minimizing total product damage; like product deterioration, breakage, leakage etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	16.4	16.4	16.4
	Disagree	29	43.3	43.3	59.7
	Neutral	4	6.0	6.0	65.7
	Agree	23	34.3	34.3	100.0
	Total	67	100.0	100.0	

As per table 4.20, which presents respondents level of agreement to the request; ***the warehouse is successful in minimizing total product damage; like product deterioration, breakage, leakage etc.*** As such their response indicates, 11(16.4%) strongly disagree, 29(43.3%) respond disagree with idea. Whereas 23 respondents (34.3%) agree and the rest 4(6%) remain neutral. So the result shows as most of the warehouse's are not successful in minimizing total product damage with response rate of 40(59.7%) as disagree.

Table 4.21 Control of accessing

In the warehouse, there is tight control of accessing the storage area without permission of the authorized personnel.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	7	10.4	10.4	10.4
	Disagree	10	14.9	14.9	25.4
	Agree	26	38.8	38.8	64.2
	Strongly Agree	24	35.8	35.8	100.0
	Total	67	100.0	100.0	

In connection to ***tightness of controlling accessing to storage area*** the respondents reply shows that. 26(38.8%) & 24(35.8%) agree & strongly agree respectively. Whereas strongly disagree 7(10.4%) and disagree response were 10(14.9%). Accordingly, most of the time the warehouse have tight control of accessing the storage area, with majority of respondents 50(74.6%).

Table 4.22 Material protection equipment's

In the warehouse there are material protection equipment's to safeguard/protect and minimize the extent of damage of stored materials; equipment's like fire extinguisher, safety rule etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	17.9	17.9	17.9
	Disagree	24	35.8	35.8	53.7
	Neutral	2	3.0	3.0	56.7
	Agree	25	37.3	37.3	94.0
	Strongly Agree	4	6.0	6.0	100.0
	Total	67	100.0	100.0	

In the above table 4.22 the respondents are asked to express their level of agreement on the availability of material protection equipment's to safeguard/protect and minimize the extent of damage of stored materials. Therefore, the respondents reply shows as; 12 respondents (17.9%) strongly disagree, 24 (35.8%) disagree; whereas 25(37.3%) respondents agree and 4(6%) of them strongly agree with the idea the rest 2(3%) remain neutral. In combination, 36 respondents (53.7%) disagreed with the availability of sufficient material protection equipment.

Table 4.23 Storage based on nature of the items

In the warehouse, storage areas are available based on the nature of the items; such as perishable, long lasting, frequently required and so on.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	31.3	31.3	31.3
	Disagree	23	34.3	34.3	65.7
	Neutral	2	3.0	3.0	68.7
	Agree	21	31.3	31.3	100.0
	Total	67	100.0	100.0	

As shown in the above table 4.23 respondents inquired to share their fleeing on ***whether storage areas are available based on the nature of the items; such as perishable, long lasting, frequently required and so on.*** Thus, 21 respondents (31.3%) were strongly disagree, 23(34.3%) were disagree with the idea; though 21 respondents (31.1%) agreed and the rest 2 (3%) remained neutral. This can reveal that the storage areas are mostly not available based on the nature of the items, with the response rate of 44(65.6%) as disagree.

Table 4.24 Tracking of expire dated items

Most of the time in the warehouse we perform tracking of expire dated items or absolute technologies.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	28.4	28.4	28.4
	Disagree	21	31.3	31.3	59.7
	Neutral	4	6.0	6.0	65.7
	Agree	20	29.9	29.9	95.5
	Strongly Agree	3	4.5	4.5	100.0
	Total	67	100.0	100.0	

Table 4.24 focuses on ***whether the warehouse performs tracking of expire dated items or absolute technologies.*** As a result, their response reveals as 19 respondents (28.4%) strongly disagree,

21(31.3%) disagree, in the contrary, 20 respondents (29.9%) agree & 3(4.5%) strongly agree the remaining 4(6%) remain neutral. By summing strongly disagree & disagree respondents which are 40 (59.7%), which is above the average reply that tracking expire dated items &/or absolute technologies are less performed.

Table 4.25 Store in correct location

Most of the time in our warehouse, items are placed in their correct location.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	16	23.9	23.9	23.9
	Neutral	5	7.5	7.5	31.3
	Agree	28	41.8	41.8	73.1
	Strongly Agree	18	26.9	26.9	100.0
	Total	67	100.0	100.0	

Under table 4.25 respondents asked to give their ***response if items are placed in their correct location***. Their answer were 16 respondents (23.9%) disagree and 5(7.5%) neutral. However, 28(41.8%) and 18(26.9%) of the respondents agree and strongly agree respectively with the idea. This shows most of the time 46(68.7%) items placed in their correct location.

This case has ***supported by the information obtained from interview***, each items location is registered and gave a locator code, with the support of ERP system. So the same item is going to be stored in this location.

4. Analysis based on Order – Picking Practice Indicators

Table 4.26 Storage area affecting the picking process

In the warehouse goods storage area affecting the picking process by causing the employee/pickers to have difficulties to search the particular good, remove other items first to get that good, etc., is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	20.9	20.9	20.9
	Disagree	23	34.3	34.3	55.2
	Neutral	7	10.4	10.4	65.7
	Agree	18	26.9	26.9	92.5
	Strongly Agree	5	7.5	7.5	100.0
	Total	67	100.0	100.0	

Under table 4.26, the respondents were requested to show their feeling on ***the warehouse's goods storage area affecting the picking process by causing the employee/pickers to have difficulties***

to search the particular good or remove other items to get the required good, etc., is minimum.

As such their response is expressed; 14 respondents (20.9%) strongly disagree, 23(34.3%) disagree with the idea. While, 18(26.9%) agree & 5(7.5%) strongly agree, the remaining 7(10.4%) were neutral. As such this shows, above average of respondents 55.2% inclined to disagreeing with the idea or the goods storage area is affecting the picking process.

Table 4.27 Returning

Most of the time items returned from shipping place or end user due to error in order-picking is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	15	22.4	22.4	22.4
	Neutral	7	10.4	10.4	32.8
	Agree	28	41.8	41.8	74.6
	Strongly Agree	17	25.4	25.4	100.0
	Total	67	100.0	100.0	

Concerning table 4.27 which the respondents were inquired to express their level of agreement on ***most of the time items returned from shipping place or end user due to error in order-picking is minimum.*** Hence, 28 respondents (41.8%) agree and 17(25.4%) strongly agree. Though, disagree and neutral were 15(22.4%) and 7(10.4%) respectively. Therefore, the result indicates that items returned from shipping place or end user due to error in order-picking is very rare, the result is supported with 45 respondents 67.2%.

Based on the feedback from interview, due to there are a lot of controlling points while fulfilling the order, the extent of occurring wrong and damaged material shipment are insignificantly.

Table 4.28 Correct order – picking

Most of the time order-picking activity has performed correctly by selecting and gathering the item type & quantity as per the requested order.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	13	19.4	19.4	19.4
	Agree	34	50.7	50.7	70.1
	Strongly Agree	20	29.9	29.9	100.0
	Total	67	100.0	100.0	

In the above table 4.28, respondents were asked the following; ***most of the time order-picking activity is performed correctly by selecting and gathering the item type & quantity as per the requested order.*** Most of the respondents agree with the idea, with response rate of 34(50.7%)

agree and 20(29.9%) strongly agree in summation 54(80.6%). While 13 respondents (19.4%) disagrees with the idea.

Table 4.29 Proper tagging

Proper tagging has performed for fixed assets before shipping to different locations to trace easily whereabouts after issued from warehouse.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	25.4	25.4	25.4
	Agree	30	44.8	44.8	70.1
	Strongly Agree	20	29.9	29.9	100.0
	Total	67	100.0	100.0	

As per the above table 4.29, the respondents give their response to the question; whether ***proper tagging is performed for fixed assets before shipping to different locations to easily trace whereabouts after issued from warehouse.*** Accordingly, 17 respondents (25.4%) strongly disagree, on the other hand, 30 respondents (44.8%) agree and 20(29.9%) strongly agree. Therefore, 74.7% of the respondents agree with idea, which is proper tagging has performed for fixed assets before shipping to different locations.

Table 4.30 Order-picking process time

Most of the time the processing time to do the order-picking activity in our warehouse is reasonable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	20.9	20.9	20.9
	Disagree	20	29.9	29.9	50.7
	Agree	26	38.8	38.8	89.6
	Strongly Agree	7	10.4	10.4	100.0
	Total	67	100.0	100.0	

Table 4.30, depicts respondent's level of ***agreement on the processing time of order – picking activity in the warehouse is reasonable.*** As a result, the response designates; strongly disagree 14(20.9%), disagree 20(29.9%). Whereas, 26 respondents (38.8%) agree and 7(10.4%) strongly agree. Thus, disagree part were 34 respondents (50.8%) and agree part show 33 respondents (49.2%). Thus, the result shows most of the time processing time of order-picking activity is somewhat unreasonable.

5. Analysis based on Shipping Practice Indicators

Table 4.31 Quantity & type checking

In our warehouse after picking items, the process of checking quantity & type, controlling, sorting have performed with high commitment and reasonable time.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	13.4	13.4	13.4
	Agree	38	56.7	56.7	70.1
	Strongly Agree	20	29.9	29.9	100.0
	Total	67	100.0	100.0	

Respondents were required to indicate their level of agreement on which; *after picking items, the process of checking quantity & type, controlling, sorting are performed with high commitment and reasonable time*. As indicated in the above table 5.1 most of the respondents are agree with the idea 58 respondents (86.6%), their response shows as 38(56.7%) & 20(29.9%) were agree & strongly agree respectively, though 9 respondents (13.4%) were disagree.

Table 4.32 Availability of packaging materials

In our warehouse, packing similar items with proper packaging material has performed with high commitment to protect the items and make easy of shipping and transportation process.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	20.9	20.9	20.9
	Disagree	37	55.2	55.2	76.1
	Agree	9	13.4	13.4	89.6
	Strongly Agree	7	10.4	10.4	100.0
	Total	67	100.0	100.0	

Table 4.32, questions respondents level of agreement on *packing similar items with proper packaging material has performed with high commitment to protect the items and make easy of shipping and transportation process*. Consequently, 14 respondents (20.9%) & 37(55.2%) strongly disagree & disagree respectively. On the other hand, 9 respondents (13.4%) agree and 7(10.4%) strongly agree with idea. This shows 51(76.1%) respondents disagree with idea.

As indicated earlier from the *interview response*, the packaging process has hindered due to unavailability of packaging materials in almost all the warehouses.

Table 4.33 Shipping space

In the warehouse there is separate and enough shipping space/area.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	11.9	11.9	11.9
	Disagree	32	47.8	47.8	59.7
	Agree	18	26.9	26.9	86.6
	Strongly Agree	9	13.4	13.4	100.0
	Total	67	100.0	100.0	

Table 4.33 is about respondent's level of agreement to the question that; ***there is separate and enough shipping space/area in the warehouse.*** In connection to this, 8 respondents (11.9%) strongly disagree and 32(47.8%) disagree with the idea; in summation this becomes 40(59.7%) respondents disagree. While 18(26.9%) agree and 9 respondents (13.4%) strongly agree with the idea. This indicates, in most of the warehouses there is shortage of separate and enough shipping space/area.

Table 4.34 Loading equipment

In the warehouse, there is sufficient & proper equipment/machine and enough man power to do the loading.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	15	22.4	22.4	22.4
	Disagree	30	44.8	44.8	67.2
	Agree	15	22.4	22.4	89.6
	Strongly Agree	7	10.4	10.4	100.0
	Total	67	100.0	100.0	

As indicated in table 4.34 the respondents show their level of agreement on; ***in the warehouse there is sufficient & proper equipment/machine and enough man power to do the loading.*** Hence, their response specifies as, 15 respondents (22.4%) strongly disagree and 30(44.8%) disagree with the idea. Still other respondents show their level of agreement as 15 respondents (22.4%) agree & 7(10.4) strongly agree with the idea. As a result, the dominant number inclined to disagreeing with the idea; most of the respondents 45(67.2%) disagree with the availability of sufficient & proper equipment/machine and enough workers to do the loading.

Table 4.35 Communication

Most of the time communication is successful, in making the transportation ready and to inform recipient.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	23.9	23.9	23.9
	Disagree	11	16.4	16.4	40.3
	Agree	40	59.7	59.7	100.0
	Total	67	100.0	100.0	

Under table 4.35 shown the result of respondents reply on the question; ***most of the time communication is successful in making ready the transportation and to inform the recipient.*** Therefore, the response directs as 16 respondents (23.9%) strongly disagree and 11(16.4%) disagree with the idea. Whereas 40 respondents (59.7%) agree. We can understand from this most of the time communication is successful in making ready transportation & inform recipients.

6. Analysis based on challenges while practice warehouse activities

Table 4.36 Stock accuracy

The warehouse has minimum problem of stock inaccuracy (due to miscount due to human error, miswritten, misread, mixed up goods and inaccurate purchase orders).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	19	28.4	28.4	28.4
	Agree	29	43.3	43.3	71.6
	Strongly Agree	19	28.4	28.4	100.0
	Total	67	100.0	100.0	

As illustrated on the above table 4.36; the respondents provide their level of agreement to; ***minimum problem of stock inaccuracy in the warehouse.*** Accordingly, 19(28.4%) respondents disagree with the idea. 29(43.3%) and 19(28.4%) respondents agree and strongly agree with the idea respectively. Hence, majority of the respondents 48(71.7%) agree the stock inaccuracy is minimum.

Table 4.37 Warehouse design

The design of the warehouse makes convenient for moving materials (aisles and layout) which is easy to access/pass, free from damaging items and convenient to load and unload.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	38.8	38.8	38.8
	Disagree	19	28.4	28.4	67.2

Agree	22	32.8	32.8	100.0
Total	67	100.0	100.0	

The inquiry of whether the ***design of the warehouse makes convenient for moving materials***; the respondents give their level of agreement as; 26(38.8%) respondents strongly disagree with the idea, 19 respondents (28.4%) disagree. Whereas, 22(32.8%) respondents agree. This shows, most of the respondents 45(67.2%) disagrees with the idea which is; design of the warehouse is inconvenient for moving materials.

Table 4.38 Availability of racks & shelves

In the warehouse spaces availability including racks & shelves to store goods is sufficient and damage of items due to space unavailability is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	25.4	25.4	25.4
	Disagree	18	26.9	26.9	52.2
	Neutral	6	9.0	9.0	61.2
	Agree	22	32.8	32.8	94.0
	Strongly Agree	4	6.0	6.0	100.0
	Total	67	100.0	100.0	

Under table 4.38 the respondents were asked to reveal their level of agreement on; ***the availability of spaces including racks & shelves to store goods is sufficient***. In connection to this, their response shows as, 17 respondents (25.4%), 18(26.9%), 6(9%), 22(32.8%) and 4(6%) responded that strongly disagree, disagree, neutral, agree and strongly agree with the idea respectively. When we sum up these results 35(52.3%) respondents disagree and 26 (38.8%) respondents agree with the idea, hence, most of the respondents disagree with availability of space including racks & shelves to store goods is sufficient.

The ***interview response supports this idea*** by revealing that, the available racks and shelves are insufficient, very old fashioned, narrow space which are inconvenient to fit for large; this lead's for storing items on the surface which took too much space, become uneconomical and make difficult to pass easily.

Table 4.39 Space to consolidate

In the warehouse, there is a sufficient area/space to consolidate, pack and load the items.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	16.4	16.4	16.4
	Disagree	29	43.3	43.3	59.7

Neutral	3	4.5	4.5	64.2
Agree	17	25.4	25.4	89.6
Strongly agree	7	10.4	10.4	100.0
Total	67	100.0	100.0	

Regarding the ***availability of sufficient space/area to consolidate, pack and load the items***; on the above table 4.39, the respondents provide their level of agreement as follows. 11(16.4%) & 29(43.3%) respondents strongly disagree and disagree respectively. Though, 17(25.4%) agree and 7(10.4%) strongly agree, the rest 3 respondents (4.5%) remains neutral. As an aggregate, 40 respondent (59.7%) disagree with the availability of sufficient space/area to consolidate, pack and load the items.

Table 4.40 Training

Appropriate & necessary training related to Warehousing Activity, material management, etc., is provided to warehouse employees.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	29.9	29.9	29.9
	Disagree	19	28.4	28.4	58.2
	Neutral	3	4.5	4.5	62.7
	Agree	19	28.4	28.4	91.0
	Strongly Agree	6	9.0	9.0	100.0
	Total	67	100.0	100.0	

To enquire the ***provisioning of appropriate & necessary training's related to Warehousing Activity, material management, etc., to warehouse employees***, the respondents share their feeling as; 20 respondents (29.9%) strongly disagree, 19(28.4%) disagree with the idea; 3 respondents (4.5%) neutral, while, 19(28.4%) and 6(9%) respondents agree and strongly agree with the idea respectively. Therefore, this tells us that most of the respondents 39(58.3%) disagree with the provisioning of appropriate & necessary training's related to Warehousing Activity, material management, etc., to employees.

Based on the response of interviewees, almost there is no formal and planed training's. Most of the time, employees train themselves by asking senior employees, which is informal on job training.

Table 4.40 Skill of employees

Skilled employees operate the warehouse.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	9.0	9.0	9.0

Disagree	8	11.9	11.9	20.9
Neutral	3	4.5	4.5	25.4
Agree	29	43.3	43.3	68.7
Strongly Agree	21	31.3	31.3	100.0
Total	67	100.0	100.0	

Table 4.40, asks ***whether the warehouse is operated by skilled labor***. The response shows as; 6 respondents (9%) strongly disagree, 8(11.9%) disagree and 3(4.5%) neutral. To the contrary, 29 respondents (43.3%) agree and 21(31.3%) strongly agree with the idea. Hence, most of the respondents 50(74.6%) believe the warehouse is operated by skilled labor.

Interview respondents also reveal that, almost all the employees are assigned from call center staffs (as a strategy of the company), and at least they are degree holders, though there is no as such formally organized trainings, these newly assigned staffs are provided informally on job training's and could easily coup up with the system & become skilled in short time. In other words, though, there is no formal trainings provided by the company, the employees fill the knowledge gap they have by asking senior employees.

Table 4.41 Communication with in & out side

There is good communication between employees of the warehouse, across the warehouse and company, which make the process easily practiced.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	13	19.4	19.4	19.4
	Neutral	10	14.9	14.9	34.3
	Agree	33	49.3	49.3	83.6
	Strongly Agree	11	16.4	16.4	100.0
	Total	67	100.0	100.0	

Under table 4.41, respondents asked to show their level of agreement regarding; ***there is good communication between employees of the warehouse, across the warehouse and company, which make the process easily practiced***. Therefore, their response indicates, 13 respondents (19.4%) disagree and 10 respondents (14.9%) remain neutral. However, 33(49.3%) and 11(16.4%) respondents agree and strongly agree with the idea respectively in aggregate 44 respondents (65.7%) as there is good communication.

Table 4.42 Write-off to reconcile

After discrepancy is recognized, delay in write-off to reconcile between bin card quantity (quantity in ERP System) and physical availability is minimum.

	Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	Strongly Disagree	8	11.9	11.9	11.9
	Disagree	13	19.4	19.4	31.3
	Neutral	6	9.0	9.0	40.3
	Agree	23	34.3	34.3	74.6
	Strongly Agree	17	25.4	25.4	100.0
	Total	67	100.0	100.0	

Table 4.42, questions respondents level of agreement on; ***after discrepancy is recognized, delay in write-off to reconcile between bin card quantity (quantity in ERP System) and physical availability is minimum.*** Accordingly, their response specifies; 8(11.9%), 13(19.4%) & 6(9%) respondents reply strongly disagree, disagree and neutral respectively. Whereas, 23 respondents (34.3%) agree and 17(25.4%) strongly agree with the idea. This shows majority of the respondents 40(59.7%) believe that; after discrepancy is recognized, delay in write-off to reconcile is minimum.

Table 4.43 Regular physical count

In the warehouse, length of period to conduct regular physical count is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	15	22.4	22.4	22.4
	Neutral	3	4.5	4.5	26.9
	Agree	32	47.8	47.8	74.6
	Strongly Agree	17	25.4	25.4	100.0
	Total	67	100.0	100.0	

Table 4.43, the respondents were asked to express their feeling on the inquiry of; ***in the warehouse length of period to conduct regular physical count is minimum.*** Therefore, the response shows 15 respondents (22.4%) disagree with the idea and 3(4.5%) were neutral. Though, 32(47.8%) & 17(25.4%) respondents were agree and strongly agree. As such majority of the respondents 49(73.2%) agree with idea.

Table 4.44 Decision to discard obsolete items

In the warehouse delays in decision to avoid/discard obsolete items is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	34.3	34.3	34.3
	Disagree	19	28.4	28.4	62.7
	Agree	18	26.9	26.9	89.6
	Strongly Agree	7	10.4	10.4	100.0

Total	67	100.0	100.0
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Table 4.44, tries to show respondent's level of agreement on; ***delays in decision to avoid/discard obsolete items is minimum***. Their response indicates 23 respondents (34.3%) strongly disagree and 19(28.4%) disagree with the idea. On the other hand, 18 respondents (26.9%) agree and 7(10.4%) strongly agree. As a result most of the respondents 42(62.7%) disagrees with the idea.

As a result from interview response, first of all items procured from local by different sections are rarely fully consumed, items procured in similar cases are accumulated in large. Second, items procured from abroad, which are failed at a time of inspection, are accumulated in large quantity and these are rarely returned. In addition to this, there are also obsolete & scrap goods, which are accumulated at different locations of the country, this happens due to delay in deciding to remove/discard.

Table 4.45 ERP System

Challenges in functioning warehousing activities due to ERP System is minimum.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	4.5	4.5	4.5
	Disagree	19	28.4	28.4	32.8
	Agree	26	38.8	38.8	71.6
	Strongly Agree	19	28.4	28.4	100.0
	Total	67	100.0	100.0	

Respondents asked the show their level of agreement on; ***challenges in functioning warehousing activities due to ERP System is minimum***. Consequently the result shows, 3 respondents (4.5%) strongly disagree & 19(28.4%) disagree. Though, 26(38.8%) and 19(28.4%) respond agree and strongly agree. This shows majority of the respondents 45(67.2%) reply as agree on the idea.

Response from interview also indicates in relation to ERP system as, the system supports in smoothing the activity of warehousing as compared to the manual system. However, in an insignificant times, due to interruption of the system and down of internet connections, warehousing activities are interrupted. Due to the low provisioning of trainings related to ERP system, sometimes, interruption occurred till employee get support. Although this happens rarely, customers are disappointed and complain due to such delays.

Table 4.46 Guidelines of warehouse activity

In our warehouse there are guidelines or standard operating procedures (SOP) in place that provide instructions to practice each of the five warehousing activity.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	71.6	71.6	71.6
	No	19	28.4	28.4	100.0
	Total	67	100.0	100.0	

In the above table respondents were asked to reply on the question; ***availability of guidelines or standard operating procedures (SOP) in place that provide instructions to practice each of the five warehousing activity***. The response indicates that, 48 respondents (71.6%) reply as Yes, and the rest 19(28.4) answered No.

Table 4.47 Cross docking

Does Cross Docking practiced in your warehouse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	29.9	29.9	29.9
	No	47	70.1	70.1	100.0
	Total	67	100.0	100.0	

To examine if the respondents practiced ***cross docking***, the above table shows their response as; 20 respondents (29.9%) reply as Yes and on the other hand 47 respondents (70.1%) reply as No. Hence, the advantage of applying cross – docking is missed in the warehouses. Advantages like, escaping the put –out, storage and picking activities; so that goods were going to be shipped directly from receiving.

CHAPTER FIVE: SUMMARY, CONCLUSION & RECOMMENDATION

5.1 Introduction

This chapter deals with the summary of finding, conclusion and recommendation, which based on the result or analysis.

5.2 Summary of Findings

Table 4.1: Summary of Response

Population	Number	Percent
Numbers of questionnaire distributed	75	95%
Returned questionnaires	70	89%
Incomplete questionnaires	3	4%
Total Usable questionnaires	67	85%

As indicated in the earlier, all the population size 79 employees who are working warehouse related activities on the case company are used in this study. However, from the total 79 questionnaire, 75 were distributed and 70 were returned from which 3 are not correctly filled and rejected, therefore, 67 respondents have filled and returned the questionnaire correctly, which essentially made the response rate about 85%. This is a good response rate based on Fowler (2002) in Asmelash Teka (2017), a 75% response rate considered as adequate.

In addition to questionnaires, data also gathered using interview, 5(five) supervisors and one manger were interviewed, the finding obtained through interview were used to strengthen the result obtained by questionnaire.

The first research question of this study was, to identify the major challenges in functioning the warehousing practices of ethio telecom. Accordingly, while practicing the warehouse activities there are many potential challenges. Here below list of some of the major challenges presented categorically.

Challenges at a Receiving stage;

- ✓ Unavailability of sufficient and appropriate receiving space for unloading materials.
- ✓ Unavailability of sufficient and appropriate machineries/equipment and enough labor to unload incoming materials.

- ✓ Too much time taken to perform the inspection process of received materials and preparation of report.
- ✓ There is problem of appropriate disassembling or repacking of goods, in order to store properly incoming goods.

Challenges at a Put – Away stage;

- ✓ There is challenge of knowing in advance the availability of free storage locations, how much space & weight they can bear, etc.
- ✓ Unavailability of sufficient and appropriate equipment's, machineries and enough work force to do the put – away activity.

Challenges at Storage stage;

- ✓ The storage area of goods is not in a proper and economical way.
- ✓ Unavailability of sufficient and proper storage space/area.
- ✓ Poor availability of protection equipment for material and employees.
- ✓ The storage areas based on nature of items, is unavailable, such as perishable, long lasting, frequently required.
- ✓ The warehouses are poor in, tracking of expire dated items or absolute technologies.

Challenges at Order – Picking stage;

- ✓ Goods storage area affects the picking process.
- ✓ Too much time taken to perform the order – picking activity.

Challenges at shipping stage;

- ✓ Availability of packaging materials to pack similar items with proper packaging material is very poor.
- ✓ Unavailability of sufficient space to consolidate, pack and prepare the shipment.
- ✓ Unavailability of sufficient & proper equipment/machine and enough man power to do the loading.

Other challenges in performing the warehousing activities;

- ✓ Design of the warehouses makes inconvenience for easily move of materials.
- ✓ Poor provisioning of appropriate & necessary trainings, related to Warehousing Activity, material management, etc., to employees.
- ✓ Significance delay in decision to avoid/discard obsolete items.

The second research question of the study was, to assess how warehousing activities being practiced by ethio telecom. Therefore, based on result from analysis and information obtained using interview, the following summary is drawn.

By first identifying, the incoming materials (inbound) through, for local inbound, notification received from ERP system, as there are expected receiving goods. For items procured/coming from abroad, Goods Shipment Section provides advance-shipping notice. Therefore, the warehouse try to prepare for receiving & inform users for inspection. If the items qualify the inspection, put – away activity will be the next activity. Based on each items locator, items will putted to store. From the storage location when orders are coming to the warehouse, order – picking activity is performed according to the order. Finally, by communicating both, the fleet section to submit vehicle for transportation and inform the recipient to be prepared for receiving, the shipment activity is conducted.

The third research question of this study is the emphasis given to warehousing activities, in relation to the five main activities (which are ***receiving, put-away, storage, order- picking, and shipping***).

The major sub – activity & indicators of receiving are space for receiving, equipment to unload, conducting inspection on time, & so on, and these are poorly available & practiced. Therefore, we can summarize that, the emphasis given to receiving activity by the warehouses is very poor.

The emphasis given to put – away activity is also low, the indicators are, unable to know in advance the availability of free storage space and unavailability of machineries to move items from receiving to storage area.

Above all, the attention given to storage activity is minimum. This can be expressed by, uneconomical storage of goods (storing on the surface), insufficient availability of racks, poor equipment’s protection, the management of trucking and deciding on discarding/removing absolute and scrape materials, inconvenience design of storage area, in which make difficult to move goods and so on.

Even though, the order – picking activity is affected by design of the storage area, for not performing this activity quickly and unavailability of machines to move goods from storage area to staging area, the emphasis given to order – picking activity is somehow better than the other activities. The indicators are, there is good control, by knowing incoming orders in advance, the warehouses prepare, and so there is minimum occurrence of returning goods due to error in picking.

The emphasis given to shipping activity is also somehow good. By availing transportation and informing recipients in advance, the shipment process is mostly successful conducted.

5.3 Conclusion

The main purpose of this study is to assess the warehousing practice and challenges in the case of ethio telecom. Based on the findings presented in the previous section, the following conclusions are drawn.

➤ **In relation to receiving practice the below conclusions drawn:**

The process of receiving activity is conducted, as such smoothly, most of the time the warehouse have notice of the goods arrival in advance, in addition, appropriate documents are brought together with the items to the warehouse (delivery order, PO No.) and the occurrence of accidents at the time of receiving is also minimum. Accidents like physical accident on warehouse personnel, on received goods and other equipment and after the items are unloaded, quantities are verified and random quality checks are performed.

Challenges in conducting the receiving activities are; poor availability of sufficient and appropriate space, insufficient availability of machines/equipment's and not enough labor to unload incoming materials; too much time taken to perform the inspection process and the process of proper repackaging or disassembling of goods in order to protect & properly store incoming goods is some of the challenges.

➤ **In relation to put-away practice the below conclusions drawn:**

In practicing the put-away activity, there is a practice of storing high demand goods near to the shipping area, so that there will be minimum walking time. The warehouses perform proper recording of item storage location to easily trace at the time of order – picking.

The potential challenges here are; the availability of machinery/equipment and work force to move goods from receiving area to storage area is insufficient/almost not available. Difficult to pass-through to move materials easily. Most of the time there is a problem of knowing in advance the availability of free storage locations, how much space & weight they can bear, etc., in the warehouse.

➤ **In relation to storage practice the below conclusions drawn:**

The storage of goods is improper and not in an economical way, the availability of storage area in the warehouse is insufficient. Furthermore, poor **availability of storage areas based on the nature of the items**; such as perishable, long lasting, frequently required and so on. There is poor and insufficient availability of **material protection equipment** to safeguard/protect and minimize the extent of damage of stored materials. There is also occurrence of product damage; like product deterioration, breakage, leakage etc.; Most of the time the warehouses are low performance of tracking of expire dated items or absolute technologies.

There is tight control of accessing to the storage area without permission of the authorized personnel. There is good practice of **placing items in their correct location**.

➤ **In relation to order-picking practice the below conclusions drawn:**

Challenges in conducting order-picking practice are; goods storage area affects the picking process, by causing the employee/pickers to have problems to search the particular good and it requires them first to remove other items to get the needed material. Thus, the time taken to perform the order – picking activity is higher in the warehouses,

Proper tagging is performed for fixed assets before shipping to different locations to easily trace whereabouts after issued from warehouse. There is minimum occurrence of returning goods from shipping place/area or from end user due to error in order picking. The warehouses are performing order-picking activity correctly by selecting and gathering the item type & quantity as per the requested order.

➤ **In relation to Shipping practice the below conclusions drawn:**

The function of shipping is conducted; after items picked, the process of checking quantity & type, controlling, sorting are performed with high commitment and reasonable time. There also successful communication in making ready the transportation and to inform the recipient about the material issuance.

Hence, this practice is also affected by, availability of separate and enough shipping space/area is insufficient. The availability of sufficient & proper equipment/machine and enough labor to do the loading activity is very poor. In addition, the availability of proper packaging material including cartons/boxes & protection materials is very poor. Thus, low performance of packing similar items with proper packaging material, to protect the items and make easy of shipping and transportation process.

➤ **In relation to challenges in the warehouse practice the below conclusions drawn:**

Availability of enough spaces including racks & shelves to store goods is insufficient. Besides, the available space/area to consolidate, pack and load the items is also insufficient. Inconvenience of the design of the warehouse to easy move of materials, to access/pass, free from damaging items and inconvenient to load and unload.

There is a problem of providing appropriate & necessary, formal training's related to Warehousing activity, material management, ERP System etc., to employees.

Above all there is significant delay in making decision to avoid/discard obsolete & scrape items.

There is minimum delay in write-off/deciding to reconcile between bin card quantity (quantity in ERP System) and physical availability after discrepancy is recognized. The occurrence of stock inaccuracy in the warehouse is minimum. In addition, the length of period to conduct regular physical count is also minimum.

The warehouses do not apply **cross docking activity** (**Cross docking** is the process of transferring goods directly from the receiving area to the shipment area to fulfill orders immediately to customers).

5.4 Recommendation

Based on the summary of findings from the research and conclusions drawn, the researcher suggests the following recommendations to be undertaken by Ethio Telecom on its warehousing practice.

- ❖ In order to effectively function the warehousing activities, the company needs to give due attention to each of the five main warehousing activities (receiving, put-away, storage, order-picking, and shipping or order fulfillment). By availing the necessary machinery/equipment, required space for each activity and other requirements, so that delay due to overlapping of activities at a time (doing different activities at a time, in the same place) will not be a hindrance.
- ❖ The warehouses need to prepare separate, sufficient & appropriate receiving and shipping space in order to accommodate incoming materials until they are completely inspected and moved to storage area. In addition, for the sake of safeguarding, the goods appropriate unloading, loading and moving equipment's/machineries and enough labor shall be available. The maintenance process of the available forklifts should be smooth, short & timely (like higher a mechanic, have appropriate & long term contract with different mechanic/Garages), avail enough & proper machines which can fit/move within the warehouse.
- ❖ In order to solve the space problem within the warehouse, applying rack/shelf system would be highly recommended. Shelves are very helpful to organize work spaces and make easy of tracing items location & picking activity. Moreover, store materials in an economical way (by using the available space in a vertical way) which improves warehouse efficiency. The company should also prepare storage area based on the nature of items; such as perishable, long lasting, frequently required and so on.
- ❖ ***To solve the delay on Inspection process:*** By informing the inspection makers in advance of goods arrival, the time taken to perform the inspection process and preparation of report could be minimized.
- ❖ Accidents may arise such as fire, collapsing of racks and so on, hence, in order to minimize the extent of damage on the stored materials and employees around the area, sufficient and appropriate protection equipment's shall be available near to the warehouse and training shall be given to employees on how to use these materials.

- ❖ For the scrape and obsolete materials & inspection failed goods, of the company which are accumulated in different areas & in a very large amount which are becoming as bad look to the company image, in addition to the high cost. Appropriate & timely decision in removing/discarding these materials shall be done, by either selling or donating. Furthermore, the company shall also give due attention on materials procured from abroad, which are very difficult to return when they fail to comply with required specification (inspection failed). This can be handled by requesting for sample approval before mass production, dealing/engaging with reputable suppliers, have a contract that can protect the company's interest, and so on. For locally purchased items, most of the time, goods purchased by different sections are not consumed fully & timely, thus, before making each purchase checking the availability of the items in warehouse shall be practiced strictly. For items required recurrently, safety/minimum stock methods shall be followed by considering the usage quantity.
- ❖ So as to make smooth & easy the loading, shipping & transporting the materials; they need to be packed with proper packaging materials, so damage will be minimized. Thus, the company need to avail necessary packaging materials.
- ❖ The company need to provide necessary, formal trainings in addition to the on – job trainings, such trainings related to usage of ERP System, warehousing practice and warehousing management and so on. Thus, employee's performance & productivity will be improved.
- ❖ To solve the major challenges in practicing warehouse activities, the company need to make periodic assessment, by gathering information from employees and Internal & External customers. Likewise, look for new technologies and new ideas or way of doing business.
- ❖ Cross docking activity (Cross docking is the process of transferring goods directly from the receiving are to the shipment area to fulfill orders immediately to customers), shall be practiced, as this activity minimizes a lot of time, warehousing cost & there is less possibility of product damage.

5.5 Limitation and Implications for Further Research

Even though, the finding in this research are valuable, the limitation of this study shall also be shown. Potential limitations of this research are not considering the warehouse practice of other companies. Another limitation is, in this study the responses of the warehouse users or their saying is not included.

In addition, this study focuses only in assessing warehousing activities and challenges of the case company, to have broader view, further study could be considering, such as, studding the performance of the warehouse by using different key performance indicator or by widening to further Logistics or Supply Chain performance's.

Therefore, future researchers can expanded the study, by considering the points indicated above.

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APPENDIX I: QUESTIONNAIRES

ADDIS ABABA UNIVERSITY SCHOOL OF BUSINESS & ECONOMICS GRADUATE STUDIES DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Dear Respondents

My name is Endaykiros Hagos and I am a student at Addis Ababa University School of Business & Economics, Department of Logistics and Supply Chain Management. This is a questionnaire prepared to fulfill my Master's Thesis in the study of *“Assessment of Warehousing Practice and Challenges: in the case of ethio telecom”*. Hence, I kindly request your co-operation to response the questionnaire by filling the questions for the successful completion of the study.

Please do not put your name on the questionnaire. The overall purpose of this questionnaire is exclusively academic. Your response will not be used for any other purpose; it is confidential. So, your genuine, frank and timely response is vital for the success of the study. I want to thank you in advance for your kind cooperation and dedication of your precious time to fill this questionnaire.

Note:

- ❖ If you need further explanation please do not hesitate to contact me with 0911509882 or endaykiros@gmail.com
- ❖ Indicate your answer with a check mark (✓) on the appropriate cell
- ❖ You can provide answer in Amharic language for the open ended questions

PART I: Respondents Demographic Information

1. Gender: **M** ☐ **F** ☐
2. Educational level?
- Diploma ☐ 1st Degree ☐ Masters ☐ PhD ☐
- If other specify_____
3. Position in the organization?
- Professional ☐ Specialist ☐ Supervisor ☐ Manager ☐
4. Year of experience in ethio telecom?
- Below 5 ☐ 6-10 ☐ 10-15 ☐ 15-20 ☐ 20 and above ☐

PART II: General Questions

Please indicate your level of agreement on the statements by checking (✓) in the column using the following rating scale. Dear respondent please take your key warehousing activities in mined while choosing your level of agreement in the statements.

Where level of agreements:-

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree & 5 = Strongly Agree

No.	Warehousing Practice	Score				
		1	2	3	4	5
	Receiving Practice Indicators					
1	Most of the time we have notice of the goods arrival in advance which allows the warehouse to prepare, to schedule inbound operations so there are no uncoordinated events.					
2	The warehouse have sufficient and appropriate area/space for loading/unloading materials.					
3	The warehouse have sufficient and appropriate equipment's and enough labor to unload materials.					
4	Most of the time after the items are unloaded, quantities are verified and random quality checks are performed.					
5	Most of the time the inspection process of received materials are performed and reported in a reasonable time.					
6	At the time of receiving, occurrence of accidents are minimum. Accident's like physical accident on warehouse personnel and on received goods and other equipment's.					
7	In order to properly store incoming goods, appropriate disassembling or repacking of goods is performed in the warehouse.					
8	At the time of items arrival appropriate documents such as delivery orders (which indicate the item description, quantity, the supplier name and etc...) and Purchase Order No's brought together with the items					

No.	Warehousing Practice	Score				
		1	2	3	4	5
	Put-Away Practice Indicators (to transport goods from receiving area to storage place)					
1	In the warehouse availability of free storage locations, how much space & weight they can bear, etc., is known in advance.					

2	In the warehouse to do the put-away activity (transporting the goods from receiving area to storage), there is sufficient & appropriate equipment's, machineries and enough manpower.					
3	Most of the time we have a practice of storing high demand goods near to the shipping area, so that there will be minimum walking time.					
4	Most of the time, after a product is placed on its location, the storage location of the product is properly recorded and it is easily traced when it is needed for pick-orders.					

No.	Warehousing Practice	Score				
		1	2	3	4	5
	Storage Practice Indicators					
1	In our warehouse goods are stored in a most proper and economical way.					
2	In the warehouse sufficient storage spaces are usually available.					
3	The warehouse is successful in minimizing total product damage; like product deterioration, breakage, leakage etc.					
4	In the warehouse there is tight control of accessing the storage area without permission of the authorized personnel.					
5	In the warehouse there are material protection equipment's to safeguard/protect and minimize the extent of damage of stored materials; equipment's like fire extinguisher, safety rule etc.					
6	In the warehouse storage areas are available based on the nature of the items; such as perishable, long lasting, frequently required and so on.					
7	Most of the time in the warehouse we perform tracking of expired dated items or absolute technologies.					

8	Most of the time in our warehouse, items are placed in their correct location.					
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No.	Warehousing Practice	Score				
	Order-Picking Practice Indicators	1	2	3	4	5
1	In the warehouse goods storage area affecting the picking process by causing the employee/pickers to have difficulties to search the particular good, remove other items first to get that good, etc., is minimum.					
2	Most of the time items returned from shipping place or end user due to error in order-picking is minimum.					
3	Most of the time order-picking activity is performed correctly by selecting and gathering the item type & quantity as per the requested order.					
4	Proper tagging is performed for fixed assets before shipping to different locations to easily trace whereabouts after issued from warehouse.					
5	Most of the time the processing time to do the order-picking activity in our warehouse is reasonable.					

No.	Warehousing Practice	Score				
	Shipping Practice Indicators	1	2	3	4	5
1	In our warehouse after picking items, the process of checking quantity & type, controlling, sorting are performed with high commitment and reasonable time.					

2	In our warehouse packing similar items with proper packaging material is performed with high commitment to protect the items and make easy of shipping and transportation process.					
3	In the warehouse there is separate and enough shipping space/area.					
4	In the warehouse there is sufficient & proper equipment/machine and enough man power to do the loading.					
5	Most of the time communication is successful in making ready the transportation and to inform the recipient.					

No.	Warehousing Practice	Score				
	Challenges of Warehousing	1	2	3	4	5
1	The warehouse has minimum problem of stock inaccuracy (due to miscount due to human error, miswritten, misread, mixed up goods and inaccurate purchase orders).					
2	The design of the warehouse makes convenient for moving materials (aisles and layout) which is easy to access/pass, free from damaging items and convenient to load and unload.					
3	In the warehouse spaces availability including racks & shelves to store goods is sufficient and damage of items due to space unavailability is minimum.					
4	In the warehouse there is a sufficient area/space to consolidate, pack and load the items.					
5	Appropriate & necessary training's related to Warehousing Activity, material management, etc, is provided to warehouse employees.					
6	The warehouse is operated by skilled manpower.					
7	There is good communication between employees of the warehouse, across the warehouse and company which make the process easily practiced.					
8	After discrepancy is recognized, delay in write-off to reconcile between bin card quantity (quantity in ERP System) and physical availability is minimum.					
9	In the warehouse length of period to conduct regular physical count is minimum.					

10	In the warehouse delays in decision to avoid/discard obsolete items is minimum.					
11	Challenges in functioning warehousing activities due to ERP System is minimum.					

Part III: Please encircle on your answer choices and write your feeling on the space provided for the open ended questions.

1. In our warehouse there are guidelines or standard operating procedures (SOP) in place that provide instructions to practice each of the five warehousing activity.

Yes ☐

No ☐

If your answer is No. please specify by what method you do the warehousing practice?

2. Does Cross Docking practiced in your warehouse?
(**Cross docking** is the process of transferring goods directly from the receiving to the shipment area to fulfill orders immediately to customers)

Yes ☐

No ☐

If your answer for question number 2 is “Yes”. Please specify how it is practiced precisely:

3. What do you say about the company’s management of scrap materials?

4. What are the overall current challenges facing in doing warehousing activities in the organization?

Thank You!

Annex II

Semi – Structured Interview Questions

1. The use and contribution of ERP system in the practice of warehousing activities as well as its challenges.
2. How do you evaluate the employee's knowledge of warehousing activities?
3. Please explain the extent of training provided to employees related to overall warehousing?
4. Please explain how the company manages to improve warehouse employee's commitment?
5. Please explain the challenges related to warehousing?
6. How is the probability or extent of delivering goods at the right time, to the right destination, in right quality/type and quantity? If it is poor, what do you think the reason and your suggestion to solve these problems?
7. How do you put customer's response concerning the service performance of the warehouse? If your answer is “**complaining**” would you please mention on which type of service the customers mostly complain? In addition, please provide appropriate solution if you have?

Thank You!