ASSESSING THE CHALLENGES OF WAREHOUSE MANAGEMENT:

The case of Habesha Brewery Share Company

By: -Eshete Aga Urgessa

A Research Paper Submitted to the Addis Ababa University School of Commerce

Presented in Partial Fulfilment of the Requirements for Master's of Arts Degree in Logistics and Supply Chain Management

Advisor: Busha Temesgen (Ph.D.)

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DECLARATION

I, the undersigned, declare that, the study entitled, **"Assessing the Challenges of Warehouse management: The case of Habesha Brewery Share Company"** is my original work and has never before been presented for a degree in AAU or in any other university, and that all the sources of materials used for the study have been carefully acknowledged.

Eshete Aga Urgessa

Signature _____

Date _____

Statement of Certification

This is to certify that the thesis carried out by **Eshete Aga Urgessa** on the topic, **"Assessing the Challenges of Warehouse management: The case of Habesha Brewery Share Company"** is his original work and is suitable for submission of the award of Masters of Art Degree in Logistics and Supply Chain Management.

Busha Temesgen (Ph.D.)

Signature _____

Date _____

Addis Ababa University School of Commerce

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Assessing the Challenges of Warehouse management: The case of Habesha Brewery Share Company.

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List of Acronyms and Abbreviations

EDI: Electronic Data Interchange

ERP: Enterprise Resource Planning

FIFO: First in First Out

HBC: Habesha Breweries Share Company

JIT: Just in Time

RFID: Radio Frequency Identification

ROI: Return on Investment

SCM: Supply Chain Management

SKUs: Store Keeping Units

WMS: Warehouse Management System

Abstract

Warehouse management is a very critical part of the common activities in production firms, and there are a lot of challenges that come against its business profitability goal ; being focused on assessing the challenges of warehouse management, this thesis is designed as a case study, and both quantitative and qualitative methods were applied for data collection and data analysis purpose. Questionnaires were used to gather the quantitative data while interview was used to collect the qualitative data; the quantitative data is dominantly analyzed through percentage and the qualitative data is verbally explained. The findings of the study revealed that there were four challenging activities in the warehouse management of Habesha Breweries share company. Poor warehouse space utilization was one of the challenges. Regarding inventory management, product surplus and with their SKU, the use of an open yard for the purpose of storing different materials were the other challenges identified by this study; and finally, the study discovered that managing reverse logistics was challenging the warehouse's speed and cost efficiency. Therefore, the study recommends that improving the warehouse's space utilization, supporting the warehouse by better communication system that can enable it detect the external environment, giving priority to store safety and leaving the work of reverse logistics for third party can help it overcome the challenges.

Key words: ***Warehouse Management, Challenges of Warehouse management***

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Warehousing is part of the logistics activity where in between the point of receiving and distribution of goods, activities like handling, storing, packing and inventory management are undertaken, and these warehouse activities incur a large amount of cost which leads to a huge challenge of business logistics so that it needs to be managed carefully. Warehouses are essential components of any supply chain; in a warehouse items are handled in order to level out the variability and imbalances of the material flow caused by factors such as seasonality in demand, production scheduling, transportation, and consolidation of items (Gu et al., 2007). Therefore, the study focuses on assessing the challenges of warehouse management in Habesha Brewery Company, and the following discussion clarifies the meaning of warehouse and warehousing, the concept of warehouse management and the significance of proper warehouse management for the business.

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 (Bartholdi & Hackman, 2006). Warehouses are usually large plain buildings in industrial areas of cities and towns and are fully equipped with loading docks, cranes and forklifts among others (Simchi et al, 2000). Warehouse facilities consists of floor capacity, open storage, office facility, spill-over area, ceiling height, loading bays, flood lights, openings, and doors at both ends. Floor capacity and the height of the ceiling of the warehouse are important in determining the volumetric capacity of the warehouse (Roh et al. ,2015), and warehousing refers to the activities involving storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed. In other words, warehousing means holding or preserving goods in huge quantities from the time of their purchase or production till their actual use or sale (Anteneh, 2017). Specialized warehouses are established to fulfill the different requirements, e.g., production warehouse, distribution warehouse, and cross-dock. The main function of a production warehouse is buffering and storage, it supplies raw or semi-finished material for production and may prepare finished items for shipment; the typical objective is the minimization of operation and investment costs given the storage capacity and response time (Rouwenhorst et al., 2000).

Warehouse management is the continuous effort to operate and improve the processes, organizational structure and use of information technology in the distribution center as well as in collaboration with supply chain partners; warehouse management consists of four elements: People, Process, Technology, Business (Van den Berg, 2012). This implies that warehouse management is an operational day-to-day activity of managing the people who are working around the warehouse, basically focusing on the inventory control system under storage space restriction and the assignment of time scheduling while receiving, storing, material handling in the store keeping units (SKUs), order picking &shipping, and managing all the warehouse process by some specialized warehouse management systems like enterprise resource planning (ERP) that uses electronic data interchange (EDI) as explained by the same author in another article, so the business aspect of warehouse management is that it deals with reducing the total warehouse cost and realizing efficiency of speed or shortened response time.

Warehouse management today is part of SCM and demand management; it does not just start with receipt of material, but it actually starts with initial planning when the process & production was designed. Warehouse Management monitors the progress of products through the warehouse. It involves the physical warehouse infrastructure, tracking systems, and communication between product stations as it deals with receipt, storage and movement of goods to final customer, (Bartholdi & Hackman, 2006). In the multi-level distribution, there are levels of warehouses, starting with the Central Warehouse(s), regional warehouses serviced by the central warehouses and satellite warehouses serviced by the regional warehouses and so on (Antenen, 2017).

Companies will realize that reducing inventories at the expense of more complex warehousing and transportation activities is no longer a valid approach. Hence, highly competitive warehouse management introduces an action plan that not only attempts to reduce inventories, shorten response times, eliminate errors and rationalize process steps, but also looks in other directions when necessary (Van den Berg, 2012); and any other dimension of warehouse management should work for the commitment of cost reduction in the whole business logistics and fast or speedy response in satisfying demand.

Effective warehouse management has a number of benefits for production companies; achieving competitive advantage, improving warehouse operations and space utilization can be realized when a warehouse is potentially managed (Suvittwatt, 2016). A well-managed warehouse can

enable firms respond at the fastest possible lead time by storing enough volume of finished products or by using any other demand supply policy successfully which avoids lost sales and satisfies customers; on the other way round, companies will continuously work on the cost benefit analysis tasks if their warehouses are properly managed with providing a clear index of the warehouse's timely total cost with respect to its impact on the businesses' profitability.

A good warehouse management can empower the company with well-trained and interactive work force who are committed for achieving efficient inventory counts, reduce cost of inventory and avoid order mis-picks; a proper warehouse management can also solve problems related to the cost of goods and tools that are exposed to risk and damage by giving strict and persistent follow up on material handling and SKUs; and all of these are related to cost reduction and time management which are key success factors of any business; therefore, the purpose of this study is assessing the challenges of warehouse management that impact its goal of cost and speed efficiency in Habesha Brewery Share Company.

Habesha Brewery Share Company (HBSC) was established by 8,000 Ethiopian shareholders including traditional associations like equbs, idirs and Ethiopians in the Diaspora who contributed beginning from 4,000 birr up to 5 million birr. Habesha built its beer manufacturing plant in Debre Birhan town, 130km north of Addis Ababa where it started construction in September 2013 on a 7.5ha plot of land, and at the time of launching its formal manufacture, it had a production capacity of 650,000 hectoliters. By the time this research was being executed, the company had a commercial warehouse at Adama, a production warehouse at Debre Birhan, and twenty- two distribution warehouses in different regions of Ethiopia. Hence this research intends on assessing the challenges of warehouse management in the case company.

1.2 Statement of the Problem

Warehousing is capital intensive investment, perhaps, it is inevitable part of the business for production firms like Habesha Brewery Company which is involved in large scale procurement of raw materials from both local and international markets; particularly, when the firm is in a developing country like Ethiopia where there is poor infrastructure, warehouse will become mandatory. According to Smartturn (2009), a safe warehouse environment delivers important cost savings through: higher employee satisfaction and increased productivity, fewer workplace

disruptions and reduced absenteeism and equipment downtime; Inventories in warehouses are capital intensive assets that require storage areas, handling equipment, and information systems; in addition, warehouse operations are repetitive, labor intensive activities; the capital and operating costs of warehouses represent about 20-25% of the logistics costs (Baker and Canessa, 2009). Which means that the cost of facility equipment requirements and human resource makes warehouse operation very expensive although it has a lot of benefits.

According to Szymonik (2018), warehouse management safety has benefits regarding the qualities of the warehouse and capacity for safeguarding stocks and infrastructure against external hazards; one can extend the life of warehouse infrastructure such as storage and material handling equipment as well as reduce damage to inventory with giving attention to the safety and security of the warehouse, (Smartturn, 2009).

The safety of a warehouse depends on the following three groups of factors: technical, legal, and human-technical factors that have an effect on warehouse safety are related to appropriate equipment and infrastructure which provide for proper warehousing, and legal (organizational) factors include the development and implementation of documentation, and establishment of procedures whereas the human factors include occupational safety and health in addition to the knowledge relevance of the warehouse personnel Szymonik (2018).

All of the abovementioned safety and security requirements of a warehouse incur additional cost. The ultimate function of warehouse is bringing cost and speed efficiency of the business which is fundamental to be profitable; however, the challenge is that a safe warehouse itself incurs a huge amount of cost. This is the research gap the study intends to fill. There are different mechanisms to solve such challenges; for example, one of the commonest means of reducing the cost of order picking and storage is cross-dock system; distribution warehouse (or distribution center) handles temporarily, in addition to the distribution of items. According to Koster et al., (2007), in a cross-dock (or transshipment center), storage is scarcely presented, incoming items are immediately sorted and new customized shipments are created.

This study assessed the entire activities and coordination of the commercial warehouse which is found in Adama, the production warehouse of Habesha brewery company located at Debre Birhan and its distribution warehouses located at different parts of the country; then the challenges of

warehouse management while working for speed and cost efficiency are well assessed by the study. Based on the researcher's preliminary survey, there were some problems related to space utilization, inventory management and material handling and store keeping areas in the case company, and the researcher had not found any other study that addressed the challenges of warehouse management, particularly on the local companies, and whether Habesha Brewery Company was gaining the abovementioned benefits from its warehouse management or not was unknown so that this study focused on assessing and describing the challenges of warehouse management and recommending the possible solutions that can be taken by the case company.

1.3 Research Questions

Being focused on the background of the study and statement of problem presented above, this study aimed to respond to the following research questions: -

1. How is the challenge of warehouse management in Habesha Brewery S.C. described in terms of space utilization?
2. What kind of challenge does material handling and store keeping reflect on the warehouse management in the case company?
3. How does the use of technology challenge the company's warehouse management?
4. What seems the description of inventory management in terms of stockout and/or excess product in HBC?
5. How is HBC's warehouse management efficiency challenged by reverse logistics?

1.4 Research Objectives

1.4.1 General Objective

The general objective of this study is to assess the challenges of warehouse management in Habesha Brewery Share Company.

1.4.2 Specific objectives

1. To describe the challenges of warehouse management in terms of space utilization in the case company,

2. To discuss how store keeping and material handling activities reflect some challenges on the company's warehouse management efficiency,
3. To reflect how the use of technology challenges the company's warehouse management,
4. To demonstrate the description of inventory management in terms of stockout and/or excess product in HBSc.
5. To describe how reverse logistics impacts the warehouse management efficiency of HBSc

1.5 Significance of the Study

The result of this research can provide information to the organization in order to improve its limitations and overcome its existing challenges. The study also reduces the scarcity of information to the existing literature in the areas related with the challenges of warehouse management. Moreover, the application of the recommendation part can give birth to additional business entity within the supply chain that can expand job opportunity in the country. Finally, it indicates areas of further research topics.

1.6 Scope of the Study

The geographic scope of the study was limited to assessing the challenges of warehouse management in the commercial warehouse, found in Adama, which was used to receiving internationally procured materials , the production warehouse of the case company located in Debre Birhan and its eight distribution warehouses found around Addis Ababa, Ambo, Wolqitie, Debre Birhan and Adama cities. Even though there are a number of challenges that encounter the goal of speed and cost efficiency of warehouse management, the conceptual scope of this study addresses only few of the challenges that are commonly observed in warehouse management (Solistica, 2019) - space utilization, inventory management, the use of technology, stockout and/or excess product and reverse logistics- these are the selected scopes of the study; thus the study focused on describing the degree of the above listed challenges on the warehouse management efficiency of cost and time in the context of the case brewery company.

1.7 Operational Definition of terms

Bay station: - an open area used for the tracks to load and unload goods

Crate: - boxes used to put a number of bottles into one

Keg: - small barrel made of metal or aluminum used to store beer

Pallet: - a flat wooden base that is used for placing a number of crates into one group

Source: Dictionary definitions operationally defined by the researcher (2020)

1.8 Organization of the Study

In general, this study has five chapters: Chapter one is all about introducing the basic concepts of this specific study, Chapter two is the discussion of theoretical concept of warehouse operations focusing on the challenges while working for the commitment of cost and speed efficiency, and empirical model is followed at the end. Chapter three elaborates the description of research methodology. Chapter four is the demonstration of the results and the discussions of the quantitative and qualitative analysis of the warehousing practice and its challenges. Chapter five explains the summary, conclusion and recommendations of the results of the study, and finally areas of further studies on the same issue have been indicated.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter focusses on the review of literature: a discussion of warehouse management in business logistics, the role of warehouse in manufacturing firms, particularly, for brewery companies, and a review of warehouse activities are presented, then the challenges of warehouse management and the conceptual framework of this study are also enclosed at the end of this chapter.

2.2 Theoretical Literature review

2.2.1 Warehouse in business logistics

Warehouses are used primarily by manufacturers, exporters, importers, wholesalers and transport businesses. A warehouse refers to a commercial building that serves as a storage place for goods. The warehouses are usually large plain buildings in industrial areas of cities and towns and are fully equipped with loading docks, cranes and forklifts among others (Simchi et al, 2007). Warehouse plays a big role in business profitability; it definitely impacts the business in all aspects of SCM; warehouse also needs to be involved in the strategic aspects of business with the awareness of the future production level, product type, supplier selection, customers and all the associated product volume and throughputs. Warehouses are essential components of any supply chain. In a warehouse items are handled in order to level out the variability and imbalances of the material flow caused by factors such as seasonality in demand, production scheduling, transportation, and consolidation of items (Gu et al., 2007). A warehouse is a commercial building serves for buffering and storage of goods, or an intermediate area for storage of raw materials or products until they are needed for production or consumption respectively, (Bartholdi & Hackman, 2006). Warehousing is an essential component for most businesses and government organizations. In any Supply Chain, Inventory Management and warehousing form a part of operations intensive function, and it is one of the key building blocks in the entire chain and the efficiency of the warehouse operations; it will determine the further supply chain efficiency (Kalkidan, 2018).

According to Van den Berg (2012), highly competitive warehouse management transforms the distribution center into a strong link within the company and the supply chain. This implies that warehouse management plays a big role in the business. competitive warehouse management has

its own methodology, and the methodology distinguishes itself by combining the following three elements: It advocates a line of thinking about logistics optimization that goes back to basics; it capitalizes on the detailed data captured by modern information systems and it strengthens the distribution center to become an equal partner to other members of the supply chain. The methodology of highly competitive warehouse management uses the data to provide powerful analytics for performance evaluation and process analysis (transparency) and for aligning relationships in the supply chain collaboration. Outstanding performance within the distribution center may contribute to the competitive power of the entire company; the areas where the distribution center may have an impact on corporate performance are logistics costs, customer service and business alignment (Van den Berg, 2012).

2.2.2 The Role of Warehouse in brewery companies

Beer is the fifth most consumed beverage in the world besides tea, carbonates, milk and coffee, and it continues to be a popular drink with an average consumption of 9.6 L/capita by population aged above 15 (OECD Health Data, 2005); this can simply indicate the large scale requirement of raw materials which ultimately needs store. Brewery companies in Ethiopia procure malt, yeast barely at large scale from both local and international market, and they need warehouse to store raw materials for buffering purpose near their manufacturing firms. The nature of beer production also requires producing at large scale due to the long and time taking steps of brewing process so that warehouse for finished products is another need, then distribution centers are required to reach the market; in addition to all these, brewery companies need to have spare parts warehouse since they are engaged in fleet management, and use reusable materials like bottles and boxes.

2.2.3 Warehouse activities

Warehousing comprises a set of activities or processes that are performed to ensure the seamless flow of materials and information. A warehouse or a distribution center is a commercial building used for the storage of goods. The principal element of warehousing is order processing which generally refers to the work flow associated with delivering products ordered by a customer to a shipping carrier. The primary aim for warehouses and distribution centers is to facilitate the movement of goods from suppliers to customers while meeting the customers' demand in a timely and cost-effective manner (Van den Berg, 1999). A number of tasks are implemented in the

warehouse; the most known tasks include: warehouse planning; receiving inspection and shipping; inventory management; material handling and packaging or re- packaging, and storage, sortation and replenishment. The following discussion reflects little about each activity set under five groups, and the viewpoint of their impact on logistics cost and service efficiency are discussed as follows.

2.2.3.1 Warehouse Planning

Warehouse planning begins from conceiving the idea of the warehouse type whether it has to be a production warehouse that provides buffering and storage solution, or a distribution warehouse which is oriented with receiving in high quantity and distributing through multiple channels at minimum investment cost, otherwise if it has to be a cross-dock warehouse concerned with direct sorting and shipping customized forms. To ensure the highest level of operational efficiency, conceptual design and facility layout planning are crucial. Facility layout planning deals with functional issues such as storage capacities in particular departments, technological facilities which are required to deliver an optimal level of service on how orders shall be placed and executed. At this level, throughput requirement is one of the main concerns to serve storage facilities and future operating cost. Size and Dimension: Considers the construction cost of a warehouse, inventory holding policy, auto replenishment process and overall material handling procedures (Gu et al., 2007). The objective of planning and process is to ensure the best system performance by allocating the appropriate space and achieve an optimum level of efficiency.

2.2.3.2 Space Utilization in the Warehouse

Warehouse space has a lot of expenses unless it is given serious attention at the initial stage. To make the best use of the available space, we must improve the storage systems, the default selection routes, and the layouts of spaces and shelves, particularly in the reception area. Maximizing the vertical space increases the efficiency of the picking and dunnage operations and lowers the costs of inventory and operation (Solistica, 2019). This is achieved by taking advantage of the vertical space and by using deep lanes. Stack height and lane depth is very important as far as spacing is concerned. Bartholdi and Hackman (2008) suggests that pallets that can be stack high, allow many pallets position per square foot of floor space which means that space for aisles cannot be used for storage and so is not directly revenue generating. Consequently, aisles space is reduced to the

minimum requirement to provide adequate accessibility. Thus, the aisles must be at least wide enough for a forklift to insert or extract a pallet

2.2.3.3 Receiving and shipping

Receiving and shipping are warehouse operations, which represent two extreme connection points of the warehouse procedures. According to Koster et al. (2007), above these main activities mentioned before, there are also some other activities that warehouses maybe involved such as: value added processing or receiving products and materials from customers and redistribute them to other customers or back to the original manufacturers. Receiving includes typically carrier processing (i.e., unloading), item identification, recording the goods receipt, quantity and quality inspection, unpacking, and sorting activities; whereas, shipping includes finishing, batching, packing, and loading operations. Distribution center is a warehouse that collects products from different suppliers and delivers them to the customers and sometimes some assembling process also takes place between these receiving and delivering (Van den Berg, 1999).

2.2.3.4 Inventory management

Inventory flow management entails planning and building design for the movement of materials or with logistics that deal with the components that are tangible in supply chain (Christopher, 2005) which means that it involves a set of decisions that aim at matching existing demand with the supply of products and materials over space and time in order to achieve specified cost and service level objectives, observing product, operation, and demand characteristics. In almost all manufacturing plants a center is needed to sort raw materials, parts and products and it plays a critical role in company's logistic success (Koster et al., 2007). A well-managed warehouse system should have easy access to market, good located, sufficient space and reasonable delivery time, and it is also important to improve the efficiency of warehouse performance in order to reduce the inventory level as much as possible, and to fulfill this goal and have a good performance of the warehouse management, there are some key factors in analyzing warehouse performance. Factors like: on time shipments, order picking accuracy, annual work force turn over, inventory capacity by dollar/unit, dock to stock cycle time, and distribution costs as a percentage of sales, etc. (Van den Berg, 1999). Ordered components are planned to ship as soon as possible, and they should be on time and with no damage and of course correct amount (Baker and Canessa, 2009).

A good inventory management is characterized by demand understanding through paying attention to short- and long- term patterns of orders, matching the regular inventory with sales waves, keeping safety stock to avoid stockouts and the inventory holding cost with the amount of revenue, Smartturn (2009). Therefore, the goal of effective inventory management is protecting extra costs caused by product surplus and keeping away lost sales that may occur because of stockouts.

2.2.3.5 Material handling and Packaging

Materials must be handled in a well-organized and effective manner to complete the essential warehouse operations. Warehouse Management System (WMS) tend to be more often associated with the need to do something to service your customers that your current system does not support such as first-in-first-out (FIFO), cross-docking, automated pick replenishment, wave picking, lot tracking, yard management, automated data collection and automated material handling equipment (Apparel, 2014). WMS enables real-time tracking of receiving, storage and immediate access to information on combined statistics of weight and lines for a specified customer (Hui Nee, 2009). WMS will reduce labor costs, inventory, increase storage capacity, increase customer service and increase inventory accuracy (Apparel, 2014). There is an urgent need to study the dynamics of the material convergence and the ways to control and reduce the negative impact of non- and low-priority material flows (Holguin et. al., 2012). By integrating advanced radio frequency and bar-coding technologies with core warehousing functionality, WMS provides comprehensive fulfillment center and warehouse management, including receiving, stocking, picking and related warehouse tasks. WMS also provides detailed audit trail that measures performance levels objectively, ensures employee accountability and allows material flow to be easily traced (Hui Nee ,2009). According to Olajire (2012), there are particular aspect of packaging in the brewery industry. Packaging ensures quality and safety of final products and is part of attraction of these products for consumers, and it is essential to protecting the product when in transit; brewing industry should work with suppliers, wholesalers, and procurement & packaging experts to help in making decisions that minimize cost and environment impact from packaging materials. Different types of product packaging are available, including bulk packaging such as beer kegs, crates and pallets that are almost always returnable and reusable. Other packaging includes boxes, glass bottles, cans and PET (polyethylene terephthalate).

The other unique part regarding brewery companies is that packaging and labelling have to be done with the consideration of environmental requirement regulations and consumer expectations. Brewery industry should implement packaging light weighting initiatives that will reduce cost, minimize the use of natural resource and lessen transportation-related impacts (EC, 2006). Therefore, packaging within the brewery companies requires attention on diversified dimension.

2.2.3.6 Storage

Storage is the process of allocating items in the warehouse. Storage includes the interrelated activities like sequencing and consolidation, storage location assignment, and shuffling. Item sequencing determines the order, according to which items are sorted to be processed, and consolidation refers to the decisions and restrictions determining whether different items can be placed in the same compartment or not; however, a dedicated compartment accommodates only one item as Anken et al. (2011) stated that item consolidation may yield both improved storage utilization and increased complexity. Tompkins et al. (2010) discusses storages location assignment in terms of how much product, and where in the warehouse, with what sort of inventory control and order picking requirements to store items. shuffling is the concept of reallocating products in the store analysis of the slack time to perform this task; brewery industry requires temperature-controlled warehouse, the diagram by (Phillips, 2010) in (table 1) below, shows the common requirement of storage.

Picking activity requirements		High	Low
	High	• High density storage • Automated handling	• Dedicated locations • Low density storage • Automated handling
	Low	• Random location • Dense storage • Manual handling	• Dedicated pick locations • Dual storage • Low density storage • Manual handling

Table 1: Storage requirements

Source, Phillips (2010)

2.2.3.7 Technology in Warehouse Management

The modern warehouse is wireless, incorporating paperless receiving, put away, picking, shipping and inventory counting, Smartturn (2009). The manual operation of the abovementioned warehouse activities may end up either in fulfilling the tasks independently or in coordinating them at a very poor or slow paced level of procedure which leads to a big failure of business in the current nature of market competition; however, the use of technology in the warehouse can automate the coordination of such interrelated warehouse activities. According to Hui Nee (2009), by integrating advanced radio frequency and bar-coding technologies with core warehousing functionality, WMS provides comprehensive fulfillment center and warehouse management, including receiving, stocking, picking and related warehouse tasks. The bar code is the heart of the modern warehouse or distribution center which helps to identify when items arrive, when they are latter picked to fill orders and shipped out, and the best way to manage information on these barcode labels is with RF technology of WMS; it makes the work simple and warehouse employees can interact with the system directly from the point of the activity, then they will be able to make critical decisions faster (Smartturn, 2009). WMS also provides detailed audit trail that measures performance levels objectively, ensures employee accountability and allows material flow to be easily traced. WMS increases productivity. reduce overall costs, brings faster inventory counts, increases storage capacity, increase customer service, increases inventory accuracy, and gives faster error correction opportunity (Apparel, 2014).

2.2.3.8 Management of Reverse logistics in the Warehouse

According to Cristina & Francisco (2016), reverse logistic is considered as part of warehouse management activities due to the fact that some products return to warehouse without any use, because of expire date, warranty, quality, damages during transportation, to be processed to produce a result by recycling; however, there are cases where reverse logistic is applied for the movement re-usable tools and materials like bottles after the target product is used. Satellite Logistics group (2010), discuses a particular challenge of brewery companies which is more of related to reverse logistics; it is about keg management. The warehouses of brewery companies usually manage reverse logistics because the bottles and the kegs are obviously returned to the warehouse after the beer is drunk by the end consumers, and the basic point is related to how it is managed in the warehouse in order to refill label and pack. According to Satellite Logistics group

(2010), after the product is once spread throughout its market destination, speed of returning them back is the basic requirements; in addition to returning them fast, getting them safe is another fundamental necessity, receiving back unbroken and full number of materials plays the basic role of the production and distribution activities. The performance of managing reverse logistics on this basis will be considered up to the standard performance if it is fast enough which accelerates production and re-distribution, and if it is capable of saving unnecessary cost caused by broken and/or lost materials (bottles, kegs & crates/boxes).

2.2.4 The Common Challenges of Warehouse management

Most of the challenges of warehouse management are related to the warehouse layout design. There are several challenges during designing a warehouse: including tighter inventory control, shorter response time and greater product variety, (Gu et al., 2007). Design facility consists of places where inventory is stored, assembled, or fabricated; world class warehouse management should include performance, practice and objective for warehouse operation (Frazelle, 2001). To ensure the highest level of operational efficiency, conceptual design and facility layout planning are crucial. Facility layout planning deals with functional issues such as storage capacities in particular departments, technological facilities which are required to deliver an optimal level of service on how orders shall be placed and executed. In a fast-paced competitive environment warehouse requires continuous improvement in design; particularly facilities in layout planning and distribution network design to bring higher efficiency in performance (Gu et al., 2007).

The other challenges are related to different technological products that can support warehouse management activities. To incorporate modern concepts such as Just-In-Time (JIT) or lean management brings new challenges to industry experts to rethink on several issues such as reduce inventory level, reduce lead time, minimize response time, and increase higher level of productivity. In less than a decade, the global retail industry has witnessed a significant achievement such as bar coding, Radio Frequency Identification (RFID), Enterprise Resource Planning (ERP) and Warehouse Management System (WMS) etc. Implementation of all these technologies contributes a real time environment of warehouse operation and faster communication with other supply chain partners (Gu et al., 2007). In addition to these, the most frequent challenges of warehouse management are the following.

2.2.4.1 Excess stock and Lack of space

In some cases, when stock is stored from a single channel, it is possible that it exceeds the acceptable level, which results in the accumulated goods becoming more of an expense than an income. Using omnichannel warehouses, rather than warehouses sorted out by channel, helps lower the total inventory of the supply chain, gives better visibility on the availability, and makes order preparation and reverse logistics easier. The problem of not having enough space is that the goods will keep on accumulating inadequately, which may result in work accidents, time lost in locating the products, and a loss of quality of the merchandise. To make the best use of the available space, we must improve the storage systems, the default selection routes, and the layouts of spaces and shelves, particularly in the reception area. Maximizing the vertical space increases the efficiency of the picking and dunnage operations and lowers the costs of inventory and operation (Solistica, 2019).

2.2.4.2 Low traceability and connectivity

As mentioned by Solistica (2019), Thanks to technology, anyone can know now who manufactured the raw materials, who transported them, which lot they belong to, when where they moved, as well as the remaining stages and who was in charge. The inconvenient comes when we have to record every step of the chain in addition to obtaining and gathering the data so we can make the best use of it. This problem may result in a loss of control over the goods and over the continuity of the supply. However, thanks to new software, apps, and tools, the connectivity within and outside the warehouse can be maximized and help plan and execute the supply chain. Integrating the storage and recovery system (AS/RS) with the warehouse management system (WMS), makes the order fulfillment process more transparent and easier.

2.2.4.3 Excess procedures and Incorrect time management

This problem covers issues such as extra operations like rework, reprocessing, and unnecessary handling due to defects, overproduction, or shortage. By deleting unnecessary or obsolete steps, the process become more agile and fast and we improve client experience, income, and margins. We can improve this issue noticeably by optimizing picking and the location of the inventory.

Not knowing the location of products precisely impacts execution times and delays the whole supply chain. Some automation tools, such as barcode technology, RFID labels, and order

management systems, give us information about inventories and locations in real time so we can avoid repeating tasks and reduce execution times considerably (Solistica, 2019).

2.2.4.4 Inaccurate inventory and outfitting

According to Sheikh (2018), inventory management is a challenging area in supply chain management, and inventory problems of too great or too small quantities on hand can cause business failures. (Satellite Logistics group, 2010) also states that having excess goods or a lack of them may become a problem because, at the end, it translates into storage of expenses or lost sales.

2.2.4.5 Damaged products and Being unprepared for the demand

When an item gets damaged, it generates a cost for warehouse operations. To avoid this, (Solistica, 2019) recommends using pallets that can be stowed, lifted, and wrapped. Likewise, we suggest having safe, well-lit, and clean facilities to protect not only our employees but also our products. Internal and external factors such as seasons, weather, and the economy contribute to the demand's volatility. Having timely information may help forecast the demand correctly and, thus, avoid an excess inventory that raises storage costs, or a lack of stock that results in lost sales (Satellite Logistics group, 2010).

2.2.4.6 Challenges with human capital and technology

According to Solistica (2019), the lack of training and integration of employees may delay the whole chain, turn it inefficient, and create expenditures due to rework. Employees of the logistics department, and those related to it, must undergo constant warehouse management training and their Key Performance Indicators (KPIs) must reflect and assess their productivity throughout the supply chain. The primary challenge of warehouse management concerning technology is the capital-intensive nature of owning the infrastructure and followed by, the working force ability to use the technology becomes additional challenge; connectivity loss during a transaction can also cause errors (Smartturn, 2009). Automating all the mechanized or manual operations, satisfying the requirements of the customer without much customization and integrating all of the warehouse data with supply chain applications are considered as the common challenges related to technology while managing the warehouse (Tibebu, 2018).

2.2.4.7 Complications of Reverse Logistics Management

Satellite Logistics group (2010), discuses a particular challenge of brewery companies which is more of related to reverse logistics; it is about Keg management. Keg management becomes increasingly critical as brewers' operations expand. Many craft brewers simply do not have an adequate keg inventory to expand to multi-state distribution and meet a new market demand. As a result, they may need to purchase more kegs in order to have sufficient on-hand inventory. With an average cost of $125 for a half-barrel, this can quickly become a budget drain. Tracking and recovering the keg assets that they have spread throughout major markets nationwide can be a daunting task for which brewers often lack the time, resources and/or expertise to handle efficiently. According to Solistica (2019), To optimize the gathering and reverse logistics processes, avoiding the manual entering into the SKUs is suggested and instead using scanners to get an updated reading of the inventory. With a warehouse management system, we can plan more efficient gathering routes that result in shorter response times and greater employee productivity.

In spite of rapid business growth, craft brewers typically do not have the business volume of empty kegs to fill a truckload and must wait for several weeks to build up enough kegs for a return shipment. this slows keg turnaround times and impedes production. In addition, problems can occur when kegs sit unused for lengthy periods of time. Lost or stolen kegs are an industry pain-point that costs producers millions of dollars each year, resulting in a negative impact on their return on investment (ROI) and bottom-line performance (Satellite Logistics group, 2010).

2.3 Empirical Literature

A research done by Anteneh Berhanu (2017) at the Addis Ababa University under the heading "Effectiveness of Warehouse Management in Save the Children Ethiopia: A Case of Gambella Emergency Office" indicates that the warehouse is quite unorganized regarding inventory level management, handling effective communication among warehouse personnel, material handling in the warehouse and retrievals of records; in addition, the study also shows that there had been lack of management support. The study concludes that manpower training, the use of IT in the warehouse and management support were required in order to improv warehouse efficiency. The other research done by Asemelash Teka under the heading, "Assessment of Warehousing Practices: A case of Finfine Furniture Factory S.CO" is focused on assessing the general practice

of warehousing rather than the challenges against such practice besides it deals with the warehouse practice in furniture company that different from the practice of warehousing in the brewery companies. The above researches are conducted on the issues of warehouse management and they are close to the theme of this study; nevertheless, neither of them focused on the challenges of warehouses management nor did they correlate efficiency with cost management. Most of the researches on the issue of warehouse management have no local touch with the Ethiopian organizations, and they do not practically reflect the challenges behind. Roh et al. (2015), for example, emphasizing on the importance of warehouse preparedness, suggests a multi-criteria AHP model to decide the location of warehouse, but does not focus on the challenges of warehouse management; and finally, A research done by Kalkidan Alemayehu (2018) at ST. Mary's University under the heading "Assessment of Warehouse Performance: A case of Meta Abo Brewery Share Company" is the one which I reviewed well due to the fact that it is both a recent study and done on a local brewery warehouse, it is focused on studying the effect of warehouse performance on the company's business competence; the study confined to meet the main and satellite warehouse and its decentralized warehouse management system. The study found that there was a poor warehouse performance in Meta Abo Brewery S.C; particularly, regarding cost reduction, in having well organized warehouse equipment, in formulating self-development strategy and in developing warehouse evaluation method; however, the research does not address the challenges of warehouse management which are the key factors of those mentioned failures of warehouse management performance; therefore, this study definitely fills the gap that is not addressed by previously conducted researches, and it also serves as a beginning point to conduct similar research on other case companies, or in the same case company with wider range of scope.

2.4 Conceptual Framework

There are four major directions in warehouse design problems including: warehouse layout, storage assignment policy, picker routing, and zoning, where the first two are the overall design problems and the last two are specific design sub problems, and these problems will become factors for the challenge of space utilization if not well handled earlier (Lihui and Hsieh (2006). The commonest challenges that most warehouses encounter with are related to layout design incompatibility, poor inventory control like untraceable placement and inaccuracy, inadequate storage, poor communication between departments and insufficient infrastructure of technology as frequently presented in researches. On the other hand, new information technologies such as

bar coding, and warehouse management systems (WMS), provide new challenges in design process (Gu et al., 2007).

Warehouse is often criticized for various reasons, some of which are genuine problems faced by users and could be overcome by proper planning and organization, but most of the above listed challenging situations can be easily resolved by closely understanding the root cause of each problem and by reforming the warehouse layout design in a way that it can be automated and supported with the recent products of technology ; therefore, the warehouse layout design is the root cause for most of the challenges listed. The type of warehouse is determined by the objective of the warehouse as indicated in table 2 bellow - distribution, production and contract warehouses, and it is a common guideline that can help to design a warehouse based on its fundamental function.

WAREHOUSE TYPE	PURPOSE	WAREHOUSE CHARACTERISTICS	COMMON DESIGN CRITERIA
DISTRIBUTION	Fulfill external customer orders	Large number of SKUs. Quantities per order line small. Complex picking process. Often optimized for cost efficient picking.	Maximum throughput, minimal investment and operational costs.
PRODUCTION	Store raw material, work in progress and finished products associated with a manufacturing process.	SKUs are in storage for long period of time. Inexpensive storage systems. Bulk storage. Few orders with many order lines or large quantities per order line.	Storage capacity, minimal investment, operational cost, response time
CONTRACT, 3PL	Provide warehousing as a service to customers.	Standardized storage system. Unpredictable demand.	Minimize double handling, maximum throughput, volume and mix flexibility.

Table 2: Criteria for warehouse type decision

Source: Rouwenhost et al, (2000)

Whatever sort of warehouse a company is running, a regular inventory is done on the space it has in order to maintain the highest possible efficiency. Therefore, regardless of the unique features of brewery warehouse's interior design which has to consider temperature controlling and ingredient storage specializations, the following design in (fig 1) can show the warehouse's general outlook or the framework of warehouse activities.

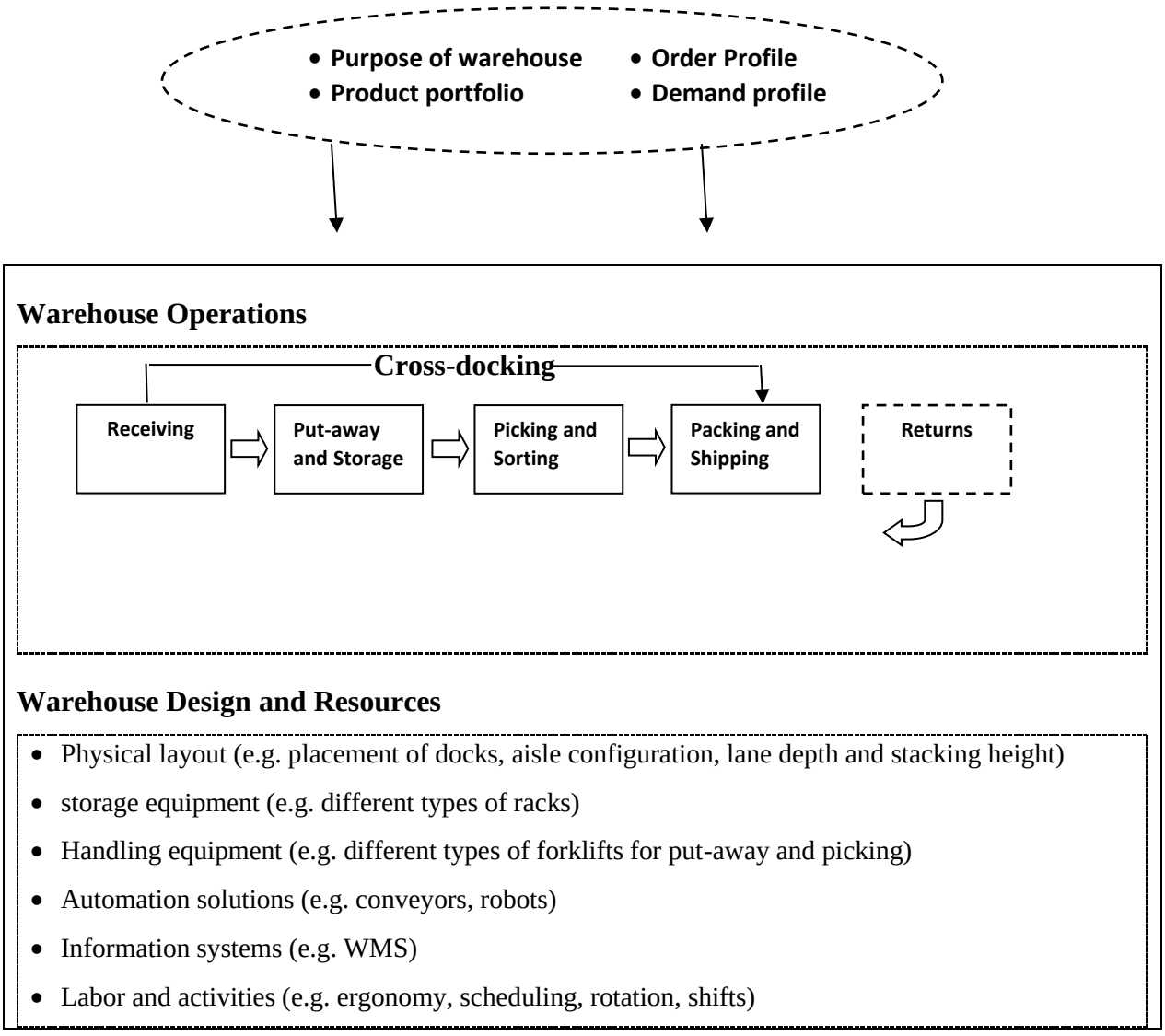


Figure 1: Common approach to Warehouse operations

Source: Joakim et al. (2018)

To conclude this discussion, the basic concept of this study is concerned with assessing the challenges of warehouse management, and respectively the following diagram indicates the conceptual framework of the variables. It shows how the researcher will perceive the relationship between the variables of the study. The conceptual framework in (fig 2) bellow portrays how or to what extent the selected challenges of the warehouse management impact the fundamental function of warehouse which is realizing cost and speed efficiency in the business.

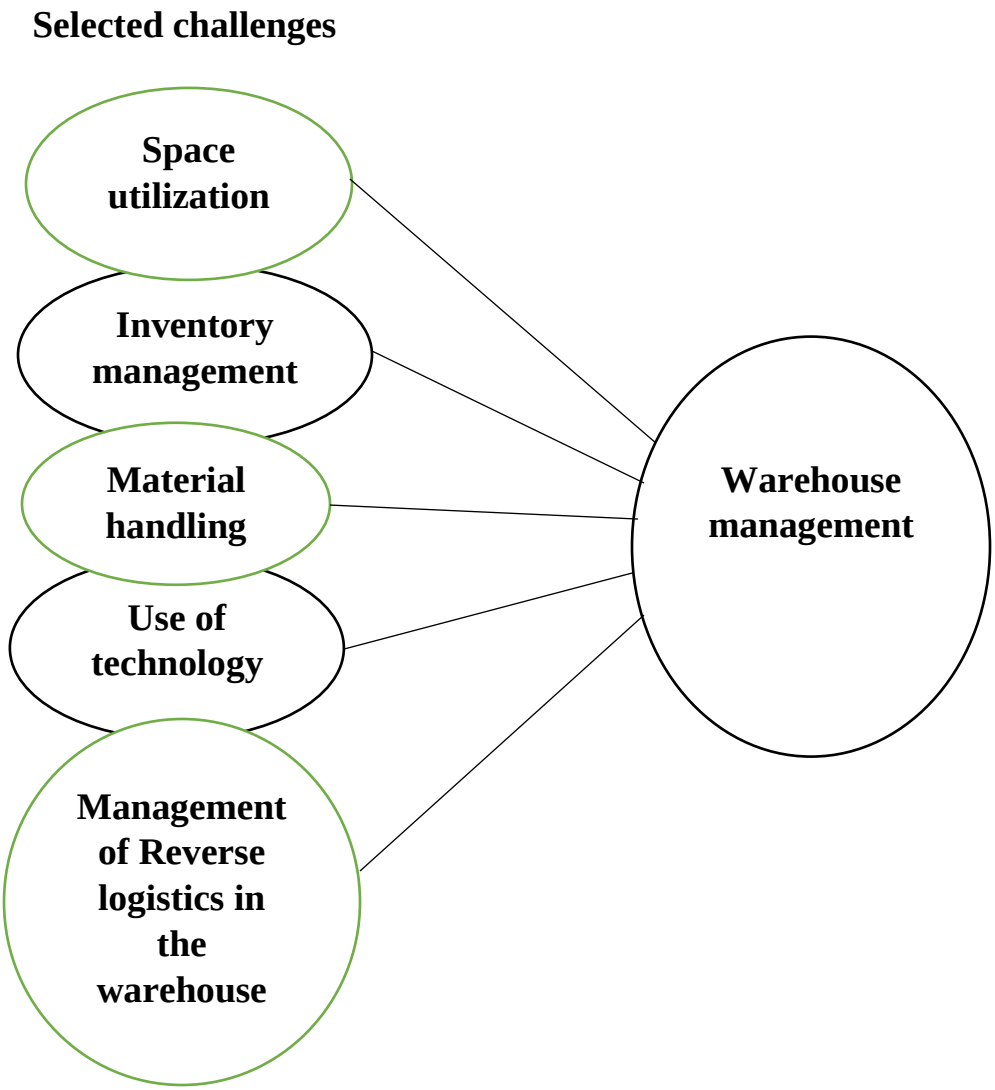


Figure 2: Conceptual framework

Source: created by the researcher (2020)

CHAPTER THREE: RESEARCH DESIGN & METHODOLOGY

3.1 Organization Selection and Research Area

According to GTAI (2019), Ethiopia is Africa's fourth-largest beer producer and needs 235,000 tons of malt per year with rapidly growing output. In August 2018, the participating company Piet Brouwer Power Solutions announced that a 60,000-tonne plant of the Belgian malt producer Boor malt in Debre Birhan was due to go on stream in mid-2019, this means that the brewery industry in Ethiopia is attracting the global business. The case organization selected for this research is Habesha Breweries Share Company (HBSC)

As slightly mentioned earlier in chapter one, HBSC was established by 8,000 Ethiopian shareholders including traditional associations like equbs, idirs and Ethiopians in the Diaspora who contributed beginning from 4,000 birr up to 5 million birr. Habesha built its beer manufacturing plant in Debre Birhan town, 120km north of Addis Ababa where it started construction in September 2013 on a 7.5ha plot of land, which has a production capacity of 650,000 hectoliters. The second largest brewery in the Netherlands, Bavaria, holds 40 percent stake on Habesha Breweries. Habesha Beer joined the local market in July 2015, and has become a popular beer brand then after. The beer has five percent alcohol content. Habesha has partnered with Ethiopian Airlines and has begun supplying canned Habesha Beer to Ethiopian Catering since July 2016. Canned Habesha beer is now available on Ethiopian Airlines flights. Habesha, has a motto, “Reach and connect”, and has an ambition to reach Ethiopians living abroad. Habesha procures the malt with which it brews the beer with five percent alcohol, from Holland Malt Company in the Netherlands. However, the company has made a deal with three cooperatives in the Southern regional states for the supply of barley, which will be used for malt making at local malt factories. The company requires 11 million kilograms of malt a year. (Hidat in *Fortune*, 2015).

The company has planted the production firm together with the production warehouse in Debre Birhan city, and its head office is found in Addis Ababa, Bole sub city in front of Harmony Hotel; it has one commercial warehouse and more than twenty distribution warehouses throughout the country. This study is concerned on assessing the challenges of warehouse management in the case company. HBSC has commercial, production and distribution warehouses that are centrally

managed in the head office; by the operations manager. The commercial warehouse is located at Adama, primarily serving as a store for procured raw materials from the international market and received from Mojo Dry Port and the production warehouse is the one which is planted together with the production firm; this one serves as a warehouse for buffering purpose; in the these warehouses, chemical substances that should not be mixed with edible items have a separate store, but other items are obviously stored in the same warehouse; besides there is another warehouse in the production firm that stores finished products until moved to the distribution warehouses. Product inventory in the production warehouse is managed following the seasonal demand fluctuation, and it uses FIFO due to the fact that beer is perishable product that needs quality follow up.. In the distribution warehouses, products are stored by batch orders using palates of 8 rows, each palate consisting of 10 kegs, and HBC uses four third party transport service providers assigned in the Northern, Southern, Eastern and Western zones of the country for the entire movement of goods.

This research included the warehouse department of HBSC working in the head office which is located in Addis Ababa, Adama commercial warehouse which is about 95 kilo meters away from the researcher to east wards, the production firm found in Debre Birhan at the distance of 130 kilo meters away from Addis to the north and its warehouse found in Debre Birhan and four distribution warehouses found around Addis Ababa at CMC, Garment, Kality and Gulele areas which sell the products to 8 agencies that distribute to all retail shops, and four other distribution warehouses that distribute in Ambo 110 kilo meters away to the west of Addis Ababa, Debre Birhan, Adama cities and Wolqitie which is 150 kilo meters away from Addis to the south, and the sketch map in (fig 3) is used to give a visual demonstration of the study area’s road map.

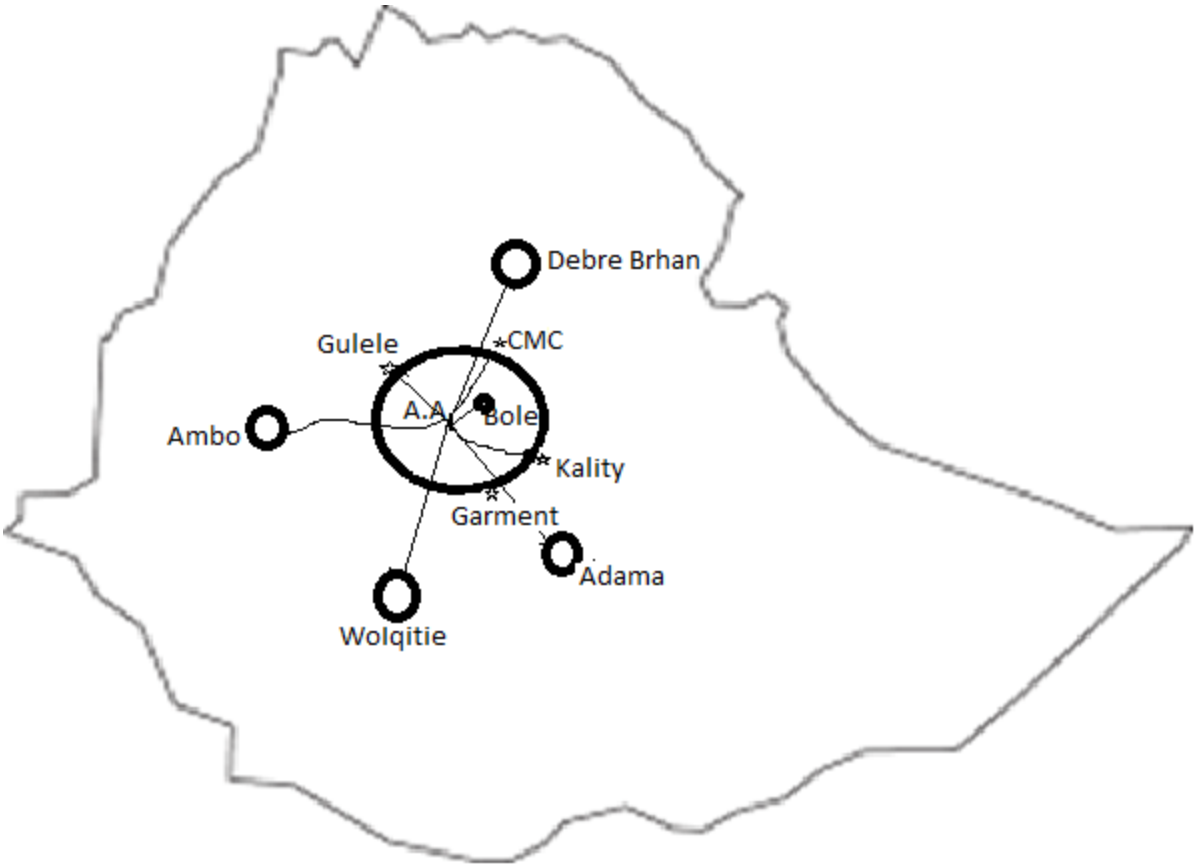


Figure 3: The road map of the study area

Source: drown by the researcher (2020)

3.2 Research Approach

In order to describe and explain the existing challenges in the warehouse management of the selected case company, both quantitative and qualitative approaches are applied because these approaches enabled the researcher gather reliable information, and the data were gathered through questionnaires from the warehouse personnel working at the head office, in the commercial warehouse, in the production warehouse and in the distribution warehouses. Unstructured interview was also conducted with, product manager and commercial manager who are managing the warehouse operations.

3.3 Research Design

A descriptive approach was used to conduct this study; this method enabled the researcher investigate and present the existing challenges of warehouse management in a single company

where there were limited number of research participants; the method allowed the researcher to easily present a quantitative evidence based on the data gathered through questionnaire and explain the qualitatively primary data gathered through interview, and finally the method was the correct choice to present balanced discussion based on the primary information gathered through interview and questionnaire.

3.4 Population Size and Sampling

The researcher found none probability purposive sampling method being suit to select warehouses from HBSC in order to conduct this case study; among its 22 (twenty-two) warehouses found all over the country, ten of them were included in the study on the notion that they can represent all of them as elaborated bellow.

The production warehouse and the commercial warehouse were among the selected ones because they are the main warehouses that serve non-replaceable service in the company; four distribution warehouses working around Addis Ababa, were also included in the study due to the fact that Addis Ababa is the major distribution area of the company's products; in addition to these, four other distribution warehouses working in Ambo, Wolqitie, Debre Birhan & Adama cities were deliberately selected for two basic reasons: the first reason was related to cost and time requirements and the second reason was that all of the company's distribution warehouses used to serve the same type of services according to the researcher's preliminary assessment so that from the view point of the researcher, including all of the company's distribution warehouses would not bring any change in the study; on top of these, the warehouse management department of HBSc head office, which centrally manages the whole warehouse operations, was included in the research; moreover, the head office, the production warehouse and the commercial warehouse are believed to be the sources of an in-depth and expert level information because they are concerned with the entire tasks of the case company's warehouse operations.

Therefore, the target population size considered the entire staff and all professional warehouse managers - a total of 33 people working in all of the above mentioned ten centers so that it became census type of population rather than taking sample since the total number of populations was less than100.

3.5 Data Source and Data Collection Instrument

The study used both primary and secondary data sources to get the required data. Document review to gather secondary data about HBSC warehouse management system, structured survey questionnaires to gather primary data from the warehouse management staff members, and unstructured interviews with the warehouse managers including the operations manager to support the primary data gathering were applied to obtain the complete information.

3.6 Method of Data Analysis

Primarily, the data gathered through questionnaire was coded and summarized to be statistically calculated using the SPSS (version 20) software so that it is presented in tables in order to display the summary of questionnaires, then based on the quantitative data that is summarized and calculated, the reality of the selected challenges in the case company was measured through frequency and percentage analysis; this analysis is able to give us a valid, clear and measurable result of the study; however, some of the challenges would not be measured with this method so that the data gathered through interview is verbally explained in order to give a complete description of the challenges of warehouse management in the case company. Therefore, with reference to both statistically calculated quantitative data and content wise analyzed qualitative information, a rational description of analysis is forwarded in the conclusion.

3.7 Reliability and Validity

3.7.1 Reliability

In order to keep the consistency or reliability of gathering the information accurately, the researcher used a uniform questionnaires format to all of the respondents, and to test the reliability of the questions in the questionnaire, some pre-test questionnaires were distributed and data was collected then redundant, unnecessary and outlier questions were removed, corrected and reversed. Cronbach's alpha was also used at the end of data gathering to test the internal consistency of the instrument, and with reference to (Taber,2017), the range of measures within the Cronbach's alpha reliability test values above 0.7 are ranked as follows.

Alpha Values	Ranks
A. 0.70–0.77=	relatively high
B. 0.71–0.91=	good
C. 0.73–0.95=	high
D. 0.76–0.95=	Fairly high
E. 0.81=	robust
F. 0.84–0.90=	reliable
G. 0.91–0.95=	strong
H. 0.93–0.94=	excellent

The above list of Alpha values indicates that the instrument that can value (≥0.71) alpha coefficient is acceptable and reliable to be used for further studies. Therefore, as indicated in the following table, (table 3), the Cronbach's alpha value of each variables of this study is above 0.7 and proves that the instrument has an acceptable level of reliability to proceed the study.

Table 3: Summary of reliability test values

No.	Variables considered in the data gathering instrument	No. of Questions under each variable	No. of responses	Cronbach's Alpha values
1	Material handling & store keeping	5	30	0.763
2	Space Utilization	5	30	0.709
3	The use of technology	5	30	0.761
4	Inventory management	5	30	0.705
5	The management of reverse logistics	5	30	0.721

Source: Survey Result, (2020)

3.7.2 Validity

To achieve the validity of the study, the data gathering instrument was derived from related subject matter literatures, issues of warehouse management, the previously studied researches by (Admasu, 2017); (Anteneh, 2017); (Asmelash, 2017); (Belayhun, 2017) and (Tibebu, 2003) which were adapted from (Saxena, 2006) and (John et al., 2007); so that the study is valid and reliable in other words it doesn't not have failure in accuracy and consistency.

3.8 Ethical Considerations

For the sake of ethical consent of the study, the researcher received support letter from AAU, School of Commerce, Department of LSCM in order to request the formal permission of HBSC's HRM at the head office level, then got authorized before starting the case study, and during data gathering, the respondents were well informed about the purpose of the study and not to write their names while responding into the questionnaire. In addition to these, the researcher approached the responders in a friendly manner and clarified contents of the questionnaire when they asked, and finally, they were guaranteed by the researcher to get access to the report if they would need it.

CHAPTER FOUR: RESULT & DISCUSSION

4.1 Introduction

According to the plan, census data is collected using questionnaires via email communication, and additional primary data is gathered through telephone interview with two workers who are the key people for the whole warehouse activity, one who is managing the production and distribution activities, and the other who is in charge of managing the commercial activities. Therefore, the result and discussion part begin with demonstrating the response rate and providing demographic information of the respondents then proceed to the quantitative and qualitative analysis of the result using different statistical tools. Table 4 shows the response rate of the questionnaires.

Table 4: Response rate

Population	Number	Percent
Number of questionnaires distributed	33	100%
Number of questionnaires returned	31	93.9%
Number of incomplete questionnaires	1	3.3%
Number of unreturned questionnaires	2	6.7%
Number of usable questionnaires	30	90.9%

Source: Survey Result, (2020)

The target population of the study included 33 workers who are assigned in the head office, manufacturing firm, commercial warehouse, store keeping unit, and distribution centers. From the total number of questionnaires distributed to the respondents, two questionnaires were not returned so that 31 questionnaires were filled and returned, but one of them was incomplete; therefor, 30 responses out of 33, which is 90.9% of the entire population's response, were used for analysis purpose.

4.2 Respondents' Demographic Information

The following table (table 5) presents the demographic information of the respondents those filled the questionnaire completely and returned it back to the researcher.

Table 5: Demographic information of the respondents

Variables	Choice	Frequency	percent
Age	Below 20yrs	-	-
	Between 20-30yrs	14	46.6%
	Between 31-40yrs	10	33.3%
	Between 41-50	3	10%
	Above 50yrs	3	10%
	Total	**30**	**100%**
Sex	Male	20	66.6%
	Female	10	33.3%
	Total	**30**	**100%**
Educational qualification	High school graduate	4	13.3%
	Diploma	7	23.3%
	First degree & above	19	63.3%
	Total	**30**	**100%**
Job position	Warehouse manager	15	50%
	Storage & distribution officer	10	33%
	Supervisor/Coordinator	3	10%
	Director	2	7%
	Total	**30**	**100%**
Service years in HBSC	Below 3yrs	12	40%
	Between 3-6yrs	11	36.6%
	Between 6-10yrs	7	23.3%
	Above 10yrs	-	-
	Total	**30**	**100%**

Source: Survey Result, (2020)

Based on the above demographic information in (table 5), most of the warehouse workers are young people who are in between 20 and 30 years of age, the second highest number of workers are in between age 31&40; the sum of the above two -age-group workers, which means the number of those who are between age 20 and 40, becomes 80% of the total population working in the warehouse, this can be a reflection of giving priority for the young due to various reasons, and the remaining 20% of the responders are above 40 years of age- three of them under 50 and the rest

three are even above age 50- this from age perspective, can reflect the inclusion of mature people in the management activities of their warehouse operations. From the gender aspect, the responders are 10 females and 20 males, and it proves that both gender groups are involved in the work of HBSC' warehouse management as well as in this study.

The educational background of the responders ranges from high school graduate up to post graduate level- four responders were high school graduates who were all assigned in the SKU; seven responders were diploma holders, four of whom assigned in the SKU and the rest three were supervisors; the educational level of the remaining 19 responders was first degree & above, and 17 out of them were warehouse managers one director and one warehouse operation manager. Perceived from their experience in HBSC, 12 of the responders worked there below three years, 11 responders worked in the case warehouse from 3 years up to 6 years and the remaining 7 responders worked there above 6 years. The information implies that most of the warehouse personnel were well educated, and the position they were given was also on the basis of their educational qualification level, besides the diversity of workers' experience in the case company can indicate the possibility of mentoring the less experienced ones.

4.3 The Warehouse Practice of HBSC

HBSC has three categories of warehousing practice, operating as commercial warehouse, manufacturing warehouse and distribution warehouses where exactly three different types of tasks are practiced in each division. The fundamental function of the commercial warehouse is receiving locally and internationally procured items, storing for short period of time then sending it to the production warehouse; the usual items procured from the international market include malt, sugar, different chemicals and spare part tools whereas barely is procured from the local market hence all of the above goods pass through the path of Receiving…Put-away & storage…picking & packing then finally Packing &shipping procedures in the commercial warehouse. The usual task of the production warehouse is receiving row materials that are both processed as soon as received and those reserved for buffering purpose then storing finished products until shipped to the distribution warehouses- finished products are kept in the SKU with batch system in order to distribute following the FIFO system because beer products are perishable in their nature ; in addition to these, the production warehouse manages reverse logistics when it receives kegs, crates, pallets and bottles for re-filling purpose, and HBSC uses an open yard warehouse system

for this purpose. Distribution warehouses, as the name tells, simply receive finished products directly from the production warehouse and serve the legal agents of HBSC who distribute the products door-to-door, and they receive back kegs, crates, pallets and bottles from the same agents.

In the head office level, the whole task of warehouse operations is centrally led by one warehouse director and two executive warehouse managers while each distribution center is managed by warehouse managers. HBSC uses four third party transportation service providers who are authorized in the four ideal directions for the movement of its procured items and finished products.

4.4 Data Presentation and Interpretation

The Result Analysis part is focused on describing the findings for each of the questions raised in chapter one or the main themes of the study's framework; therefore, the targeted challenging areas of warehouse management to study in the case company for the purpose of this research are: Space Utilization, Inventory Management, Materials Handling & Store Keeping, The Use of Technology, and The Management of Reverse Logistics in the Warehouse, thus the following tables in chapter four demonstrates the summarized responses of the respondents gathered through Likert`s scale rated from Strongly Disagree to Strongly Agree as-1=Strongly Disagree(SD), 2=Disagree(D), 3=Neutral(N), 4=Agree(A), & 5=Strongly Agree(SA)-on the challenges of warehouse management in HBSC; moreover, the sub-divided-discussion below each table elaborates whether each of the selected themes have something to challenge with respect to warehouse management or not, in order to interpret percentage and frequency values of the data, the researcher used a simple approach of considering '3' or neutral as a central point to put together values under 3 as a 'general disagreement' response to the given statement and values above 3 as a 'general agreement' response to the given statement; the reason for using such a simple approach is due to the fact that the total census data were limited.

4.4.1 Space Utilization

The study's target, regarding the above sub-topic, was describing the challenges of warehouse management in HBSC in terms of space utilization, and the data gathering instrument consisted of five questions with five different -but- interrelated dimensions that can help the respondents to

reflect the presence of those challenges in the case company thus the following table (table 6) presents the summary of the data gathered regarding the abovementioned issue.

Table 6: Summary of Data about the challenges of Space Utilization

Note: - (**'F'**=frequency of responses; S.D. =standard deviation)

A	Space Utilization	SD F(%)	D F(%)	N F(%)		A F(%)	SA F(%)	Mean	S.D.	Total F(%)
1	There is enough space for goods in the warehouse	**8(26.7)**	**1(3.3)**	**3(10)**		**12(40)**	**6(20)**	**3.2**	**1.54**	30(100)
2	Goods and materials are stored on risk free approach	**3(10)**	**9(30)**	**1(3.3)**		**12(40)**	**5(16.7)**	**3.2**	**1.33**	30(100)
3	There is no space wastage in the warehouse	**12(40)**	**5(16.7)**	**2(6.7)**		**2(6.7)**	**9(30)**	**2.7**	**1.74**	30(100)
4	The warehouse has enough bay station for loading and unloading activities	**5(16.7)**	**2(6.7)**	**2(6.7)**		**12(40)**	**9(30)**	**3.6**	**1.42**	30(100)
5	There is a need of warehouse space usage reformation	**8(26.7)**	**-**			**10(33.3)**	**12(40)**	**3.6**	**1.65**	30(100)

Source: Survey Result, (2020)

As displayed in the above table, there were potential challenges related to space utilization in HBSC's warehouse management. Based on the reflection of the respondents to question number 1, it is clear that there was enough space for performing the warehouse activity by the time of the study because 60% of the respondents replied that there was enough warehouse space, and while 30% of the respondents opposed the presence of enough warehouse space, the remaining 10% of the respondents refrained from giving positive or negative response to the given statement and answered 'neutral' so that the majority's response proved that there was enough warehouse space. The respondents' response to question number two reflects more or less similar feedback to the first one that the majority of the respondents believed that materials are stored on risk free approach concerning space usage- out of the total respondents of thirty people, 17 of them agreed with the given statement, 12 of them disagreed with the proposition and 1 responder answered 'neutral'; the respondents' response rate of 21 agreement, 7 disagreement and 2 neutral out of thirty to the statement, **" The warehouse has enough bay station for loading and unloading activities,"** can

confirm the presence of enough warehouse space though it doesn't give any information about the proper usage of their warehouse space. However, when the usage is evaluated by the respondents' answer to the third question, the study found that, at 57.7 percent of significant response rate, there was space wastage even if the response of 30% of the responders indicates that there wasn't space wastage and 6.7% of them chose neutral against the idea of space wastage; hence the majority's response signals that the uneconomical space usage can impede the warehouse's future expansion in relation with its production growth. In addition to this, 73.3% of the respondents agreed with the proposition, **"There is a need of warehouse space usage reformation,"** and the rest 26.7% disagreed with this idea. The implication of their response revealed that the workers faced inconvenience with their current warehouse space usage. In the conclusion, the study found that the company faces the challenges of warehouse management concerning space utilization.

4.4.2 Inventory Management

In order to investigate whether there was anything challenging in the inventory management area of the case company or not, the data presented in (table 7) below were gathered.

Table 7: Summary of Data about the challenges of Inventory Management

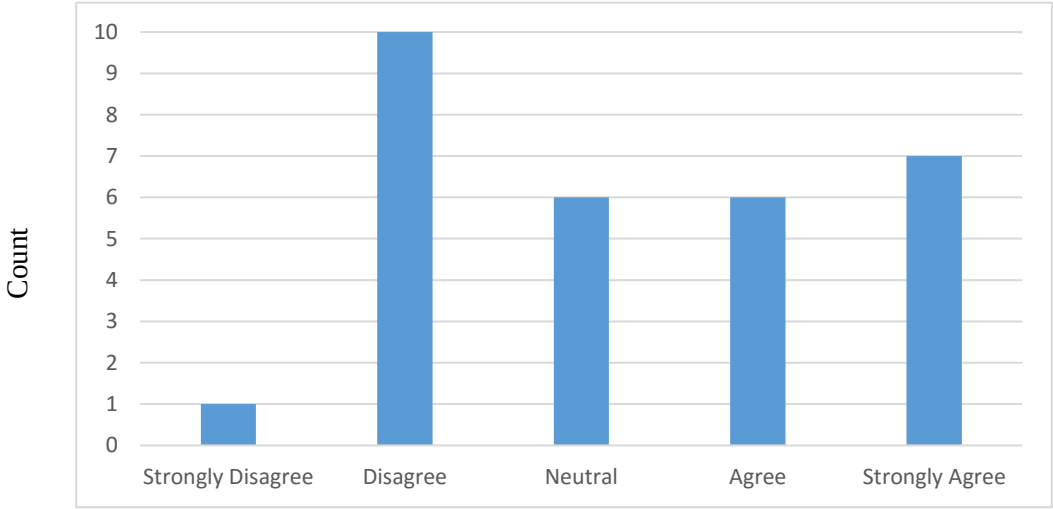
Note: - (**'F'**=frequency of responses; S.D. =standard deviation)

B	Inventory management	SD F(%)	D F(%)	N F(%)		A F(%)	SA F(%)	Mean	S.D.	Total F(%)
1	The warehouse has a known inventory control system to follow	**1(3.3)**	**-**	**1(3.3)**		**9(30)**	**19(63.3)**	**4.5**	**0.86**	30(100)
2	The warehouse personnel are aware of the inventory control system	**1(3.3)**	**-**	**-**		**11(36.7)**	**18(60)**	**4.5**	**0.82**	30(100)
3	There are recorded cases where there is product shortage	**1(3.3)**	**10(33.3)**	**6(20)**		**6(20)**	**7(23.3)**	**3.2**	**1.25**	30(100)
4	The warehouse sometimes faces the problem of product surplus	**3(10)**	**1(3.3)**	**5(16.7)**		**15(50)**	**6(20)**	**3.6**	**1.15**	30(100)
5	Stockout and product surplus are not the….	**9(30)**	**6(20)**	**4(13.3)**		**6(20)**	**5(16.7)**	**2.73**	**1.50**	30(100)

Source: Survey Result, (2020)

According to the findings of this study, the practice of inventory management was found to be lesser challenging than the remaining four dimensions of the study. In order to answer the research question, "What seems the description of inventory management in terms of stockout and/or excess product," five statements were provided in the questionnaires for the responders to choose, and 93.3% of the responders mentioned that the warehouse had a known inventory control system to follow, and with regard to the second statement, 96.7% of them mentioned that the warehouse personnel were aware of it; these survey results indicate the fulfillment of the primary and basic requirement of inventory management. 36.7% of the responders disagreed with the third statement, "There are recorded cases where there was product shortage," and 20% of the responders chose neutral whereas 43.3% of them agreed with the given proposition thus the distribution of the response rates to this statement does not allow the researcher to investigate the reality about the warehouse's history of product shortage even if 43% response reflects relatively the majority's response, it is still below fifty percent and this figure stands for the sum of responses as 'agree' and 'strongly agree' which is difficult to give logical justification; moreover, the following graph, (fig. 4), clarifies the description with providing a visual aid to how the respondents replied to the survey question whether product shortage had ever happened in the warehouse of HBSC or not.

Figure 4: Response rate to, "There are recorded cases where there was product shortage,"



Source: Survey Result, (2020)

When the respondents' reply to the fourth statement- at the rate of 76 percent of agreement-is evaluated, the study clearly found that there were cases when product surplus had happened in the

warehouse even though 13.3% of the responders disagreed with this idea, and 16.7% of them replied 'neutral'. The survey through question number five, "**Stockout and product surplus are not the features of the warehouse**," was deliberately included to balance between the findings through the above two propositions, statement number 1&2, and 50% of the responders disagreed, while 13.3 respondents answered 'neutral', the rest 36.7% of them agreed with the proposition hence, with reference to the 50% response of disagreement to the fifth question & the finding obtained through survey question 4 which reflected the presence of product surplus in their warehouse, the study found that product surplus characterizes the warehouse although less is investigated about stockout in their warehouse.

4.4.3 Materials Handling & Store Keeping

The following table (table 8) is the data gathered about the challenges of material handling and store keeping in the warehouse of HBSC.

Table 8: Summary of Data about Material Handling and Store Keeping

Note: - (**'F'**=frequency of responses; S.D. =standard deviation)

C	Materials Handling & Store keeping	SD F(%)	D F(%)	N F(%)		A F(%)	SA F(%)	Mean	S.D.	Total F(%)
1	There is no sufficient goods-handling equipment for..	**10(33.3)**	**8(26.7)**	**2(6.7)**		**4(13)**	**6(20)**	**2.6**	**1.56**	30(100)
2	Materials are properly sorted in the way ..	**6(20)**	**4(13.3)**	**2(6.7)**		**12(40)**	**6(20)**	**3.27**	**1.46**	30(100)
3	Important and costly materials are not stored in the open yard ..	**10(33.3)**	**7(23.3)**	**1(3.3)**		**9(30)**	**3(10)**	**2.6**	**1.47**	30(100)
4	Similar items are kept in one store	**4(13.3)**	**5(16.7)**	**4(13.3)**		**7(23.3)**	**10(33.3)**	**3.47**	**1.45**	30(100)
5	Materials are properly placed in designated places for latter tracing	**3(10)**	**3(10)**	**3(10)**		**13(43)**	**8(26.7)**	**3.67**	**1.26**	30(100)

Source: Survey Result, (2020)

"What considerable challenge does material handling and store keeping reflect on the warehouse management in the case company?" is the third research question that the study aimed to answer, and the study found that the warehouse doesn't have lack of goods' handling equipment for

unloading and moving the incoming goods with reference to the majority's response to the given statement(i.e. 60% of the respondents mentioned that there wasn't material handling equipment shortage although 33% the responders disagreed with the presence of enough equipment and the rest 6.7% of them preferred to answer 'neutral'). The majority of the respondents again, at 60% of response rate, described their warehouse that it doesn't have the challenge of sorting or arrangement too, here 33.3% of the responders mentioned that the warehouse had sorting problem as well and 6.7% them answered 'neutral', the researcher on logical ground underlined the majority's response and concluded that sorting didn't challenge the SKU of HBSC. The finding also shows that similar items are kept in one store with systematically linked approach and in the way that simplifies latter tracing, but one of the challenges of their material handling and store keeping activity is related to using an open yard for storing purpose; 56.6% of the respondents disagreed with the statement, **"Important and costly materials are not stored in the open yard without proper care,"** 40% of the respondents agreed with the statement and only one responder chose 'neutral'; therefore, the study found that the HBSC's warehouse has challenges related with its SKU in relation with storing materials in an open yard without proper care.

4.4.4 The Use of Technology

Table 9: Summary of Data about the challenges on The Use of Technology

D	The Use of technology	SD F(%)	D F(%)	N F(%)		A F(%)	SA F(%)	Mean	S.D.	Total F(%)
1	The warehouse management is supported by modern technology of WMS	2(6.7)	1(3.3)	7(23.3)		13(43.3)	7(23.3)	3.7	1.08	30(100)
2	The technology is capable of solving …	1(3.3)	4(13.3)	5(16.7)		14(46.7)	6(20)	3.6	1.06	30(100)
3	The warehouse personnel are familiar with …	-	2(6.7)	6(20)		13(43.3)	9(30)	3.9	0.89	30(100)
4	The warehouse is not using any sort of tech.	14(46.7)	12(40)	1(3.3)		1(3.3)	2(6.7)	1.8	1.11	30(100)
5	There is not a need of technological product	18(60)	6(20)	3(10)		1(3.3)	2(6.7)	1.7	1.19	30(100)

Source: Survey Result, (2020)

Regarding the use of technology in the warehouse, as displayed in the above table(table 9), the survey result, at 66.7% response rate indicated that HBSC's warehouse was supported by modern technology of warehouse management system which was capable of solving its inventory management tasks although 10-16.6 % of the response indicated the reverse view point and 16.7-23.3% of the respondents didn't give positive or negative response about this issue. At 73.3% agreement response to the statement, "The warehouse personnel were familiar with the technology," the study found that the warehouse personnel were familiar with the technology; they also had the understanding of technological product's importance to support the warehouse management activities as indicated in table 4.4 above. Therefore, the study found that the warehouse management of HBSC didn't have the surveyed type of challenges related with the use of technology, this finding will ultimately lead to question the preliminary assessment of this case, and in order to find out the reasons behind the information gathered, unstructured interview had been conducted with the operations warehouse manager who is in the head office and became capable of understanding the fact that knowledge gap of technology had really been challenging among the warehouse personnel up to few months before the questionnaire was distributed; however, by the time data was gathered, the problem was already solved with a continuous effort on training the workers.

4.4.5 The Management of Reverse Logistics in the Warehouse

In order to investigate if the management of HBSC's warehouse was impacted by the management of reverse logistics, responders were provided five statements to express their agreement's level as presented in the table below (table 10), and the discussion is presented by comparing and contrasting a couple of response rates at a time with the integration of the data gathered through interview in order to provide clear image of the challenges related to managing reverse logistics in the warehouse of the case company.

Table 10: Summary of Data on the challenges of Managing Reverse Logistics in the Warehouse

Note: - ***(‘F’=frequency of responses; S.D. =standard deviation)***

E	*The Management of Reverse Logistics*	*SD F(%)*	*D F(%)*	*N F(%)*		*A F(%)*	*SA F(%)*	*Mean*	*S.D.*	*Total F(%)*
1	*Keg and bottle returning challenges the ware*	*6(20)*	*10(33.3)*	*1(3.3)*		*9(30)*	*4(13.3)*	*2.8*	*1.41*	*30(100)*
2	*Broken & lost bottles incur additional cost*	*-*	*3(10)*	*6(20)*		*10(33.3)*	*11(36.7)*	*3.97*	*0.99*	*30(100)*
3	*There is waste of time until kegs & bottles are returned*	*6(20)*	*12(40)*	*3(10)*		*4(13.3)*	*5(16.7)*	*2.67*	*1.39*	*30(100)*
4	*Reverse logistics causes huge burden on speed*	*4(13.3)*	*4(13.3)*	*4(13.3)*		*9(30)*	*9(30)*	*3.5*	*1.40*	*30(100)*
5	*Returned kegs & bottles have safe & enough space to store*	*7(23.3)*	*7(23.3)*	*2(6.7)*		*9(30)*	*5(16.7)*	*2.9*	*1.48*	*30(100)*

Source: Survey Result, (2020)

To the statement, ***“Keg and bottle returning challenges the warehouse management,”*** *53.3% of the responders disagreed, and 43.3 % of them agreed whereas 3.3 % of the responders answered neutral. The figure seems that there wasn’t any sort of challenge concerning the management of reverse logistics in the warehouse based on the majority’s response rate; however, their response to the next question can lead to a better logical conclusion. 70% of the respondents agreed with the statement, “Broken and lost bottles incur the company additional cost.” 20% of the responders answered neutral and the rest 10 % of the responders disagreed with the above statement which implies that the company* overcomes the challenge of reverse logistics at the cost of unnecessary expense. A similar contrasting response is again observed against the following two questions; while the majority of the respondents, at response rate of 60%, disagreed with the statement, “There is waste of time until kegs and bottles are returned,” the majority of the respondents, at the same response rate of 60%, agreed with the statement that says, “ Managing Reverse logistics causes huge burden on speed efficiency.” Therefore, the survey result indicates that the company overcomes the challenge of speed efficiency at the cost of replacing lately returning materials by newly bought ones which costs it additional expense. In the conclusion, the study found that the management of reverse logistics in the warehouse is challenging as it is not cost effective when it works for speed efficiency.

CHAPTER FIVE: SUMMARY, CONCLUSION &RECOMMENDATION

The last chapter of the study comes up with the summary of the major findings, the general conclusion drawn based on the findings, and recommendations that are thought by the researcher to overcome the challenges of warehouse management in HBSC.

5.1 Summary of the finding

The main objective of this study was to assess the challenges of warehouse management in Habesha Brewery Share Company; in order to meet this objective, the following five research questions were raised:

1. How is the challenge of warehouse management in Habesha Brewery S.C. described in terms of space utilization?
2. What kind of challenge does material handling and store keeping reflect on the warehouse management in the case company?
3. How does the use of technology challenge the company's warehouse management?
4. What seems the description of inventory management in terms of stockout and/or excess product in HBC?
5. How is HBSC's warehouse management efficiency challenged by reverse logistics?

So as to answer the above the above five research questions, 33 questionnaires were sent to responders and 31 of them were able to be returned with the diligent effort of the researcher to gather them, of course one of the questionnaires was incomplete and dropped; in addition to this, unstructured interview was conducted with two warehouse managers who were capable of answering every detail of the warehouse activity and the challenges. Therefore, taking the data gathered into account, the study found the following:

- HBSC's warehouse management has some challenges related to Space utilization as the highest percent of respondents at 73.3% expressed their feeling that there was a need of space usage reformation which was a clear indication of workers' inconvenience with the way they used their warehouse space; in addition to that, 56.7% response of the responders indicated that there was space wastage in the warehouse,

although the trial of the quantitative survey of detecting the type of the challenge related to space utilization was less effective, based on the information gathered through interview, it was known that the warehouse was used to applying a horizontal positioning of materials due to the fact that there are only two and in some cases only three stare vertical positioning facility in their warehouse.

- According to the study's finding, the warehouse of HBSC has challenges with its store keeping unit; the response of 56.6% responders indicated that important and costly materials are kept in an open yard without proper care; the researcher's desire to clearly understand what sort of materials were to be kept in an open yard through interview question proved that most of the materials kept outside the store were retuned crates, kegs and pallets for short period of time until refilled and sent to market, and the materials that are left outside the safe store for a long time included disabled vehicles used machinery and different spare part tools.
- The study's finding shows that the use of technology is not challenging the management of HBSC'S warehouse; with reference to the majority's description of the warehouse through questionnaires, it was supported with a modern technology of WMS which was capable of solving its inventory management tasks, and the warehouse personnel were aware of the technology as well as familiar with it; the information obtained through interview was also similar with the above data and further realized that the software Habesha Breweries was applying along its warehouse's, head office and production firm were ERP & SAP.
- Concerning inventory management, the study found that product surplus challenges the warehouse management of the case company. Based on the quantitative data gathered through questionnaire, the response of 76% of the responders proved that there had been cases when product surplus used to happen in their warehouse; the data gathered through interview also matched with the quantitative data presented above; moreover, the information obtained from the interview clarified the reasons for product surplus in the warehouse; i.e. excess product was used to be held in the production center and in the distribution warehouses because of political instabilities in the country in the past few years which directly made almost all of the supply chain entities hold than sell during those occasions; in addition to this, the interview revealed the fact that the

declaration of excise tax made into effect before few months was a new reason for holding excess product along the entire distribution warehouses and in the production firm of the case company.

- Managing reverse logistics is one of the challenges of the warehouse with reference to the study's finding; 70 % the response indicated that reverse logistics incurred the company additional cost, 60% of the response indicated that managing reverse logistics impacted their speed efficiency, and based on the information gained from interview, the company overcame its speed efficiency at the cost of additional expense in buying new bottles in order to substitute lost and broken bottles; although the cost of those lost and broken bottles was returned later on, the company still lost some amount because of an increase in the cost of the bottles through time.

5.2 Conclusion

The study of assessing the challenges of warehouse management in Habesha Breweries share company was focused on only five selected common challenges of warehouse management and reached on the above findings, then based on those findings the following conclusions are forwarded.

As far as this study is concerned, the warehouse management of HBSC was capable of solving the challenges related to the use of technology in the warehouse by the time data was gathered for this research; however, the remaining four common challenges of warehouse management are still challenging the case company that need to be given serious attention to overcome. The warehouse has poor space utilization which is inconvenient to the warehouse workers at the time of this study and that possibly can affect its operational capacity in the very near future when its product volume increases. The warehouse management hasn't observed the challenges with its SKU as well because the materials left in an open yard are getting harmed day after day. The life span of the kegs, pallets and crates is going shorter and shorter as they stayed outside under the exchange of sunny and rainy weather, and the other materials like the spare parts, disabled vehicles and machinery are continuously losing their quality of functioning with some maintenance, and if they continue staying outside, they may totally become useless and incur the company cost of disposal at the end of the day. Product surplus

is also another serious challenge that encounter their warehouse management due to the fact that beer products are perishable in their nature; it requires some kind solutions to keep away deposing semi-processed products, perishable raw materials in case of expiry date if excess product occupies space throughout the system. The issue of managing reverse logistics is also a big challenge for the warehouse; it ultimately contradicts with the fundamental reason of having a warehouse which is cost minimizing and profit maximizing, but in the case study, unnecessary cost is observed because of handling reverse logistics.

5.3 Recommendation

The study found that four critical challenges are faced up with the case company's warehouse management; therefore, the following recommendations are helpful for the company to take possible actions that can enable it overcome the existing challenges and protect the inevitable ones.

- HBSC has to give prior attention to maximize and improve its warehouse space facility taking an increase in the height of shelves as simplest solution of space utilization in order to avoid the current inconvenience of the warehouse activity and to build the warehouse's capacity for the future production growth.
- The SKU requires an immediate solution: there is a need of safe and protected store for the spare part tools, kegs, pallets and crates to increase their durability; used vehicles and machinery have to be either maintained and continue functioning or sold for other purpose otherwise they have to be exposed early to protect different side effects.
- Although the inventory management of the case company at the time of the study was found to be lesser challenging than the other focused areas, product surplus indicates a possible loss in the future; therefore, in order to avoid or at least minimize the risk, the inventory management has to be supported by greater information communication system so that HBSC has to invest on developing its communication department which can enable it continuously detect and understand the external business, economic and political environment in advance.
- Regarding reverse logistics, it is better to give the work of distributing products and collecting back bottles for another party, because in this case the company will be

focused on its main task which is producing and order fulfilling; on the other side the other party that distributes and collects back the empty bottles can closely follow up the cost management of lost and broken bottles.

5.4 Limitation of the study and Directions for further studies

Due to time and cost constraints of the researcher, this study didn't incorporate all of the challenging areas of warehouse management; for example, the human element, lead-time and warehouse cost analysis were not considered by this research. In addition to this, the impact of Covid 19 made the researcher stay home and gather all of the data on electronic communication, but observation would have contributed a lot for this research; this study was also focused on assessing the challenges of Habesha Breweries warehouse management. Therefore, the inclusion of observation in studying the challenges of warehouse management and considering a number of warehouses to study the common challenges of management can be directions for further studies.

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Appendixes

Appendix 1: Questionnaire

Addis Ababa University

School of Commerce

Department of Logistics and Supply Chain Management

Questionnaire

Dear respondent: **My name is Eshete Aga Urgessa**, pursuing a Master's Degree in Logistics and Supply Chain Management at Addis Ababa University. The research is entitled "**Assessing the Challenges of Warehouse Management: The case of Habesha Brewery Share Company**" for the partial fulfillment of academic requirement. This questionnaire is designed to collect primary data for the study.

The questionnaire is only for study purpose and your genuine responses to the questions are highly demanded on which the success is depending on. I kindly request you to spend a few minutes of your valuable time to answer the questions as per the instruction below:

- You do not need to write your name
- All of the questions need to be responded by yourself
- In some of the questions, there are available place to put mark "X" in the given space
- For some of the questions that need your explanations, please try to honestly describe as per the questions on the spaces provided.

  If you need anything concerning the study or any further explanation about the questions, you can contact me on the phone number: **+251911060752** or via email: **agaeshete@yahoo.com** Please note that the information you are providing will be kept confidential.

I thank you in advance for your participation in the study!

Part I: General information of the respondents

1. Age: **Below 20years ☐** **Between 31–40years ☐**

Between 20-30years ☐ **Between 41–50years ☐** **Above 50years ☐**

2. Sex: **Male ☐** **Female ☐**

3. Educational Qualification:

High School graduate ☐ **Diploma ☐** **First Degree & above ☐**

4. Job Position: Warehouse manager ☐ **Storage and distribution officer ☐**

Supervisor/Coordinator ☐ **Director ☐**

5. Years of service in HBSC: Below 3 years ☐ **Between 3–6 years ☐**

Between 6-10 years ☐ **Above 10 years ☐**

Part II: Challenges of warehouse management activities

The purpose of this part is to gather information about the challenges of warehouse management related activities. Please indicate your level of agreement to the following statements using the five level of scales given below: **Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, & Strongly Agree=5**

	Materials Handling & Store keeping	1	2	3	4	5
1	There is no sufficient goods handling equipment for unloading and moving the incoming goods	☐	☐	☐	☐	☐
2	Materials are properly sorted in the way that avoid risk of spoilage or damage	☐	☐	☐	☐	☐
3	Important and costly materials are not stored in the open yard without proper care	☐	☐	☐	☐	☐
4	Similar items are kept in one store (not more than one place which are not systematically linked	☐	☐	☐	☐	☐
5	Materials are properly placed in designated places for latter tracing	☐	☐	☐	☐	☐

	Space Utilization	**1**	**2**	**3**	**4**	**5**
1	There is enough space for goods in the warehouse	☐	☐	☐	☐	☐
2	Goods and materials are stored on risk free approach	☐	☐	☐	☐	☐
3	There is no space wastage in the warehouse	☐	☐	☐	☐	☐
4	The warehouse has enough bay station for loading and unloading activities	☐	☐	☐	☐	☐
5	There is a need of warehouse space usage reformation	☐	☐	☐	☐	☐
	The Use of technology	**1**	**2**	**3**	**4**	**5**
1	The warehouse management is supported by modern technology of WMS	☐	☐	☐	☐	☐
2	The technology is capable of solving inventory management tasks	☐	☐	☐	☐	☐
3	The warehouse personnel are familiar with the technology	☐	☐	☐	☐	☐
4	The warehouse is not using any sort of technology	☐	☐	☐	☐	☐
5	There is not a need of technological product to support the warehouse management	☐	☐	☐	☐	☐
	Inventory management	**1**	**2**	**3**	**4**	**5**
1	The warehouse has a known inventory control system to follow	☐	☐	☐	☐	☐
2	The warehouse personnel are aware of the inventory control system	☐	☐	☐	☐	☐
3	There are recorded cases where there is product shortage	☐	☐	☐	☐	☐
4	The warehouse sometimes faces the problem of product surplus	☐	☐	☐	☐	☐
5	Stock out and product surplus are not the features of the warehouse	☐	☐	☐	☐	☐
	Reverse Logistics	**1**	**2**	**3**	**4**	**5**
1	Keg and bottle retuning challenges the warehouse management	☐	☐	☐	☐	☐
2	Broken & lost bottles incur the company additional cost	☐	☐	☐	☐	☐
3	There is waste of time until kegs & bottles are returned	☐	☐	☐	☐	☐
4	Managing Reverse logistics causes huge burden on speed efficiency	☐	☐	☐	☐	☐
5	Returned kegs & bottles have safe & enough space to store	☐	☐	☐	☐	☐

Do you think the warehouse management has major challenges that affect its productivities?

Yes ☐ No ☐

1. If yes, write the challenges:
   1.1 In the warehouse space management's cost minimizing aspect

   Please specify Click here to enter text.

   1.2 In the main warehouse activities (receiving, put away and issuing/dispatching)

   Please specify Click here to enter text.

   1.3 In the warehouse management system software

   Please specify Click here to enter text.

   1.4 In communication areas

   Please specify Click here to enter text.

   1.5 In any other areas

   Please specify Click here to enter text.
2. Do you think there are strengths in the warehouse management?

   Yes ☐ No ☐
3. If yes, write the strengths:
   3.1 In the human and material managements

   Please specify Click here to enter text.

   3.2 In the main warehouse operations (receiving, put away and issuing/dispatching)

   Please specify Click here to enter text.

   3.3 In the warehouse management system software (HCMIS)

   Please specify Click here to enter text.

If you have additional comments or ideas about warehouse management practice please express your feeling:

Click here to enter text.

Appendix 2: Interview Questions for Warehouse Personnel

These interview questions are prepared to collect primary data from Warehouse Personnel's about the activities of the warehouse and the system of handling it. This data will be collected to conduct a research entitled "**Assessing the Challenges of Warehouse Management: Habesha Brewery Share Company**" for the partial fulfillment of academic requirement.

1) Inventory Control System

1.1 Do you have inventory control system?

1.2 What kind of inventory control system do you use currently?

1.3 Does the system deliver minimum and maximum level of stock?

1.4 Do you have expired and/or disabled materials in store now?

1.5 Does the system have alert system that remind the expiry date of materials in stock?

1.6 Is there a system of identifying fast moving items from slow moving & obsolete items?

1.7 Does the organization have inventory control policy?

1.8 Does the warehouse act in compliance with this policy?

1.9 What problems do you see in the inventory control process?

1.10 What do you think the root causes of these problems?

1.11 Does the inventory management have any software support improve the inventory control?

1.12 What challenges have you noticed in the use of the new inventory management software?

2) Materials Handling and Store Keeping

2.1 How do you put materials in the warehouse?

2.2 Do you have the warehouse equipment's like shelves, pallets, weight balance etc.?

2.3 Do you keep materials in the open yard?

2.4 What kind of materials are kept in the open yard?

2.5 Have you observed any loss or damage of materials kept in the open yard?

2.6 Do you keep different items in a single store? If so, why?

2.7 What problems do you observe in materials handling and storekeeping?

2.8 What do you think the root cause of these problems?

3) Quality Inspection

3.1 Does the organization have quality inspection requirement before receipt and before put away?

3.2 What is the role of the warehouse management departments in quality inspection?

3.3 Does any other departments concern with quality inspection requests? How?

3.4 Have you faced any challenge concerning this matter before?

4) Record Keeping

4.1 Do you have system of updating store records?

4.2 How much frequent store records are updated?

4.3 How do you retrieve information about the past transactions?

4.4 How long does it take to know the correct status of a stock in the store?

4.5 Does the introduction of the inventory management software improve the record keeping process of the store?

5**. Warehouse cost and its impact on the business**

5.1. What seems the cost of warehouse management in your organization?

5.2. What mechanisms do you use to reduce the cost of warehouse management?

5.3. Have you ever conducted any research on how to minimize warehouse related costs?

Thank you!