



ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTEMENT OF
LOGISTICS AND SUPPLY CHAIN MANAGEMENT

THE EFFECT OF WAREHOUSE OPERATION MANAGEMENT ON ORGANIZATION
PERFORMANCE: IN THE CASE OF SUGAR CORPORATION

BY
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Thesis Approval

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List of Acronyms

KPI – key performance indicator

FSF – Fincha Sugar Factory

WMS – Warehouse Management System

DC – Distribution Centers

SKU – Store keeping Unit

SCEM – Supply Chain Event Management

IT – Information Technology

JIT – Just in time

SLAP – Storage Location Assignment Problem

ERP – Enterprise Resource Planning

ABSTRACT

Warehouse operations management is a key component of supply chain management. Thus, any inefficiency in warehouse management will greatly affect the performance of the supply chain which in turn affects the profitability of the organization. The objective of this study was to assess the effect of warehouse operation management on organization performance of Sugar Corporation. The study employed both quantitative and qualitative study approaches. Since the researcher target population was less than 100, all total target populations were involved by using census method in the study. Accordingly 70 questionnaires were distributed, from which 65 questionnaires were properly filled and returned. The collected data were analyzed using descriptive statistics. The findings of descriptive statistics of the variables showed that mean score of the independent variables of put away operation, storage operation and inventory control operation were 2.55, 2.39, and 2.44 respectively. And the result shows warehouse operation management of the corporation had major gaps in put away operation, storage operation and inventory control operation. Whereas receiving operation, order picking operation and shipping operation the mean score were 3.13, 2.83 and 2.66 respectively which shows almost all the respondents concerning these issues give their view on moderately. According to the survey result almost all warehouse operation in Sugar Corporation showed dissatisfaction. So, the researcher recommends the sugar corporation management team must give proper attention to eliminate the bottle neck of the warehouse operation. There should be in place a guideline or standard operating procedure (SOP) in all warehouses. Indeed, which helps to give directions to the employee how each operation is going to be done step by step in the case of receiving, put away, storage, order picking, shipping, inventory control, keeping the warehouse clean etc. At the same time they strive to create a modern system and IT software to increase productivity. The corporation management team also must provide greater attention and assistance to eliminate the pitfalls of the warehouse system.

Key Words: Warehouse, Warehouse Management, Warehouse operations, Organization Performance

Chapter 1: Introduction

1.1 Background of the study

Warehouse Management is often thought of as being just an operational day to day job. However, it should also be involved in the longer strategic aspects of the business. Warehousing has a critical part to play in supply chain management and it can only play this part if it is involved in the strategic aspect of the business (Emmett, 2005). Warehouses have, in the past, been constantly referred to as cost centers and rarely adding value. The movement of production to lower cost countries, the growth of e-commerce and increasing demands from consumers has seen a step change in warehouse operations. Warehouses are now seen as a vital link within today's supply chains. In fact, as stated in a recent survey by Motorola (2013) (cited in Richards, 2018).

A basic customer requirement is the immediate fulfilment of an order. Since the time of the order entry and the ordered quantity cannot be forecast exactly for the vast amount of articles the first approach is to keep a forecast quantity of goods in stock, which can also be described as ensuring the readiness to deliver. This is a justifiable process especially in case of a large distance occurred between the sites of production and consumption and possibly custom clearance. Distant markets sometimes can only be opened up with warehousing. A growing variety of goods and articles, a trend towards the more frequent ordering of smaller lots and the call for ever shorter delivery times make logistic services a decisive criterion for the choice of a supplier. By operating a goods distribution center powerfully and efficiently, a position. Of course, stockkeeping requires continuous supervision of stocks and optimization of the ordering patterns in order to avoid too large stocks or too long a storage time (Hompel & Schmidt, 2007).

Warehouse management is the act of organizing and controlling everything within your warehouse and making sure it all runs in the most optimal way possible.

This includes: arranging the warehouse and its inventory, having and maintaining the appropriate equipment, managing new stock coming into the facility, Picking, packing and shipping orders, tracking and improving overall warehouse performance and most high growth retailers would use automation tools (like some form of Warehouse Management System) to control this part of their supply chain www.veego.com (Viewed 21 December 2019).

Tracking performance and working to improve it is essential when it comes to all parts of supply chain management. And it's no different when it comes to warehouse management. In general, this is all about two things:

1. Accuracy of fulfilling customer orders (without damage).
2. Speed of fulfilling customer orders (without damage).

The main KPIs you want to be tracking to measure the success of your warehouse management process:

- Receiving efficiency
- Rate of return
- Picking Accuracy
- Order lead time. Material management www.veeqo.com (Viewed 21 December 2019).

According to Bartholdi and Hackman (2006) (cited in Guilherme Pereira et al, 2008) there are four main reasons why warehouses are useful: to consolidate products in order to reduce transportation costs and to provide customer service; to take advantage of economies of scale; to provide value-added processing and to reduce response time. Thus, warehouses will continue to be an important node at the logistic network.

In distribution logistics where short lead-times and flexibility are essentials warehouse design and operations become more important and complex. Furthermore, the ever-increasing variety of products and the constant changes in customer demand has placed a tremendous emphasis on the ability to establish efficient logistic operations. Warehouse design and operations will be determinant to have quality, efficiency and flexibility (Pereira et al, 2008).

Typically, a design runs from a functional description, through a technical specification, to equipment selection and determination of the layout. A layout must be modular, adaptable, compact, accessible and flexible and must be capable to respond to changing conditions, to improve space utilization and to reduce congestion and movement. For these reasons, warehouse design is a highly complex task, where, sometimes, trade-offs have to be made between conflicting objectives (Pereira et al, 2008).

According to Hassan (2002) (cited by Pereira et al, 2008) an important aspect of designing a warehouse is its layout. The design of the layout should be concerned with the arrangement of the functional areas, determining the number and location of input/output (I/O) points, determining the

number of aisles, their dimensions and orientation, estimating space requirements, designing the flow pattern, and defining picking zones.

The Sugar Corporation of Ethiopia, established in 2010, is currently undertaking the development of 5 new sugar factory projects. When these projects are completed Ethiopia would have 13 sugar factories and its annual sugar production would become 2 million 250 thousand tons. Sugar Corporation has been given huge responsibility by Ethiopian government to excel the country's sugar development and contribute to the growing economy by maximizing the production of sugar and exporting sugar to earn foreign exchange as well as create jobs for citizens.

Sugar Corporation has procured a lot of material from local and foreign suppliers and deployed at central warehouse which is located at head office and wonjeshoa. At the same time, these inputs would be distributed to different sugar factories and projects when the need arises.

Thus, this study will assess the operation of warehousing practice and its effects on organization performance of Sugar Corporation, show the current warehousing practice situation, find out potential challenges and provide necessary recommendations based on the result.

1.2 Statement of the Problem

As discussed by Sneha(2016)warehousing takes up to between 2% and 5% of the cost of sales of a corporation and with today's highly competitive global business environment organizations are emphasizing on Return on Assets. Thus, minimizing warehousing costs has become an important business issue. Many firms are automating their basic warehousing functions to achieve the increase in throughput rates or inventory turns required for their warehousing operations to be cost effective. Hence, companies need to give due attention to the warehouse at all and each warehousing activity's effectiveness and correctness. The activities are interrelated and dependent one another, failure in one activity will have negative impact, especially on the consecutive activities.

An I.T. strategy has to be formulated by the Corporation in alignment with the Corporate Mission, Vision and Goals. This strategy will not only include the Corporation Head Quarter's function, FSF and its Liaison Office but also ultimately encompass all the sugar manufacturing units under the Corporation. Such a strategy of online connectivity will provide great benefits to the entire organization viz. online real time data access among all units and Corporation. It will address several issues – which otherwise is not possible e.g. transfer surplus inventory from one unit to another where it may be required, by a click of a button (ShreeRenuka Sugars, 2012).

Modern information systems capture highly detailed data on logistics activities. Warehouse management systems (WMSs) can use this data to enhance operational performance. 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). Moreover, the model explains several advanced planning and control methodologies that capitalize on this detailed data. These methods seek to make WMSs more intelligent (Jeroen, 2012).

Warehouse management may be viewed as the ability to coordinate both incoming and outgoing goods to limit waste product arriving or leaving the warehouse. At individual warehouses or distribution centers (DCs), which serve as a hub to other warehouses, this process has often been mastered and tailored to the individual product and/or asset being handled. That is, the strategy adopted will have to consider (i) the product deterioration rate and (ii) product demand. Irrespective of the strategy adopted, the primary aim is to deliver efficiencies across a number of business processes, including a reduction in product lead times and also a reduction in product quality losses (Maarten, et al. 2014).

A warehouse with a WMS program operational objective is to improve profits and customer service. To achieve the objective, a warehouse with a WMS program

1. Maximizes a facility, customer order ship carton, transport concept or vendor or customer delivery vehicle space utilization;
2. maximizes storage/pick concept utilization;
3. Maximizes employee utilization;
4. Reduces SKU handlings and assures an identified SKU is delivered to the correct location;
5. Assures WMS scan transaction information transfer, thus maintaining SKU accessibility and inventory tracking capability;
6. Assures a designed SKU rotation;
7. Minimizes company logistics operational expenses;
8. Protects a company assets; and
9. Assures satisfied customers. (Mulcahy and Sydow, 2008).

Deloitte (2014) has stated the gap on Sugar Corporation property administration functions such as:

1. Lack of modern stores management techniques leading to damage and contamination of materials stored including but not limited to agro-chemicals, farm inputs, etc.

2. Large volumes of obsolete stocks due to reactive requirements forecasting and planning, as well as ineffective inventory management systems and processes.
3. There are no effective control mechanisms in place to ensure effective management of materials in the active and non-active stores.
4. Lack of standard coding for certain commonly used items, leading to excessive stock level of active stock.
5. There was no training program for the staff, neither was there a method of assessing the skills gap of their staff. Specific areas to be strengthened include but are not limited to effective inventory management, materials handling and stores management.
6. Lack of automated materials tracking has hampered the ability of the directorate to allocate idle resources in a timely and cost-effective manner. At any given moment, there is no visibility of active and idle resources, which renders decision making a difficult task. This automated resource tracking has to be feature in the integrated system (with all projects and factory resources information) that allows for smooth wide resource allocation.

Considering the above facts, the researcher strikes to make study based on the reports produced on Feb. 18, 2019 stated that inefficient of warehouse operation management of the corporation by internal audit, the report produced on Jul. 12, 2019 by Federal Ethics and Anti – Corruption Commission and Annual report of the Sugar Corporation. Some of the gaps identified by them were,

- Most of the time receiving of incoming items delayed. E.g. Grab Loaders bought from abroad not finalize the receiving process even after two years.
- The stock items are not kept in a proper way and they are not easily traceable which causes for delays during shipping and stock taking.
- There is no proper control on the record of documentation.
- There is no database to know all asset of the corporation.
- Used and excess items which are not functional for short period planning of the corporation are not disposing on time. Which causes of loss of income and unnecessary cost of stock handling?

So, improving the practices should be critical since the Sugar Corporation invest a huge amount of money for inputs for sugar factories and projects. This is a continuing practices as it is and will make great losses of the organization.

In addition to that, warehouse operations management as key components of supply chain management, any inefficiency in warehouse management will greatly affect the performance of the whole supply chain which in turn affects the profitability of the Corporation. So, this research tries to assess the performance of warehouse management in Sugar Corporation specially in the function of receiving, inspection, put away, storage, order picking, retrieval, response time, usage of modern technology, cost reduction, usage of warehouse space and level of services. The result will be helpful closing the above stated gap.

1.3 Research Questions

In order to attain the research objective, the following research questions are proposed: The basic research question is: How efficiently and effectively Sugar Corporation manages the warehouse operations?

Specific Research questions:

- 1) How efficient are the receiving operation of warehouse in sugar corporation?
- 2) How quickly are tracking the order in warehousing operation in Sugar Corporation?
- 3) How does the shipping operation of warehouse affect business performance of the Sugar Corporation?
- 4) How efficient are the storage operation of warehouse in sugar corporation?

1.4 Research Objective

The general objective of this research is to assess the warehouse operation management of Sugar Corporation. The specific objectives of the study are:

- To identify the efficiency of receiving operation of warehouse in the Corporation.
- To assess the tracking of order in the warehouse.
- To review the shipping operation to what extent affects business performance of the Corporation.
- To examine the storage practice of material.

1.5 Significance of the Study

The findings of this study will provide information to those who has stackssuch as Management of the Corporation, Board of Directories, and Public Enterprises Holding and Administration Agency etc. It will helpful showing the gap and challenges of practicing of warehouse operation management in the Sugar Corporation.

In order to improve the performance of warehouse operation it will have significant contribution to optimize each activity in the supply chain of the Corporation. As the same time other sugar factories and projects will take the findings as base to look their practice and take corrective measure as well.

In addition to that, this study may also contribute to the existing body of knowledge and used as reference for future studies in the same area. 1the study might be used as a reference material for future student research

1.6 Scope of the Study.

This studyfocus on the effect of warehouse operation management on organization performance practices in Sugar Corporation at head office. Sugar Corporation has 13 sugar factories and projects. However, due to geographical location, time and budget constraint this study confined at head office.

Since, head office administeredcentral warehouse which are located at head office and wonjeshoa, the researcher focus on the management of receiving and inspection, storage, retrieval, shipping operation of the central store. It emphasize on general store, factory spare part, machinery spare part, agricultural chemicals, laboratory chemicals, machinery and vehicleswill cover during the study. It also considered the management and staff of the corporation at head office, factory and projects who engage in the warehouse operation management to provide relevant and valuable information on the study of assessing warehouse operation management in the corporation.

1.7 Limitation of the Study

The study undertakes at corporate level head office of Sugar Corporation. Since, Sugar Corporation has 13 sugar factories and projects carrying the study at sugar factories and projects might show the depth of the problem. But, the researcher faced problems like lack of up-to date and sufficient reference material, and time constraint, the study limit on the above specified places only. As a result, this might overlook major problems of warehouse operation management as a whole in the organization.

In addition to that, the collected data has a problem of multi collinearity conversely the researcher couldn't possible to analyze inferential analysis like multiple regression and others.

1.8 Definition of Terms

Warehousing: - Warehousing is 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 (JNU, Jaipur, 2013).

Excellent warehouse performance: - helps companies to create competitive advantage by reducing logistics costs, by increasing internal and external customer service levels, and by aligning business activities (van den Berg, 2012)

Warehouse management generally means the control and optimization of complex warehouse and distribution systems. In addition to the elementary functionality of an inventory management like the management of quantities and storage locations, the control and planning of transport means according to this principle warehouse management also comprises methods and means to control the system status and to choose an operating and optimization strategy (Hompeland Schmidt, 2007).

Receiving-This includes the physical unloading of incoming transport, checking, recording of receipts, and deciding where the received goods are to be put away in the warehouse. It can also include such activities as unpacking and repackaging, quality control checks and temporary quarantine storage for goods awaiting clearance by quality control www.ciilogistics.com (Viewed 15 December 2019).

Inspection- Quality and quantity check of the incoming goods for their required characteristics www.ciilogistics.com (Viewed 15 December 2019).

Materials handling: - Material handling is technique employed to move, transport, and store or distributes materials with or without the aid of mechanical appliances.

Order-Order picking / selection –Goods are selected from order picking stock in the required quantities and at the required time to meet customer orders www.ciilogistics.com (Viewed 15 December 2019).

Shipping: Shipping operator productivity is improved as a result of the system's ability to consolidate and confirm complete orders prior to shipment preparation. When shipping operators begin to build shipping loads, their time is spent preparing and loading orders rather than searching for misplaced items and information.

Cross-docking –Move products directly from receiving to the shipping dock – these products are not at all stored in the specific locations www.ciilogistics.com (Viewed 15 December 2019).

1.9 Organization of the Study

This study is organized into five Chapters. Chapter one provides introduction, which consists of back ground of the study, statement of the problem, basics research questions, objective of the study, significance of the study, scope of the study, limitation of the study and definitions of terms. Chapter two presents literature review covering such aspects as theoretical literature review, empirical literature review, summary of hypothesis and conceptual frame work. Chapter three describes the methodology employed the study. This part includes description of the study area, research approach, research design, population and sampling, data source and type, data collection procedure, ethical consideration and data analysis method. The fourth chapter deals with the results and analysis of the study output. Finally, the fifth chapter addresses the discussion, conclusions and recommendations of the study.

Chapter 2: Related Literatures Review

In this part of study, the related literatures which were reviewed from different sources are presented. The literatures are organized and categorized under theoretical review, empirical review and conceptual framework.

2.1 Theoretical Review

2.1.1 Warehousing

Although the term warehousing raises negative images like high costs and non-value-adding times, in practice most branches are bound to store their goods for various reasons. A distinctive feature from a logistic point of view is the fact that this is a planned process to bridge over time and status (Hompel and Schmidt, 2007). Some important reasons to implement and operate warehouse and distribution systems along multi-level supply chains are:

Optimizing the logistic performance: A basic customer requirement is the immediate fulfilment of an order. Since the time of the order entry and the ordered quantity cannot be forecast exactly for the vast amount of articles the first approach is to keep a forecast quantity of goods in stock, which can also be described as ensuring the readiness to deliver (Hompel and Schmidt, 2007).

This is a justifiable process especially in case of a large distance between the sites of production and consumption and possibly custom clearance. Distant markets sometimes can only be opened up with warehousing. A growing variety of goods and articles, a trend towards the more frequent ordering of smaller lots and the call for ever shorter delivery times make logistic services a decisive criterion for the choice of a supplier. By operating a goods distribution center powerfully and efficiently, a company can achieve, assert or improve its market position. Of course, stock keeping requires continuous supervision of stocks and optimization of the ordering patterns in order to avoid too large stocks or too long a storage time (Hompel and Schmidt, 2007).

Ensuring the productivity: Production chains that are designed for a just-in-time delivery, and thus work with minimized stocks along the supply chain are highly sensible to disturbances. This was demonstrated in recent years when complete production lines in the automotive industry broke down due to border blockades caused by angry lorry drivers or due to strikes in external supplier plants.

Therefore, one of the main reasons for stockkeeping is to ensure the supply of the expensive production levels (Hompel and Schmidt, 2007)

A successful warehouse management system (WMS) implementation can provide an 18-24 month return on investment. A WMS also serves as a foundation for instituting a continuous improvement culture and facilitates on-going annual benefits ranging from 5-10%. For some companies, justification in a WMS is a matter of survival. Having the right material available at the right place and at the right time is no longer enough. The new requirements include: compliance labeling, floor ready displays, advanced ship notices, postponement, light manufacturing, and collaboration. Leading companies are realizing information has a specific shelf life value that diminishes over time, often by the hour or minute. Many of the processes and activities being managed and monitored by Supply chain Event Management (SCEM) applications relate directly to warehouse operations. As the focus on SCEM applications continues to grow, the need for real-time activity tracking and inventory visibility offered by a WMS becomes even more critical to your organization (www.highjump.com) (Viewed 14 January 2020).

The general warehousing concept includes the storage and retrieval operations, the organizational aspects, the mechanization equipment for materials handling, media for material storage, and the building itself which is necessary to protect the goods' environments. The task of distribution consists of moving goods from the production line to the customer in an acceptable time and doing it economically. However, there are an infinite number of solutions. Optimum or near-optimum solutions are difficult to find and often involve more than errand running ingredients for the shortest path as well as the removal of unnecessary waiting time. Inventory control, production control and warehouse management are the underlying methodologies that affect the industrial success of distribution organizations. Both the physical processes of material handling and stocking, as well as the underlying methodologies, are commonly denoted by the word "warehousing". Warehousing activities concern the physical storage and retrieval of materials, and also the processing of information needed about the goods stored. For example, lot (or the parcel) has an origin, its supplier, identification, its designation, a dimension (usually the quantity), a destination and a customer. Basically, warehousing methodology is information-oriented and requires the use of efficient media to store and handle data about the movement of goods. It is important to have good control over the inventory. Management should ensure that, for each item (Gunasekaran, Marri, Menci, 1999):

- The correct stock level is available;
- No unnecessary money is tied-up in inventory;
- The warehouse capacity is both economical and efficient; and
- The goods are properly kept.

To achieve this, a focus on the correct evaluation, identification, classification and quantification, retrieval, and security of goods, would provide a clear and accurate view (Chorafas, 1974) (Cited in Gunasekaran, Marri, Menci, (1999)). Warehouses are an essential component of any supply chain. Their major roles include: buffering the material flow along the supply chain to accommodate variability caused by factors such as product seasonality and/or batching in production and transportation; consolidation of products from various suppliers for combined delivery to customers; and value-added processing such as kitting, pricing, labeling, and product customization.

Market competition requires continuous improvement in the design and operation of production-distribution networks, which in turn requires higher performance from warehouses. The adoption of new management philosophies such as Just-In-Time (JIT) or lean production also brings new challenges for warehouse systems, including tighter inventory control, shorter response time, and greater product variety. On the other hand, the widespread implementation of new information technologies (IT), such as bar coding, radio frequency communications (RF), and warehouse management systems (WMS), provides new opportunities to improve warehouse operations. These opportunities include, but are not limited to: real time control of warehouse operation, easy communication with the other parts of the supply chain, and high levels of automation (Goetschalckx, McGinnis, 2007).

2.1.2 Warehouse Management

Warehouse management is, nowadays, a great challenge in the field of supply chain management. Inventory level management, warehouse design, warehouse operations and space optimization and customers' requirements are some examples of important challenges in this context. Warehouses must be flexible structures to provide quality, efficiency and effectiveness of the logistics operations in a very demanding, competitive and uncertain market (Pereira et al, 2008).

Warehouse management is the art of operating a warehouse and distribution system or, better still, of operating it e

efficiently. E

expect speed, quality and minimized costs. Warehouses and material handling systems are the core

elements within the goods flow and build the connection between producer and consumer (Hompel & Schmidt, 2007). Widescope business strategies catering to broad-based clientele require large scale purchasing, production, and distribution. Achieving competitive scale demands operating efficiencies and economies supported by large scale warehousing of supplies and product. Economies of scale in purchasing, production, and transportation have long required warehouse support, and today, need continues for such warehouse support (Scott and Brian, 2014).

Warehouse operations contribute to the overall total cost of managing a supply chain, and as such, the trade-offs between warehousing costs and services to that of other critical functions of the firm must be evaluated. It is when warehousing contributes to reduced costs and improved service, flexibility, and responsiveness that warehouses become more valued to the organization and supply chain as a whole. Value is provided through

- Storing product to fulfill customer demand and protect against uncertainties in demand and lead-time
- Providing customers with product assortment
- Postponing or delaying inventory commitment to form or location until demand is better known
- Achieving low total cost and improved lead-time through consolidating multiple orders
- Reducing lead-time through cross-docking
- Sequencing materials and components from multiple third-party logistics (3PLs) providers for time-based delivery to factory production lines
- Performing light manufacturing, assembly, and kitting (Keller and Keller, 2014).

Excellent warehouse performance helps companies to create competitive advantage by reducing logistics costs, by increasing internal and external customer service levels, and by aligning business activities. Research shows that best-in-class companies realize competitive customer service levels while achieving logistics costs advantages of 20 to 30 percent over their laggard peers. Moreover, these companies are financially more successful (Jeroen, 2012).

It is believed that the same underlying principles apply whatever type of warehouse you operate. The role of a supply chain, and therefore a warehouse within that chain is to deliver the right products, in the correct quantity, to the right customer, at the right place, at the right time, in the right condition, at the right price – the seven rights of customer service. We can also include an eighth ‘right’ today, that being ‘at the right cost environmentally’. The warehouse plays a significant role in this.

Delivering the right product in the right quantity relies on the warehouse picking and dispatching products accurately. Delivering to the right customer at the right place, on time, requires the product to be labeled correctly and loaded onto the correct vehicle with sufficient time to meet the delivery deadline. The warehouse also has to ensure the product leaves the warehouse clean and damage free. In order to deliver at the right price we require a cost-efficient operation that provides value for money (Richards, 2018).

2.1.3 Warehouse Operations

According to Frazelle, 2002. Functions in the warehouse no matter the name or role, warehouse operations have a fundamental set of activities in common.

The functions may be defined briefly as follows:

1. Receiving is the collection of activities involved in (a) the orderly receipt of all materials coming into the warehouse, (b) providing the assurance that the quantity and quality of such materials are as ordered, and (c) disbursing materials to storage or to other organizational functions requiring them.
2. Prepackaging is performed in a warehouse when products are received in bulk from a supplier and subsequently packaged singly, in merchandisable quantities, or in combinations with other parts to form kits or assortments. An entire receipt of merchandise may be processed at once, or a portion may be held in bulk form to be processed later. This may be done when packaging greatly increases the storage-cube requirements or when a part is common to several kits or assortments.
3. Put away is the act of placing merchandise in storage. It includes the material handling, location verification, and product placement.
4. Storage is the physical containment of merchandise while it is awaiting a demand. The storage method depends on the size and quantity of the items in inventory and the handling characteristics of the product or its container
5. Order picking is the process of removing items from storage to meet a specific demand. It is the basic service a warehouse provides for customers and is the function around which most warehouse designs are based.
6. Packaging and/or pricing may be done as an optional step after the picking process. As in the prepackaging function, individual items or assortments are boxed for more convenient use. Waiting until after picking to perform these functions has the advantage of providing more flexibility in the use of on-hand inventory. Individual items are available for use in any of the packaging

configurations right up to the time of need. Pricing is current at the time of sale. Prepricing at manufacture or receipt into the warehouse inevitably leads to some repricing activity as price lists are changed while merchandise sits in inventory. Picking tickets and price stickers are sometimes combined into a single document (Frazelle, 2002).

7. Sortation of batch picks into individual orders and accumulation of distributed picks into orders must be done when an order has more than one item and the accumulation is not done as the picks are made.

8. Packing and shipping may include the following tasks:

- Checking orders for completeness
- Packaging merchandise in an appropriate shipping container
- Preparing shipping documents, including the packing list, address label, and bill of lading
- Weighing shipments to determine shipping charges
- Accumulating orders by outbound carrier
- Loading trucks (in many instances, this is a carrier's responsibility) (Frazelle, 2002)

Warehousing is concerned with all the material handling activities that take place within the warehouse. They include the receiving of goods, storage, order-picking, accumulation, sorting and shipping (van Berg, 2012).

2.1.4 Characteristics of warehouse systems

The basic process in a goods distribution center is as trivial as it is simple. A delivered article is not used at once and thus put aside until it is required by a customer. Then it is retrieved and transferred. This reduces the main steps to receiving, storing, retrieving, shipping goods. In practice, due to time, quality and cost-related requirements as well as a variety of external influences this seemingly simple process soon becomes complex and has to be controlled and optimized (Hompel and Schmidt, 2007):

- Goods receipts cannot be planned or the goods arrive in irregular intervals.
- Because of its dimensions, weights, temperature requirements the product range requires a variety of different transport, storage or handling technologies which have to be available at any time.
- The throughput of some articles differs widely and is furthermore subject to time fluctuations.
- Customers order only small quantities which should be consolidated within a short time and arrive at the shipping department simultaneously to build a single shipping unit.

- At the same time hundreds of orders have to be handled while the processing has to be optimized according to item, the type of order and shipment, possible time slots and existing personnel and technical capacities (Hompel and Schmidt, 2007)

2.1.5 Storage location assignment

The storage location assignment problem (SLAP) is to assign incoming products to storage locations in storage departments/zones in order to reduce material handling cost and improve space utilization. Different warehouse departments might use different SLAP policies depending on the department-specific SKU profiles and storage technology. The storage location assignment problem is formally defined as follows (Gu, Goetschalckx, McGinnis, 2006) :

Given:

- (1) Information on the storage area, including its physical configuration and storage layout.
- (2) Information on the storage locations, including their availability, physical dimensions, and location.
- (3) Information on the set of items to be stored, including their physical dimensions, demand, quantity, arrival and departure times.

Determine:

The physical location where arriving items will be stored. Subject to performance criteria and constraints such as:

- (1) Storage capacity and efficiency.
- (2) Picker capacity and efficiency based on the picker cycle time.
- (3) Response time.
- (4) Compatibility between products and storage locations and the compatibility between products
- (5) Item retrieval policy such as FIFO (first-in, first-out), LIFO (last-in, first-out), BFIFO (batch first-in, first-out). When using the BFIFO policy, items that arrived in the same replenishment batch are considered to be equivalent (Gu, Goetschalckx, McGinnis, 2006).

In typical warehouse operations, the physical storage infrastructure and its characteristics are known when planning the storage location assignment. The availability of storage locations is always known in automated warehouses and often known in mechanized warehouses. SLAP can be divided into three classes depending on the amount of information known about the arrival and departure of the products stored in the warehouse: (1) item information, (2) product information, or (3) no information (Gu, Goetschalckx, McGinnis, 2006).

We can segregate the basic layout of the warehouse, with the following regions: receiving docks for inbound trucks, unloading area, inventory area, packing and shipping area, and delivery docks for shipment. Stock locator system is also essential in the ability to manage an inventory of storage locations in addition to an inventory of product. With this capability a software system can do more than trigger financial transactions but can finally support warehouse operations by directing warehouse activities to/from storage locations. In addition, a WMS should also track the inventory of storage locations in the warehouse. A good WMS will track every place that product can be, down to and including the forks of individual forklift trucks. The ability to manage the inventory of storage locations makes possible the most fundamental capability of a WMS, which is the stock locator system, which supports directed put-away and directed picking. To track warehouse activities in real-time, the database must support transaction processing, which means that the database can maintain its integrity even though being updated simultaneously from multiple sources (purchasing, receiving, picking, shipping, etc.) (Bartholdi and Hackman, 2014).

Random location is often used for reserve storage, which tends to take up the largest area in a warehouse, and fixed location for order picking stock, which enables the use of concepts such as popularity storage- fast-moving product lines located to minimize picker movement (www.ciilogistics.com) (Viewed 15 January, 2020).

The concept of SKU warehouse storage location focuses on SKUs' physical position in a storage aisle. The location is determined by a storage position philosophy. This has guidelines based on whether the storage activity used a manual forklift truck or an AS/RS crane. An inventory program either permits an employee to determine the product transaction location or controls the storage strategy by suggesting or directing the transaction location.

Storage position philosophy includes:

1. SKUs' physical width, height, length, and weight. In a storage operation, heavy or short SKUs are located at floor level, tall and light SKUs are located in high positions.

2. SKU velocity, sales, or physical movement for a complete fiscal year. In a storage aisle, fastmoving SKUs are located at the aisle start, medium-moving SKUs are located in the middle of the aisle, and slow-moving SKUs are located at the end.
3. SKU value. High-value SKUs are placed in positions with limited or controlled access.
4. SKUs that have specific environmental storage conditions. For example, temperature-sensitive SKUs are located at a low position or in a separate storage area.
5. Hazardous classification. SKUs with such a classification are housed in a position that restricts an SKU flight or has a barrier or pit connected to a containment chamber that restricts flammable liquid run-off(Mulcahyand Sydow, 2008).

2.1.6 Inventory Management concept

Inventory (stocks) covers all the goods and goods that an organization owns or holds, and to which intends to add value before selling. The dichotomy of inventory is that inventory held tied up working capital (because it costs money and therefore less is better) but it is needed in order to have something to add value to and sell (because we need inventory to ensure product availability) (Relphand Millner, 2015).

Inventory management:

- is the set of policies and that controls that monitor levels of inventory;
- determines what level of each product should be maintained;
- identifies when stock should be replenished;and;
- decides how large order should be;

Inventory Control Techniques

In inventory management, ABC inventory control technique is based on the principle that a small portion of the items may typically represent the bulk of money value of the total inventory used in the production process, while a relatively large number may from a small part of the money value of stores. The money value is ascertained by multiplying the quantity of material of each item by its unit price (Mumbai, 2006). According to this approach to inventory control high value items are more closely controlled than low value items. Each item of inventory is given either A, B, or C domination depending upon the amount of spent for that particular item. "A" or the highest value of

items should be under the tight control and under the responsibility of the most experienced personnel, while "C" or the lowest value may be under simple physical control (Kaudunde, 2013).

2.1.7 Materials Coding

Each company will have a method of identifying products through the use of some form of coding system. The coding system may be unique (for example, the Materials and Equipment Standards and Codes (MES-C) 10-number coding used worldwide within the Shell group) or, it may be a coding system that conforms to industry standards (for example, the UK food industry bar code labeling of products). Whatever coding method is used, the reasons for it are universal:

- Provides a unique identifier per product line/item.
- Prevents duplication of stocks: for example, by ensuring that coding is used by all suppliers and can be identified by all customers and users.
- Provides standardization: for example, coding a 'new' product for the first time can identify that similar products already exist and therefore possible duplication is avoided.
- Simplifies product identification for all suppliers, customers and users.
- Can help in determining stock locations: for example, within a store holding engineering items where all those products in one main coding category are kept together.
- Assists in pricing and costing: for example, with food supermarkets' EPOS systems (Emmett, 2005).

2.1.8 Warehouse Key Performance Indicators

The performance indicator or key performance indicator (KPI) is a measure of performance of the business in order to benchmark against the competition and explore the possibility to improve in order to gain competitive advantage. Warehousing function is a very critical within any supply chain. If the products do not move seamlessly within supply chain business would face serious service related challenges. Hence, it is necessary to drive the performance of the warehouse through key performance indicators. Further, in a continuous improvement environment, it is essential to benchmark against the industry standards in order to drive improvements (JNU, Jaipur, 2013).

The development of information technology has changed business environment almost entirely. And IT has of course been very influential in performance measurements. Almost all processes today are in some way in touch with IT so it has become much easier to measure. Three main trends in performance management have been found discusses as follows:-

Real-time

The current highly competitive markets have created the demand for both businesses and products to be able to change fast and dynamically. The company that meets consumers' demands fastest is the one that survives. To be able to be flexible and develop winning strategies for the future it's important for managers to have meaningful performance information to avoid becoming lost in a sea of data (Elrod, 2013)(Cited byAxelsson& Frankel, 2014).

Mobility

The ability to change fast and dynamically also means that decisions must be able to make wherever you are. Mobility is therefore a large trend within performance management. Even if the logistics manager is away from site he wants to be able to manage the warehouse like normal. And with modern technology this is becoming more and more standard. 24-7 Internet connectivity, cloud solutions, smartphone support these are all much more common in warehouses today than ten years ago (Axelsson& Frankel, 2014).

Visibility

To create a system so that critical business information can be attained, analyzed and acted upon has become almost as important as performance measurement itself. The increased willingness to measure together with increasing number of processes measured and the increased possibilities to automated measuring thanks to IT and ERPs, these have created massive opportunities to support decisions. However there is also a great risk to get lost in the large amount of data that is gathered in today's businesses. A critical success factor is therefore to make important metrics more visible and, if possible, display them in a dashboard that provides the relevant metrics. (Searle, Dixon, 2013)(Cited by Axelsson&Frankel, 2014).

According to Edward, 2002. Businesses compete on the basis of financial, productivity, quality, and cycle timeperformance; we recommend that warehouse performance be captured in those four categories of indicators.

Warehouse Financial Performance

In financial performance, it should be recommended that each warehouse establish a warehouse activity based costing program. A cost for each warehousing activity (receipt, put away, store, pick, ship, and load) is established. The activity costs become the basis for comparing third-party warehousing proposals, budgeting, measuring improvement, and menu-based pricing for warehousing services (Frazelle, 2002).

Warehouse Productivity Performance

For productivity performance, it should be recommended that our clients monitor the productivity and utilization of the key assets in the warehouse —labor, space, material handling systems, and warehouse management systems (Frazelle, 2002) .

Warehouse Quality Performance

There are four key quality indicators for warehouse performance we recommend for implementation:

- Putaway accuracy: - The percent of items put away correctly.
- Inventory accuracy: -The percent of warehouse locations without inventory discrepancies.
- Picking accuracy: - The percent of order lines picked without errors.
- Shipping accuracy: -The percent of order lines shipped without errors (Frazelle, 2002).

Warehouse Cycle Time Performance

For cycle time, we recommend the warehouse track performance in two key areas:

- Dock-to-Stock Time (DTS) The elapsed time from when a receipt arrives on the warehouse premises until it is ready for picking or shipping
- Warehouse Order Cycle Time (WOCT) The elapsed time from when an order is released to the warehouse floor until it is picked, packed, and ready for shipping We often assess our client's performance in the form of a warehouse performance gap analysis indicating to the client their standing versus world-class norms in the key performance indicators and the cost savings that are available if the gaps can be closed (Frazelle, 2002).

2.1.9 Shipping

On the face of it, the sole task of the shipping department is to consolidate shipping units according to orders and to load the goods into transport means. Apart from the physical processes in the shipping zone, these activities also include a series of organizational and control functions. Unless it is specified in the order, the optimal shipping method or the transport means has to be determined. This process is not an easy one due to the di

fferent prices

service providers (Hompel and Schmidt, 2007). The choice of cost-optimized shipping requires the exact study of shipping quantities (volumes and weights) as well as of the transport destinations and frequency. Based on these data, the optimal transport service provider can be found for each single transport order. At the same time, tours have to be planned where the priority of the delivery, the availability of ordered goods, already agreed delivery frequencies, etc. have to be taken into consideration. These requirements vary considerably according to the storage type and have to be considered in the strategies (Hompel and Schmidt, 2007).

According to Frazelle, (2002). Shipment planning is the process of choosing shipment frequencies and deciding for each shipment the orders which should be assigned to the shipment, mode of transport, appropriate carrier, route, and shipping schedule. World-class shipment tracking and visibility begins before the shipment is released to the fleet or common carrier. The first time a customer places an order with us, we should be able to estimate a picking time, departure time, arrival time, and container assignment, and communicate that information via phone, fax, e-mail, and/or Internet during the communication. Any exceptions to that plan should be communicated to the customer proactively.

2.2 Empirical Literature Review

A study conducted by Endaykiros (2019) is an assessment of challenges of warehousing practices: The case of Ethio Telecom in Addis Ababa. Find out challenges of warehousing practice in the company and show them the potential challenges & gaps that need correction in practicing the warehousing activities. The study revealed that inadequate availability of unloading & loading space; insufficient availability of machinery's/equipment has to unload, load and move materials. The poor availability of packaging materials and storage areas of goods are also improper. Similarly, a study conducted in Cameroon to assess warehouse performance indicators of Huawei central warehouse revealed that there was a drop in the quality of warehouse services, an increase in the time taken to perform warehouse transactions and an increase in warehouse cost. It is therefore insufficient to consider

quantities as the only performance indicator for assessing warehouse performance. There is need for the incorporation of elements of quality, cost, time and productivity(Derick, 2018).

According to Abdi(2019)study result ofwarehousing operation efficiency and effectiveness in logistics management practice the case of Berhan Bank S.C. The five key efficiency and effectiveness indicators, the Asset management indicator in the company seems to be most valuable and should be given with high emphasis as its current status is poor. In order to achieve significant cost savings from minimized total cost of warehousing operations, the company should give attention to the warehousing function to be cost effective. Likewise, the study conducted to improving the effectiveness of warehousing operation, revealed that long lead time because of delays which arise from many hand-offs, poor warehouse layout, irregular deliveries owing to poor communication in the GI system, increase in the queuing time of goods, high level errors in the forecasting of demand and unnecessary queries such as errors on the advice notes, on the order and a misprint on the paper that can increase the congestion in the warehousing operations(Gunasekaran, Marri and Menci, 2018).

The study aims to finding out the existing pharmaceuticals warehousing practices of pharmaceuticals fund and supply agency. Revealed that the company's overall warehousing practices below moderate except the packing and shipping activity which is little bit better practiced. There are also so many various challenges in performing warehousing activities: lack of designated receiving area, shortage of material handling equipment, insufficient storage space and long searching time of customer order are the most common once(Habtamu, 2018). According to Teshome,2019.Stated that, among the six key performance indicator, assessment of the pharmaceutical store performance based on dimension Inventory management is comparatively in a better position in the hospital store. However, their expectation Addis Ababa government hospitals pharmacy exert relatively lower efforts in Storage condition dimension, and Security & Safety dimension store performance. The study advocated that a lot of emphasis need to be directed to Storage condition, and Security & Safety indicator in order to achieve for improved storage condition area and Security & Safety, consequently improving the organizational performance as a whole and increasing the quality of drug.

A research studies conducted by Anteneh(2017)stated that Save the Children Gambella Emergency Office have major gaps in inventory control, materials handling, record keeping and application of

information technology for warehouse services. The quality inspection practices of the warehouse have shown relatively higher rating than the other four factors mentioned above.

Kibrom(2019) argue that warehousing dimensions such as (receiving activity, storage activity, picking activity, shipping activity and order picking) have positive and significant relationship with organizational performance. His finding also indicates that employees were well aware of the importance of warehousing activities on organizational performance. The results also indicate that, unlike order picking, the four warehousing dimensions (receiving activity, storing activity, picking activity, shipping activity) have a relatively more positive and significant effect on organizational performance. These dimensions contribute significantly (47.6%) to organizational performance. Based on the findings of the study, several recommendations are made, including that order picking should be given higher priority so as to improve organizational performance, but also since this activity is at the closest interface with the customer - customer satisfaction is at risk. Finally, based on the gap observed, it would be to the benefit of My Wish Enterprise to streamline its warehousing operations through a formalization of its warehousing guidelines, to improve the knowledge capacity of staff with regards to warehousing operations, to improve the security measures i.e. with CCTV systems, and, in view of its expansive stock, to explore the possibility of digitalizing warehousing operations.

Manayeh(2018) conducted a research on effect of order picking practice on warehouse performance the case of pharmaceuticals fund and supply agency Addis Ababa branch employees perspective. In this specific study the effect of order picking practice on warehouse performance, a case of the agency of employees' Perspective, three indicators of order picking were used, namely; quality, time and productivity as these indicators are the best to measure the effect of order picking practice on warehouse performance. The result from the study showed that all of them have huge impact on the warehouse performance. The quality measuring entities showed that there was a quality problem in order picking practice. Time indicator likewise affects the warehouse performance as the order picking is the longest time taking process as compared to the other operations and it is not in the best interest of customers. And finally the study shows productivity indicator of the space utilization in the warehouse is not as it is expected from an agency whose one of the core processes of warehousing. To this end the study advocates working such kind of researches in detail will investigate and revealed the problem on the ground and needs greater attention to improve the order picking practice in turn improving the warehouse performance.

Sayed(2013) did a Study on Warehouse Management of Rural Electrification Board (REB) a Case Study of Central Warehouse, Dhaka. This study is designed to explore the overall picture of warehouse management practice in REB and help identify the scope of improvements. The study found that, every year billions are spent for the procurement of equipment and materials required for construction and maintenance which are then stored in the central warehouses of REB and later distributed to other stores and project sites according to the requirements. But the warehouse management of REB has no specific long term vision and goals.

In addition, existing performance of Warehouse Management is not that much satisfactory in terms of efficiency and effectiveness in comparison with the present standards of similar industry. Therefore, based on the response of the respondents', observation and literature review problems are identified and conclusions are drawn. REB has not traditionally seen warehouse function as 'profit center' rather considered as 'cost center'. Hence, efficient and effective warehouse management has crucial roles to play for the organization and it can act as a profit center for the organization. Warehouse Management provides maximum profitability with the minimum investment through ordering cost and carrying of materials. It provides service and controls function of the flow of materials entering and distributed at a company.

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2.3 Summary

A look at the reviewed theoretical literature and empirical review has shown that warehousing dimensions such as (receiving activity, storage activity, picking activity, shipping activity and order picking) have positive and significant relationship with organizational performance and customer satisfaction. So, these are the key for business success and survival.

2.4 Conceptual Framework

A conceptual framework is a description of a comprehensive conceptual model framework which is relevant to the research problems. It indicates variables of cause and effects (Kaudunde, 2013).

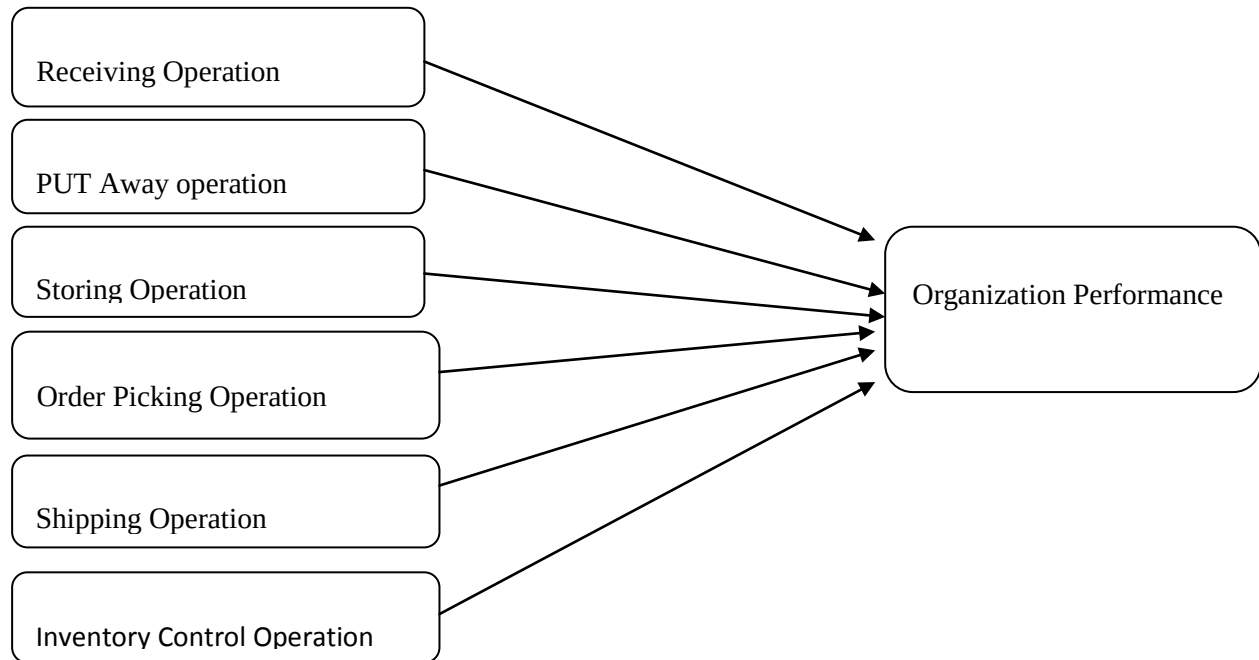
From the literatures reviewed the researcher has identified six core operations that warehouse managements are intended to perform: such as receiving operation, put away operation, storing operation, order picking operation, shipping operation and inventory control operation. Hence, excellent warehouse performance helps companies to create competitive advantage by reducing

logistics costs, by increasing internal and external customer service levels, and by aligning business activities. The organization performance ultimately dependent on these warehouse operations.

The study tried to conceptualized as shown as follows:-

Conceptual Framework

Independent Variables Dependent Variables



Source: Fetene(2019)

Chapter 3: Research Methodology

3.1 Description of the study area

The Sugar Corporation of Ethiopia, established in 2010, is currently undertaking the development of 5 new sugar factory projects. When these projects are completed Ethiopia would have 13 sugar factories and its annual sugar production would become 2 million 250 thousand tons. Sugar Corporation has been given huge responsibility by Ethiopian government to excel the country's sugar development and contribute to the growing economy by maximizing the production of sugar and exporting sugar to earn foreign exchange as well as create jobs for citizens.

Sugar Corporation has procured a lot of material from local and foreign suppliers and deployed at central warehouse which is located at head office and wonjeshoa. At the same time, these inputs would be distributed to different sugar factories and projects when the need arises. So, this study will focus on the assessment of warehouse operation management and its effect on performance of the sugar corporation.

3.2 Research Approach

Both qualitative and quantitative data were collected. Qualitative data gathered through open ended questionnaires and at the same time quantitative data also gathered through closed ended questionnaires. There was more insight to be gained from the combination of both qualitative and quantitative research than either form by itself. Their combined use provides an expanded understanding of research problems (Creswell, 2009).

3.3 Research Design

According to Creswell(2009), Research Designs are plans and the procedures for research that span the decision from broad assumptions to detailed methods of data collection and analysis. So, this study adopts descriptive design. This approach showed how warehouse operation management practices affect operational efficiency of the sugar corporation.

3.4 Population and Sample

The target population of the study consisted of employees and managements who are engaged in warehouse management, inventory control, property administration, procurement, machinery, finance section and those who received service from the warehouse section at head office, factories and Projects of Sugar Corporation. The total number of target population were 70 employees which were 33 employees from head office, 21 employees from factories and 16 employees from sugar projects of the corporation. Since the target population for this research was less than 100, all target populations were included in the study using census method.

3.5 Data Sources and Types

3.5.1 Primary data

Primary data was collected by the use of questionnaires. The questionnaires had both open ended and closed ended question.

3.5.2 Secondary Data

This study used company document, annual report and audit report.

3.6 Data Collection Procedures

The methods of collecting primary and secondary data differ since primary data are to be originally collected, while in case of secondary data the nature of data collection work is merely that of compilation. This study used a primary data used to collect data through questioner. Mostly the researcher used questionnaire which consisted of both open ended and closed ended question.

In the case of secondary data, data collected company document, annual report and audit report.

Ethical Consideration

The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. The researcher strictly followed research ethics such as: Respondent's participation was entirely voluntary and the questionnaire did not require writing respondents name. The feedback from the participants remain confidential and only used for the stated purpose only, thus not affects any one rather it might provide the company in improving the performance of the warehousing practices.

3.8 Data Analysis

The data, after collection, had to be processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan. This is essential for a scientific study and for ensuring that we have all relevant data for making contemplated comparisons and analysis. Technically speaking, processing implies editing, coding, classification and tabulation of collected data so that they were amenable to analysis. The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data-groups (Kothari, 2004). This study used to be conducted both qualitative analysis and quantitative analysis.

The quantitative data that was collected through questionnaires had been computed by using Statistical Packages for Social Science (SPSS 21) statistical analysis tool. And, at the same time the data was coded, entered and analyzed using this tool.

Frequency tables and percentages were used to summarize the demographic information of respondents. And Frequency, percentages also used to summarize all the dimensions that had assessed in order to determine the status of warehouse operation management and the impacts of operational efficiency of the sugar corporation. Finally, detail interpretation and discussion of the results of the statistical analysis was analyze and prepared in the table.

3.9 Validity and Reliability

3.9.1 Validity

According to Kothari (2004). Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure. Validity can also be thought of as utility. In other words, validity is the extent to which differences found with a measuring instrument reflect true differences among those being tested. A pilot study was conducted to make the validity of the data collection questionnaire a certainty before the actual data collection tool was dispatched to the respondents.

3.9.2 Reliability Analysis

A scale reliability test was conducted to check whether a scale applied in this research consistently reflected the subset it measures. To carry out the reliability analysis, Cronbach's Alpha (α) was

used. If the value of alpha is >0.9 = Excellent, >0.8 =Good, >0.7 = Acceptable, >0.6 = Questionable, >0.5 =Poor, and <0.5 = Unacceptable (Namdeo& Rout, 2016). The accepted limit of Cronbach's α is 0.70. Accordingly, the Cronbach's α result for the pilot study was 0.70. This indicates that the scales suitable for further analysis.

Table 3.1: Reliability result

Reliability Statistics	
Cronbach's Alpha	N of Items
.959	47

Source: Survey Result (2020)

CHAPTER 4: DATA ANALYSIS, INTERPRETATION AND DISCUSSION

Introduction

This chapter presents the findings of the study in reference of objectives mentioned in chapter one. Therefore, as determined in the data collection method of this study, data were collected using questionnaire. Accordingly, the collected data were analyzed quantitatively and qualitatively. This takes from a descriptive analysis. The statistical analysis is performed in SPSS version 21.0.

In this study, the findings presented in categorical way based on the six main warehousing practices; which are receiving, put-away, storage, order-picking, shipping and inventory; and their effect on performance of the corporation.

4.1. Response Rate

The target population of this study comprised of 70 employees and individuals who are working closely and received service from the warehouse section. However, from the total 70 questionnaire distributed 65 were completed and returned. Only 65 questionnaires which are completely filled and returned are used for analysis and which essentially made the response rate about 92.86%. The demographic information of the respondents who have filled and returned the questionnaire is presented on underneath tables.

4.2 Respondents' Demographic Information

Table 4.1 Age of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
18-25	3	4.6	4.6	4.6
26-35	30	46.2	46.2	50.8
Valid 36-45	22	33.8	33.8	84.6
>45	10	15.4	15.4	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

The above table shows 4.6% of the respondents were between 18 – 25 years, 46.2% of the respondents were between the ages of 26 - 35 years, 33.8% of respondents were between 36 – 45 years and 15.4 % of the respondents were above 45 years. Based on the results obtained, the researcher found that the majority of the respondents are between 26 –35 years and 36 - 45 years. As result of this the researcher believed that the respondent would have good awareness about the effect of warehouse operation and gave reliable data.

Table 4.2 Gender of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	52	80.0	80.0	80.0
Valid Female	13	20.0	20.0	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

As shown in Table 4.2. Gender distribution of the respondents, 52 (80%) of the total respondents are male; 13(20%) are female. This implies that the proportion of male employees is larger than that of female employees in Sugar Corporation. This implies that Sugar Corporation human resource department has a job to do in creating a gender balanced workforce.

Table 4.3 Working Location of the Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Head office	31	47.7	47.7	47.7
Valid Factory	19	29.2	29.2	76.9
Project	15	23.1	23.1	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

Table 4.3 indicates that out of the total target population 33 employees from head office 31 are responded, 21 employees from factories 19 are responded, 16 employees from sugar projects 15 are responded. Therefore, the researcher believed that the responses given by the respondents reflect the feelings of the whole sugar factories and projects.

Table 4.4 Year of Service in The Current Position of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
<1year	3	4.6	4.6	4.6
1-5	36	55.4	55.4	60.0
6-10	17	26.2	26.2	86.2
Valid >10	9	13.8	13.8	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

As table 4.4 illustrates the respondents with work experience of below 1 years, 1-5 years, 6-10 years, and above 10 years accounts 4.6%, 55.4%, 26.2%, and 13.8% respectively. Majority of respondents (81.6%) have had One and above ten years of experience at their current position. Hence the researcher believed that the respondents have got enough experience and skill to respond the right answer for each question items.

Table 4.5 Respondents Educational Level

	Frequency	Percent	Valid Percent	Cumulative Percent
<College Diploma	1	1.5	1.5	1.5
Valid First Degree	46	70.8	70.8	72.3
Second Degree	18	27.7	27.7	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

As figure 4.5 indicates, majority of the respondents i.e. 70.8% were first degree holders whereas 1.5% of the respondents were less than college diploma holders. The respondents with first degree and Second degree qualification level accounts 98.5% of the total respondents. This confirm that almost all respondents had a degree and above. So, the researcher believed that the respondents could easily understand the questionnaire items and gave the correct answers.

4.3 Descriptive Analysis

In this part of the study's report, analysis conducted on data gathered to assess warehouse operation management and its effect on performance of the sugar corporation is presented in relation to the objectives of the study. Descriptive statistics was used to analyze the data in this study is based on the responses of respondents in to account that numbers 1, 2, 3, 4 and 5 represent strongly disagree, disagree, neutral, agree and strongly agree, respectively. The result of the study in assessment of warehouse operation management and its effect on performance of the organization showed that the scores of strongly disagree have been taken to represent a variable which had a mean score of 0 to 1.5, the scores of disagree have been taken to represent a variable with a mean score of 1.5 to 2.5, the score of neutral have been taken to represent a variable which had a mean score of 2.5 to 3.5, the score of agree have been taken to represent a variable which had a mean score of 3.5 to 4.5 and the score of strongly agree have been taken to represent a variable which had

a mean score of above 4.5. A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents. Hence, descriptive statistics was assessed to examine the mean scores and the corresponding standard deviations under the respective scales of each of the measurement items of the dimensions. The mean value provides the idea about the central tendency of the values of a variable. Standard deviation is to give the idea about the dispersion of the values of a variable from its mean value. The results of the descriptive analysis are shown in the table below.

4.3.1 Receiving Operation Indicators

Table 4.6: Descriptive Statistics of Receiving Operation Indicators

Receiving Operation Indicators	N	Mean	Std. Deviation
Standard operating procedure in place at all warehouse	65	2.94	1.223
Prenotification of new arrival to be received is mostly in place for warehouse staff	65	3.40	1.043
Warehouse manager arrange storage space before the arrival of items	65	2.91	1.221
There is clearly defined separated receiving area in the corporation Warehouse	65	2.89	1.174
Users get timely request from warehouse for inspection	65	3.32	1.002
Users always check the quality of materials before store receive the materials formally	65	3.65	1.037
Users are responsive to do quality inspection on time	65	3.20	1.135
Inspection performed and reported on time	65	2.92	1.122
A claim report for discrepancy timely reported	65	2.95	1.067
Valid N (list wise)	65		
Aggregate mean and Standard deviation		3.13	1.11

Source: Survey Result (2020)

As portrayed in table 4.6, above the mean values of receiving operation indicators were found between 3.65 and 2.89 with standard deviations that range between 1.22 and 1.037. The lowest mean value is registered in the case of available clearly defined separated receiving area and relatively higher mean is recorded in users are always check the quality of materials before store receive the materials formally. It is clearly noticeable that mean scores of the receiving operation indicators measurement items are skewed to disagree and strongly disagree spectrum. The aggregate mean of receiving operation shows the respondents were remain neutral. Most of the receiving operation management indicators mean show below average.

4.3.2 put away Operation Indicators

Table 4.7 Descriptive Statistics of put away Operation Indicators

Put away Operation Indicators	N	Mean	Std. Deviation
Warehouse Personnel are skilled to perform put away	65	2.62	1.041
There is an established well-structured put away process for all items received	65	2.23	1.012
All items received are placed on their preferred location as per good storage practice	65	2.66	1.122
Items are arranged by category, type, batch number, and expiry date before moves from receiving area to storage area.	65	2.51	1.048
In Corporation warehouses, goods specific locations are registered/recorded after put-away.	65	2.18	1.130
Aisle space is not enough to move the workers as well as machinery at the time of performing put away activity.	65	3.23	1.057
Fast moving items are put-away in the most accessible locations.	65	2.43	1.131
Valid N (list wise)	65		
Aggregate mean and Standard deviation		2.55	1.077

Source: Survey Result (2020)

As indicated in table 4.7 above, the put away operation dimension was measured in seven items and the results of the mean were found between 3.23 and 2.18 with standard deviations that range between 1.131 and 1.012. The lowest mean value is registered both in the request of “In Corporation warehouses, goods specific locations are registered/recorded after put-away” and “There is an established well-structured put away process for all items received available clearly defined separated receiving area”. However, higher mean (3.23) is recorded in “Aisle space is not enough to move the workers as well as machinery at the time of performing put away activity”. This also indicates that the corporation does not have enough adequate aisle space for the movement of worker and machinery and needs a lot to be done to improve the situation of all put away operation management.

4.3.3 Storage Operation Indicators

Table 4.8: Descriptive Statistics of Storage Operation Indicators

Storage Operation Indicators	N	Mean	Std. Deviation
Shelves/ racks/pallets are arranged in lines with the adequate passageways.	65	1.68	.664
Non-useable items (expired, damaged, quality defect products) are regularly separated from useable inventory	65	2.22	1.008
The shelves/racks/Pallets in the warehouses are all adequate to store the products.	65	2.66	1.122
There is access controlled storage for products that need increased security.	65	2.52	1.077
Large supplies of flammables are stored in separate location away from the main store room	65	2.31	1.211
incoming goods are stored in a manner that facilitates the first in first out (FIFO).policy	65	2.49	1.161
There is system of classifying or organizing the goods for which all Warehouse employees are familiar.	65	2.57	1.000
Fire extinguishers are in place.in the entire corporation warehouse	65	2.46	1.047
There is regular inspection and cleaning of storage areas.	65	2.23	.965
the storage areas of sufficient capacity to allow orderly storage of various categories of goods	65	2.58	1.059
Warehouses are organized into sections or zones according to the intended function	65	2.65	1.152
Valid N (list wise)	65		
Aggregate mean and Standard deviation		2.39	1.042

Source: Survey Result (2020)

As indicated in Table 4.8 the aggregated value of Storage Operation Indicator has scored disagree with the value of (2.39) and this clearly shows the current storage operation management of the Sugar Corporation. The lowest mean value was registered the score of (1.68) that was the respondent put their view for question whether the Shelves/ racks/pallets are arranged in lines with the adequate passageways. The next lowest mean scored (2.22) as the respondents asked to show their level of agreements for the question that “Non-useable items (expired, damaged, quality defect products) are regularly separated from useable inventory”. Similarly, the respondents put their view for question that “whether there is regular inspection and cleaning of storage areas” scored with the mean of (2.23). So, these clearly show the corporation did not segregate and disposed on time the expired and damaged goods and there were no regular cleaning and inspection of the warehouse. Hence, it indicates that the corporation invests a huge amount of money to dispose unused material.

4.3.4 Order picking Operation Indicators

Table 4.9: Descriptive Statistics of Order picking Operation Indicators

Order picking Operation Indicators	N	Mean	Std. Deviation
Most of the time items are picked from the storage area as exactly mentioned on the issue order	65	2.63	1.069
Picked items are arranged on dispatch area by category so that the responsible warehouse staff checks for picking accuracy	65	2.23	1.012
Order picking operation in the corporation warehouse is satisfactory and considers the urgency	65	2.66	1.122
The design of the warehouse space (aisle and lay out) is easy to pick items free from damage during order picking activity.	65	3.63	2.382
There are a designed picking system in place by considering product range, size of order, the picking equipment, and the size of unit load or container in to which orders are being picked.	65	2.98	1.281
Valid N (list wise)	65		
Aggregate mean and Standard deviation		2.83	1.37

Source: Survey Result (2020)

As indicated in the table 4.9, majority of the respondents were neutral for order picking operation indicators with aggregate mean score 2.83. These also indicates for the three question as the respondents response for “There are a designed picking system in place by considering product range, size of order, the picking equipment, and the size of unit load or container in to which orders are being picked” (mean 2.98, std. dv. 1.281), “Order picking operation in the corporation warehouse is satisfactory and considers the urgency”(mean 2.66, std. dv. 1.122) and Most of the time items are picked from the storage area as exactly mentioned on the issue order(mean 2.63, std. dev. 1.069). As the remaining one measurement used in “The design of the warehouse space (aisle and lay out) is easy to pick items free from damage during order picking activity” relatively higher score (mean 3.63, std. dev. 2.382). This shows a little bit better the other activities.

At the same time some respondent’s response on open ended question “if there is any idea or comment to improve the warehouse operation management of the corporation”. Some of them indicate that since the corporation warehouse specially central store located at wonjeshoa warehouse don’t have enough shelves and racks almost all spare parts are deployed in a boxes as it is and during order picking it takes a lot of time even a day and two to track and to response the order.

4.3.5 Shipping Operation Indicators

Table 4.10: Descriptive Statistics of Shipping Operation Indicators

Shipping Operation Indicators	N	Mean	Std. Deviation
The orders are packed into the correct sized boxes	65	2.60	1.157
The goods are properly packed so that increase vehicle space utilization, facilitate ease of loading and receipt at destination	65	2.40	1.247
The vehicles are loaded carefully and systematically on a first out/ last in basis to save time	65	3.26	1.361
All customers are served as quick as possible	65	2.43	1.447
Valid N (list wise)	65		
Aggregate mean and Standard deviation		2.67	1.303

Source: Survey Result (2020)

The mean values for each of the measurement entities for shipping operation indicator are range 3.26 and 2.40. From the response it can be understood that the shipping operation management were in indifference and disagree position such as “the vehicles are loaded carefully and systematically on a first out/ last in basis to save time” (mean 3.26, s.t.d. 1.361) and “the goods are properly packed so that increase vehicle space utilization” score mean 2.60). The table also show that all customers who needs service of the warehouse from head office, factory and project are not served as quick as possible and in the consideration of the urgency of the need.

This also supported on the open ended question the respondents were indicated as there are not enough manpower to do all the shipping operation activity, they were not properly treated and most of the time wrong items shipped to different factories and projects. So, these cause a delay of delivery of the needed items which in turn negatively affect the corporation performance.

4.3.6 Inventory Control Operation Indicators

Table 4.11: Descriptive Statistics of Inventory Operation Indicators

Inventory Operation Indicators	N	Mean	Std. Deviation
Maximum and minimum inventory levels are properly maintained.	65	2.62	1.041
No expired or obsolete materials are kept in store.	65	2.23	1.012
There is a system of identification for fast and slow moving items.	65	2.66	1.122
There is a system of alerting users the inventory status required materials	65	2.51	1.048
There is an IT system to control the entire corporation asset.	65	2.18	1.130
Valid N (list wise)	65		
Aggregate mean and Standard deviation		2.44	1.07

Source: Survey Result (2020)

It could be seen from Table 4.11 that Sugar Corporation at corporate level an inventory management practice are weak as the mean responses of most of the 5 items used to measure the inventory practice were almost all in the position of the midpoint signifying “neutral” and “disagreement”. The response of neutral was received from the first item:“(maximum and minimum inventory levels are properly maintained)” with mean, 2.62 and SD=1.041. The third item which was“There is a system of identification for fast and slow moving items” with Mean=2.66, SD=1.122”. And, followed by the fourth item “There is a system of alerting users the inventory status required materials with Mean= 2.51 and SD= 1.048. However, least responses indicating disagreement were received from two items namely“No expired or obsolete materials are kept in store” and “There is an IT system to control the entire corporation asset” with mean and standard deviation values of 2.23 (1.012) and 2.18(1.130) respectively.

This implies that a great effort needs to improve the practice of inventory management. Actually, the Sugar Corporation on the verge of implementing Enterprise Resource Planning (ERP) and the concerned executive should prepare themselves for necessary precondition works that need before the system to implement.

4.3.7 Organization Performance Indicators

Table 4.12: Descriptive Statistics of Organization Performance

Organization Performance	N	Mean	Std. Deviation
Receiving activity has a significant positive effect on performance. of sugar corporation	65	2.94	1.223
Put away activity has a significant positive effect on performance. of sugar corporation	65	1.92	.756
Storage activity has a significant positive effect on performance .of sugar corporation	65	2.72	1.153
Order picking activity has a significant positive effect on performance. of sugar corporation	65	2.37	1.054
Shipping activity has a significant positive effect on performance. of sugar corporation	65	2.38	.947
Inventory control operation activity has a significant positive effect on performance. of sugar corporation	65	2.92	1.136
Valid N (list wise)	65		
Organization Performance Aggregate Mean		2.54	1.044

Source: Survey Result (2020)

As shown from table 4.12: Organizational performance indicators scored with the aggregate mean of (2.54) which is neutral and there are no registered agreed and strongly agreed score of the whole measurements and this indicates that the existing operational performance of Sugar Corporation were in critical situation. So, the concerned bodies give more attention to strive record in a better performance for those listed above activities to accomplish the corporation objectives and goals. The least mean registered for items two “Put away activity has a significant positive effect on performance of Sugar Corporation” and item four “Order picking activity has a significant positive effect on performance of Sugar Corporation” with mean 1.92s.t.d .756 and mean 2.37s.t.d1.054 respectively. The standard deviation for organizational performance was 1.044. This standard deviation is low meaning that there are no extremes in the positive and negative in the scoring.

4.4 Summary of responseswhether the warehouse to be improved and exceptional strength.

One of the questions raised under this section to be respond and reflect their idea “Do you think the warehouse has got major problem to be improved”. Most of the respondent 64.6 percent said yes and suggested to improve inventory policy should be implemented, storage of the materials should follow standard operating procedure, and receiving of materials should be proceed on time then the inside and outside customer might get better service. These were dominant idea has given by the respondent.

Table 4.13 Summery of the Response whether the warehouse to be improved.

Do you think the warehouse services have got major problems which needs improvement?				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	42	64.6	64.6	64.6
Valid No	23	35.4	35.4	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

Table 4.14 Summery of the Response whether the warehouse have got exceptional strength

warehouse services have got exceptional strengths				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	18	27.7	27.7	27.7
Valid No	47	72.3	72.3	100.0
Total	65	100.0	100.0	

Source: Survey Result (2020)

Respondents were requested to whether the warehouse have got exceptional strength which they want to see replicated but as shown in table 4.14 72.3 percent response there were no strength and it indicates that the overall inefficiency of the warehouse operation management.

4.5 Discussions of the Results

The objective of this study was to show the effect of Warehouse Operation Management on organization performance of the Sugar corporation by measuring the level of influence of core operation like receiving, put away, storage, order picking, shipping and inventory control operation.

From the results of the descriptive analysis, it was indicated that the mean score of the independent variables of put away operation, storage operation and inventory control operation were 2.55, 2.39, and 2.44 respectively. Subsequently, the result shows most of the respondents put their view on disagreement for those measurement of the corporation current status. Whereas receiving operation, order picking operation and shipping operation the mean score were 3.13, 2.83 and 2.66 respectively which shows almost all the respondents concerning these issues give their view on neutral. The result discuss above indicates that warehouse operation management of the corporation in a critical problem to help the organization performance.

The study that was done by Habtamu, 2018 on a similar type of operation also found that the company's overall warehousing practices below moderate except the packing and shipping activity which is little bit better practiced. There are also so many various challenges in performing warehousing activities: lack of designated receiving area, shortage of material handling equipment,

insufficient storage space and long searching time of customer order are the most common once. It also matches with Sayeed, 2013 with the result of existing performance of Warehouse Management was not that much satisfactory in terms of efficiency and effectiveness in comparison with the present standards of similar industry. Hence, efficient and effective warehouse management has crucial roles to play for the organization and it can act as a profit center for the organization. Warehouse Management provides maximum profitability with the minimum investment through ordering cost and carrying of materials. It provides service and controls function of the flow of materials entering and distributed at a company.

The average descriptive statistics for warehouse operation's has a significant positive effect on organization performance (dependent variable) result showed that, the mean score was below the midpoint (3.5) of the likert scale which was 2.54. This respondent's overall rating came from warehouse operation's effect variables namely: receiving, put away, storage, order picking and inventory control operation. Regardless of the result, the fact shows the Sugar corporation actual organization performance at current state. However, according to Kibrom (2019) effect of warehousing practices on organizational performance verified that organizational performance is satisfied/agreed with the grand mean of (4.07) and this indicates the existing operational performance of MWE which shows that the company's performance as compared to goals and objectives within the productivity, quality, customer satisfaction, time, and cost is good.

The researcher couldn't analyze of correlation and regression since the data has a problem of multi collinearity.

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CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of major findings, conclusions and recommendation of the study.

5.2 Summary of the findings

This thesis assessed warehouse operation management of the sugar corporation. The role of each warehouse operation on organization performance measured by the level of influence of warehouse's core functions: receiving operation, put away operation, storage operation, order picking operation, shipping operation and inventory control operation on organization performance. Accordingly, the overall findings of the research are summarized as follows: -

- The average descriptive statistics for warehouse operation's has a significant positive effect on organization performance (dependent variable) result showed that, the mean score was below the midpoint (3.5) of the likertscale which was 2.54. This respondent's overall rating came from warehouse operation's effect variables namely: receiving, put away, storage, order picking and inventory control operation.
- The results of the descriptive statistics of the independent variables showed that, the mean scores put away operation, storage operation and Inventory control operation were 2.55, 2.39 and 2.44 which shows almost all respondents response on disagreement of these operation. The mean score of the receiving operation, order picking operation and shipping operation was a little bit higher than the previous with values of 3.13, 2.83 and 2.67 respectively. However, this value also shows not above the mean and all the respondents are indifferent or neutral position of these operation.
- From the open ended question collected and grouped the major question that is under this section was "Do you think the warehouse has got major problem to be improved". Most of the respondent 64.6 percent said yes and suggested to improve inventory policy should be implemented, storage of the materials should follow standard operating procedure, receiving of materials should be processed on time then the inside and outside customer might get better service. These were some of the respondent to see the activates to be improved.

Another, major question under this section was “whether the warehouse have got exceptional strength which they want to see replicated” but as shown in table 4.12 72.3 percent response there were no strength and it indicates that the overall inefficiency of the warehouse operation management.

5.3 Conclusion.

The main purpose of this study is to assess the effect of warehouse operation management on organization performance of Sugar Corporation. Based on the findings presented in the previous section, the following conclusions are drawn.

Six major warehouse management operations were developed and addressed in this research. Half of the dimensions were rated in neutral whereas the other half was rated in disagreement. In other words, the result shows majority of the respondents were not satisfied with the operation of warehouse management of the corporation.

Receiving operation was found to be neutral and relatively a little bit higher than the others operation. It shows that standard operating operation (SOP) was not placed in each warehouse, most of the times the inspection process of received materials were not performed in a reasonable time, there was no defined separated receiving area and users were not responsive on time for inspection of incoming materials. So, these activities will need attention to improve and helps to enhance organization performance.

Put away operation was found to be disagreement and the respondents give their view as dissatisfied on this operation too. The result shows that there was no established well- structured put away process for all item received, all items received were not placed on their preferred specific location as per good storage practice, goods specific locations were not registered and fast moving items were not put in the most accessible locations. This indicates that the concerned designated person immediately organize and take a quick fix solutions in order to improve the organization performance.

According to the survey result of storage operation the respondents were not disagree or dissatisfied on this operation of the warehouse of the organization. This implies that there were no enough shelves to accommodate all incoming materials, there were no separate place to distinguish non-usable items from useable items, goods had not attach with items tag which helps to order picking

and on time shipping response, warehouses were not organized in to section or zones according to the intended function, fire extinguishers were not in place and there was no system of classifying or organizing the goods. And, this reflects the goods were not kept in good storage practice and there were no IT system to track the history of each material. Since the sugar corporation invest a huge amount of money for inputs to provide sugar factories and sugar projects, it is a critical and to save money and minimize a cost of operation in these operation too.

With regard to order picking operation, the study exposed that in neutral position. This in turn shows that most of the time, items were not picked from the storage area as exactly mentioned on the issue order, order picking operation was not satisfactory and considers the urgency , there were not a designed picking system in place by considering product range, size of order, the picking equipment and the size of unit load.This clearly shows the inefficiency of the warehouse operation management.

The other gap found in this study was shippingoperation;the respondents were scoring the mean 2.67 in this activity. This implies that the goods were not properly packed so that it was not increases vehicle space utilization, the vehicles were not loaded carefully and systematically on first out/ last in basis to save time and customers were not served as quick as possible to use the goods as needed. Wasting time on shipping operation would in turn cost a lot on the organization performance. Since the sugar corporation in critical time to finalize the remaining sugar projects, doing a better job in this operation might minimize the project time. This is also important to deliver inputs on time to different sugar factories.

The other gap identified in this study was lack of effective inventory control operation. Due to this gap, the organization was exposed to incur a huge amount of capital tide up and the corporation could not get enough saving by implementing the right inventory policy and procedure. There were no maximum and minimum inventory levels maintained,There was no system of identification for fast and slow moving items, there was no system of alerting users the inventory status required materials and there was no IT system to control the entire corporation asset. Which are in directly affects the organization performance to carry out the strategic plan effectively and efficiently.

Overall, the results of the study imply that the management team and concerned department give greater attention to bring radical change on this warehouse operation. Then each and every operation led by standardized procedures, IT based and cost efficient.

5.4 Recommendations

The researcher forwarded the following recommendations based on the research findings and the conclusion drawn in the previous sections.

- The Corporation should prepared separate receiving area or quarantine area for all incoming goods until inspection performed. This helps the goods to be inspected properly and not allowed to be mix up with the current stock. The segregated area allows keeping the materials until identified as approved or rejected. This indirectly maintains the quality of all received items.
- The organization should in place a guideline or standard operating procedure (SOP) in all warehouses. Which helps to give directions to the employee how each operation is going to be done step by step in the case of receiving, put away, storage, order picking, shipping, inventory control, keeping the warehouse clean etc.
- The corporation management team must provide greater attention and assistance to eliminate the pitfalls of the warehouse system.
- The corporation management team must assist in giving better training to the concerned employees and facilitate a bench mark locally or internationally with the best performer organization. When all sugar projects finalized and start production, the warehouse department function might be a greater contributor to reduce cost of production. Which in turn brings a competitive advantage and to keep international standard during exporting the products.
- The corporation management team must approved a budget to prepare separate warehouse which are going to be used for damage, out of specification, expired and obsolete materials until their disposal. So, it will helpful to segregate usable items from not usable items. Disposal of the above said materials also important in order to get rid of the warehouse space, to get additional income by selling not usable materials and protect health of employee specially the effect comes from expired agricultural chemicals etc.
- The corporation management team must strengthen and facilitate to implement ERP software system which is already underway. If this project becomes complete and operational almost above 80% of the warehouse operation problem will get solution. So, this software is indispensable to help in assisting the departments work to be effective and efficient. It is also helps to integrate with other corporation's departments like purchasing and logistics, finance, human resource, machinery and maintenance and marketing.

In addition to that it will help to administer the corporation asset properly, to get better information concerning the stock and to control the whole sugar factories and projects asset.

- The warehouse management team must work with finance, machinery and maintenance departments to prepare a code for all stock items which is helpful in tracing during order picking and shipping the goods.
- The warehouse management team must strive to have enough shelves to accommodate all incoming materials instead of keeping in big boxes. Which was really crates a tiresome in identifying each material during order picking, shipping, storage, annual inventory, surprise inventory etc. As the same time, attach item tag to all stock items then it will be easy to trace the good.
- In the case of safety of the materials all warehouse should have fire- fighting equipment in case of emergency. The status and usage expiry date of these equipment regularly checked and update if any deviations. Since the sugar corporation invest a huge amount of money for input for sugar factories and sugar projects taking this caution measure is mandatory.
- One of the finding of this study was incoming materials inspection and receiving of the materials take a longer time. In order to alleviate this problem the warehouse management team set a standard and follow up to meet as scheduled. And, the warehouse team also works collaboratively with the user departments or the concerned section for on time inspection and providing the results as quick as possible.
- The warehouse team must present the claims on time to procurement and logistics department which is responsible to take the cases until reimburse the goods. Since there is time limitation presenting the claims to suppliers and insurance, taking too much time or presenting beyond the date might cause to lose a huge amount of money.
- To alleviate the problem of on time receiving, order picking and shipping of the goods to different sugar factories and projects, the warehouse team must be aware in advance and prepare themselves in getting ready and stand by the handling equipment. Equipment like crane, forklift, hand pallet track etc. regularly checked and maintained as required all the time. These were some of the factors to dissatisfy internal and external customers.
- Some of the respondents declare that as there was no accountability. So, in order to crate accountability, the corporation should strengthen cost and budget section in finance department or establish inventory control section under warehousing department then these two sections will control the stock and create database. Which in turn responsible to provide up to date information about the stock independently.

- Since one of the major problem was no inventory control policy, the warehouse management team should established inventory control policy then the sugar corporation will benefit out of it and all items will be at optimum level. But, during establishing this policy all the concerned parties must be participated and get their valuable opinion

5.5 Area for Further Study

The major limitation of the study is its failure to incorporate other sugar factories and projects. It undertakes at corporate level head office of Sugar Corporation. Since, Sugar Corporation has 13 sugar factories and projects, carrying out the study at the whole sugar factories and projects might show the depth of the problem. Therefore, further research carried out more extended than this study would bring another scenario to improve the organization performance.

References

- Abdi, (2019). Assessment of Warehousing Operation Efficiency and Effectiveness in Logistics Management Practice: the case of Berhan Bank S.C.
- Ali, (2018). Smart Warehouse vs. Traditional Warehouse – Review. *Ciit International Journal of Automation and Autonomous System*, 11(1), January 2019.
- Anteneh, (2017). Effectiveness of Warehouse Management in Save the Children Ethiopia: a case of Gambella Emergency Office.
- Asongafack, (2018). An Assessment of Performance Indicators in the Warehousing Industry in Cameroon.
- Axelsson & Frankel, (2014). Performance measurement system for warehouse activities based on the SCOR model.
- Barthold and Hackman, (2014). *Warehouse and Distribution Science*.
- Creswell (2009). *Research Design, Qualitative, Quantitative, Mixed Method Approach*, 2nd edition.
- Deloitte (2014). Ethiopia Sugar Corporation Procurement, Logistics and Property Administration As-Is Report.
- Emmett (2005). *Excellence in Warehouse Management*.
- Endaykios, (2019). Assessment of Challenges of Warehousing Practices: The Case of Ethio Telecom in Addis Ababa.
- Frazelle, (2002). *Supply Chain Strategy*. McGraw-Hill.
- Geoff and Millner (2015). *Inventory Management*.
- Gu, Goetschalckx, McGinnis, (2006). Research on warehouse operation: A comprehensive review. *European Journal of Operational Research* 177 (2007) 1–21
- Guilherme Pereira et al. (2008), A Warehouse Design Decision Model- Case Study, conference paper 2008 ReserchGate, <https://www.researchgate.net/publication/4368911>. (Viewed 20 December 2019)
- Gulilat, (2018). Assessment of Pharmaceuticals Distribution Effectiveness: The Case of Central Pharmaceutical Fund & Supply Agency.
- Gunasekaran, Marri, Menci, (1999) "Improving the effectiveness of warehousing operations: a case study", *Industrial Management & Data Systems*, 99(8), pp.328-339,
- Habtam, (2018). Assessment of Pharmaceuticals Warehousing Practice: The Case of Pharmaceuticals Fund & Supply Agency, Central Level, Ethiopia.

Hertog, Uysal, McCarthy, Verlinden and Nicolaï (2014). Shelf life modeling for first-expired-first-out warehouse management. Royal Society Publishing. org

Hompel & Schmidt (2007), Warehouse Management.

Jeroen, (2012), Highly Competitive Warehouse Management.

<https://www.researchgate.net/publication/270578790>. (Viewed 20 December 2019)

JNU, Jaipur, (2013). Warehousing & Supply Chain Management.

Kaudunde (2013). An assessment of effectiveness of inventory control system in the public sector in Tanzania: A case of Kilwa District Council.

Keller and Keller, (2014). The Definitive Guide to Warehousing, Managing the Storage and Handling of Materials and Products in the Supply Chain.

Kibrom, (2019). Effect of Warehousing Practices on Organizational Performance: A Case Study of My Wish Enterprise P.L.C.

Kothari C.R, (2004). Research Methodology, Methods and Techniques, (Second Revised edition).

Liul, (2019). The Effect of Inventory Management Practice on Logistics Performance: the Case of Ethiopian Defense Force Logistics Main Department.

Manayeh, (2018). Effect of Order Picking Practice on Warehouse Performance; the Case of Pharmaceuticals Fund & Supply Agency Addis Ababa Branch – Employees' Perspective.

Mulcahy and Sydow (2008). A Supply Chain Logistics Program for Warehouse Management.

Sayeed, (2013). A Study on Warehouse Management of REB: A Case Study of Central Warehouse, Dhaka.

Shree Renuka Sugars, (2012). Materials Management Guidelines for Implementation of I.T.

Sneha (2016). The study of Efficiency and Effectiveness of warehouse management in the context of supply chain management. The Asian Journal of Shipping and Logistics 34(2) (2018) 151-160.

Teshome, (2019). Assessing Performances of Pharmaceutical Store Management: The Case of General Public Hospitals under the Addis Ababa City Administration Health Bureau, Ethiopia

Richards, (2018). Warehouse Management, 3rd edition.

Warehouse Management: A Complete Guide for Retailers. www.Veeqo.com (Viewed 21 December 2019).

www.ciilogistics.com "Warehousing and Inventory Management." (Viewed 15 December 2019). www.highjump.com "Warehouse Management System Business Case Development". (Viewed 14 January 2020).

ANNEX I QUESTIONNAIRE

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Dear respondents,

I am a graduate student at Addis Ababa University School of Commerce in the Department of Logistics and Supply Chain Management .Currently,I am conducting a research entitled “***The effect of Warehouse Operation Management on Organization Performance:In the case of Sugar Corporation***” as a partial requirement for the award of Master of Art Degree in Logistics and Supply Chain Management.

The purpose of this questionnaire is to gather data for the proposed study, and hence I kindly request you to assist the successful completion of the study by providing the necessary information. Your participation is entirely voluntary, and I confirm you that the information you provide will stay confidential and used only for the academic purpose. So, yours genuine, frank, and timely response is very important for the success of the study.

I thank you in advance for your kind cooperation and dedication of your precious time to fill this questionnaire.

Thank you in advance!

BehailuGebeyehu

Note:

- ✓ No need to write your name.
- ✓ Indicate your answer with the thick mark (✓) in the space provided.
- ✓ If you need further explanation, please contact me through my phone 0911959965,
E-mail: behailu9965@gmail.com

Section I: Respondents Profile:

1. Age: 18-25 years ☐ 26-35 years ☐ 36-45 years ☐ above 45 ☐

2. Sex: Male ☐ Female ☐

3. Educational Qualification: Below college diploma ☐ College diploma ☐

First Degree ☐ Second Degree ☐ PhD and above ☐

4. Currently you are working in Sugar Corporation:

Head Office ☐ Factory ☐ Project ☐

5. Current Position _____

6. Year of service in the current position:

Below 1 year ☐ 1 to 5 years ☐ 6 to 10 years ☐ above 10 years ☐

Section II Main Questionnaire

Please indicate your choice by putting thick mark (✓) on the appropriate cell. Where,

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

5) Please indicate the degree to which you agree with the following statements regarding the Warehouse Operation Management of Sugar Corporation at Corporate Level.

No.	Warehouse Operation	Score				
Receiving Operation Indicators		1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.1	In the corporation warehouse including wonjeshoa Warehouse, there is a guideline or standard operating procedures (SOP) in place that provide instructions to receive any incoming material properly.					
7.2	Pre-notification of new arrivals to be received is mostly in place for warehouse staff.					
7.3	Warehouse managers arrange storage space before the arrival of items as they received pre-arrival notifications.					
7.4	There is clearly defined separated receiving area in the Corporation Warehouses					
7.5	Users get timely request from warehouse personnel to inspect quality of the materials.					
7.6	Users always check the quality of materials before store receives the materials formally					
7.7	Users are responsive to do quality inspections on time.					
7.8	Most of the time the inspection process of received materials are performed and reported in a reasonable time.					
7.9	A claim report for discrepancy of incoming items timely reported to the concerned department/section. (For shortage, overage, out of specifications and damaged goods.)					
	Put Away Operations Indicators	Score				
		1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.10	Most of Warehouse personnel are skilled to perform put away activities properly					

7.11	There is an established well-structured put-away process for all items received into Corporation warehouses					
7.12	All items received are placed on their preferred specific location as per good storage practice so that it simplifies order picking.					
7.13	Items are arranged by category, type, batch number, and expiry date before moves from receiving area to storage area.					
7.14	In Corporation warehouses, goods specific locations are registered/recorded after put-away.					
7.15	Aisle space (space in warehouse for walking, shelving, to either side of shelves, pallet racks) is not enough to move the workers as well as machinery at the time of performing put away activity.					
7.16	Fast moving items are put-away in the most accessible locations.					
	Storage Operation Indicators	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.17	Shelves/ racks/pallets are arranged in lines with the adequate passageways to facilitate put away and order picking activities.					
7.18	Non-useable items (expired, damaged, quality defect products) are regularly separated from useable inventory to use storage space efficiently.					
7.19	The shelves/racks/Pallets in the warehouses are all adequate to store the products					
7.20	There is access controlled storage (e.g. a separate locked room, cabinet, or locked wire cage with in the storage facility) for products that need increased security					
7.21	Large supplies of flammables are stored in separate location away from the main store room					

7.22	Always, incoming goods are stored in a manner that facilitates the first in first out (FIFO) policy for stock mgt.					
7.23	In the corporation warehouses, there is system of classifying or organizing the goods for which all Warehouse employees are familiar.					
7.24	Fire extinguishers are in place in the entire Corporation warehouse. And, periodically checked for usability and expired date.					
7.25	There is regular inspection and cleaning of storage areas					
7.26	There are the storage areas of sufficient capacity to allow orderly storage of the various categories of goods that move through the warehouse.					
7.27	Warehouses are organized into sections or zones according to the intended function or characteristics of the goods kept in them.					
	Order Picking Operation Indicators	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.28	Most of the time, items are picked from the storage area as exactly mentioned on the issue order (right items, in the right quantity, right expiry, right manufacturer, from the right location of storage area).					
7.29	Picked items are arranged on dispatch area by category so that the responsible warehouse staff checks for picking accuracy.					
7.30	Order picking Operation in the Corporation warehouse is satisfactory and considers the urgency which is important for productivity.					
7.31	The design of the warehouse space (aisle and lay out) is easy to pick items free from damage during order picking activity.					
7.32	In the Corporation Warehouses, there are a designed picking system in place by considering product range, size of order, the picking equipment, and the size of unit load or container in to					

	which orders are being picked.					
	Shipping Operation indicators	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.33	The orders are packed into the correct sized boxes or onto a pallet in a manner to prevent damage during transit.					
7.34	The goods are properly packed so that it increases vehicle space utilization, facilitate ease of loading and receipt at destination.					
7.35	The vehicles are loaded carefully and systematically on a first out/ last in basis to save time when unloading and prevent physical damage					
7.36	All customers (at head office, factories and projects) are served as quick as possible to use the goods as needed.					
	Inventory Control Operation Indicators	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.37	Maximum and minimum inventory levels are properly maintained					
7.38	No expired or obsolete materials are kept in store					
7.39	There is a system of identification for fast and slow moving items					
7.40	There is a system of alerting users the inventory status required materials					
7.41	There is an IT system to control the entire corporation asset.					
	Organizational performance	1 (SD)	2 (D)	3 (N)	4 (A)	5 (SA)
7.42	Receiving activity has a significant positive effect on performance of Sugar Corporation.					

7.43	Put-away activity has a significant positive effect on performance of Sugar Corporation.					
7.44	Storage activity has a significant positive effect on performance of Sugar Corporation.					
7.45	Order picking activity has a significant positive effect on performance of Sugar Corporation.					
7.46	Shipping activity has a significant positive effect on performance of Sugar Corporation.					
7.47	Inventory Control Operation activity has a significant positive effect on performance of Sugar Corporation.					

Section III:

1. Do you think the warehouse services have got major problems which needs improvement?

Yes ☐

No ☐

2. If your answer is yes, please state the areas which need improvement in the future.

3. What do you think the root cause or causes of these problems mentioned above?

Lack of manpower ☐

Lack of skill of the warehouse personnel ☐

Lack warehouse personnel motivation ☐

The pitfalls of the system ☐

Lack of management support and leadership

Lack of accountability

User department negligence in ordering, planning, specifications etc.

Others (please specify):

4. Do you think the warehouse services have got exceptional strengths which you want to see continued? Yes No

5. If your answer is yes, please state those strengths which you want to see replicated.

6. Write if you have any additional comments or ideas about the Corporation Warehouse Operation Management practice.

ANNEX II Reference for questionnaire

Questionnaire of the study content	Title	Authors	Year
Warehouse operations	Effect of Warehousing practices on organizational performance: A case study of My Wish Enterprise P.L.C	Kibrom	2019
	Assessment of pharmaceuticals Warehousing practice: The case of pharmaceuticals fund and supply Agency, central level, Ethiopia	Habtamu	2018

