



**ASSESSMENT OF WAREHOUSING OPERATION EFFICIENCY AND
EFFECTIVENESS IN LOGISTICS MANAGEMENT PRACTICE: THE CASE OF
BERHAN BANK S.C.**

BY: ABDI FETENE AMENTA

**A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTERS OF ARTS IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

**ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
LOGISTICS AND SUPPLY CHAIN MANAGEMENT GRADUATE PROGRAM**

ADDIS ABABA, ETHIOPIA

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Declaration

I, the under signed, declare that this thesis entitled “*assessment of warehousing operation efficiency and effectiveness in logistics management practices: A case of Berhan Bank S.C.*”, is my original work and to the best of my knowledge it has not been presented for a degree by any other person, and that all the sources of material used for the thesis have been duly acknowledged.

Declared by:

Abdi Fetene Amenta

Date & Signature

Statement of Certification

This is to certify that the thesis carried out by Abdi Fetene Amenta on the topic entitled: “assessment of warehousing operation efficiency and effectiveness in logistics management practices: A case of Berhan Bank S.C.”, is his original work and is suitable for submission for the award of Masters of Art Degree in Logistics and Supply Chain Management.

Advisor: Dr. Busha Temesgen

Date & Signature

Addis Ababa University School of Commerce
Department of Logistics and Supply Chain Management

Thesis Approval

This is to certify that the thesis carried out by Abdi Fetene Amenta, entitled: “*assessment of warehousing operation efficiency and effectiveness in logistics management practices: A case of Berhan Bank S.C.,*” submitted in partial fulfillment of the requirements of the Degree of Master of Art in Logistics and Supply Chain Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

The study is aimed to make assessment of the warehousing operation efficiency and effectiveness in logistics management practices of Berhan Bank S.C. The study is a descriptive type which utilized quantitative and qualitative data. The researcher organizes face to face approach data collection methodology and. Both primary and secondary data were collected for this study. Primary data were collected with questionnaires and observation and analyzed quantitatively. As the number of employees in the office is below 100, the researcher of the study included the whole population in the study & used census sampling method. A total of 65 questionnaires were distributed to employees, 57 of it were filled and returned. Frequency and percentages were used to analyze the data with the application of SPSS 24 and presented in the table form. The finding of the study showed that the way Birhan bank S.C manages the warehouse operations is approximately good in terms of the five key efficiency and effectiveness indicators. Cost and time indicator of the efficiency and effectiveness shows that, the company should work more on the gaps observed from the study. The quality indicator of the finding indicates that, the company manages the warehouse operation to some extent but there are rooms to improve in some of the areas. However the employee's expectation for productivity indicator is slightly good but the company needs to make an assessment on the employee's basic knowledge and experience on warehouse management and takes necessary actions to improve this part. The warehouse working office seems to be overcrowded and this could affect the employee's productivity in many ways and the company should make any office expansions that can create good environment for the employees. The study discovered that, among 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. Improved quality and response time as well improved cost and productivity and improved asset management practice can consequently improve the company warehousing operation efficiency and effectiveness as a whole.

Key Words: Warehouse, Warehouse Management, Warehouse operations, Efficiency and Effectiveness

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List of Acronyms

ERP	Enterprise Resource Planning
FIFO	First In First Out
ICT	Information and Communication Technology
LIFO	Last In First Out
S.C	Share Company
SKU	Stock Keeping Unit
SPSS	Statistical Package for the Social Science
WCS	warehouse control systems
WMS	Warehouse Management System

CHAPTER ONE

INTRODUCTION

This chapter is introductory chapter to the study on assessment of warehousing operation efficiency and effectiveness in logistics management practices in Berhan Bank S.C. It incorporates the background of the study, background of the case company, statement of the problem, research questions, research objectives, significance of the study, scope of the study, limitations of the study, definition of the terms in this study and the organization of this paper.

1.1. Background of the Study

The study deals with the assessment of warehousing operations efficiency and effectiveness in logistics management practices in Berhan Bank S.C. Warehousing refers to the activities involving storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed. In other words, warehousing means holding or preserving goods in huge quantities from the time of their purchase or production till their actual use or sale (Frazelle, 2002). Warehouse: is a place where item are received, stocked and dispatched (Aronovich, *et al.*, 2010).

Warehouses are an integral part of the modern supply chain, involved in sourcing, producing and distributing goods. However, due to the complexities of warehouse operations they can often be one of the most costly parts of the supply chain. Their efficient management is therefore critical for minimizing cost and contributing to an effective and efficient supply chain (Richards, 2011).

Warehouses are the final point in the supply chain represents approximately 20-24 per cent of total logistics costs (European Logistics Association and A.T. Kearney Management Consultants, 2004). The efficiency and effectiveness in any distribution network in turn is largely determined by the operation of the warehouses. Reduction in material handling, increase accuracy levels, improvement in service consistency & availability, increase speed of service are the main decision criteria in warehousing management (Bartholdi & Hackman, 2011). This shows that effective and efficient management of any organization requires that all its constituent elements operate effectively and efficiently as individual sub units and together as an integrated whole entity.

As the term 'Globalization' brought rigorous changes in the field of logistics, World business companies are now paying more emphasis on fewer inventories, smaller order sizes, quicker order turnaround, increased customized packaging and value adding services.

Ethiopia is one of the countries that emerging to changes and growing needs of the customers to be more competitive in business world. In Ethiopia, private banking industries are one of the business sectors that are increasing in number from time to time. The warehousing management practices in these industries is not yet recognized as one of the important focus area for development of the companies. Therefore, the study focuses on one of these private banks to make the assessment of its warehousing operations efficiency and effectiveness in logistics management.

1.2. Statement of the Problem

Warehouses are a substantial component of logistic operations and an important contributor to speed and cost in supply chains. While there are widely accepted benchmarks for individual warehouse functions such as order picking, little is known about the overall technical efficiency of warehouses. Lacking a general understanding of warehouse technical efficiency and the associated causal factors limits industry's ability to identify the best opportunities for improving warehouse performance (Johnson A. and L. McGinnis, 2010).

A preliminary interview made with warehouse team of Birhan Bank S.C. and the following main problems are clearly seen for further study/assessment:

The company warehouse operation (1) Lacks internal integration system with other functions (like procurement, finance and transportation) of the company, (2) Lacks general understanding of warehousing operations efficiency and effectiveness (3) Lacks proper warehouse management system in place and (4) Lacks administrative guidance for management & disposal of obsolete/damaged fixed asset.

Accordingly, based on the finding drawn from the pilot interview made with warehouse team of the case company, inefficient and ineffectiveness exhibited in the case company might be attributed to warehouse management practices of Birhan Bank S.C. Hence, further in-depth study in the same area would require assessment and understand the existing challenges and to propose recommendations and policy options.

1.3. Basic Research Questions

In order to attain the research objective, the following research questions are proposed: The basic research question is: How efficiently and effectively Birhan Bank S.C manages the warehousing operations?

Specific Research questions:

- How efficiently Birhan Bank S.C manages warehouse operations?
- How effectively Birhan Bank S.C manages warehouse operations?
- How well the warehousing function of Birhan Bank S.C is integrating with the other logistics functions (like Finance, procurement and Transportations functions)?
- What are the major challenges of warehouse management of Birhan Bank S.C.?

1.4. Research Objectives

The **general objective** of this research is to describe the warehousing operation efficiency and effectiveness in logistics management practice of Berhan Bank S.C. The specific objectives of the study are to:

- Describe the efficiency of Birhan Bank S.C warehouse management operations.
- Describe the effectiveness of Birhan Bank S.C warehouse management operations.
- Describe the warehouse management function interfacing/integration system of the Birhan Bank S.C with other logistics functions (like Finance, Procurement and Transportations functions)
- Identify major challenges of the warehouse management operations of Birhan Bank S.C

1.5. Significance of the Study

This research study “Assessment of warehousing operations efficiency and Effectiveness in Logistics Management Practice: the case of Berhan Bank S.C” will help the company managers to understand how efficient and effectively the company warehousing management operation is performing throughout logistics management of the company. The study identified the scopes for improvements in the company warehouse management for its well monitored efficiency and effectiveness in logistics management practices which is good input for the bank’s management in their endorse towards improvement. In addition to this, the study might be used as a reference material for future student research and as well for other stakeholders.

1.6. Scope of the Study

This research study is proposed to assess warehousing operations efficiency and effectiveness of Berhan Bank S.C Main/Central Warehouse operations efficiency and effectiveness in Addis Ababa in particular. The central warehouse located in Addis Ababa is the main and distribution center for all the branches and head quarter office. The branches are not included at this stage of the researcher study as the inability to cover and access all the branches throughout Ethiopia in all the regions because of the geographical locations, time and budget. The quality, time, cost, productivity and asset management indicators were used as a variables in order to describe the case company warehousing operations efficiency and effectiveness.

1.7. Limitation of the Study

As the logistics management in banking sector is recently emerging in our country (Ethiopia), the understanding of the whole logistics management practices including warehouse management practice is not yet well integrated and there are different way of managing the warehouse practices. As the selected company is one of the growing and leading business firm, the central warehouse is the only main warehouse that receive, store and distribute goods/equipment's to the main office and other branches. So, the study is limited to Main/Central Warehouse only. The target population are limited to individuals who are working closely and received service from the warehouse. Specifically, individuals from Facility and property administration section (Procurement, Transportation, General Services, warehousing & property).

1.8. Definition of Terms (Conceptual & Operational)

Warehousing: it refers to the activities involving storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed. In other words, warehousing means holding or preserving goods in huge quantities from the time of their purchase or production till their actual use or sale (Frazelle, 2002).

Logistics Management: it is defined as part of supply chain that plans, implements, controls the efficient and effective forward and reverse flow, storage of goods, services and related information between the points of origin and point of consumption in order to meet customer's requirement (Stevenson, 2007).

Warehouse operations: it the inbound and outbound operation of the warehouse. The inbound processes are represented by receiving and put-away whereas the outbound processes includes picking, packing and shipping. (Bartholdi & Hackman, 2011).

Internal Customer Satisfactions: it is the degree to which the employee of the company who receives the services from warehouse of Birhan Bank S.C. (own definition for this study)

1.9. Background of the Company (Berhan Bank S.C)

Berhan Bank S.C was formed in accordance with Article 304 of the Commercial Code of Ethiopia with the objective of operating in the banking industry. This objective has been ensured in Article 3 of the Memorandum of Association of the Company. The Bank was registered and licensed by the National Bank of Ethiopia on 27 June 2009 with an authorized capital of 300 Million and subscribed capital of Birr.

Having been registered and licensed by the National Bank of Ethiopia on 27th June, 2009, Berhan Bank S.C. got its start in 2009. With a branch network of 185 as at 31st October 2018, headquartered in Bole, Addis Ababa today, the company operate in virtually all regional cities and in their respective major towns within Ethiopia. The company has got 3,378 employees and serve more than 582,122 customers across the nation, latest update on 31st October 2018.

The Company has got its central warehouse in Addis Ababa at Gerji Mebrat Hail area and all the necessary and valuable goods or equipment's are centralized at one location and distributed to each location as per the need of the end users. Human resource are allocated and the headquarter office is located at Bole and has a direct link with the central warehouse. The central warehouse is the main distribution center to all locations.

1.10. Organization of the Paper

This Research Proposal is organized into five chapters: Chapter one contains the introduction part dealing with back ground of the study and the selected company, the research statement of the problem, basic research question, objectives of the study, the significance of the study, the scope of the study, the limitation of the study, the definition of terms, and the organization of this research paper. The second chapter discusses the literature review about the subject matter. The third chapter has contained research methodology which incorporated: study area description, study design; data collection methods and instruments; study population, sample size and sampling, methods of data analysis used, and ethical considerations. Chapter four has contained findings of the study including data analysis, interpretation and discussions of the findings. Chapter five contains summary, conclusion and recommendation.

CHPATER TWO

RELATED LITERATURE REVIEW

Introduction

In this chapter, theories related to the research issues which are relevant to this study work are described. The theoretical framework for warehousing operations efficiency and effectiveness in logistic management practice discussed in detail. The purpose of this part of this study work is to set up a basis for theoretical frame of warehousing concepts and investigate whether the warehousing operations efficiency and effectiveness problems and the theoretical benefits are likely to create some impact on the efficiency and effectiveness of the case company warehouse management. The theoretical, empirical and conceptual concepts are discussed.

2.1. Theoretical Literature Review

2.1.1 Warehouse Management

Warehousing is the activities involving the storage of goods on a large-scale in a systematic and orderly manner and making them available conveniently when needed (Tsige, 2013). It creates time utility by bridging the time gap between production and consumption of goods. Also, minimizing travel time between point of supply locations and demand destinations can greatly improve productivity. However, to achieve this increase in efficiency, manufacturing firms must develop processes to regularly monitor picking travel times and storage locations (Bartholdi and Hackman, 2011). The objective of a warehouse management system is to provide a set of computerized procedures to handle the receipt of stock and returns into a warehouse facility, model and manage the logical representation of the physical storage facilities (e.g. racking etc.), manage the stock within the facility and enable a seamless link to order processing and logistics management in order to pick, pack and ship product out of the facility. Warehouse management systems can be stand-alone systems or modules of an ERP system or supply chain execution suite (Saxena, 2003).

In short, warehousing is mainly about storing, re organizing and repackaging products (Bartholdi and Hackman, 2014). Furthermore, it is an essential component in the linkage of the supply chain's various chain partners (Lam *et al.*, 2010). Major roles of warehousing include (1) buffering material flow, (2) consolidation of products, and (3) value adding processes and customization (Goetschalckx *et al.*, 2007). The most common perception of the processes behind the warehouse flows is a division based on inbound and outbound processes.

Inbound processes are mainly receiving and put-away activities, whilst outbound processes basically consists of order-picking and shipping (Rouwenhorst *et al.*, 2000). These activities are usually referred to as warehouse operations. The context of which warehouse operations are performed in a warehouse are called functional areas, which together make up a warehouse layout. The means for achieving material flow in a warehouse are the warehouse resources. Warehouse resources are anything from shelf storages, labor, and material handling equipment and packing material.

2.1.2. Logistics Management

Logistics Management is defined as part of supply chain that plans, implements, controls the efficient and effective forward and reverse flow, storage of goods, services and related information between the points of origin and point of consumption in order to meet customer's requirement (Stevenson, 2007). Thus logistics management represents a collection of activities that guarantee the availability of the right products in the right quantity to the right customers at the right time. It therefore, provides activities that serve as a link between production and consumption and provide a bridge between production and market locations or suppliers separated by a distance and time (Canci, 2003). Furthermore, logistics is responsible for the movement of materials and products through the use of equipment, labour, in meeting due date deliveries.

The components of logistics system include logistics services, information systems and infrastructure/resources according to Chang (1998). Logistics services involve the movement of materials and products from inputs through production to consumers, as well as associated waste disposal and reverse flows.

2.1.3 Inventory Control

Many concepts about control and management of inventory has been written but very little has been written about how inventory can be measured and monitored in a best way in the warehouse, even though the stock is measured and monitored every day by thousands of organizations. Inventory control has been represented as the function of management – forecasting, exploring requirements, setting up targets and issuing instructions. The monitoring of stocks in the warehouse is considered to be supervisory function, which requires less skill and experience. Overlooking of, monitoring and measurement process results in unreliable and low quality inventory management.

The main purpose of inventory management is to provide the appropriate information to improve operations and reduce errors, but very often it is confined to stock valuation process rather than contributing to effective logistics (Sakil Ibne S., 2013).

2.1.4 Concept of Efficiency and Effectiveness

Effectiveness is the power to produce the desired result. Efficiency is defined as the ability to do something or produce something without wasting materials, time, or energy: the quality or degree of being efficient (technical), but also as the power to produce the desired result causing some ambiguity between the two terms. Buder *et al.*, (2012) differentiate between quality (effectiveness) and required effort which is efficiency (Buder *et al.* 2012). Organizational effectiveness is discussed by Zheng *et al.*, (2010) in combination with strategy and knowledge management, where they use the definition the degree to which an organization realizes its goals (Zheng *et al.*, 2010). Effectiveness is often measured as the quality of the desired result and Frokjaer *et al.*, (2000) in their attempt to correlate usability to efficiency and effectiveness, they define efficiency as the relation between (1) the accuracy and completeness with which users achieve certain goals and (2) the resources expended in achieving them (Frokjaer *et al.*, 2000). Measurements of efficiency are often related (direct and indirect) to time and cost. In economics the term efficiency focus on different aspects of the balance between supply and demand. It is measured by the relationship between the value of ends and the value of means and examples of terms are allocative efficiency (production represents customer preferences) and productive efficiency (cannot produce more of one good without sacrificing production of another). Effectiveness and efficiency are subjective and depend on evaluations. Such evaluations are based on an individual's understanding of knowledge and interpretation in a specific context (G. Pask, 1976). Therefore, having the same understanding of a context (which the measurements are relative to), is fundamental when defining effectiveness and efficiency measurements for BM (and the over-arching business context)

There is a term that many people uses to explain cost: 'cost effective' is, nonetheless, sometimes used as shorthand for asserting that there is a net benefit (that the total benefits of an activity exceed its total costs). Another explanation for the cost effective is stated as follows: cost effectiveness is a measure of the extent to which the cost of resources, used to produce a specified output or outcome, has been minimized. Cost effectiveness involves comparisons of the costs of alternative ways of producing the same or very similar effect; or comparisons of the effect produced by alternative ways with the same or very similar cost. An option is cost effective if it has the lowest cost of all the ways of producing the same or very similar effects. This does not mean that the option necessarily has a positive net benefit (Productivity Commission, 2013).

A common 'effectiveness concept' is cost effectiveness. For example, COAG's Principles and Guidelines for National Standard Setting and Regulatory Action (2004) state that cost effectiveness offers a priority ranking of proposals with the same or similar outputs or benefits, on the basis of comparative 'cost per unit of effectiveness' or 'units of effectiveness per dollar'. Also, the term cost effectiveness is frequently used to cover the case of achieving the maximum level of output for a stated level of inputs or cost (Council of Australian Governments, 2004). The World Bank group explain that cost-effectiveness is the extent to which the program has achieved or is expected to achieve its results at a lower cost compared with alternatives. Shortcomings in cost-effectiveness occur when the program is not the least-cost alternative or approach to achieving the same or similar outputs and outcomes.

Efficiency and effectiveness in warehouse operation: Warehouses are the final point in the supply chain represents approximately 20-24 per cent of total logistics costs (European Logistics Association and A.T. Kearney Management Consultants, 2004). The efficiency and effectiveness in any distribution network in turn is largely determined by the operation of the warehouses. Reduction in material handling, increase accuracy levels, improvement in service consistency & availability, increase speed of service are the main decision criteria in warehousing management (Bartholdi & Hackman, 2011). This shows that effective and efficient management of any organization requires that all its constituent elements operate effectively and efficiently as individual sub units and together as an integrated whole entity.

2.1.5. Warehouse Operational Efficiency

Warehouses play a major role in virtually any supply network and continue to do so within all foreseeable future. Improving the operational/technical efficiency of warehouses has substantial economic potential and is key in obtaining high profitability. As Johnson & McGinnis, state; "lacking a general understanding of warehouse technical efficiency and the associated causal factors limits industry's ability to identify the best opportunities for improving warehouse performance".

A clear overview of the state-of-the-art developments in assessing and improving the operational efficiency of warehouses is however lacking (Johnson A. and L. McGinnis, 2010).

2.1.6. Warehousing Operations

Bartholdi & Hackman, described the activities of warehouses. The inbound processes are represented by receiving and put-away whereas the outbound processes includes picking, packing and shipping. (Bartholdi & Hackman, 2011).

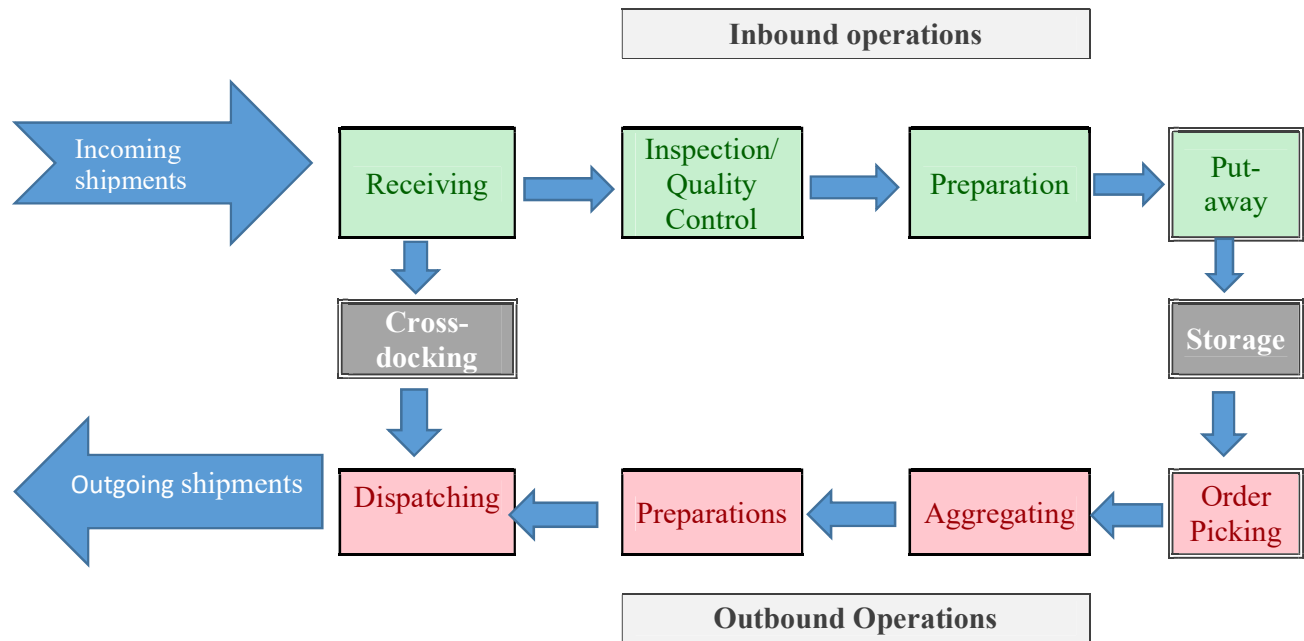


Figure 2.1 General Overview of warehouse operations

2.1.6.1 Inbound warehousing Operations

Receiving

The receiving function is the first process that an arriving item or collection of goods will encounter, i.e. an advance notification (Bartholdi and Hackman, 2014). These goods arrive from some mode of transport and from either a supplier or customer, i.e. returns. The activity may start with a notification of incoming goods, which allows the workers to arrange coordinated unloading of the incoming goods. In the receiving process there is an organizational policy called assignment policy, which usually relates to allocation of trucks to docks (Rouwenhorst *et al.*, 2000).

It may also relate to the allocation of staging areas or equipment that is to help the goods in the next step, which is the storage or put-away process (Goetschalckx *et al.*, 2007).

Inspection/Quality Control

Incoming goods should be subject to inspection/quality control prior to further processing. This is done to ensure that the right goods have arrived in the right quantity and conditions (Bartholdi and Hackman, 2011).

Put-away

Unless the goods are moving out from the warehouse again (Neslin *et al.*, 2006), i.e. cross-docking, they go through a storage process. This, so that they can be put into storage locations before they can become picked to fulfill customer orders (de Koster *et al.*, 2007). When designing a warehouse it is important to decide what storage assignment principle that is to be used. This concerns the withdrawal principle, for instance if the products should be picked according to FIFO or LIFO (Lumsden, 2006). Then there is the allocation of products, which can be done across a warehouse or within a storage system (Goetschalckx *et al.*, 2007). Across warehouse storage usually refers to forward-reserve allocation, SKU department allocation or zone allocation. The allocation of goods within a storage system (e.g. department or zone) is done according to some storage (location) assignment policy listed below. If there is a system support for it, slotting is a popular function to put-away or re-store goods so that the pick-face is optimized and/or used storage positions have near 100% allocation rates. There are storage assignment policy that companies would choose for the storage of their goods. (1) Dedicated storage policy, (2) Random (Floating) storage policy, (3) Physical characteristics, (4) Family grouping, (5) Class based storage (strata), and (6) Affinity or Correlated storage (Bartholdi and Hackman, 2014).

Storage

There are two main storage types, dedicated storage and shared storage. In general, a unique address is assigned to every single location in a warehouse, regardless if it's dedicated or shared location. A dedicated location is a storage, which is reserved for a specific and allocated SKU. The other type of storage, shared storage, can on the other hand be used to improve space utilization (Bartholdi and Hackman, 2014).

2.1.6.2 Outbound warehousing operations

Order Picking: de Koster *et al.* (2007) defines the order-picking process as the process of obtaining a right amount of the right products for a set of customer orders. Normally, order-picking (retrieving a SKU from storage location) represents about 55 % of total warehouse operating costs. But it can also be further broken down to traveling, searching, extracting and paperwork and other activities. As a mean to get the right information to the order pickers, pick-lines are used, which contain instructions on what to pick, in what quantity and in what units of measure. Each pick-line corresponds to a specific location in the warehouse. It should further be notable that a pick-line may consist of several picks from the same location. Of course picking have been of large interest for automating due to high operating cost and manual handling.

Aggregating and preparation for shipment

Aggregating the different items of an orders can take place during order picking or after order picking. If the aggregating takes place after order picking, this is often done in a dedicated sorting area inside the warehouse. Orders that are gathered completely must be packed and labeled. Other preparations before shipment also takes place during this phase. Some final checks might also be performed before the goods can be designated as ready for shipment (T.D. Hogenboom, 2017)

Dispatch

When goods are ready for shipment, they are transferred to the dispatch area and loaded into the carrier. Depending on the availability of the carrier and the need to rearrange the load in different order (trucks usually offloaded last-in-first-out), a staging area near the dispatch location might be used (T.D. Hogenboom, 2017).

Cross-docking

Cross docking is referred to the activity when goods are not stored in the warehouse. It is instead directly transferred, after receipt in receiving, to the shipping dock where an aggregation with other goods will be coordinated into a truck (Van Den Berg, 2012).

2.1.7 Warehousing Costs

Warehousing activities incurs costs. Warehousing costs are generally classified as follows: (1) General overhead cost: This cost involves the cost of the space available per cubic square foot and infrastructure. This also includes the cost for various security devices such as security alarms, auto IDs. (2) Delivery cost: This cost includes the cost incurred in the distribution of the freight by an outside vendor. This cost includes the cost of fuel, insurance and the cost of the delivery trucks.(3) Labour cost: This is the cost, which involves the cost of the labour that perform various operations in the warehouse including the operations such as receiving the incoming goods, entering the relevant data into the computer systems and some of the administrative duties such as assigning warehouse positions and job works on a daily basis.(4) Processing costs: These are the costs incurred by various operations and processes carried out in the warehouse such as receiving, storing, picking, packaging and shipping. If any other costs are involved in assembly are included in the processing cost. (5) Storage costs or Handling costs: These are the costs incurred to store and handle the products and are also known as inventory holding costs (Sakil Ibne S., 2013).

2.1.8 Labour Management in Warehousing

An Ideal labour management measures the individual performances against standard times applied with the help of a labour management system that forms an interface between the labour management system and the time and attendance systems. The outcome results commonly in time, used by the warehouses to improve productivity. An effective labour management should support workload planning, process improvement, and in some cases, incentive schemes. A basic challenge for all warehouse managers is allocating right number of people in the right place and at the right time to produce quality work. Warehouses with more number of employees result in high labour cost, low productivity and less profits. Alternatively with less staff there is a problem of employee burnout, quality problems and higher costs. It is a proven fact that labor management could cut down the costs to a considerable level arising due to labor, warehouses with a labor management can save more on increasing resources. The growing demand for value-added services, labeling and promotional display, packaging, reverse logistics, recycled packaging and product for rework and customer returns, had a direct impact on the warehouse costs, and thereby increasing the cost per employee. Few case studies suggest an increase in productivity with labor management. Most of the warehouses have experienced a significant performance improvement, and also stated that performance would fall back considerable without a labor management application (Dymond, 2007).

2.1.9 Warehouse Technologies

Advances in warehouse technologies have made many developments in the warehouse efficiency possible. It is useful to think of warehouse technologies consisting of two elements. The first element involves the use of computers for planning and directing activities. The second is the degree of mechanization or automation. Naturally, the goal of automating warehousing operations is to enhance efficiency of material handling through reduction of labor costs and increased throughput. The evolution of systems created for warehousing is not very different from many other technology solutions in the sense that most of them are based on few core functionalities on top of which developers have started to add small features that they have seen as valuable for accomplishing specific tasks (Sakil Ibne S., 2013).

Warehouse technologies are used for three main reasons: save storage space, improve productivity, and reduce errors (Aminoff *et al.*, 2002). Selecting the appropriate level of warehouse automation is a difficult task. Capital investments can be considerable but the rewards often include significant savings in terms of labor costs and productivity, inventory accuracy, or order processing times.

2.1.10. The Role of Information Systems

Warehouse execution systems can be classified into two categories - the warehouse management systems (WMS) and warehouse control systems (WCS). The primary purpose of a warehouse management system is to control the movement and storage of materials within a warehouse and process the associated transactions. Typical roles of a warehouse management system include directing and sharing transaction data for the picking, replenishment, and putaway operations. The system may be standalone applications although most modern Enterprise Resource Planning (ERP) systems have modules with corresponding functionalities. The primary function of a warehouse control system is to receive information from the upper level host system, most often being the warehouse management system, and translate it for the daily operations. A common goal is to ensure a situation where warehouse employees never have to retype information because it already lies in one system or is collected automatically (Yao & Carlson, 1999). Warehouse control system is usually the interface that is used to manage processes, people and equipment on the operational level.

2.1.11. Warehouse Performance Indicators

Measuring warehouse metrics is critical for providing managers with a clear vision of potential issues and opportunities for improvements. Metrics are tied directly to the business strategy and operation's success drives the financial results of the organization. If warehouses are going to contribute to be a source for adding value to the supply chain then they need to measure their performance with perfect metrics (Ramana, A., *et al*, 2012).

A warehouse performance measurement is a method to measure activity performance, program or service which is provided by a warehouse. Performance measurement system as the sets of metric used to quantify both the efficiency and effectiveness of action, (A. Neely, *et al.*, 2005). Performance measurement can be divided in 4 categories: input, output, efficiency and effectiveness (D.N. Ammons, 1995). In general, efficiency and effectiveness is the most widely utilized as a measure of performance (E. Kusri, *et al.*, 2014). In most of the commercial warehouse, warehouse managers need to carry out warehouse performance indicators in terms of time, cost, quality, productivity and asset management.

1. Cost Indicator

The number of cost indicators used for warehouse management is not as abundant in the literature as the quality or the productivity indicators. Gunasekaran & Kobu (2007) confirm this fact stating that despite the strategic importance in the supply chain, warehouses have most of their activities in the operational level, which is normally based on non-financial indicators.

Also, some warehouse objectives are difficult to be measured monetarily (lead-time reduction, quality improvements and customer service). Typical cost/financial indicators are total warehousing costs, Value of Product damaged in Warehouse, Inventory costs, order processing costs, labour costs, distribution costs, etc.

A. Total Warehousing Cost

The total warehousing costs collect all costs related to warehousing, such as labor costs and warehouse rent; or mortgage payments, utility bills, equipment, material- and information handling systems, etc. It also includes costs related to systems, supplies, and any other material with specific use in warehousing. This indicator is usually measured annually. Using this indicator, managers can monitor the costs of different components in a warehouse, as well as compare costs between different warehouses. It can help identify the most cost-effective warehouses, and can also lead to an analysis of best practices.

B. Value of Product Damaged in the Warehouse

This indicator calculates the value of products damaged, during a defined period of time (usually one year), in the warehouse as a percentage of the value of all shipped products during that period. Inappropriate warehousing conditions or handling of products can lead to inventory damage. This indicator can help put the value of products damaged into perspective and can be used to help identify the causes, as well as, the actions needed to avoid such damages, including better infrastructure, manpower, training, etc.

C. Inventory cost: Total storage costs/unit.

D. Order processing cost: Total processing cost of all orders per number of orders.

E. Labour cost: Cost of personnel involved in warehouse operations

F. Distribution Cost: The mean number of vehicles and total travel distance per day provide measures of distribution costs.

2. Productivity Indicator

Productivity can be defined as the level of asset utilization (Frazelle 2002), or how well resources are combined and used to accomplish specific, desirable results (Neely *et al.* 1995). Typical productivity indicators are storage space utilization, Percentage of Storage Space Dedicated to Product Handling, Shipping productivity, Transport utilization, Picking productivity, etc.

A. Storage Space Utilization

Storage space utilization indicates the percentage of the total storage space actually being used out of the total storage space available. Based on this indicator, managers can monitor storage capacity and utilization at a warehouse. By assessing storage space utilization, managers can look for opportunities to improve storage capacity (e.g., remove expired products, de junking, reorganizing) and maximize the use of the storage space, or request a re-evaluation of layout, material flow, shelves disposition, etc.

B. Percentage of Storage Space Dedicated to Product Handling

This indicator measures the percentage of total storage area that is dedicated specifically to product handling (receiving, unloading, packing, loading, and dispatching).

It is recommended that a certain percentage of the storage area be dedicated specifically to product handling for an average volume of products. The amount of handling space needed depends on the volume of product moved through the storage area and the equipment required to move those products. This dedicated area is critical for the efficient operations of the storage facility to allow for organized and efficient receiving, unloading, packing, loading, and dispatching of products; and to protect products from the elements during receiving and packing.

C. Shipping productivity: Total number of products shipped per time period

D. Transport utilization: Vehicle fill rate

E. Picking productivity: Total number of products picked per labor hours in picking activity

3. Quality Indicator

The quality indicators can be divided in two groups: some metrics are related to internal quality operations, whereas others focus on customer service level. Typically, they tell us how well the company perform a specific activity related to warehousing. A common logistics indicator in this classification is accuracy including order accuracy, inventory accuracy, picking accuracy, etc.

A. Inventory Accuracy Rate

This indicator measures the percentage of warehouse or storage locations that had no inventory discrepancies when stock cards were compared to a physical inventory count out of the total number of locations under review, during a defined period of time. Alternatively, this indicator can be calculated for a single facility as the percentage of months or quarters with no inventory discrepancies out of the total number of months or quarters in the review period (e.g., annual).

The inventory accuracy rate can be used to assess overall inventory control performance for a group of storage facilities or for one storage facility over a set of review periods. Inventory accuracy is critical for managers to know how much they have in stock at any given point in time and to know when a new order must be placed to replenish stock. This discrepancy analysis can help managers identify storage locations that are having problems with inventory management; the analysis can lead to opportunities for improvement.

B. Put-Away Accuracy

This indicator is the percentage of items placed in the correct location or bin in a warehouse or storage area. This indicator measures a facility's ability to stock items in the correct location so they can be quickly and easily located. This can provide an indication of whether staff is practicing good warehousing practices and guidelines. This indicator can be measured during a site visit or by making periodic checks at the facility over a specified length of time. For example, during a quarterly period, the number of times items were found in the wrong location.

C. Picking Accuracy Rate

This indicator is defined as the percentage of items or lines picked accurately (i.e., the correct items and quantities) from storage based on a request or packing list, and then placed into the appropriate container.

This indicator measures whether items are accurately selected from storage and placed into a container to be shipped to the requesting facility. It can reveal the ability of the facility to pick requests correctly in terms of quantity and item. Errors can result in stock outs or overstocks at the ordering facility. To collect data for this indicator, a review of items just before they are loaded for transporting can be conducted to determine the accuracy of picked items compared against an invoice or requisition form. It can be calculated for a single order or for all orders during a defined period of time.

D. Physical inventory accuracy: Measures the accuracy (by location and units) of the physical inventory compared to the reported inventory.

E. Shipping Accuracy: Number of errors free orders shipped.

F. Delivery Accuracy: Number of orders distributed without incidents.

G. Customer satisfaction: Number of customer complaints or number of orders delivered.

4. Time Indicator

The most used metrics or indicators are order lead time, receiving operation time and order picking time, delivery lead time (Gunasekaran & Kobu, 2007). Typical time indicators are warehouse order processing time, put away time, order lead time, order delivery time, order shipping time, etc.

A. Warehouse Order Processing Time

This indicator measures the average amount of time (e.g., minutes, hours, days, weeks) from the moment an order is received at the storage facility until the time the order is actually shipped to the client. The order processing time can be calculated for a specific shipping facility averaged across orders or on average for orders to a specific client or for a specific product. This indicator helps monitor the order processing performance and the efficiency of a shipping facility. It also helps identify opportunities for improving staff performance in order management and a facility's response time.

B. Put-Away Time

This indicator measures the amount of time it takes from when a product(s) has been unloaded from a truck after arriving at a warehouse or other storage location to when it is stored in its designated place and is ready for picking. This indicator can be calculated by product, or by shipment, or as an average across products or shipments, during a specified period of time. Measuring the put-away time can help improve productivity by monitoring the efficiency of the put-away processes and the staff responsible for the task. It can help managers identify work conditions or processes that need improvement, as well as the need for staff training.

C. Order lead time: Lead time from customer order to customer acceptance.

D. Delivery lead time: Lead times from the warehouse to customers.

E. Shipping time: Lead time to load a truck per total orders loaded.

5. Asset Management Indicator

Asset management enables greater visibility, accuracy, and reporting. Capturing accurate data with asset management systems as part of asset management programs helps organizations to streamline operations, improve finances, save on taxes, and improve their overall bottom line and productivity.

Accuracy of Asset information: The percentage improvement in the accuracy of audit of configuration items, Inventory listing by status of asset (i.e. ordered, deployed, retired etc.)

Time taken to reconcile the inventory: The percentage improvement in the speed of the audit of configuration items. Report on unauthorized additions, modifications, or removal of assets.

2.1.12 Ideal Warehouse Characteristics

To continue the trend of warehouse optimization, it is said that an ideal warehouse should consists of the following characteristics listed below (Montgomery, 2009). Space (the warehouse should be spacious enough in for the workers to move around and sort products), Location (the warehouse should be near highways, railway stations, airports, harbor etc.), Machinery (in the warehouse, Forklifts and other devices should be present), Security (there should be 24/7 on site security presence to guard the warehouse), Fire Prevention (a sufficient fire prevention system should be installed within and in the warehouse compound), and there should be sufficient parking area for a trucks to park as well as load and unload.

Warehouse layout design is a highly important factor in creating an effective and efficient warehousing operation. If the layout of a warehouse is designed poorly and lacks efficiency, two of the areas that are likely to suffer the most would have to be the fulfillment area and dispatch area (Sykes, 2017). These are areas that require efficiency, and if not properly designed could ultimately cost time of the workers causing the overall labor costs to increase.

Other issues that can lead to negative factors of a poorly designed warehouse are inventory control issues, decreased productivity, shipping errors and potential safety risks (Zeninventory, 2017). One method of preventing these factors from becoming a reality, is using what is called warehouse segmentation. Implementing a segmentation strategy can help a company achieve better efficiency for the day-to-day warehouse activities.

2.2. Empirical Literature Review

Several researches have been done on warehouse management performances measured in terms of the most frequently used performance indicators (like Quality, time, cost, and productivity). The efficiency and effectiveness of the warehouse management is all about how efficient and effectively the warehouse perform. For this, several related researchers studies are discussed and the researcher's recommendations are stated as well.

2.2.1 Warehousing Operations Efficiency and Effectiveness

A research done by Sneha Vishnu More, (2016) the study on “Efficiency and Effectiveness of Warehouse Management in the context of Supply Chain Management” state that, as a result of global competition and supply chain concepts, including a focus on integral inventory control, warehousing has become a critical activity in the supply chain to outperform competitors on customer service, lead-times, and costs. Timely and accurate information about products, resources and processes are essential to operationalize a planning and control structure that effectively and efficiently achieves the high performance of warehouse operations required in today’s marketplace. The researcher conclude that, Optimization strategies are utilized to position product availability and delivery as a competitive advantage while also optimizing the cost trade-offs associated with transportation, facilities, equipment, workforce, and other critical cost variables.

Gursharan Kaur, (2017) the study on “Warehousing Efficiency and Effectiveness in the Logistics Management Process” stated that, A warehouse acts as a supporting function for logistics and plays a key role in attaining the overall objective of the firm’s logistical supply chain system. The researcher states that, the performance of the warehouse is judged by its operations such as timely customer service, keeping track of items, lower operating costs, damage free delivery and higher inventory turnover. The researcher conclude that the effectiveness of overall operations of a company can be considerably enhanced by proper decision on objectives for efficient warehousing. Warehousing network plays a major role in the success of the physical distribution of products. In the scenario of growing competition and to meet the customer expectations for cost and service, implementation of appropriate warehousing strategies play significant role.

The study suggests that in order to meet the customer expectations for cost and service, the organization can follow capacity switching strategy, where the capacity of a warehouse is planned on the basis of average demand per month over the year.

Material handling function also has an effect on the efficiency and the speed of the warehousing operations. The materials, spare and finished goods can be moved in and out of warehouse manually or using various kinds of equipment and systems. The efficiency of material handling process adds to the performance level of the warehouse. The reduction of labour and enhancement of productivity could be achieved by using emerging technologies in material handling (Gursharan Kaur, 2017).

A research done by Tadesse Dagnachew (2015) study on “The Role of Warehouse Personnel Practice on warehouse Performance - A Case Ethiopian Electric Utility” reveals that poor practice of warehouse personnel negatively affected the overall operation of the corporation.

The study showed that the utilization of unqualified personnel in the organization is contributing to the organization's lower performance. The study concludes by showing that the corporation didn't recognize the importance of qualified personnel in the warehouse.

A research done by Belayhun Begashaw (2016) the study on "Assessment of Warehouse Management of Ethiopian National Defense Main Department of Logistics in Adama City" reveals that human resource is the most important resource and needs continuous training that can help to up-grade knowledge and skills of warehouse managements. Data communications between warehouse managers and warehouse data workers have been observed to be weak and he recommends that Ethiopian national defense warehouse can only be productive if there is effective and efficient management of human and material resources in the system by the computerized data base communication between warehouse managers and warehouse data workers.

Alona G. and Jinshan Z.,(2009) the study on "Optimization of Goods Incoming Process" Stated that, the goods incoming process for the case company under their study identifies that there are some problems in Nelly's goods in the actual operations. (1) Lack of information. Even if goods receiving area plays a connectional role, Nelly's goods receivers couldn't get sufficient information from both purchasing department and delivery agents. They don't know when goods are loaded on the truck, when the truck will arrive, and what kinds of goods are delivered. This situation directly leads to a passive waiting state in the whole warehouse. And it is impossible to positively prepare something without that information from truckers. Moreover, goods will be idled for a long time due to the absence of purchasing order in Harmony system, which means purchaser didn't put order for every buying behavior. Although important goods will be coped relatively fast, it still impacts the efficiency of the warehouse.

For this goods receiving, the researcher suggestions is as follows by grounding with related literature: As suggested by Tompkins and Smith (1998), in their model of receiving goods, the following activities should be implemented within the company. (1) Cross-functional collaboration. Purchasing department, delivery agents and warehouse department should exchange more information to progress a continuous information flow. Communication is a key word in the implementing process. In short, cross-functional collaboration is a prerequisite of future improvement. (2) Responsibility institutionalization. Making purchasing order should be set as compulsive duty to purchasers according to the classic function model presented in theory. If they are overloaded, it is better to hire more purchasers to work on such core position in the company or flexibly reallocate someone when needed. (3) Scheduled delivery. Truckers should notify receivers by phone and at the same time inform the detailed data about the goods and time.

(4) Goods Classification: In goods receiving process, the goods are completely mixed together with different articles, packages, sizes, and colors in each box. (5) Quality control: As the preceding theories, damages of goods may occur in any process in the warehouse. Varley (2006) concluded that quality control may appear at any point in the supply chain. So the researcher propose to arrange a quality controller to work in goods receiving area before goods are moved to next step in order to identify the damages and inferiors at the first moment.

Meanwhile, interruptions in next processes will be eliminated and the inspection will be more professional as well. (6) Cross-docking and material flows. Tompkins and Smith (1998) emphasized the importance of sorting to be done as early as possible in the process with the purpose of minimization of additional handling.

The researcher identified another problems related to the inbound warehouse operation management and listed as follows: (1) Waste of time which occur when worker distract him- or herself from work in order to find an empty box; (2) Waste of time which occur when worker is run out of separating papers and tries to find it or just create a new one by tearing it from another boxes; (3) Waste of time when workers wait for others to print the order; (4) Waste of time when workers should reprint the order and sometimes to do it again, wait for others to print and etc. The researcher conclude that goods flows should be smoothed when optimizing goods incoming process. In particularly, material flow and information flow should be integrated efficiently in order to streamline the whole process.

It has to be understood that intermittent flows create a lot of wastes in warehouse management, invoke delays, and reduce the service level. However, as the researcher study is more focus on the inbound operation of warehouse management, the outbound operation of the warehouse management is not considered under the researcher topic of study.

According to T.C. Poon *et al*, (2009) Recommendations, it is necessary to allocate warehouse resources efficiently and effectively to enhance the productivity and reduce the operation costs of the warehouse. One vital area determining the efficiency of warehouse is the determination of the proper storage locations for potentially thousands of products in a warehouse. Various factors affecting the storage assignment like order picking method, size and layout of the storage system, material handling system, product characteristics, demand trends, turnover rates and space requirements are been extensively studied. It has been suggested that selecting appropriate storage assignment policies (i.e. random, dedicated or class-based) and routing methods (i.e. transversal, return or combined) with regards to above factors is a possible solution to improve the efficiency (Felix T.S. Chan, H.K. Chan, 2011).

According to Neely, (1995) performance measurement is a topic which is often discussed but rarely defined. He defines performance measurement as the process of quantifying the efficiency and effectiveness of action. Effectiveness is the amount of meeting customers' needs and efficiency is rate of economically using corporation's resources in time of measuring a predetermined level of customers' satisfaction. A performance measure can be defined as a metric used to quantify the efficiency and/or effectiveness of an action (Neely, 1995). A performance measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions (Neely, 1994).

2.2.2 Warehousing Functions Integrations with other Logistics Functions

A research done by P. Mauricio Ribera *et al.* (2003) study on the “Integrating the warehousing and transportation functions of the supply chain” state that, Electronic commerce and associated business-to-business transaction capabilities have changed the way in which supply chains operate. The research presents the following ideas regarding the integration of the warehousing system with other logistics functions of the company for information exchanging. The Internet has enabled information exchange on an unprecedented scale, often at a pace too fast for normal consumption.

Companies are not equipped to make effective use of data from warehouse management systems which contain information on supplier/customer warehouse inventory levels and key customer ordering patterns and transportation management systems within which information pertaining to the location of important supply chain assets such as products or vehicles is typically stored. These systems are key factors in integrating the physical flow of goods along the supply chain. The integration of these systems leads to global inventory visibility, which, in turn, leads to reduced costs and improved customer service by decreasing shipping and receiving cycle times, increasing shipment and inventory accuracy, and decreasing lead-time variability.

2.2.3 Challenges of Warehousing Management Practices

A case study done by Ferdoush S. *et al.*, (2014) under the heading “Challenges of Warehouse Operations: A Case Study in Retail Supermarket”. Stated that there are many factors that impact the warehousing operations. Such as political unrest, government legislations, import barriers, purchase power parity (PPP) and skilled resources etc. On top of that, implementation of modern IT infrastructure, Enterprise Resource Planning (ERP) and Warehouse Management System (WMS) etc. were major obstacles.

In addition to the above major obstacles, the research indicates that there other administrative factors which should be handled with high level of efficiency and management skills. These also require extensive knowledge in Industrial Relations such as labor unrest, grievance, working at late hour, productivity of an employee, salary and wages, multitasking ability, theft and pilferage, collective bargaining, ability to meet emergency support with limited resource; a pre-requisite for smooth warehouse operation.

The research concludes that, the goal of warehouse management is to ensure operational efficiency while focusing on cost reduction. Performance measurement benchmark at warehouse operation comprises of Quality, Speed, Dependability, Flexibility, Reliability and Time linked with few internal as well as external factors. Warehouse design, facility layout and capacity assessment can synchronize the demand and supply gaps and ensures the smooth flow of operation.

More so, warehouse layout is one important factor affecting job order assignment schedule in the warehousing management. Caron, *et al.*, (2000) found that the warehouse layout has a considerable effect on order picking travel distance.

Bartholdi and Hackman (2011) pointed out the layout design has an effect of more than 60% on the total travel distance, and also that there is a relationship between warehouse layout and order picking travel distance. Efficient and effective warehouse management and high productivity rates portray the organization as an entity that values their customers because if the organization is running on inefficient warehouse and suffering from poor productivity levels, it may be sending wrong message to its customers. Inefficient warehouse management can lead to shipping delays, processing errors, and more complications that could negatively impact on the rate of customer satisfaction.

2.3. Conceptual Frame Work

Warehousing is an essential component of logistics and it is a key aspect of modern supply chains which plays a critical role in the success or failure of businesses today. An ideal warehouse should be well equipped with machinery and should have firefighting equipment to deal with any incidences happening. The warehouse should be in a place with good infrastructure. Staff should be well trained about warehouse management and should know their duties and responsibilities. The warehouse should be with a good layout and design. Proper arrangement should be there to protect the goods from sunlight, rain, wind, dust, moisture and pests. There must be sufficient parking space to facilitate easy and quick loading and unloading of goods.

A warehouse should have record keeping and inventory controlling system in place. There must be a guideline and procedure to keep and make disposal of damaged goods/equipment.

The warehouse management should be integrated with other logistics functions (like procurement, transportations and finance functions). This helps the company to share information and enhance communications. It also increases visibility.

The basic warehouse functions (like Receiving goods, inspections, Repackaging, Put away, Order-Order Picking/Selection, Sortation, packing and shipping, cross-docking, Replenishing, physical inventory, staffing, information management systems and etc.) are the main functions that should one warehouse should possess in order to be efficient and effective operationally. Effective warehouse management can potentially add value to overall supply chain activities of the companies and directly contributed to the productivity of the company as a whole.

Therefore, considering the theoretical and empirical review of different studies reviewed above, this study bases the ideal warehousing features and the basic warehouse functions to assess the case company warehousing operations efficiency and effectiveness in logistics management practices. The quality, time, cost, productivity and asset management indicators are used to indicate whether the company warehousing operation is efficient and effective or not. See below the conceptual framework derived from the above paragraph.



Figure 2.2 Conceptual frameworks (Own Model)

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

The following section presents the research design and methods that are used to achieve the objectives of the research. It includes description of the study area, research approach, research design, target population and sample size determination, data source and types, Data collection procedures, ethical consideration and data analysis plan.

3.1. Description of the Study Area

Berhan Bank S.C is one of the local banking sector that provides banking services and operate in virtually all regional cities and in their respective major towns within Ethiopia. With its goal to make banking stress free and efficient, the company invest in technology and innovations that enable its customers to reach their goals as in saving, investment, business or managing money.

This research focuses on assessing the warehousing operations efficiency and effectiveness of Berhan Bank S.C. the overall management of warehousing system is under Facility and property management department in Headquarter Office. The company has got one central warehouse that is a heart of the company where goods or devices/equipment's are stored in order to facilitate the regular function of the current banks and the new opening branches throughout the country. There are warehouse supervisors, store keepers, warehouse personnel's are engaged in receiving, storing, and issuance of materials; keep records of stock in the stores and also protect the materials from deterioration and theft.

3.2. Research Approach

To achieve the objective of this study, the researcher used quantitative research approach. The quantitative approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. Procedurally, primary data collected through questionnaire are analyzed to meet the objectives of the study.

3.3. Research Design/Type

In order to describe and make an assessment of the warehousing operations efficiency and effectiveness of the case company, a descriptive type of research design was used. Descriptive studies observe, describe and document aspects of a situation as it naturally occur (Polit and Hungler, 1999). This design involves the collection of data that provides an account or description of individual groups or situations.

Questionnaires with different sections is used as an instrument to get respondents feedback. An observation made to the company warehouse with observation checklist. So, through the use of descriptive research design, assessing and describing the nature; condition and degree of the present situation of warehousing operations efficiency and effectiveness of the selected company are elaborated.

3.4. Target Population

According to Holme and Solvang, (1991), selecting respondents with right knowledge about the research area is crucial. Since the present study is limited to assessment of the warehousing operation efficiency and effectiveness of the selected company, employees and individuals who are working closely and received service from the warehouse section of the case company Headquarter office and Central Warehouse, in Addis Ababa are considered as a target population. Specifically, individuals from Facility and property administration section are the target populations. As the study covers all the 65 employees and individuals in the stated department and census is used to conduct the research.

3.5. Data Source and Type

In order to conduct this research, both primary and secondary sources of data are used. The primary data are gathered through a well-developed questionnaire from the entire warehouse management population/employees and other population of the selected company. Secondary data for this specific research are collected from different journals, company files and reports.

3.6. Data Collection Methodology/Procedures

The researcher organizes face to face approach data collection methodology depend on the availability and accessibility of the target population. After the visit to all corresponding target population work place, the questionnaires were distributed. Questionnaires were provided to respondents to choose a scale/their level of agreements (interval questions) and one open ended question to fill. With regard to the interval questions, a five point Likert scale is used i.e. 5=strongly agree, 4= agree, 3= neutral, 2=disagree and 1= strongly disagree. The researcher also visits the company warehouse in order to fill the observation list prepared by him.

Finally, all the questionnaires were collected physically from the respondents at their working place by the researcher and supporters.

3.7. Ethical Considerations

It is mandatory to consider the ethical issues during the research studies at all phases of the research process. Through the guidance from the case company, the researcher explained the essence of the study to the all respondents. Respondents understand their role in the data providing activity to the research questions. Respondent's participation was entirely voluntary and the questionnaire did not required to write respondents name. The feedback from the participants remain confidential and only used for the aforementioned academic purpose, thus not affects any one rather it might provide the company in improving the efficiency and effectiveness of the warehousing practices.

3.8. Data Analysis Methods

The data collection instrument is organized as: First demographic information of respondents, then followed by interval questions where respondents indicate the degree to which they are agree to the indicator given in the questionnaire, thirdly, data is gathered through open –ended questions, fourthly, observation list is completed based on the researcher short visit to the company warehouse. The quantitative data collected through questionnaires were computed by using Statistical Packages for Social Science (SPSS 24) statistical analysis tool that was employed for doing the analysis and the data were coded, entered and analyzed using this tool.

Frequency tables and percentages were used to summarize the demographic information of respondents. And Frequency, percentages were used to summarize all the dimensions that are assessed in order to determine the extent of Warehouse operations efficiency and effectiveness of the company. Finally, detail interpretation and discussion of the results of the statistical analysis were analyzed and prepared in the table.

3.9. Reliability and Validity

Validity is concerned with the accuracy and truthfulness of scientific findings. A valid study should demonstrate what actually exists and a valid instrument or measure should actually measure what it is supposed to measure (Brink, 1993).

To achieve the validity of the study, the instrument applied (questionnaires) were adopted from previously related studied researches in Ethiopia, Belayhun B. (2016) and Anteneh B. (2017). The validity of the questionnaire data depends on a crucial way the ability and willingness of the respondents to provide the information requested. To ensure the validity of the instruments, a pilot study were conducted to refine the methodology and test instrument (questionnaire and observation list) before administering the final questionnaires.

Reliability is concerned with the consistency, stability and repeatability of the informant's accounts as well as the investigators' ability to collect and record information accurately. Cranach's alpha coefficient is used for the consistency of the data as given bellow.

Table 3.1: Reliability Statistics (Cronbach's Alpha)

Dimension/Scale	No. of Items	Cronbach's Alpha
Quality	6	0.746
Response Time	5	0.771
Cost/Financial	5	0.708
Productivity	3	0.752
Asset Management	5	0.829

The above table implies that all alpha values for the respective dimensions were well above the suggested cut-off value of 0.7 (Cronbach, 1951), hence implying the reliability of the instrument that measures the study constructs, i.e. the items under the respective scales properly measured the dimension of concern. The lowest alpha value was 0.708 and it was in the case of cost/financial indicator, whereas the highest was for Asset management indicator with the alpha value of 0.829.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSION

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 and observation methods. Accordingly, the collected data were analyzed quantitatively and qualitatively. Particularly, statistical tools like: Frequency and percentage were employed. The survey was conducted during two weeks" time and a total 57 questionnaires were effectively used for analysis that shows response rate of 87.69%.

4.1 Respondents Response Rate

Table 4.1: Respondents Response Rate

Population	Number	Percent
Numbers of questionnaire distributed	65	100%
Completed & Returned questionnaires	57	87.69%
Incomplete Returned questionnaires	3	4.62%
Not completed returned questionnaires	5	7.69%
Total Usable questionnaires	57	87.69%

Source: Questionnaire Result, (2019)

As shown in the preceding part of this study, the target population of this study comprised of 65 employees and individuals who are working closely and received service from the warehouse section. However, from the total 65 questionnaire distributed 57 were completed and returned questionnaires. 3 questionnaires' were not correctly filled and rejected and 5 questionnaires were returned back not completed. Only 57 questionnaires which are completely filled returned are used for analysis and which essentially made the response rate about 87.69%. This is a good response rate based on Fowler (2002) a 75% response rate is considered adequate. The demographic information of the respondents who have filled and returned the questionnaire is presented on underneath table 4.2.

4.2 Respondents' Demographic Information

Table 4.2. Demographic information of the respondents

No	Variable	Choice	Frequency	Percent	Valid Percent	Cumulative Percent
1	Age	Between 20-30 years	26	45.6	45.6	45.6
		Between 31 – 40 years	24	42.1	42.1	87.7
		Between 41 – 50 years	6	10.5	10.5	98.2
		Above 50 years	1	1.8	1.8	100
		Total	57	100	100	
2	Gender	Male	35	61.4	61.4	61.4
		Female	22	38.6	38.6	100
		Total	57	100	100	
3	Educational Background	Diploma holder	9	15.8	15.8	15.8
		First Degree holder	36	63.2	63.2	78.9
		Master's Degree holder & Above	12	21.1	21.1	100
		Total	57	100	100	
4	Years of Service in the company	Below 2 years	14	24.6	24.6	24.6
		Between 2-4 Years	25	43.9	43.9	68.4
		Between 5-6 Years	13	22.8	22.8	91.2
		Above 6 years	5	8.8	8.8	100
		Total	57	100	100	

Source: Source: Questionnaire Result, (2019)

The data in this section contains age group, gender, educational background and years of service in the company of the respondents worked in Birhan Bank S.C. From the above table 45.6% of the respondents were between 20 – 30 years, 42.1% of the respondents were between the ages of 31 - 40 years, 10.5% of respondents were between 41 – 50 years and only 1.8 % of the respondents were above 50 years. Based on the results obtained, the researcher found that the majority of the respondents are between 20 – 30 years and 31 - 40 years. This implies that, the company employed young people who are highly productive and efficient.

As depicted on the above table 61.4 % of the respondents were male and 38.6 % were female. This implies that company human resource department has a job to do in creating a gender balanced workforce. Respondents were also asked to indicate their educational background and found that 15.8 % of the respondents were Diploma holders, 63.2 % of the respondents were first degree holders, and 21.1 % of the respondents were master holders and above.

Based on the results presented in the above table, majority of the respondents 63.2 % of the respondents were first degree holders. This implies that the respondents were knowledgeable and hence would understand and interpret the questions properly.

In addition to educational background they were asked to mention the years of service in Birhan Bank S.C and 24.6% of the respondents worked below 2 years, 43.9% mention in between 2 – 4 years of service in Birhan Bank S.C, 22.8% of respondents mentioned in between 5 – 6 years and 8.8% of respondents worked for above 6 years in Birhan Bank S.C. this implies that, the respondents were worked for years in the company and can give feedback about the company warehousing operations.

This study focus on assessment of on Birhan Bank S.C warehousing operations efficiency and effectiveness in logistics management practices. For this four questions were stated in chapter one of this study. Therefore, the questions are reviewed based on the nature of the questionnaire provided to respondents.

4.3 Descriptive Analysis

Descriptive statistics was used in an effort to describe the frequency, percentage, under the respective scales of each of the measurement items of the dimensions. Hence, this particular attempt has the importance of answering the research questions on the basis of the perceptions of the respondents on the warehousing operations efficiency and effectiveness of the case company and also to answer on which efficiency and effectiveness indicator the company performs better and viseversa.

4.3.1 Respondents' Perception on Quality Indicator

Table 4.3. Respondents' Perception on Quality Indicator

No	Quality indicator	SD		DA		N		A		SA	
		N	%	N	%	N	%	N	%	N	%
1	Most of the time, internal customers' orders are shipped error free.	1	1.8	14	24.6	20	35.1	17	30	5	8.8
2	In our warehouse, order-picking process is the process of obtaining a right quantity of the right goods for a set of internal customer orders.	0	0	7	12.3	17	29.8	29	51	4	7
3	Most of the time, goods are properly sorted in our warehouse in the way that avoid risk of spoilage or damage.	3	5.3	23	40.4	9	15.8	16	28	6	11
4	Most of the time our warehouse has no inventory discrepancies when bin cards were compared to a physical stock count.	3	5.3	12	21.1	18	31.6	20	35	4	7
5	Most of the time, goods are delivered to requestors as per the specification requested.	0	0	11	19.3	11	19.3	28	49	7	12
6	Most of the time, our warehouse delivers complete quantity of orders to the internal customers	1	1.8	23	40.4	3	5.3	23	40	7	12

Source: Data from response, (2019)

The respondents were asked to give response towards the quality indicator of Birhan bank S.C warehousing operations. Six quality indicator statements mentioned in the above table which are used to measure the efficiency and effectiveness of the company warehouse.

The above table 4.3 with the first quality indicator statement is about the internal customers' orders shipment management. Ideally to ensure if internal customers' orders are shipped error free or not. Accordingly, 1.8 % of the respondents strongly disagree, 24.6 % of the respondents disagree, 35.1 % of the respondent neutral, 30 % of the respondents agree and 8.8 % are strongly agree. Compare to the five rating level, majority of the respondents (38.8%) replied that internal customer orders are shipped error free. This indicates that the warehouse team make proper package and labeling as per the customer's order specifications and addresses. This also shows that the company uses efficient mode of transport to ship goods to the customer's error free. When goods are shipped error free, customer complaints are avoided and time and money are saved.

The second quality indicator statement is about order-picking process. 12.3 % of the respondents disagree, 29.8 % of the respondent neutral, 51 % of the respondents agree and 7 % are strongly agree. Majority of respondents replied that the order picking process in Birhan Bank S.C warehouse operation is well understood. The result shows that the company warehouse team are all aware about the order picking process. This indicates that the warehouse team understood of the order picking process that increases the logistics quality services especially in terms of delivery.

The third quality indicator statement is if the goods are properly sorted in our warehouse in the way that avoid risk of spoilage or damage or not. 5.3 % of the respondents strongly disagree, 40.4 % of the respondents disagree, 15.8 % of the respondent neutral, 28 % of the respondents agree and 11 % are strongly agree. Most of the respondents judge that the goods are not properly sorted in our warehouse in the way that avoid risk of spoilage or damage. In addition to this, the researcher visited the company warehouse and the way goods are sorted and allocated in the warehouse are relatively average. This implies that the goods are not sorted in the warehouse and leads to the risk of spoilage or damage. Respondents in the case company believe that goods are not properly sorted in the warehouse in the way that avoid risk of spoilage or damage .If goods are not sorted and kept in proper locations, the quality of goods may get in danger. This result in risk of delaying delivery to customers and creating an inefficient staffing system that increases your labor costs as.

The fourth quality indicator statement is about inventory discrepancies when bin cards were compared to a physical stock count. 5.3 % of the respondents strongly disagree, 21.1 % of the respondents disagree, 31.6 % of the respondent neutral, 35 % of the respondents agree and 7 % are strongly agree. Around 42% of respondents provided positive respond regarding the inventory discrepancies when bin cards were compared to a physical stock count. This fourth quality indicator Measures the inventory accuracy (by location and units) compared to the reported inventory. This implies that the warehouse team perform well in inventory management.

The fifth quality indicator statement tried to measure that if goods are delivered to requestors are as per the specification requested by the internal customer. 19.3 % of the respondents disagree, 19.3 % of the respondent neutral, 49 % of the respondents agree and 12 % are strongly agree. According to the respondents response, 61% of them positively replied that goods are delivered to requestors are as per the specification requested by the internal customer. This shows that the warehouse team are capable of understanding the internal customers request specifications and deliver to the internal customers.

The sixth quality indicator statement measures if the company warehouse delivers complete quantity of orders to the internal customers. 1.8 % of the respondents strongly disagree, 40.4 % of the respondents disagree, 5.3 % of the respondent neutral, 40 % of the respondents agree and 12 % are strongly agree. 42.2% of respondents are not agree that the company warehouse doesn't deliver complete orders to internal customers. However, 52% of the respondents positively agree that the company warehouse delivers complete quantity of orders to the internal customers. This implies that the warehouse reserves goods that are need by the customers and complete quantity are delivered as per the request provided to warehouse team.

4.3.2 Respondents' Perception on Time Indicator

Table 4.4. Respondents' Perception on Time Indicator

No	Time indicator	SD		DA		N		A		SA	
		N	%	N	%	N	%	N	%	N	%
1	The store keeper is informed of the goods being procured before arrival to warehouse so that unloading time will be reduced.	7	12.3	16	28.1	8	14	22	39	4	7
2	In our warehouse most of the time, Order lead time is well monitored.	4	7	28	49.1	11	19.3	12	21	2	3.5
3	Most of the time, orders requested by internal customers are shipped before or on committed date.	3	5.3	28	49.1	7	12.3	16	28	3	5.3
4	In our warehouse management, Dock to stock time (lead time from goods arrival until they are ready for order picking) is perfectly managed.	1	1.8	8	14	31	54.4	15	26	2	3.5
5	Periodic Warehouse Inventory Reports are submitted to line manager on time to meet the deadline.	2	3.5	27	47.4	4	7	16	28	8	14

Source: Data from response, (2019)

The respondents were asked to give response towards the time indicator of Birhan bank S.C warehousing operations. Five time indictors statements mentioned in the above table which are used to measure the efficiency and effectiveness of the company warehouse. The first time indicator statement is in line to measure if the store keeper is informed of the goods being procured before arrival to warehouse. 12 % of the respondents strongly disagree,

28.1 % of the respondents disagree, 14 % of the respondent neutral, 39 % of the respondents agree and 7 % are strongly agree. 46% of the respondents positively agree that the store keeper is informed in advance of the goods being procured before arrival to the warehouse. This result implies that there is good communication between the procurement and warehouse function

of the company for information passing for the delivery of goods to warehouse. Goods receiving activity start with a notification of incoming goods, which allows the workers to arrange coordinated unloading of the incoming goods properly at possible lowest cost within specific time.

The second time indicator statement tried to measure if order lead time (i.e. Lead time from order placement to shipment) is well monitored or not. Regarding this statement, 7 % of the respondents strongly disagree, 49.1 % of the respondents disagree, 19.3 % of the respondent neutral, 21 % of the respondents agree and 3.5 % are strongly agree. About 56% of respondents disagree that order lead time is not well monitored. Lead time is a time from order placement by the customer to shipment (received by the customer). Within the warehouse operations, order lead time could be delayed due to poor sorting and storage activity, order picking, order preparation and shipment activity. The above result shows that the order lead time is not well monitored which in turn result is order delaying and dissatisfy the customers. The more customers order delayed the less effectiveness of the warehouse operation.

The third time indicator is to measure if orders requested by internal customers are shipped before or on committed date. The respondents provided their level of agreement against the third time indicator of Birhan Bank S.C warehouse operation. 5.3 % of the respondents strongly disagree, 49.1 % of the respondents disagree, 12.3 % of the respondent neutral, 28 % of the respondents agree and 5.3 % are strongly agree. 54.4% of respondents indicates that orders requested by internal customers are shipped neither before nor on committed date. This implies that the warehouse operation doesn't have chronological schedule where goods ordered by internal customers are delivered on specific time. This results in complains from the internal customers and consume the customers time.

The fourth time indicator is the case of lead time from goods arrival until they are ready for order picking. 1.8 % of the respondents strongly disagree, 14 % of the respondents disagree, 54 % of the respondent neutral, 26 % of the respondents agree and 3.5 % are strongly agree. 29.5% of the respondents indicates that lead time from goods arrival until they are ready for order picking is well monitored.

This shows that the company manages the supply of goods from the supplier till they are ready for order picking.

The fifth time indicator is about if periodic warehouse inventory reports are submitted to line manager on time to meet the deadline or not. 3.5 % of the respondents strongly disagree, 47.4 % of the respondents disagree, 7 % of the respondent neutral, 28 % of the respondents agree and 14 % are strongly agree.

50.9% of the respondents are indicating that, periodic warehouse report is not submitted to line manager on time as per the deadline identified. This implies that the company uses manually prepared reporting system which is not generated from advanced inventory technology. The researcher observed that the warehouse people were waiting for public power supply since there is no company owned reserved power supply. This on the other hand pushes the warehouse people to work on hand made report. This results in less efficiency and effectiveness of the company operations.

4.3.3 Respondents' Perception on Cost/Financial Indicator

Table 4.5. Respondents' Perception on Cost/Financial Indicator

N o	Cost/Financial indicator	SD		DA		N		A		SA	
		N	%	N	%	N	%	N	%	N	%
1	The company uses IT tools (e.g. ERP system) for inventory management.	30	52.6	18	31.6	2	3.5	3	5.3	4	7
2	Most of the time, orders are consolidated for full truck load capacity.	3	5.3	27	47.4	6	10.5	17	30	4	7
3	Most of the time our warehouse personnel utilizes a reasonable warehouse spaces during the reception of goods.	0	0	6	10.5	29	50.9	21	37	1	1.8
4	In our warehouse management, there is a system to avoid excess stock that will takes up valuable space.	4	7	33	57.9	7	12.3	10	18	3	5.3
5	The company has the procedure for disposal of goods/equipment's being surplus or isolated for disposal.	10	17.5	25	43.9	3	5.3	15	26	4	7

Source: Data from response, (2019)

The respondents were asked to give response towards the Cost or Financial indicator of Birhan bank S.C warehousing operations. Five time indictors statements mentioned in the above table which are used to measure the efficiency and effectiveness of the company warehouse.

Accordingly, the first Cost or Financial indicator statement is attempt to measure whether the company uses IT tools (e.g. ERP system) for inventory management or not. Based on this, 53 % of the respondents strongly disagree, 31.6 % of the respondents disagree, 3.5 % of the respondent neutral, 5.3 % of the respondents agree and 7 % are strongly agree.

Overall, 84.6% of the respondents conclude that the company doesn't use IT tools (e.g. ERP system) for inventory management. In addition to this, on open ended questionnaire, majority respondents clearly indicate that lack of ERP system or well-developed technology for warehouse inventory control is one of the major warehouse challenge.

This implies that the company lacks advanced inventory control technology that assist in inventory management. Due to this the company cannot monetarily measure the inventory level and total storage costs/units.

The second Cost or Financial indicator to be measured is if the customers' orders are consolidated for full truck load capacity. Respondents rate their level of agreement as follows: 5.3 % of the respondents strongly disagree, 47.4 % of the respondents disagree, 10.5 % of the respondent neutral, 30 % of the respondents agree and 7 % are strongly agree. 52.7% of respondents indicates that customers' orders are not consolidated for full truck load capacity. This could be due to the nature of the business that the company holds. However, if goods are not consolidated into full truck capacity, this might results in an increase of distribution costs including the transportation and other costs.

Thirdly, the respondents were asked to rate their level of agreement if a warehouse personnel utilizes a reasonable warehouse spaces during the reception of goods or not. 10.5 % of the respondents are disagree, 50.9 % of the respondent are neutral, 37 % of the respondents agree and 1.8% are strongly agree. High number of respondents remain neutral to the statement mentioned, where as 38.8 % of the respondents are indicated that a warehouse personnel utilizes a reasonable warehouse spaces during the reception of goods. This implies the warehouse team are able to utilize the space available to make goods receiving activities.

The fourth Cost or Financial indicator is measuring if there is a system to avoid excess stock that takes up valuable space. The respondents replied that 7 % of the respondents strongly disagree, 57.9 % of the respondents disagree, 12.3 % of the respondent neutral, 18 % of the respondents agree and 5.3 % are strongly agree. Regarding to this statement, 64.9% of the respondents conclude that there is no system to avoid excess stock that takes up valuable space. Excess stock takes up valuable spaces in the warehouse that results in extra cost that the company should expense.

The last fourth Cost or Financial indicator is measuring if the company has the procedure for disposal of goods/equipment's being surplus or isolated for disposal. As per the rating level of the respondents, 18 % of the respondents strongly disagree, 43.9 % of the respondents disagree, 5.3 % of the respondent neutral, 26 % of the respondents agree and 7 % are strongly agree. Majority of the respondents (61.9%) were believe that the company has no procedure for disposal of goods/equipment's being surplus or isolated for disposal.

In addition to this result, the researcher observed that, most of old/broken/damaged goods/fixed assets are accumulated in the warehouse compound for a long time. This shows that there is no administrative procedure for dispose of unneeded or obsolete fixed assets. This shows that there is no way that identify & highlight surplus or damaged assets (property, equipment's) for disposal. The company cannot be cost effectiveness and might leads to poor environmental practices

4.3.4 Respondents' Perception on Productivity Indicator

Table 4.6. Respondents' Perception on Productivity Indicator

No	Productivity indicator	SD		DA		N		A		SA	
		N	%	N	%	N	%	N	%	N	%
1	Our warehouse management team has basic knowledge with extensive warehouse management experience.	3	5.3	28	49.1	4	7	16	28	6	11
2	In our company warehouse management, there is a proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.).	22	39	15	26.3	6	10.5	13	23	1	1.8
3	Most of the time our daily laborer are not idle.	0	0	6	10.5	27	47.4	23	40	1	1.8
4	Most of the time, our warehouse team works hard in reduction of stock out (out of stock).	0	0	10	17.5	11	19.3	31	54	5	8.8
5	The company has proper office setup (i.e. furniture's, copiers, printers & stationary materials) in a warehouse for warehouse workers.	0	0	1	1.8	7	12.3	36	63	13	23
6	Warehouse personnel's are skillful in performing order picking process without significant errors.	0	0	16	28.1	12	21.1	22	39	7	12

Source: Data from response, (2019)

The respondents were asked to give response towards the productivity indicator of Birhan bank S.C warehousing operations. Six time indictors statements mentioned in the above table which are used to measure the efficiency and effectiveness of the company warehouse.

The respondents were asked to rate their level of agreement for the first productivity indicator. So, the respondents indicates if the warehouse management team has basic knowledge with extensive warehouse management experience or not.

The result shown for the first indicator above indicates that 5.3 % of the respondents strongly disagree, 49.1 % of the respondents disagree, 7 % of the respondent neutral, 28 % of the respondents agree and 11 % are strongly agree. 54.4% of the respondents argue that, the warehouse management team has no basic knowledge with extensive warehouse management experience. Generally, this shows that the company warehouse team lacks basic knowledge with extensive warehouse management experience that make them productive in warehouse management even though they can able to perform some of the other activities in the warehouse.

The second productivity indicator measures if there is a proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.) of the company. Accordingly, 39 % of the respondents strongly disagree, 26.3 % of the respondents disagree, 10.5 % of the respondent neutral, 23 % of the respondents agree and 1.8 % are strongly agree. From the respondent's level of agreement, 65.3% of the respondents indicates that there is no proper integration of information system with other logistics functions. This shows that the company warehouse function doesn't have proper integration of information system with other logistics function (like finance, procurement and transportation section) which results in loss of information and obstacle in achieving warehousing operation efficiency and effectiveness.

The third measurement for productivity indicator is to know whether the daily labors are idle or not idle throughout the warehouse operations. The respondents responded that 10.5 % of the respondents disagree, 47.4 % of the respondent neutral, 40 % of the respondents agree and 1.8 % are strongly agree. 47.4 % of the respondents remain neutral however, 41.8% of the respondents agree that most of the time, the warehouse daily laborers are not idle. This shows that the warehouse operation utilizes proper labor and labor productivity is well monitored.

The respondents were requested to rate their degree to which they agree for the fourth productivity indicator. The statement is if the warehouse team works hard in reduction of stock out (out of stock) or not.

To this statement, 17.5 % of the respondents disagree, 19.3 % of the respondent neutral, 54 % of the respondents agree and 8.8 % are strongly agree. Accordingly, 62.8% of the respondents agree that the warehouse team works hard in reduction of stock out. This shows that the warehouse works hard in reduction of stock which in the other hand shows the productivity of the warehouse workers.

The fifth productivity indicator tried to measure whether the company has proper office setup (i.e. furniture's, copiers, printers & stationary materials) in a warehouse for warehouse workers. Towards this statement, 1.8 % of the respondents disagree, 12.3 % of the respondent neutral, 63 % of the respondents agree and 23 % are strongly agree. The majority of the respondents (86%) agree that the company has proper office setup in the warehouse for warehouse workers. This implies that the company has good set up of an office for the workers which if separated from the storage area. However, during the researcher observation, the researcher observed that the number of the warehouse employees and the office size doesn't match. This could result in decrease of employee productivity as the working office over crowded.

The last productivity indicator of the above table is asking the respondents whether the warehouse personnel's are skillful in performing order picking process without significant errors or not. The respondents reply their level of agreement as follows: 28.1 % of the respondents disagree, 21.1 % of the respondent neutral, 39 % of the respondents agree and 12 % are strongly agree. 51% of the respondents indicates that the warehouse personnel's are skill full in order picking process without significant errors. This shows that the warehouse workers are doing things in the right way each time, instead of taking shortcuts, they go a long way to ensuring a more accurate order picking process that increases productivity. This also implies that the warehouse team are skill full to choose the correct picking methods as well as follow the best order picking practices.

4.3.5 Respondents' Perception on Asset Management Indicator

Table 4.7. Respondents' Perception on Asset Management Indicator

No	Asset Management indicator	SD		DA		N		A		SA	
		N	%	N	%	N	%	N	%	N	%
1	In our company, there is a proper fixed asset management follow up.	0	0	33	57.9	0	0	20	35	4	7
2	The company has proper procedures for disposal of obsolete/damaged goods/assets.	16	28	19	33.3	9	15.8	11	19	2	3.5
3	In our company, there is a proper utilization of fixed asset/property.	3	5.3	10	17.5	19	33.3	22	39	3	5.3
4	In our company, comprehensive fixed asset inventory exists with proper reconciliation process.	19	33	20	35.1	6	10.5	9	16	3	5.3
5	The company adopts asset management practices (i.e. asset management software solutions or automated tracking methods) that produce reports for efficient fixed asset follow up.	25	44	21	36.8	3	5.3	8	14	0	0

Source: Data from response, (2019)

The respondents were asked to give response towards the asset management indicator of Birhan bank S.C warehousing operations. Asset management is one of the indicator that is used to measure the efficiency and effectiveness of the company warehouse. Five asset management indicator statements are mentioned in the above table.

The first asset management indicator is about there is fixed asset management follow up. The respondents were asked to mention their level of agreements whether the company has proper fixed asset management follow up or not. Based on the statement provided, 57.9 % of the respondents disagree, 35 % of the respondents agree and 7 % are strongly agree. Majority of respondents indicates that the company doesn't have proper fixed asset management follow up. This shows that, the company is still late in developing proper fixed asset management follow up. As the result, the company could not track an information's about location, quantity, condition, Maintenance schedules and depreciation status of the fixed assets in company.

The second statement for asset management indicator is about proper procedures for disposal of obsolete/damaged goods/assets. So, the respondents were asked to mention their level of agreement whether the company has proper procedure for disposal of obsolete/damaged goods/assets in their system.

28 % of the respondents strongly disagree, 33.3 % of the respondents disagree, 15.8 % of the respondent neutral, 19 % of the respondents agree and 3.5 % are strongly agree. Among the total respondents, 61.3% of them have noticed that the company doesn't have proper procedures for disposal of obsolete/damaged goods/assets. The respondents also mentioned in open ended questionnaire that lack of administrative procedure for disposal of damaged/obsolete fixed assets is one of the major warehouse challenges. This indicates that there is no administrative procedure for disposal of unneeded or obsolete fixed assets. This shows that there is no way that identify & highlight surplus or damaged assets (property, equipment's) for disposal. The company cannot be cost effectiveness and might leads to poor environmental practices

The third statement regarding the asset management indicator is about a proper utilization of fixed asset/property. The respondents were asked to rate their agreement level towards the statement: if the company utilizes the fixed asset/property in a proper way. Accordingly, 5.3 % of the respondents strongly disagree, 17.5 % of the respondents disagree, 33.3 % of the respondent neutral, 39 % of the respondents agree and 5.3 % are strongly agree. Majority of the respondents (44.3%) indicates that the company utilizes its asset management properly. This implies that the company uses its fixed asset/property properly even though there is no proper follow up and administrative procedures for asset management.

The fourth asset management indicator is asking the respondents if there is comprehensive fixed asset inventory exists with proper reconciliation process in their company. As per their feedback, 33 % of the respondents strongly disagree, 35.1 % of the respondents disagree, 10.5 % of the respondent neutral, 16 % of the respondents agree and 5.3 % are strongly agree. 68.1% of the respondents indicates that there is no comprehensive fixed asset inventory exists with proper reconciliation process in their company. This clearly shows that, the company is not well integrated with other sections like finance department in order to have comprehensive fixed asset inventory with proper reconciliation process.

The last asset management indicator is about if the company adopts asset management practices (i.e. asset management software solutions or automated tracking methods) that produce reports for efficient fixed asset follow up. Depend on the statement mentioned here, 44 % of the respondents strongly disagree, 36.8 % of the respondents disagree, 5.3 % of the respondent neutral, 14 % of the respondents agree. From the total respondents, 80.8% of the respondents are indicating that the company did not adopts asset management practices (i.e. asset management software solutions or automated tracking methods) that produce reports for efficient fixed asset follow up.

This shows that the company doesn't have asset management software solutions or automated tracking system that generate reports or provide information's regarding the status, quantity, etc. of the assets.

4.3.6 Major warehouse management challenges

Table 4.8. Summary of Major warehouse management challenges

No	Major warehouse management challenges	No of respondents	Percentage of Respondents
1	No ERP system/no well-developed technology for warehouse inventory control	40	70.2
2	warehouse layout/design	20	35.1
3	Employees skill	12	21.1
4	No procedure for disposal of old/broken/nonfunctioning assets	18	31.6
5	No training for staff	15	26.3
6	warehouse space is not enough	10	17.5

Source: Data from response, (2019)

Majority of the respondents indicated that the company lacks Enterprise Resource Planning (ERP) or any well developed technology that is used for warehouse inventory controlling. This implies that the company cannot generate any report electronically with the support of information provided into the system. On the other hand, the company warehouse cannot have synchronization with other sections of the company and this have an impact on the efficiency and effectiveness of warehousing operations.

Warehouse layout or design is the second challenge that 35% of respondents indicated in the open ended questionnaire section. Warehouse layout design is a highly important factor in creating an effective and efficient operation. The limitations to the warehouse space is also one of the challenge observed and has a link with warehouse design or layout.

If the layout of a warehouse is designed poorly and lacks efficiency, the receiving and dispatching areas are likely affected and leads to inefficiency and ineffectiveness of the warehouse operations.

The respondents mentioned that employees' skill is another challenge that stated in the lists of observations. This shows that, lack of training (could be on job training or specific training) are not provided to the warehouse team and leads to the warehouse employee less productivity.

The researcher visits Birhan Bank S.C central warehouse that is located at Gerji area and made physical observations to the warehouse compound, inside the warehouse, the office and working area of the warehouse. The following areas of the observation result are stated here.

(1) the warehouse access and location: currently, accessing the company warehouse is a challenging issue due to the road that is under construction. Location wise, the warehouse exist in a good location. (2) Shelves and allocation of store materials: as the size of the company warehouse is not too big, the goods are allocated in different zones of the warehouse. There are a number of pallets observed within the warehouse with different types of goods. Shelves with different designs are also exist in the warehouse. However, the researcher observed that, the warehouse is not optimized as efficient as possible and conclude that the shelves and allocation of store materials is relatively average. (3) Safety and security condition of the warehouse: during the researcher observation, the safety and material handling equipment's are rarely observed. The researcher observed and considered that the safety and security condition of the company warehouse looks poor. (4) Design/layout of the warehouse: the design/layout of the company warehouse is not properly fit with the company goods that are to be stored. (5) Goods receiving and dispatching area: the company warehouse is full of goods and the goods receiving and dispatching area are all at the same place. There is no any identification that shows the two different areas. Therefore, the researcher considered this part of observation as poor. This can affect the receiving activity of the goods in terms of time, quality, cost and productivity. (6) Warehouse workers Office availability & set up: the researcher found that the office and storage area are completely separated which is good. However, the number warehouse people and the size of the office doesn't match. In addition to this, there is no any backup power supply when there is public power cut which results in employee productivity reduction in many ways.

(7) The management of old/broken/damaged fixed assets of the company: the researcher observed that the company old/broken/damaged fixed assets are damped in one of the shelter at the corner of the warehouse compound. The rest of fixed assets big in size are just exist outside in the warehouse compound. (8) During the researcher visit to the company warehouse, the space exist in the compound of the company warehouse is occupied with a lot of materials like old vehicles, other broken and damaged fixed assets as well different rubbishes thrown out from the warehouse. The researcher mentioned that this part of the observed item list is relatively poor.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

Introduction

This chapter include summary of the findings, conclusion, recommendation and area of further study.

5.1 Summary of Findings

The purpose of this study was to conduct assessment of warehousing operation efficiency and effectiveness in logistics management practices in Berhan Bank S.C. Based on the data analysis, the following major findings were mentioned:

- 45.7% of the respondents indicates that goods are not properly sorted in the company warehouse in the way that avoid risk of spoilage or damage.
- 56% of the respondents mentioned that the order lead time (i.e. Lead time from order placement to shipment) is not well monitored.
- 54.4% of the respondents reacts that orders requested by internal customers are not shipped before or even on committed date.
- From the total respondents, 50.9% of them indicates periodic warehouse inventory reports are not submitted to line manager on time to meet the deadline.
- Majority of the respondents (84.6%) indicates that the company doesn't uses IT tools (e.g. ERP system) for inventory management.
- 52.7% of respondents clearly argue that most of the time, orders are not consolidated for full truck load capacity.
- 64.9% of the respondent's argument shows that there is no system to avoid excess stock that takes up valuable space.
- 54.4% of the respondents indicates that the warehouse management team has no basic knowledge with extensive warehouse management experience that help them to manage the company warehouse.
- The company warehouse workers/employees considered that there is lack trainings that improve their performances (26.3% of the respondent's argument).
- 65.3% of the respondents indicates that there is a no proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.).
- 57.9% of the respondents disagree that the company doesn't have proper fixed asset management follow up system.

- Among the total respondents, 61.3% of them have noticed that the company has no procedure for disposal of goods/equipment's being surplus or isolated for disposal.
- 68.1% of the respondents indicates that there is no comprehensive fixed asset inventory exists with proper reconciliation process with finance department of the company.
- From the total respondents, 80.8% of the respondents were indicated that the company doesn't have any automated tracking system that produce fixed asset management reports for efficient use and follow up.
- The warehouse safety and security condition is also another findings that is observed.
- Warehouse compound space is not properly utilized even though the size is big compare to the volume of the entire warehouse (observation result).
- 35% of the respondents indicates that the warehouse design/layout doesn't allow to perform all the warehousing functions (e.g. Goods receiving and dispatching area are not identified).

5.2 Conclusion

The following conclusions have been drawn on the bases of the findings of the data analysis effort.

From the research findings, the study shows that Birhan Bank S.Co has been operating for a long time almost since 2009. However, warehouse management theories and practices are not given attention by the company business managers. The warehouse management operations has been not taken into account for the success of the company overall operations. The researcher point out that below conclusion points have an impact on the efficiency and effectiveness of the company warehouse operations:

- The research indicates that goods in the company warehouse are not properly sorted in the way that avoid risk of spoilage or damage. If goods are not sorted and kept in proper locations within the warehouse, the quality of goods may get in danger. If the goods are not properly sorted and placed at right place, it affects the warehouse space utilizations (result in cost), and customers order lead time (delays order delivery time).
- Another result of this study clearly shows that the order lead time (i.e. Lead time from order placement to shipment) is not well monitored which in turn result is order delaying and dissatisfy the customer. Within the warehouse operations, order lead time could be delayed due to poor sorting and storage activity, order picking, order preparation and shipment activity.

The above result shows that the order lead time is not well monitored which in turn result is order delaying and dissatisfy the customers. The more customers order delayed the less effectiveness of the warehouse operation.

- In the time indicator, orders requested by internal customers are not shipped before or even on committed date. This implies that the warehouse operation doesn't have chronological schedule where goods ordered by internal customers are delivered on specific time. Customers' orders shipment commitment date could be affected due to delays in goods order picking, preparation, shipping, delivery activities of the warehousing operation. This results in complains from the internal customers, consume the customers time and makes less effective warehousing operations.
- From the finding, Periodic warehouse inventory reports are not submitted to line manager on time to meet the deadline. This indicates that the company uses manually prepared reporting system which is not generated from advanced inventory technology. When reports are in paper based supported by computer applications (words/excel), there always delays and the report doesn't meet the deadline set by the company. The researcher observed that the warehouse people were waiting for public power supply since there is no company owned reserved power supply. This on the other hand pushes the warehouse people to work on hand made report. This results in less efficiency (monetary wise) and effectiveness (time wise) of the company operations.
- The study finding shows that the company doesn't uses IT tools (e.g. ERP system) for inventory management. This implies that the company lacks advanced inventory control technology that assist in inventory management. Warehouse technologies (e.g. ERP system) are used for three main reasons: save storage space, improve productivity, and reduce errors (Aminoff et al., 2002). Implementing best inventory management system is one of the best ways to maintain transparency of stock and assets, keep accounts in line, and create reports for stakeholders. Having advanced IT technology for inventory management helps in forecasting inventory demand, controlling, replenish, etc. Due to this the company cannot monetarily measure the inventory level and total storage costs/units.
- Related to cost/financial indicator, it is observed that customer orders are not consolidated for full truck load capacity. This could be due to the nature of the business that the company holds. However, if goods are not consolidated into full truck capacity, this might results in an increase of distribution costs including the transportation and other related costs.

- The finding of this study also shows there is no system to avoid excess stock that takes up valuable space. If the warehouse storage area is occupied with other excess stock that takes available space, the new incoming goods faces space shortage and goods are decided to be placed somewhere else in the warehouse without proper locations. This affects the storage activity of the warehouse operations thus affects the efficiency of the warehouse in terms of cost (having excess stock in the warehouse which takes up valuable space leads to inventory holding cost).
- From the research findings, the warehouse management team lacks basic knowledge with extensive warehouse management experience that help them to manage the company warehouse. If the company doesn't allocate right number of people in the right place and at the right time to produce quality work, the warehouses with less skilled and less experienced employees result in high labour cost, low productivity and less profits.
- In connection to warehouse team basic knowledge and experience, the finding shows that there is lack of related trainings that improve their warehousing management performances. If the warehouse workers/employees lacks training that improve their skills, the staff performance become low and leads to poor warehousing efficiency and effectiveness.
- One of the other finding is that, there is a no proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.). With the absence of integrated information system, the warehouse activities visibility become difficult. The information sharing culture become loose and the communication between all the warehousing and the other sections of the company become effective only if there is proper integrated information system.
- The study shows that the company doesn't have proper fixed asset management follow up system. Fixed Assets are procured, operated, maintained and disposed of efficiently to provide optimum economic and social benefits to the Society. Asset Management involves processes of planning and monitoring physical assets during their useful lives to the company. Managing assets effectively requires a high level of management interest.

The main objective of asset management is to achieve the least cost solution for acquisition, use, maintenance and disposal of assets in line with the company objectives however, if there is no proper fixed assets management follow up system the main objective of asset management could not be obtained.

- The result of study analysis shows that the company has no procedure for disposal of goods/equipment's being surplus or isolated for disposal. The disposal of the fixed asset is reasonable at the time (e.g. the asset is no longer required by the company and cannot be reasonably reallocated to another user within the similar business firm). However, if there is no fixed asset disposal administrative procedures from the company, several holding cost become noticeable. It also affect the environment of the warehouse as well the human health. This leads to inefficiency and ineffectiveness of the case company warehousing operation directly and indirectly.
- The descriptive analysis shows that the company doesn't have comprehensive fixed asset inventory that exists with proper reconciliation process with the company finance section. By having comprehensive fixed asset inventory with technology supported software, the company would have proper asset accounting so that inventory quantity matches sales figures so that proper reconciliation process with the company finance section.
- The absence of advance technology software (automated fixed asset inventory tracking system) result in low performance in tracking a number of fixed assets that are owned by the company name. The responsible department for fixed asset registry and follow up cannot generate fixed asset status reports that leads to inefficient and ineffective use and follow up of fixed asset.
- In this study findings, safety and security of warehouse is found to be poor. Implementing safety precautions are one of the necessary standards that should be implemented in warehouse operations. In the warehouses, mechanical appliances should be used to load and unload the goods. The Security of stock and fixed assets exist in the warehouse and warehouse compound should have be well controlled to safeguard the goods/assets. if there is no proper safety and security of warehouse, it results in accident on warehouse workers and loss of materials. It also increases wastages in handling of goods and overall handling costs.
- The study found that the warehouse compound space is not properly utilized even though the size is big compare to the volume of the entire warehouse. In order the company to run a successful warehouse, it's essential that company warehouse should have enough space inside/outside the building to keep all the goods in proper order without clutter. Not only will this improve organization of the warehouse goods, but will promote the effective movement of goods.

Where there are no available space or storage areas, there are the chances of creating transaction errors, product will become more susceptible to damage both from remaining on the ground, as well as being moved multiple times (Smart turn Inc., 2014).

- The company warehouse layout/design is found to be one the challenges indicated in the study findings. Warehouse layout design is a highly important factor in creating an effective and efficient warehousing operation. If the layout of a warehouse is designed poorly and lacks efficiency, two of the areas that are likely to suffer the most would have to be the fulfillment area and dispatch area (Sykes, 2017). If the warehouse is not properly designed, it could ultimately cost time of the workers causing the overall labor costs to increase.

5.3 Recommendations

In today's world, warehouse management is considered as an indivisible part of all business. If Birhan Bank S.C warehouses is effectively and efficiently organized and managed, the warehouse would have proper sorting of materials, good order lead time management, could deliver safe custody of materials, clear monitoring and accountability, distribution of the right goods at the right time whenever required in the right condition to all user departments, 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.

Based on the results of the study, the following recommendations are suggested for consideration:

- It is reported that goods are not sorted in the warehouse properly. Within the warehouse goods of different types, sizes, or conditions should be sorted in the way that avoid risk of spoilage or damage to the goods and employees. The warehouse team should know how the sorting activity takes place and the layout of the warehouse should allow them to perform the sorting activity properly.
- The issue of order lead time should be given priority as it affects the whole warehousing operation. Customer lead time could be delayed due to stock outs, shipping delays, to many process and disorganized warehouse. Within the warehouse operations, order lead time could be delayed due to poor sorting and storage activity, order picking, order preparation and shipment activity which result in order delaying and dissatisfy the customers. So, the company warehouse team should know and manage goods sorting, storage, order picking, order preparation and shipment activity properly.

so that the order lead time within warehouse could be reduced in terms of time. The more customers order delayed the less effectiveness of the warehouse operation.

- Meeting customer's expectations and delivery requirements has to be a priority for every business. Orders should be shipped accurately and arrive on-time. Not respecting order lead time and delaying order delivery is the symptom of poor procurement efficiency and materials handling procedures within the warehouse. On-time delivery (OTD) is the main metric to measure the efficiency of supply chain processes in the company. Therefore, the company should have proper order schedules that assist the warehouse team and as well the customers so that on time delivery of goods to customers increases the customers' satisfactions.
- Periodic warehouse inventory reports should be submitted to line manager on time to meet the deadline. In order to perform proper inventory report, an Inventory Management Software should be implemented which assist the warehouse team to extract an information about all the transactions appeared in the warehouse. Proper power supply should be installed by the company as it is one of the challenge observed in working office. If periodic warehouse report is submitted on time, then the company become more efficient (monetary wise) and effective (time wise).
- It is observed that the company warehouse management lacks modern ICT (like ERP system) blessings to operate more efficiently and effectively. ICT (like ERP system) is valuable logistics tool and has applications in key areas such as automatic stock control (order point), modeling of proposed changes to warehouse and operational process. If the company implements ICT software (like ERP system), storage and distribution function can benefit from these technologies. ICT has a vital role within storage & distribution function and without it, the logistic management could not operate as efficiently and effectively as it have big role in today's environments.

The introduction of warehouse management systems (WMS) through ERP system could enable all the activities of the Birhan Bank S.C warehouse to be controlled and better synchronized with other logistics functions (like procurement, finance and transport section) of the company which will lead to the reduction in wasted time and effort and can also enable the use of different types of storage and handling systems. The use of ICTs software (like ERP system) technology will definitely increase the visibility, traceability and security of materials and equipment's. Therefore, the use of ICT software (like ERP system) could contribute to improved warehouse efficiencies and effectiveness at Birhan Bank S.C.

- Regarding customer orders full truck load capacity, even though the company business nature doesn't allow the full capacity truck load, the company could assume the best practice that could be cost efficient which lower the risk of damaged to goods and satisfy customers need. Goods transportation/shipment is one of the key area that cost should be monitored in order to be efficient.
- (System to avoid excess stock that takes up valuable space). Goods within the warehouse should be identified as slow moving, fast moving or unusable. These goods should be handled in accordance with a procedure of the company which involves at least the physical segregation of such goods in a dedicated area so that the valuable space in the warehouse will not be occupied with excess stock and cost related to valuable space could be saved.
- Human resource is the most important resource and needs continuous training that can help to up-grade basic knowledge and skills of warehouse managements. Attention should be given to training opportunities and staff development programs with a people who have extensive warehouse management experiences. A research done by Belayhun Begashaw (2016) the study on "Assessment of Warehouse Management of Ethiopian National Defense Main Department of Logistics in Adama City" reveals that human resource is the most important resource and needs continuous training that can help to up-grade knowledge and skills of warehouse managements. If the warehouse workers know their duties and over all warehouse functions which is basic knowledge, it has an advantage to the warehousing operations. This is to make sure that the operations of the warehouse run smoothly.
- Employees working at warehouse should be given specific training to make them conversant to store environment, understand the hazards associated with their work and the procedures to perform the work safely. The company should make training needs assessment for warehouse employees which is important to identify what specific training the warehouse employees need in order to be more efficient and effective in operating the current warehouse operations.
- It is observed that the company warehouse function has no proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.). Well integrated and effective information Systems in WMS is focused on efficient flow of goods through the distribution channel with the help of Information flow with lowest possible cost. Timely and accurate information is critical owing to the following reasons: (1) Information related to order status, product availability, delivery etc.

(2) Information through supply chain is very essential as this can minimize demand uncertainty, (3) there is more flexibility with information as there is clarity as to how, when and where resources may be utilized to gain strategic advantage.

Therefore, the company should ensure that, there is proper integration of information system among the warehouse functions and other logistics functions of the company.

- The company should implement cost effective solutions for fixed asset management follow up through following recommendations from the researcher: (1) Maximizing the service potential of the existing assets, (2) lowering the overall cost of owning assets through the use of life-cycle costing techniques, (3) ensuring a sharper focus on results by establishing clear accountability and responsibility for assets and (4) reduced demand for new assets by adoption of ‘non-asset’ solutions.
- Regarding the fixed asset disposal, the property and facility administration of the company is responsible for identifying & highlighting surplus/damaged assets or property, & equipment for disposal. Obsolete assets should be written off and physically disposed of on an annual basis. A key component of asset management is to take a strategic view of which assets are best retained and efficiently exploited, as well as to identify those which should be disposed of to generate resources for the company.
- The company should have comprehensive fixed asset inventory that exists with proper reconciliation process with finance section.

Having comprehensive fixed asset inventory with technology supported software, the company would have proper asset accounting so that inventory quantity matches sales figures. To manage a profitable business, the management must have information regarding the current location, use, state of repair, and usefulness of its productive assets. The only way that the company can accomplish this is to implement a best practices inventory process which is supported by technology. The fixed asset reconciliation process should start from proper inventory that can provide accurate picture of what assets exist, where they are and their present condition. This provides the basis against which the reconciliation will be developed. Then, the company should introduce the inventory into automated fixed asset inventory technology that can connect finance and the data. Correlation step will be followed and material discrepancies can easily traced.

- Having automated inventory monitoring system enhance the registration and follow up fixed assets owned by the company and one can easily generate report that provide information regarding the status of the assets and further actions to be taken.

Therefore, the company should have proper software (like ERP system) that could be easily usable and used for tracking the inventory of fixed assets.

- The Company needs to assess the situation of safety and security conditions and put standards in order to safeguard the warehouse team and goods. Implementing safety precautions will improve the goods handling in the warehouse, for example, firefighting equipment's; fire extinguishers and notices like "No smoking", "Authorized Personnel's only" signals must be placed in or around the entire warehouses. An effective warehouse is one that is equipped with machinery that makes the handling of the goods easier. When dealing with heavy goods, the warehouse should have lift jacks to carry them. This will make the warehouse more effective in the handling of goods. The researcher recommends that implementing safety and security measures as soon as possible is vital in securing the goods stored in the warehouse and the warehouse employees/workers.
- The warehouse compound space utilizations is one of the observed area in the study. The company have big warehouse compound that can be used properly. However, the space exist is occupied with different old, broken, not used goods/equipment's including vehicles/trucks. The researcher advices to remove all the rubbishes, broken, not used goods/equipment so that the valuable warehouse space compound could be used as additional storage area by building extension rooms for better efficiency and effectiveness of the warehousing operations.
- Warehouse layout/design is a highly important factor in creating an effective and efficient operation within the warehouse. If the layout of a warehouse is designed poorly and lacks efficiency, the receiving and dispatching areas are likely affected and leads to inefficiency and ineffectiveness of the warehouse operations. Storing goods in adequate space with the proper equipment by well trained personnel in a properly planned layout results in maximum protection of items. Therefore, the company should make an assessment of the current warehouse layout/design in order to use of the entire warehouse space as efficient as possible.

5.4 Area for Further Study

The study is under taken only in Birhan Bank S.C central warehouse that is exist in Addis Ababa. However, there are around 185 branches within Ethiopia both in Addis Ababa and regional areas. The company branch warehouse are not considered to asses for this study. Therefore, further research could be carried out on the same or even more in bigger picture on the efficiency and effectiveness of the company warehouse operations including the branches exist in Ethiopia.

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ADDIS ABABA UNIVERSITY SCHOOL OF COMERCE
LOGISTICS AND SUPPLY CHAIN MANAGEMENT POSTGRADUATE
DEPARTMENT

QUESTIONNAIRE TO BE FILLED BY BIRHAN BANK S.C PROPERTY AND
FACILITY MANAGEMET SECTION

Dear respondents:

I'm a Postgraduate student at Addis Ababa University School of Commerce in the Department of Logistics and Supply Chain Management. Currently, I'm conducting a research entitled **“Assessment of Warehousing operations Efficiency and Effectiveness in Logistics Management Practice: The case of Berhan Bank S.C”** as a partial requirement for the award of Masters of Art Degree in Logistics and Supply Chain Management. The purpose of this questionnaire is to gather data for the proposed study, and hence you are kindly requested to assist me for the successful completion of the study by providing the necessary information as per the questionnaires' given in all sections. Your participation is entirely voluntary and the questionnaire doesn't require writing of your names. The information you share remain confidential and only used for the aforementioned academic purpose. So, your clear and timely response is vital for the success of the study.

I would like to thank you in advance for your kind cooperation and dedication of your precious time to fill up and return back to me this questionnaire form.

Best Regards,

Abdi Fetene Amenta

Contact: +2519-10-85-23-56

Section A: General Information/Respondents Profile:

Please tick(✓) the box that corresponds with your answer

1. Age

Below 20 years

☐

Between 20-30 years

☐

Between 31 – 40 years

☐

Between 41 – 50 years

☐

Above 50 years

☐

2. Gender

Male

☐

Female

☐

3. Educational Qualification

Below 10th grade

☐

Diploma holder

☐

High School graduate

☐

First Degree holder

☐

Certificates holder

☐

Master's Degree holder &
Above

☐

4. Years of service in the company

Below 2 years

☐

Between 5-6 Years

☐

Between 2-4 Years

☐

Above 6 Years

☐

Section B-1: Please indicate the degree to which you agree with the following statements regarding the warehouse management practice/warehousing operations in your company. *Indicate your choice by putting the check mark (✓) on the appropriate cell for each table.*

Where, 1 = Strongly Disagree (SD), 2 = Disagree (DA), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA).

No	Quality Indicator	Score				
		1	2	3	4	5
1	Most of the time, internal customers' orders are shipped errors free.					
2	In our warehouse, order-picking process is the process of obtaining a right quantity of the right goods for a set of internal customer orders.					
3	Most of the time, goods are properly sorted in our warehouse in the way that avoid risk of spoilage or damage.					
4	Most of the time our warehouse has no inventory discrepancies when bin cards were compared to a physical stock count.					
5	Most of the time, goods are delivered to requestors as per the specification requested.					
6	Most of the time, our warehouse delivers complete quantity of orders to the internal customers					

No	Time Indicator	Score				
		1	2	3	4	5
1	The store keeper is informed of the goods being procured before arrival to warehouse so that unloading time is reduced.					
2	In our warehouse most of the time, Order lead time (i.e. Lead time from order placement to shipment) is well monitored.					
3	Most of the time, orders requested by internal customers are shipped before or on committed date.					
4	In our warehouse management, Dock to stock time (lead time from goods arrival until they are ready for order picking) is perfectly managed.					
5	Periodic Warehouse Inventory Reports are submitted to line manager on time to meet the deadline.					
No	Cost/Financial Indicator	Score				
		1	2	3	4	5
1	The company uses IT tools (e.g. ERP system) for inventory management.					
2	Most of the time, orders are consolidated for full truck load capacity.					
3	Most of the time our warehouse personnel utilizes a reasonable warehouse spaces during the reception of goods.					
4	In our warehouse management, there is a system to avoid excess stock that takes up valuable space.					
5	The company has the procedure for disposal of goods/equipment's being surplus or isolated for disposal.					

No	Productivity Indicator	1	2	3	4	5
1	Our warehouse management team has basic knowledge with extensive warehouse management experience.					
2	In our company warehouse management, there is a proper integration of information system with other logistics functions (like procurement, finance, transportation, etc.).					
3	Most of the time our daily laborer are not idle.					
4	Most of the time, our warehouse team works hard in reduction of stock out (out of stock).					
5	The company has proper office setup (i.e. furniture's, copiers, printers & stationary materials) in a warehouse for warehouse workers.					
6	Warehouse personnel's are skillful in performing order picking process without significant errors.					

		Score				
No	Asset Management Indicator	1	2	3	4	5
1	In our company, there is a proper fixed asset management follow up.					
2	The company has proper procedures for disposal of obsolete/damaged goods/assets.					
3	In our company, there is a proper utilization of fixed asset/property.					
4	In our company, comprehensive fixed asset inventory exists with proper reconciliation process.					
5	The company adopts asset management practices (i.e. asset management software solutions or automated tracking methods) that produce reports t for efficient fixed asset follow up.					

SECTION B-2: Open ended questions.

A. What are the major challenges (internal & external) of Birhan Bank S.C warehouse management practices?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Observation checklist

No	Observation issues	Very good	Good	Average	Poor
1	Warehouse access and location				
2	Shelves and allocation of store materials.				
3	Safety and security condition of the warehouse				
4	Design/layout of the warehouse				
5	Goods receiving and dispatching area				
6	Warehouse workers Office availability & set up				
7	The management of old/broken/damaged fixed assets of the company				
8	Warehouse compound space and utilization				