

Addis Ababa
University
(Since 1950)



THE EFFECT OF LOGISTICS ACTIVITIES ON SALES VOLUME:

The Case of Heineken Breweries S.C, Ethiopia

By

Fikirte Manaye

**ADDIS ABABA UNIVERSITY SCHOOL OF
COMMERCE**

Addis Ababa, Ethiopia

May, 2019

**THE EFFECT OF LOGISTICS ACTIVITIES ON
SALES VOLUME:**

The Case of Heineken Breweries S.C, Ethiopia

**A Thesis Submitted to the AAU School of Commerce of in
Partial Fulfillment of the Requirements for the Degree of
Master of Art in Logistics and Supply Chain Management**

By

Fikirte Manaye

Advisor: Tariku Jebena (PhD)

Addis Ababa, Ethiopia

May, 2019

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

THE EFFECT OF LOGISTICS ACTIVITIES ON
SALES VOLUME:

The Case of Heineken Breweries S.C, Ethiopia

By

Fikirte Manaye

Approved by Board of Examiners

----- Chairman, Graduate Studies -----	----- Signature and date -----
Advisor <u>Tariku Jebena (PhD)</u> Internal Examiner <u>Shiferaw Mitiku (PhD)</u> External Examiner <u>Tadios Mentta (PhD)</u>	Signature and date ----- Signature and date ----- Signature and date -----

DECLARATION

I Fikirte Manaye the undersigned researcher declare that, this thesis entitled the impact of logistics activities on sales volume is my original work and has not been presented for a degree in any other University, and that all the sources of materials used for the thesis have been duly acknowledged.

Name: Fikirte Manaye

Signature:

Date:

CONFIRMATION

This is to certify that the study made by Fikirte Manaye entitled: The Effect of Logistics Activities on Sales Volume in the Case of Heineken Breweries S.C, Ethiopia and submitted in partial fulfillment of the requirements for the Degree of Masters of Arts in Logistics and Supply Chain Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Advisor: Tariku Jebena (PhD)

Signature:

Date:

ACKNOWLEDGEMENT

Above all I would like to thank my Lord God, son of St. Merry who are the reason for my existence and gave me his grace to accomplish this research paper successfully. Then my deepest gratitude goes to my advisor Dr. Tariku Jebena for his important comments and intellectual guidance. I would also like to extend my deepest appreciation to the Heineken company staffs who were involved in this study.

Abstract

The paper has made a study with the objective assessing the effects of logistics activities on sales volume under the five interdependent activities: customer service, inventory management, supply, transportation and warehousing on the level of sales volume in a set up where Heineken Breweries S.C was considered as a population. Accordingly the study raised five hypothesis parallel with the five specific objectives. In order for the study to be able to answer the raised hypothesis quantitative data were collected from secondary data sources from the company data base called Heilite, system data base designed by International Business Machines Corporation and Brewery Comparison System, a system which is used by around 200 global manufacturing companies. Explanatory and descriptive research design were used along with data analysis tool called Statistical package for Social Science with version 24. Regression and correlation analyses were used to investigate the relationship between dependent and independent variables and magnitude of the impact of logistics activities on sales volume. The study found out of a total of five dimensions under examination all except warehouse are statistically significantly affect the sales volume with a 0.05 level of significance. Among those dimensions inventory planning and management has a higher impact therefore the research recommended to give a due attention for inventory planning and management on forecasting accuracy to be based on the trend and current market scenario at the same time the company could also decide whether the three month stock is required or not. The company should also use automated ordering and replenishment software which could also show stock out level. At the same time the company should also consider customer response, supply and transportation in order to improve sales volume.

Key Words: Logistics activities, Inventory planning and management, Sales Volume

Table of Contents

CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of Problem	3
1.3 Objective of the Study	5
1.3.1 General Objective	5
1.3.2 Specific Objectives	6
1.4 Hypothesis	6
1.5 Scope of the study	7
1.6 Significance of the Study	7
1.7 Limitation of the Study	8
1.8 Definition of Concepts	8
1.9 Organization of the Study	9
CHAPTER TWO	10
REVIEW OF RELATED LITERATURE	10
Introduction	10
2.1 Theoretical Literature Review	10
2.1.1 Logistics Management	10
2.1.2 Logistics Activities	11
2.1.3 Logistics Activities and Sales Volume	26
2.1.4 Recent trends in Logistics Practices	27
2.1.5. Logistics excellence matters in winning competitive advantage	28
2.1.6. Logistics Challenges in Ethiopia Manufacturing Firms	29
2.2 Empirical Literature Review	29
2.3 Summary of Literature Review and Research Gap	34
CHAPTER THREE	39
RESEARCH METHODOLOGY	39
Introduction	39
3.1 Description of the Study Area	39
3.2 Research Design	40
3.3 Research Approach	41
3.4 Population of the Study	41

3.5 Sampling Technique	41
3.6 Data Source and Types.....	42
3.7 Validity of Data Sources.....	43
3.8 Data Analysis.....	44
3.9 Model Specification	44
3.10 Variables of the Study and Operational Definition	47
3.11 Operational Variables Measurement and Instrumentation	49
3.12 Ethical Consideration and Data Collection Procedure	49
CHAPTER FOUR	51
DATA PRESENTATION AND ANALYSIS.....	51
Introduction	51
4.1 Descriptive Analysis of Logistics activities of Heineken Breweries S.C.....	51
4.2 The Role of Logistics Activities on Sales Volume in Heineken Breweries S.C.....	57
CHAPTER FIVE	67
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION.....	67
Introduction	67
5.1 Summary of Findings	67
5.2 Conclusion	69
5.3 Recommendations.....	70
5.4 Suggestion for Further Studies.....	72

List of Tables

Table 2.1: Summary of the current study by the researcher -----	34
Table 2.2: Summary of literature review and research gap -----	34
Table 3.1: Indicators of each logistics activities variable in relation to sales volume -----	49
Table 4.1: Descriptive analysis on customer response of Heineken Breweries S.C, Ethiopia --	52
Table 4.2: Descriptive analysis on inventory planning and management of Heineken -----	53
Table 4.3: Descriptive analysis of Supply of Heineken Breweries S.C, Ethiopia -----	54
Table 4.4: Descriptive analysis of Transport of Heineken Breweries S.C, Ethiopia -----	55
Table 4.5: Descriptive analysis on warehouse of Heineken Breweries S.C, Ethiopia -----	56
Table 4.6: Descriptive analysis on sales volume of Heineken Breweries S.C, Ethiopia -----	56
Table 4.7: Tests of outliers by using a Cook's distance -----	57
Table 4.8: Test of normality -----	58
Table 4.9: Collinearity Statistics -----	59
Table 4.10: Pearson correlations matrix -----	60
Table 4.11: Model Determination (ANOVA) -----	63
Table 4.12: Logistics activities and their effect on level of sales volume -----	64
Table 4.13: The determinant factors of logistics activities on sales volume -----	64

List of Figures

Figure 2.1: Interdependent Logistics Activities-----	12
Figure 2.2: Conceptual framework of the study based on the review literature -----	37
Figure 4.1: The normality tests of the error term -----	61
Figure 4.2: Hetroscedasticity Test -----	62

List of Acronyms

AIV	Average inventory value
BCS	Brewery Comparison System
CR	Customer Response
CSP	Customer Service Policy
IBM	International Business Machines
IMF	International Monetary Fund
IP & M	Inventory Planning and Management
JIT	Just in Time
OE	Order Entry
OP	Order Processing
SKU	Stock Keeping Unit
SSP	Supplier Service Policy

CHAPTER ONE

INTRODUCTION

This chapter covers the introduction part that addressed the background information, research questions, the general and specific objectives of the research, the significance and scope of the research, and finally the limitations of the research.

1.1 Background of the Study

Following the liberalization of certain sectors in Ethiopia, one was beer industry. The country becomes battle of strong competition among multinational beverage companies for a bigger share in the expanding market. Comparison among other African countries, South Africa per capita consumption is about 59 liters, and in Kenya it is about 12 liters. However, Ethiopia with its huge population size and a very young demographic, it looks primed to catch up with demand for beer (Jeffrey, 2014).

Logistics as a functional area is used as a channel between what is in to the operation and out to the target market by ensuring right products are avail at the right place, price, time, condition, quality to the right customer. Shortly it is a discipline which ensures smooth flow of inputs to the operation and outputs to potential customers. To make all those events happen, logistics has two main elements; i.e., material handling and physical distribution in which the former takes in to consideration if operation obtains necessary inputs efficiently and the later makes sure if finished products are at the right place (Kong and Choe, 2011). Given the high percentages provided by researchers from 1999 to 2013 and by witnessing lecture book “Logistics and Supply Chain management prepared by Matiws Ensermu (2013), customer response, inventory planning and management, supply, transportation, and warehousing are five main interdependent activities done under those elements to realize if end to end operations are meet which are accomplished by logistics work forces.

For long period of time, whereby demand surpasses the supply, organizations paid no attention to customer value but now the very essence of any business organization is to make money in the form of profit and to be fierce and number one in the competition by continuously working on customer value creation (Cui and Hertz, 2011). Inevitably those company motives are difficult to attain without the collective effort of its basic units; i.e., production, marketing, sales, finance, human resource and corporate relations. Specifically from supply chain integration context, logistics should support every unit in order for the organization could maintain the existing and attract new customers to remain in the competition (Odhiambo *et al*, 2017).

Logistics which is highly related internally with production, marketing, sales and externally with customers, its management should realize if logistics costs are reasonably related to the extent of activities performed which requires performance measurements on customer response, inventory planning and management, supply, transportation, and warehousing with due follow up because logistics is a pipeline to reach out the target market in terms of sales volume to ensure the existence in the market. According to Odhiambo *et al*, (2017) in effective logistics causes competitive loss in the journey to market and now a days intense competition and market saturation forced manufacturing industries to give due attention on logistics activities to access new revenue generation markets and maintain already existed markets everywhere in the world.

Having the above facts in mind which showed the necessity of logistics excellence to exist in the market, it is inevitable to measure performance of logistics in terms of its activities parallel with its impact on level of sales to give organized insight to logistics management for a better decision making. This in turn allows seeing where the company is in terms of its logistics activities; i.e., customer response, inventory planning and management, supply, transportation, and warehousing and further effects on sales volume which deals with profit creation capacity of the firm.

Taking all the above consideration into account, this study wants to assess the effect of logistics activities on level of sales volume at Heineken breweries S.C, Ethiopia. The researcher took Heineken Breweries S.C as where the details in practice were analyzed; i.e., a company which

exists after the acquisition of state owned Harar and Bedele breweries in 2011 and followed by the opening of Kilinto brewery in 2015 with a technical capacity of 4mhl, which is 550khl of Bedele, 500khl of Harar and 3mhl of Kilinto. Bedele brewery S.C which is 483km from Addis Ababa with more than 32 million people produces product Walia, Bedele Regular, Bedele Special, and Sofi brands from 100% natural ingredients and refreshing natural water on 250,000 m² surface coverage in major market in north west, west, south, central and south west of Ethiopia and from abroad USA, Canada, Australia, Israel and Sudan on the other hand Harar Breweries which is 530km east of Addis Ababa is known for producing brands like Harar Beer, Harar Draught, Sofi, and Buckler. Kilinto, in the outskirts of Addis Ababa, is home to the Walia brands and also produces other brands like Heineken, Walia, Walia Radler, Harar, Bedele, Bedele Special and Sofi (<http://heinekenethiopia.com>, accessed in 2018).

1.2 Statement of Problem

Even though logistics is a decisive factor to channel what the company owns to the rest, companies gave little attention to in and out material movements which ensures the company output to market (Cui and Hertz, 2011). Very recently logistics performance is considered as a critical factor to determine business performance and manufacturing industries are forced to give due attention for logistics activities to access new revenue generation markets and maintain already existed markets because business becomes more of customer oriented due to the availability of many service providers and as more and more firms compete to survive with introduction of products with short life cycle.

As a matter of fact, in-effective logistics causes competitive loss in the journey to market (Odhiambo *et al*, 2017). Major activities in the firm are dependent on logistics performance which is mainly expressed under logistics activities. Under those activities logistics links company with external customers and make sure acquisition costs are minimized to available inventories that can meet customer requirement which are stored in a place where products are safe and ready to use. Taking the customers interest in to consideration the company would also transport its product to the right place.

Operation functioned in the logistics stream will impact the level of sales volume in which the company brings to the market (Daniela and Ovidiu, ND: 38). Hardly existed research on the study area also found out the same. Empirical study in retail industry which were held outside of Ethiopia showed that logistics operation has a significant impact on sales level with empirical validation framework that identifies three constructs of logistics performance; i.e., customer service, operation metrics, and logistics costs taking in to consideration (Hadi and Setiawan, 2013). The result showed if logistics performance is properly managed, the level of sales would also increase; since, logistics cost is properly managed with a due attention, the supervision of logistics performance is maximized in order to minimize high costs due to unnecessary activities. Another study made by Hana Alemu (2016), study on the implication of logistics service quality dimensions on customer satisfaction under seven dimensions of logistics service quality model; i.e., information quality, order procedure, timeliness, order condition, order accuracy, order discrepancy handling and personnel contact quality, found out that there is a positive correlation between the dimensions of logistics service quality and customer satisfaction.

As per the research made by Fekadu Debela (2013), beer industries in Ethiopia are performing in a country where logistics system is characterized by poor logistics management system, lack of coordination of goods transport, low level of development of logistics infrastructure, inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. Besides African countries where Ethiopia is not an exception are suffering largely due to the non-application of the principles of supply chain management practices such as logistics to business activities (Mensah *et al*, 2014). Heineken Ethiopia is not an exception for all the facts said because the company points out lost sales, customer dissatisfaction, interrupted production, low perfect customer order, high working capital, low asset utilization, low operational performance indicator, high overtime costs, excess costs due to rush orders and stock transfer, scrapped goods and aged products as associated liabilities due mainly by logistics practices (Heineken Ethiopia Logistics Process Standard, 2012; Business Comparison System, 2016)

In general, activities of logistics are remarkably expensive, if not controlled effectively, it is the second costly activity in organizations next to cost of goods sold (International Monetary Fund,

2013). For instance, holding stock or inventory in warehouses just in case it is needed is a highly costly activity. The stock itself is expensive and might not sell or could become obsolete. Warehouses and distribution centers generally are expensive to build, operate and maintain. Vehicles to transport goods between warehouses and customers are expensive, in terms of both capital and running costs (Lealt Desta, 2016). Therefore there is a cost imperative to make sure logistics is carried out effectively and efficiently, through the most appropriate allocation of resources parallel to the level of activities performed.

Given the hardly existed researches on the study area along with those all facts led on conclusion that optimization and performance measurements on logistics activities: customer service, computing optimal purchase order quantities, determining optimal product sources, choosing optimal locations for distribution centers, optimizing the placement of products in a warehouse are necessary to sustain growth in the area. Accordingly the researcher became enthusiast to assess logistics activities with requirement of huge investment in terms of their impact on the level of sales volume. How much significant are they to the recorded sales volume the company Heineken Breweries S.C traded to the customers? Does the same conclusion reached like scholars found out, that logistics activities have a contribution for the success of a company, in terms of sales volume? This provides improved and organized information on the logistics activities in assisting the managers to make better decisions on where to focus and improve.

1.3 Objective of the Study

1.3.1 General Objective

The general objective of the study is to assess the effect of logistics activities on sales volume at Heineken breweries S.C, Ethiopia.

1.3.2 Specific Objectives

The specific objectives of the study are: - To assess the effect of -

- Customer response logistics activity on sales volume in the case of Heineken Breweries S.C Ethiopia;
- Inventory planning and management logistics activity on sales volume in the case of Heineken Breweries S.C Ethiopia;
- Supply logistics activity on sales volume in the case of Heineken Breweries S.C Ethiopia;
- Transportation logistics activity on sales volume in the case of Heineken Breweries S.C Ethiopia;
- Warehousing logistics activity on sales volume in the case of Heineken Breweries S.C Ethiopia;

1.4 Hypothesis

H1: Customer response logistics activity has significant effect on the level of sales volume at Heineken Ethiopia.

H2: Inventory planning and management logistics activity has significant effect on the level of sales volume at Heineken Ethiopia.

H3: Supply logistics activity has significant effect on the level of sales volume at Heineken Ethiopia.

H4: Transportation logistics activity has significant effect on the level of sales volume at Heineken Ethiopia.

H5: Warehousing logistics activity has significant effect on the level of sales volume at Heineken Ethiopia.

1.5 Scope of the study

In order to make the study more manageable, it was delimited in concepts or issues, geography and time. Regarding the concepts, it was delimited to the effect of logistics activities on sales volume. Logistic activities encompass with dimensions such as customer response, inventory planning and management, supply, transportation, and warehousing. Geographically the scope of this study was Heineken Breweries S.C, Ethiopia in its provinces located in Harar Brewery S.C, Bedele Brewery S.C and Kilinto Brewery. Concerning the time, the study considered secondary data collected within the period of 2013 to 2018.

1.6 Significance of the Study

This study would provide organized and practical frameworks for company managements on measuring and explaining logistics activities under dimensions of customer response, inventory planning and management, supply, transportation, and warehousing and finally those activity effects on the level sales volume. It enables to specifically indicate which dimension they are good and worst; so that they will decide which element needs due attention and which dimension practice is good to continue with taking in to consideration the level sales volume.

The study would also provide an awareness for beer industries operating in Ethiopia weather logistics activities and practices has effect on sales volume and what could be done to take the best out of this discipline. More importantly this study could break the status quo of opinions which assumes logistics is far to affect sales volume.

Moreover, this study has academic contribution since it will be in use as a stepping stone for further studies in areas of logistics and its impact on sales volume taking in to consideration the hardly found researches on the area of the study.

1.7 Limitation of the Study

Since the research was focused on the selected frame work of logistics activities it is difficult to generalize the finding of the study to all other logistics activities that are described by different researchers and authors. So to improve generalizability the study can be replicated for other logistics activities. It is also difficult to generalize the findings of the study for other industry sectors in Ethiopia. To improve generalizability, the study could also be replicated in other industry sectors.

Lack of sufficient pre-existing research on the topic of the study in the case of Ethiopia beer industry were a main constraints as most of the studies focuses on one of the logistics dimensions with different objective.

1.8 Definition of Concepts

- **Logistics:** is the flow of material, information, and money between consumers and suppliers.
- **Logistics Performance:** is a position where the company is in terms of computing optimal purchase order quantities, determining optimal product sources, choosing optimal locations for distribution centers, optimizing the placement of products in a warehouse.
- **Logistics Activities:** interdependent activities performed within logistics discipline to make sure inputs to production are ready, smooth flow of process is held and finally outputs are delivered to potential customers to realize aimed level of sales volume by the manufacturer includes customer response, inventory planning and management, supply, transportation and warehousing.
- **Customer Service Policy:** a policy which binds activities between the buyer and seller that enhance or facilitate the sale or use of the seller's products or services.
- **Customer Response:** the reaction by the organization to the queries and activities of the customer. Dealing with these queries intelligently is very important as small misunderstandings could convey unlike perceptions. It can also be defined a positive or negative feedback a company receives about its products, services or business ethics. A

consumer response can be solicited by the company or initiated by a consumer. The response can include a letter or answers to questions about a product or issue within the company.

- **Inventory planning and management:** is the art of determining inventory level that will meet the customer service policy requirements stipulated in the customer service policy through forecasting, order quantity engineering, service level optimization, replenishment planning and inventory deployment.
- **Supply:** the process of building inventory to the targets established in inventory planning through sourcing, supplier integration, purchase order processing, buying and payment so that customer requirements can be satisfied.
- **Transportation:** links all pick-up and delivery -to points within the response time requirements of the customer service policy and sources of supply chosen in sourcing with the customers.
- **Warehousing:** is the act of inventory receiving, storage, order picking and shipping
- **Sales Volume:** quantity of beer sold i.e. delivered to customers

1.9 Organization of the Study

This research organized in to five chapters. Chapter one presents the introductory part of the study among others, the background of the study, statement of the problem along with objectives and hypothesis. Chapter two consists of the review of related literature and chapter-three gives specifications and the reason behind the selection of research methodologies whereas the analysis of the data, presentation of the results and corresponding discussions is under Chapter four. Chapter five culminates the thesis with a brief conclusions and relevant suggestions on the basis of the findings of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

A literature review is based on the assumption that knowledge accumulates and can be learnt from and built upon what others have done. Which allow demonstration and identification of variables which are important to answer research hypothesis and closing the gaps which is mentioned in section of statement of the problem. Therefore this section provides theoretical as well as empirical foundations of the research.

2.1 Theoretical Literature Review

2.1.1 Logistics Management

Logistics management, according to the Council of Logistics Management (1991), is the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements.

Most commonly said definition of the term logistics is the flow of material, information, and money between consumers and suppliers which is accompanied by logistics management for strategically managing the procurement, movement and storage of materials, parts and finished inventory through the organization and marketing channels in such a way that current and future profitability are maximized through the cost effective fulfillment of orders.

According to IMF report (2013), logistics with average cost of about 12 percent from world total domestic product i.e. highest cost of company after calculating cost of goods sold can also be defined as the process of anticipating customer needs and wants (inventory planning and management), acquiring materials which are in need for production (supply), optimizing services

provided to customer to maintain existing and attract new markets, keeping inputs and outputs till needed by production and potential customers with minimal handling costs (warehousing), and deliver inputs to production site and final products to customers (transportation).

Both cost advantage and value advantage are the issues that can be achieved by effective implementation of logistics management. Furthermore, some new requirements are added to the customer expectations that were not essential to consider before. In addition to the product requirements, customers request for a variety of services. Occasionally these services become more vital in the eyes of customers rather than product itself, i.e. it is harder to maintain a competitive edge through the product itself. In a situation like this it is customer service that can provide the distinctive difference between one company's offer and that of its competitors (Lealt Desta, 2016) as cited from (Christopher, 2005).

2.1.2 Logistics Activities

The scope of logistics in 21st go beyond the traditional scale of transportation and warehousing to include many sub activities under the broader inbound and outbound activities in which the former deals with movement of materials from supply point directly to production process or to warehouse till it is in need for production. On the other hand the latter give due attention on movements and storage of production outputs i.e. finished products directly after production or from warehouse as per customer requirement (Luchen and Notteboom, 2011). Accordingly inbound logistics consists of activities such as supply, inbound transportation, receiving, warehousing, material handling, inventory management and control, packaging, communication and information management and outbound logistics consists of finished product inventory management, order processing, outbound transportation, customer service, demand management, and distribution of finished products. Which can be described shortly as a discipline consists of series of activities from procurement at the beginning of operation to physical distribution (Luchen and Notteboom, 2011).

As per Nege *et al*, (2016), generally there are eighteen logistics activities in common i.e. order processing, procurement, inventory management, packaging, transportation, warehousing, material handling, customer service, demand management, communication and information

management, facility network, production and production schedule, maintenance, reverse logistics, salvage and scrap disposal, recycling, quality control, plant location and make or buy decisions. Accordingly they conduct questionnaires with 353 managers from 122 private manufacturing firms in garment industry held in Myanmar, Thailand which helped them to reach in the conclusion regarding logistics activities and factors affecting those activities. More importantly they summarized different researchers finding from 1999 to 2013 i.e. (Ballou, 1999; Stock and Lambert, 2001; Kent, 2001; Frazelle and Bowersox, 2002; Dimitrov, 2005; Ismail *et al*, 2012; Ismail *et al*, 2013). Ranking was given to those lists of activities in logistics. As a matter of fact 13% of the researchers were voted as inventory management and transportation are part of logistics activities while 11% of the studies were goes to warehousing as logistics operation, 10% went for procurement, 9% packaging, 8% order processing, 7% customer service, 6% communication and information management to the list 1% which goes to maintenance.

However given the high percentages provided by researchers from 1999 to 2013 and by witnessing lecture book “Logistics and Supply Chain management prepared by Matiws Ensermu (2013), this study focused on the interdependent logistics activities namely customer response, inventory planning and management, supply, transportation, and warehousing.

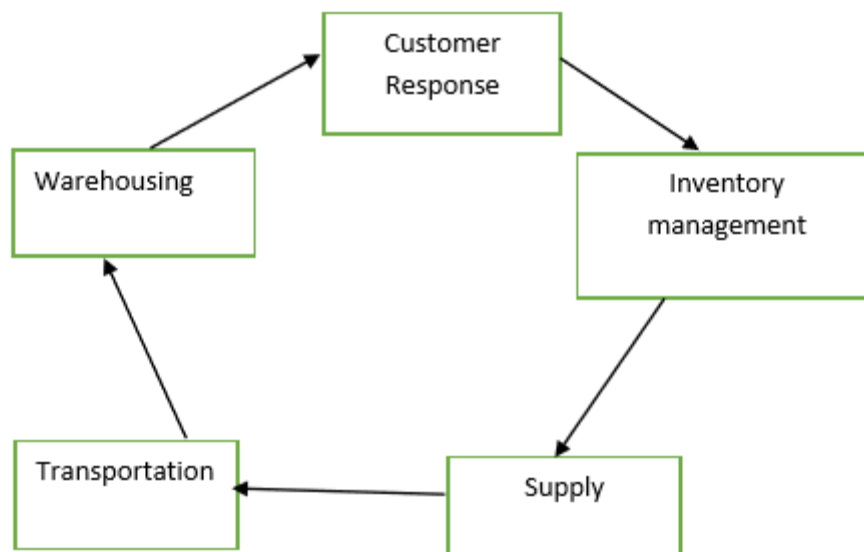


Figure 2.1: Interdependent Logistics Activities adopted from Matiws Ensermu (2013), Melkamu Ayenew (2016) as referred from Frazelle (2002) and Kent (2001)

I. Customer Response

Customer response links logistics externally to the customer base and internally to sales and marketing. Customer response is optimized when the customer service policy (CSP) yielding the lowest cost of lost sales, inventory carrying, and distribution is identified and executed. The logistics of customer response includes activities developing and maintaining a customer service policy, monitoring customer satisfaction, order entry (OE), order processing (OP), and invoicing and collections (Matiwos Ensermu, 2013).

For long period of time, whereby demand surpass the supply, organizations paid no attention to customer value. As cited by Melkamu Ayenew (2016) from Ronald (1997), he witnessed that customers are now in the position to decide who should stay in the market and who should leave because customers are key stakeholders in organizations and their satisfaction is a priority for sustainable growth. Accordingly the organizations needs to balance customer requirements to quickly respond to their needs given right quality product at lowest possible cost at the right time with a need to be profitable.

The power of customers was also described by Lee *et al*, (2011) as satisfied customers are a great source to increase profitability. That is because satisfied customers are likely to commit to the organization who provide service and/or goods, while dissatisfied customers complain more and repurchase less. Keiningham *et al*, (2006) have also describe the concept of Lee in different terms but with the similar meaning, satisfaction with a service or service provider may be a strong incentive for customers to maintain or increase current retention rate, dissatisfaction with a service or service provider may be a strong incentive to exit from the interaction.

Constraints of infrastructure in Ethiopia along with seasonality of beer consumption habit and short life cycle of products, makes customer response aspect of logistics activity crucial. Those facts will warn the service providers to measure the level of customer satisfaction and make on time corrective action to stay in the business is advisable.

As explained by Hana Alemu (2016) cited from Mentzer *et al*, (2001), the most important and critical aspect of customer response is in the physical distribution of the product, which is providing the right product in the right place and at the right time, followed by motivating the

success of the service facilitator to complete physical distribution. Having those two components together, they identified nine pillars to evaluate customer response logistics activity. Which includes personnel contact quality, order release quantities, information quality, ordering procedure, order accuracy, order condition, order quality, order discrepancy handling, and timeliness under customer response activities i.e. developing and maintaining a customer service policy, monitoring customer satisfaction, order entry, order processing, invoicing and collection.

The primary indicator for CR is the number of customer orders processed as per the agreed time frame with customers (Matiwos Ensermu, 2013). Having the developed framework for customer response as adopted by Alemu (2016) cited from Huang, Kuo & Xu (2009) along with Brewery Comparison System (2016) of Heineken Breweries S.C, which is the way of working for more than 200 manufacturing companies globally, this research adopted the below indicators

❖ **Perfect Customer Order: On-time, In-full and Product Availability**

The relative number of customer orders that were available to deliver, delivered on time and in full compared to the initial customer request. Initial customer demand for the purposes of product availability refers to the order quantities and Stock Keeping Units (SKUs) initially requested by a customer. Orders recorded (and subsequently delivered) per initial customer specification count towards product availability; orders placed for quantities or/and selections different from what the customer initially requested do not count towards product availability.

On time: The number of orders that is delivered within the confirmed time window.

In full: The number of orders that is delivered according to the confirmed order in the right quantities and without any product damages.

Product Availability: The number of orders that can be delivered (or, that is confirmed) according to the initial customers demand.

Required data

A. Number of orders confirmed according to initial customer requirement

- B. Number of orders delivered in full
- C. Number of orders delivered within the agreed time window
- D. Total number of orders delivered to the customers

Calculation of PCO

$$\text{On Time} = (C/D)$$

$$\text{In Full} = (B/D)$$

$$\text{Product Availability} = (A/D)$$

$$\text{PCO} = (A/D) * (B/D) * (C/D)$$

II. Inventory Planning and Management

The objective of IP&M is to determine and maintain the lowest inventory levels possible that will meet the customer service policy requirements stipulated in the customer service policy. The logistics of inventory planning and management includes forecasting, order quantity engineering, service level optimization, and replenishment planning and inventory deployment (Matiwos Ensermu, 2013).

As witnessed by Melkamu Ayenew (2016) from the study of Sahay and Ramneesh (2003), the very reason of holding inventories is to improve customer services, hedging against price changes and contingencies, achieving production, purchase and transportation economies, protecting against demand and lead time uncertainties, and balancing supply and demand.

The two essential questions to address in inventory planning are “When to order/deliver?” and “How much to order?” One is time-related and the other is quantity-related. There are a number of material planning methods, which answer these two questions in different ways and can be categorized as working with dependent or independent demand. Materials requirements planning is the best known and most widely used method for dependent demand. Re-order point method,

fixed order interval method, runout time planning, and kanban are common methods for independent demand (Jonsson, 2008), cited from (Vollmann *et al*, 2005).

Inventory planning methods have a number of different replenishment mechanisms (reorder points, replenishment intervals, run-out times, number of kanbans and the MRP calculation). However, they also include several common planning parameters, for example safety stocks, lead times and order quantities (Jonsson, 2008).

The performance of the inventory planning method can be estimated in different ways. Firstly, it should constitute a good basis for achieving high operational performances, in terms of costs, tied-up capital and customer service. Secondly, it should be user friendly, i.e. easy to understand and use and efficient to operate. Operational performances could be expected to be lower if a method is used in an inappropriate environment (Jonsson, 2008) cited from (Krajewski *et al*, 1987) and (Berry and Hill, 1992).

The very reason behind all those thoughts is the expected demand variation and the need to fulfill customer requirements which is revenue generation segment. Demand variation can be defined as day to day fluctuation of demand which needs adjustment to the change in the turbulent environment. Inventories can improve firms' responsiveness to customer demand, but this is accomplished at cost. Some firms have successfully employed "timely response" strategies to reduce demand variation, usually involving the extensive use of Information Systems for data collection and demand forecasting. There are two types of demand variation i.e. predictable demand variation (season, quality, price, special occasion) and unpredictable demand variation. Demand variation effect can be reviewed as normal production versus normal demand and special demand (Rabbi *et al*, 2013).

Customer satisfaction is the way the customer thinks about the company and deals with the meeting or exceeding of expectation over the lifetime of the products and/or services. A company's loyalty and product repurchase comes from achieving customer satisfaction. The study of customer satisfaction has shown that there could be a disproportional relationship between cause and effect, or between a factor and its consequence on the organization. For instance, a five percent increase in loyalty can increase profits by 25 to 85 percent (Eckert, 2007) cited from (Cacioappo, 2000).

Having the developed framework for inventory planning and management logistics activity as adopted by Melkamu Ayenew (2016) from the study of Reid and Sanders (2007) and Rabbi *et al*, (2013) along with Brewery Comparison System (2016) way of working for more than 200 manufacturing companies, the research adopted the below indicators

❖ Forecasting Bias (Forecast Accuracy)

Forecasting bias is a measurement of structural one-sided deviations between forecasted and actual volumes. It shows the tendency of forecast to systematically over- or under-estimate the demand. Consistent Forecast bias shows a tendency to structurally overstock, with additional costs, or under-stock, with negative consequences for customer service level.

Required data

Ai. Volume Traded Actual (actual sales volume) in HL per SKU in the specific month.

Bi. Most recent monthly forecast for Volume Traded (sales volume) in HL per SKU generated in the previous month

i. Identification of a specific SKU

n. Number of SKUs that are forecasted by the operating company

(Bi - Ai). The absolute value of the difference between the Forecasted Volume Traded (Bi) for the specific month and the realized Volume Traded (Ai) per SKU in the specific month.

$\sum_{i=1}^n (Bi - Ai)$. The sum of differences for all SKUs in the specific month

$\sum_{i=1}^n (Ai)$. The sum of Volume Traded Actual in HL of all SKUs in the specific month.

Calculation method

Forecasting Bias = $\sum_{i=1}^n (Bi - Ai) / \sum_{i=1}^n Ai$

A negative value ($< 0\%$) shows there is a negative bias: there is a tendency for under forecasting, where actual demand (Volume Traded Actual) is higher than expected.

A positive value ($> 0\%$) shows there is a positive bias: there is a tendency for over forecasting, where real Volume Traded is lower than expected.

A zero value ($=0\%$) shows there is no recognizable bias, as the frequency and extent of over forecasting and under forecasting is equal.

Such calculation can be made on weekly, monthly or quarterly basis so that the company can know the structural tendency to over or under the forecasting bias which will enable to adjust the company target as per actual demand, not to have lost sales and obsolete finished products.

❖ **Finished Product Stock Level**

Finished Product which is beverages, either produced in the one of the separate legal entities or purchased from each other as finished product.

Finished product stock level is the average monthly stock level of finished products expressed in working days of actual sales (Volume Traded) in the specific month.

Finished products stock levels will be measured by using the average stocks at the end each week of the specific month and compare them with the actual traded volume in the specific month. A standard number of 21 days will be used for the calculation which is considering the normal working days in the specific month.

Required data

A. Average Inventory in HL of each SKU in the month owned by the legally separated entities. Average inventory is calculated by taking the average of the end of the month Inventory in HL of each SKU.

B. Actual traded in HLs of each SKU in the month.

C. Standard number of days= 21 days

Calculation

$$\text{Finished products stock level} = \sum A / \sum B * C$$

- $\sum A$ = Total HL of month average entities owned inventory for all SKUs
- $\sum B$ = Total volume in HLs actual volume traded for all SKUs for the month

III. Supply

Supply is the process of building inventory (through manufacturing and/or procurement) to the targets established in inventory planning. The objective of supply management is to minimize the total acquisition cost while meeting the availability, response time, and quality requirements stipulated in the customer service policy and the inventory planning. The logistics of supply include developing and maintaining a supplier service policy (SSP), sourcing, supplier integration, purchase order processing, buying and payment (Matiwos Ensermu, 2013).

The classic definition of the overall procurement function is to obtain materials of the right quality in the right quantity from the right source delivered to the right place at the right time at the right price (Belay Tariku, 2016) as cited from (Lysons, 1992). As per his witness, Tariku, also mentions procurement function stands:

- I. To make the maximum contribution to the competitiveness, profitability and survival of the organization.
- II. To ensure continuity of supplies to meet the requirements of production and all other functions.
- III. To buy industrial equipment, materials, supplies and services at the lowest cost commensurate with acceptable standards of quality and delivery.
- IV. To ensure that investment in inventory is at the lowest level compatible with safety.
- V. To keep losses in inventory arising from duplication, waste deterioration, obsolescence or pilferage to a minimum and dispose of surplus items on the most favorable terms.
- VI. To build up supplier goodwill by such means as fair dealing, the provision of cooperation and assistance and prompt payment.

- VII. To integrate the purchasing activity with all related functions of the undertaking by working in close collaboration with those function especially concerning the interchange of information and expertise.

Having the developed framework for supply logistics activity as adopted by (Belay Tariku, 2016) cited from (Robert *et al*, 2010) along with Brewery Comparison System (2016) way of working for more than 200 manufacturing companies, the research adopted the below indicator.

❖ **Supplier OTIF: OTIF with vendors**

Supplier OTIF is number of purchase orders for one-way and new returnable packaging materials, raw materials, auxiliary materials that were available, and delivered on time and in full in comparison to the agreed or originally requested purchasing order.

On time: delivery within the agreed time window set by the production unit.

In full: delivery of the promised products in the right quantities and without any defects/damages.

Delivered: physical delivery of the purchased one-way and new returnable packaging materials, raw materials, auxiliary materials at the unit production / unit warehousing.

Required data

- A. Total orders in the month that were delivered in full
- B. Total orders in the month that were delivered in the agreed time window at the right site
- C. Total number of orders delivered during the month

Calculation

Supplier OTIF = $(A/C) * (B/C)$

IV. Transportation

Transportation physically links the sources of supply chosen in sourcing with the customers in which the service provider decided to serve. The objective of transportation is to link all pick-up and delivery -to points within the response time requirements of the customer service policy and the limitations of the transportation infrastructure at the lowest possible cost. The logistics of transportation includes network design and optimization, shipment management, fleet and container management, carrier management, and freight management (Matiwos Ensermu, 2013) Transportation plays a key role in the supply chain, because without the efficient movement of finished goods and raw materials the entire system would not be able to work at its full potential. Transportation is the most important sub-function of logistics that creates time and place utility in goods. Transportation systems and techniques are needed in almost every logistics activity. If even customers and firms could make business easier through e-commerce and Internet, physical delivery still relies on the transportation system to finish the operations (Daniela and Ovidiu, ND:35)

In sub-Saharan African countries, this infrastructure is poorly managed and maintained, very recently about half of the region's paved roads and 70 percent of its unpaved roads were only in a fair to poor condition and required substantial repair. Ayenew (2016) witnessed from Geoff (2006), well established transportation system in the logistics operation will provide effective and efficient operation which in turn will promote service value of the service provider to the customer (Odhiambo *et al*, 2017).

All trucks are considered, owned, leased and third party suppliers finished products and returnable initially shipped with finished products. Arrival is defined as arrival at the gate of the depot or unit warehouse. The below are sub dimensions in which transportation effect on level of sales volume can be reviewed from as per the business comparison report i.e. a report which is used by over 200 manufacturing companies around global supply chain.

Having the developed framework for transportation logistics activity as adopted from Matiwo Ensermu (2013) and Daniela and Ovidiu (ND: 35) along with Brewery Comparison System

(2016) way of working for more than 200 manufacturing companies, the research adopted the below indicators:

❖ **Truck Arrival Time (TAT)**

Truck Arrival time measures the planned arrival time at depots and customer warehouse compared to the actual arrival time at depots and customer warehouse. As per business comparison system (2016) the maximum time window for measurement is 4 hours.

Required data:

- A. Sum of Actual Minutes Too Late Arrivals in Month X for Depots in Month x
- B. Sum of Actual Number of all the Arrivals of Trucks in Month x for Depots in Month x
- C. Sum of Actual Number of Trucks Arriving Too Late In Month x at Depots in Month x

Calculation of TAT:

$$\text{TAT} = (\text{number truck arrival too late}) = C/B$$

$$\text{TAT} = (\text{average minutes too late}) = A/C$$

❖ **Truck Departure Time (TDT)**

Truck Departure Time measures the actual departure time at depot and customer warehouse compared to the planned departure time at depot and customer warehouse.

Required data:

- A. Sum of Actual Minutes of Too Late Departures in Month X for depots
- B. Sum of Actual Trucks Departing In Month x for depots All trucks are considered, owned, leased and third party suppliers
- C. Sum of Actual Departures of Trucks in Month x departing Too late from Depots

Calculation of TDT:

$TDT = (\text{number of truck depart too late}) = C/B$

$TDT = (\text{average minutes too late}) = A/C$

❖ Residence time of Trucks

Truck Residence Time is the time a truck is at a warehouse residence, measured from the moment of entrance at the gate and moment of exit at the gate.

Required data:

- A. Actual Arrival Time at depot
- B. Actual Departure Time at depot
- C. Number of departures of trucks in month from Depots x

Calculation

$TRT: \sum_{n=1}^n ABS(A_n - B_n) / C$

V. Warehousing

Warehousing is the last of the five logistics activities because good planning in the other four activities may eliminate the need for warehousing or may suggest the warehousing activity be outsourced. In addition, a good warehouse plan incorporates the needs of all the other logistics activities. Good or bad, the warehouse ultimately portrays the efficiency or inefficiency of the entire supply chain. The objective of warehousing is to minimize the cost of labor, space, and equipment in the warehouse while meeting the cycle time and shipping accuracy requirements of the customer service policy and the storage capacity requirements of the inventory play. The logistics of warehousing includes receiving, storage, order picking, and shipping. Such activities will directly affect the effectiveness of service provider including quality of logistics service (Ensermu, 2013).

In such dynamic market where service providers are competing to satisfy the unlimited customer needs, proper warehouse management practice becomes more crucial to gain competitive advantage via better customer service and shorter lead time (Melkamu Ayenew, 2016) as witnessed from (Anna *et al*, 2011).

The principal missions of a logistics facility (warehouses, distribution centers, logistics centers, and/or terminals) are throughput and storage. The principal material-handling output is the number of units and/or weight moved. Ideally, the average inventory level is expressed in a common material handling unit of measure such as pallets or cases (Ensermu, 2013).

Hence, as per brewery comparison system (2016), Ensermu (2013) warehouse processes which can impact on level of sales volume can be traced from the accuracy level of receiving, storage, put away, order picking, and shipping of orders to depots and customer warehouses, which also supported by Begashaw (2016) as witnessed from Bereg (2007).

❖ **Receiving Accuracy**

This includes the physical unloading of incoming transport, checking, recording of receipts, and deciding where the received goods are to be put away in the warehouse. It can also include such activities as unpacking and repackaging, quality control checks and temporary quarantine storage for goods awaiting clearance by quality control station.

Required data:

- A. Average Inventory level per month (full product)
- B. Quarantine Items Value (full product)

Calculation

Receiving Accuracy = B/A

❖ **Storage Accuracy**

It includes binning the approved material in their respective locations and/or binning and storing the goods in their respective temporary locations from the receiving docking area.

Required data:

- A. Physical Inventory Count Result per month (full product)
- B. System Inventory Availability per month (full product)
- C. Average Inventory level per month (full product)

Calculation

$$\text{Storage Accuracy} = (B-A)/C$$

❖ **Order Picking Accuracy**

Goods are selected from order picking stock in the required quantities and at the required time to meet customer orders. Picking often involves break bulk operations, when goods are received from suppliers in, say, whole pallet quantities, but ordered by customers in less than pallet quantity. Order picking is important for achieving high levels of customer service. The good design and management of picking systems and operations are consequently vital to effective warehouse performance. Which also includes accurate sorting based on customer order.

Required data:

- A. Volume Traded Actual (hl)
- B. Number of incorrect orders as per Customer requirement (hl)

Calculation

$$\text{Order Picking Accuracy} = B/A$$

❖ Packing and Shipping Accuracy

Picked goods as per the customer order are consolidated and packed according to customer order requirement. It is shipped according to customer orders and respective destinations.

Required data:

- A. Volume Traded Actual (hl)
- B. Warehouse full product breakage (hl)

Calculation

Order Packing and Shipping Accuracy = B/A

2.1.3 Logistics Activities and Sales Volume

Sales is an integrated activity to develop strategic plans that are directed towards an effort to satisfy needs and desires of buyers, in order to make profit-generating sales i.e. it contributes either to increase the profit of business or decrease. Sales is a business or concrete step taken to move a product, whether in the form of goods or services, from producers to target consumers. The main purpose of sales is to bring profits from products or services produced by producers with good management. In practice, the sales alone will not do without their perpetrators such as agents, traders and salespeople along with logistics work forces who are engaged in performing logistics activities (Setiawan and Hadi, 2013).

Logistics oriented to provide customers need while sales give its attention on creating desired profit. The main point to make here is logistics is important for creating desired profit as the smooth running of logistics activities such as inventory, warehousing, transportation, supply of goods is very much determined by how well logistics of company performs in the journey to be able to generate desired profits with minimal logistics costs. In conclusion a good logistics activities practice will result in satisfied customers and buybacks i.e. loyalty to the company product will emerge, at possibly lowest cost, which are momentums towards desired profit (Setiawan and Hadi, 2013).

2.1.4 Recent trends in Logistics Practices

❖ Logistics Integration

As witnessed by Setiawan and Hadi, (2013) from Sople, (2007) logistics as flow of material, information, and money between consumers and suppliers requires proper integration between dimensions of its activities i.e. how individual dimensions get coordinated and work as a system in order to run its operation smoothly for the efficiency and effectiveness of the entire system depends. Such coordination is required for recent business requirements to quickly respond and to be able to reply as soon as the order is made.

✓ Quick response

It is supply chain information systems and provides critical role in industry wide inventory reduction initiatives. According to the witness of Melkamu Ayalew (2016) from Martin (2011) it is a practice which guarantees the right quality product is in the right place at the right time with a main concern of speed and flexibility. Which also has a benefits to reduce lead time and forecast error for fewer inventory holding i.e. less pipeline inventory, and less safety stock.

Despite initiatives to reduce inventory in the supply chain, there remain legitimate, value-added forms of inventory in the supply chain, including service inventory, pipeline inventory, contingency inventory, safety stock, efficient manufacturing inventory, and efficient procurement inventory, in order to respond to the volatile demand in the market.

✓ Just in Time

JIT emphasizes on reduction of waste, continuous improvement, and the synchronization of material flows from within the organization and eventually including the organizations immediate suppliers and customers (Matiwos Ensermu, 2013).

As witnessed by Melkamu Ayalew (2016) from Walter (2008) and Marcia (2000) who argues that demand chain management with effective response management results in high level of customer satisfaction based on the study made on the experiences of 50 manufacturing companies participating in a Government-funded program in Australia. As a matter of fact they found that development of effective logistics practices will require the adoption a range of JIT enabling practices and technologies by manufacturers and upstream suppliers.

2.1.5. Logistics excellence matters in winning competitive advantage

Fast growing and volatile economy in the world born many companies who are competing to take a slice from the table which contains a collection of many more foods. Here the wisdom is to answer the question how to take relatively more and be number one from the market share. This is not an easy task because demand and supply fluctuates and more importantly, companies who want to be truly profitable have to offer up to date service that meets customers' expectations in terms of delivery service, which are constantly growing. Such factors make the logistic system and the related costs, increasingly important and often critical for competitiveness of companies (Caputo, 2006). Companies have to be flexible and offer better service at a better price level and look for ways to reduce costs, improve quality and meet the ever-escalating demands of their customers. To these ends, many of them have identified logistics as an area to build cost and service advantages. Therefore logistics in business aim to reach maximum customer service level, to achieve minimum possible costs, to ensure high quality, and be flexible in the constant market changes (Klimenok, 2017).

Accordingly logistics strategy have main objectives which focused on service quality, right time deliveries and low cost which are in detail services improvement by recognizing that revenues depend on the level of logistics services provided, cost reduction by minimizing the variable costs associated with transports, customer response, warehouse, supply, and inventory handling, capital reduction by minimizing the level of investment in the logistics system and maximizing the return on logistics assets (Daniela and Ovidiu, ND:34-39).

2.1.6. Logistics Challenges in Ethiopia Manufacturing Firms

Logistics system is characterized by poor logistics management system, lack of coordination of goods transport, low level of development of logistics infrastructure, inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. Moreover uncompetitive workforce skill in service provider, mainly governmental, number of fleet vehicles, low efficiency of customs authority which results in lots of delays at check point, long time foreign currency approval waiting time from national bank of Ethiopia, unavailability of local suppliers for imported items, and being land locked country are also features of logistics practice and challenges in Ethiopia (Fekadu Debela, 2013).

For countries like Ethiopia, whose import trade balance exceeds export along with poor trade logistics hampers manufacturers ability to deliver customers need due to unforeseen delays which adds up as logistics cost furtherly will have effect on product price in which the company produces to customers. Due to this the deliver process will be expensive and challenging. This hinders the firms' competitiveness operating in Ethiopia (Melkamu Ayenew, 2016), as cited from (Fasika *et al*, 2014).

2.2 Empirical Literature Review

❖ Logistics and its impact on Company performance

Research conducted by Toyli *et al*, (2008) with the title of Logistics and Financial Performance in Finland. The results of this study indicate that companies that are at the lower level (small companies) are statistically no positive relationship between the performance of the logistics and financial performance. As per the researchers explained on why such result was obtained due to logistics was just beginning get more attention among small and medium companies in Finland and at least in the short term, it might be relatively easy for those companies to gain competitive advantage by focusing more on logistics performance.

Research conducted by Kunadhamraks and Hanaoka (2008) entitled “Evaluating the logistics performance of intermodal transportation in Thailand “. This study used Fuzzy set theory under

Fuzzy - process hierarchy analysis and Fuzzy - multi criteria analysis. In which the previous is used to identify relative significance between attributes (logistic cost, service quality, reliability, and security) in order to level hierarchy while the latter is used to assess the perception of logistics operators from performance through proper assignment of numerical values. The results analyzed using these two methods indicate that the lack of intermodal coordination limits the intermodal attraction system and this result shows transportation on land (trucks and containers) is preferred over trains and waterways.

❖ **Assessment of the impact and practice of Logistics Activities**

Subsequent research was conducted by Rafele (2004) entitled "Logistics Service Measurement". The method used in this study is the PZB Model, which is one of the models to evaluate service quality and applies to all types of services including logistics. The results of this study reveals indicators like failure, completeness, timeliness , productivity, waiting time (especially for customers), time delay (in total days or in percentages against maturity date), regularity, flexibility, and availability are dimensions to measure logistics service. The result also showed that most companies have different meanings of those indicators. Following these conclusion, the researcher came up with a recommendation of all companies should understand deeply regarding relationship between those indicators, which can allow a research free from sources of inefficiency and error.

Some Ethiopian researchers also revealed about the challenges and practices of logistics as a whole and by taking one of the logistics activities as scope of their study. Ayenew (2016) under his research title "Logistics practices in Ethiopian medium and large leather footwear manufacturing firms" with his objective of describing current logistics practices under the five interdependent activities of logistics i.e. customer service, inventory management, supply, transportation and warehousing in leather footwear companies. This research used descriptive type of research with quantitative and qualitative data using the population of all medium and large scale leather footwear manufacturing firms in Ethiopia. Accordingly he witnessed that even though firms practiced the logistics activities in their day to day operations, most of the firms have no logistics department in their organizational structure. Foreign currency shortages, higher

taxes, lack of integrated system and long lead time in ports are found to be the critical challenges of logistics for footwear manufacturing firms in Ethiopia.

Another researcher called Debela (2013) with study title of “Logistics practices in Ethiopia”. The objective is to assess the current status of logistics practices in Ethiopia with the aim of identifying the gaps, potentials and constraints for development of effective and efficient logistics system. For this qualitative assessment and information from secondary sources was used to carry out the assessment in relation to logistics, freight logistics and transport companies, organizations dealing with documentation of import and export goods. Presence of road of high density and quality makes efficient distribution of goods easy. Customer orientation, low level bureaucracy at customs and trade facilitations expedite goods flow. Availability of skilled manpower, conducive labor regulations and business environment promotes economic activities. On most of these criteria, Ethiopian logistics system is found to be poor logistics management system and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and in storage. This coupled with lack of sea port resulted in poor linkage of producers (farmers) to the consumers (market) and non-competitiveness of Ethiopian goods on global market, which compromised livelihood of the people and economy of the country. More importantly he linked efficient and effective logistics system contributes to minimize socio-economic problems of having a very high rate of traffic accident (first in the world) and congestion in cities and at city inlets/outlets to which freight vehicles contribute significantly.

Tewodros Bogale (2016) under his research title of “Assessment of warehouse performance: a case of Ethiopian trading enterprise” begun with a brief introduction of warehouse management, performance measurement and metrics or key performance indicators based on the most recognized literature. Accordingly this particular study explores to investigate the warehouse performance which is measured in terms of the most frequently used four dimensions as suggested by Frazelle (2001), namely quality, response time, total warehouse cost, and productivity. Census survey to quantitatively and qualitatively assess the warehouse of the enterprise was used along with questionnaire as official instrument of data collection. The study found out that all the dimensions of warehouse performance have statistically significant result

but the level of understanding in the sampled area is different for the four dimensions. Among the four key performance indicator, measurement of the warehouse performance based on dimension of response time is comparatively in a better position in the enterprise warehouse and less attention is given for the rest. The study advocated that a lot of emphasis need to be directed to all the four dimensions to achieve significant cost savings from minimized total cost of warehousing and improved quality and also maintain improved response time and improved efficiency or productivity, consequently improving the organizational performance as a whole.

Tariku (2016) with study title of “Assessment of procurement performance and its link with operational efficiency: in case of Ethiopian Electric Utility”, focused on factors affecting procurement performance and operational efficiency along with the relationship between procurement performance and operational efficiency in Ethiopian Electric utility. The study adopted Explanatory method of research and correlation analysis was used to identify relationships between procurement and operational efficiency. Primary data was gathered using structured questionnaires. Descriptive statistics was used to summarize the data i.e. percentage and frequencies. From the study findings it was concluded that procurement performance have a link with operational efficiency in Ethiopian electric utility. Thus the researcher recommended that the organization management should give attention to procurement planning to reduce delays in procurement process.

❖ **The impact of Logistics Activities on Sales Volume**

“The impact of logistics performance on the sales level” an empirical study in retail Sector which differs from the previous three researchers in terms of research title, analysis tool and research objective was done by Setiawan and Hadi (2013). This research is categorized under explanatory research with multiple regression method to analyze the hypotheses. The indicators involved in their study were customer service, operation metric (transportation and warehouse), and logistics cost. Customer service for this study is a measure of how logistics creates time and place utility for products. The explanation showed that customer service is a benchmark in logistics performance. This will help companies to build good relationships with consumers so they can

provide added value to the company and enhance the company's competitive advantage. The second indicator i.e. operational matrix, was explained by the authors from the perspective of the company's operational activities related to logistics performance refer to time efficiency in this case the time efficiency in the company's operational activities includes the speed of delivery of goods, the availability of timely products, responsive electronic data interchange and the average delay is minimal. The last indicator discussed by Setiawan and Hadi was total logistics costs which must cover all expenses needed to carry out logistics activities. They also mentioned logistics costs have a direct relationship with service-performance policies. The habit of the company to highly available in the market, rapid and consistent performance, and providing quality product is highly associated with costs. Some of the costs involved in logistics include extra inventory in factories, packaging, transportation, logistics documentation and brokerage fees to intermediaries. These costs are as much as possible managed properly so as not to cause harm to the company considering that logistics costs have a large role in supporting the company's operational performance.

Having those facts as a support they found that logistics performance has significant contribution to retail sales level. However, customer service has not had positive contribution to sales level compare to operation metric and logistics cost. In addition, logistics cost has big impact on retail sales level.

Last but not least, another researcher with title “Implication of logistics service quality on customer satisfaction: the case of Jumia online market”, called Hana Alemu (2016), focused on seven logistics service quality dimensions and their impact on customer satisfaction. The seven dimensions of logistics service quality model i.e. information quality, order procedure, timeliness, order condition, order accuracy, order discrepancy handling and personnel contact quality were used to measure the logistics service quality of Jumia online market. The correlation results indicate that there is a positive correlation between the dimensions of logistics service quality and customer satisfaction. The research showed that timeliness and order procedure plays the most important role in customer satisfaction level followed by Order accuracy, Information quality, Order discrepancy handling, Order condition and Personnel contact quality respectively.

2.3 Summary of Literature Review and Research Gap

Table 2.1: Summary of the current study by the researcher

Variables and Attributes	Analysis Tool	Object of Research	Samples
Logistics Activities 1, Customer Response 2, Inventory planning and management 3, Supply 4, Transportation 5, Warehousing Sales Volume 1, Volume Traded (Actual) 2, Volume Packed (Actual) 3, Volume Target 4, Lost Sales	Regression and Correlation Analysis	To assess the effect of logistics activities on sales volume	Heineken Breweries Share Company, Ethiopia

Table 2.2: Summary of literature review and differences with the current study

Name of Researcher	Research Title	Variables and Attributes	Analysis Tool	Object of Research	Samples	Difference Versus this study
Toyli, <i>et.al</i> (2008)	Logistics and Financial Performance	Logistic Performance 1, Service level 2, Operation Metric 3, Logistic Cost Financial Performance 1, Return On Capital Employed 2, Return On Assets 3, Earning Before Interest Tax	Correlation Analysis	To measure relationships between logistics performance and financial performance	Small and Medium Enterprises, in Light and heavy manufacturing businesses, construction and supermarket in Finland	- Research title - Research Objective - Sampled industry - Sampled Country - Correlated variables and attributes
Kunadhamraks and Hanaoka (2008)	Evaluating the logistics performance of intermodal transportation in Thailand	Logistical performance 1, Logistics Cost 2, Service quality 3, Reliability 4, Security	Analysis Hierarchy Process and Regression	To evaluate logistics performance among modes of transportation	Transport service providers via different modes in Thailand	- Research title - Research Objective - Sampled industry - Sampled Country -variables & attributes - Analysis tool

Rafele (2004)	Logistic Service Measurement	Logistics Service 1, Tangible components 2, Ways of fulfillment 3, Informative actions	PZB Model (Analytical model to evaluate service quality 1. Tangible, Reliable, Responsiveness, Empathy, Assurance	To measure logistics service quality	Manufacturing company in Italy	- Research title - Research Objective - Sampled industry - Sampled Country - variables & attributes - Analysis tool
Setiawan and Hadi (2013)	The impact of logistics performance on the sales level	Logistics Performance 1, Customer Service 2, Operational Matrix 3, Logistics Cost Sales Level 1, Actual Sales 2, Target Sales	Correlation analysis and multiple regression	To assess the impact of logistics performance on the level of sales	Retail sector in Palu in Central Sulawesi Province	- Research title - Sampled industry - Sampled Country - Attributes
Fekadu Debela (2013)	Logistics Practices in Ethiopia	Logistics Practices	Qualitative assessment of secondary data and literature reviewed	To assess logistics practices	Companies in Ethiopia involved in freight transport import and export	- Research title - Research Objective - Sampled industry - variables and attributes - Analysis tool
Tewodros Bogale (2016)	Assessment of warehouse performance	Warehouse performance 1, Quality 2, Response time 3, Total warehouse cost 4, Productivity	Descriptive statistics (mean and standard deviation)	To assessment of warehouse performance	Warehouses of Ethiopia Trading Enterprise	- Research title - Research Objective - Sampled industry - variables and attributes - Analysis tool

Belay Tariku (2016)	Assessment of procurement performance and its link with operational efficiency	Procurement Performance 1, Efficiency and effectiveness in procurement 2, Organized procedures and systems 3, Quality 4, Timely delivery of goods and services 5, Cost minimization Operational Efficiency 1, Maximize resource utilization 2, Minimize waste of inputs 3, Reduced internal costs	Correlation Analysis	To assess factors affecting procurement performance and its impact on operational efficiency	Ethiopian Electric Utility	-Research title -Research Objective - Sampled industry - variables and attributes
Hana Alemu (2016)	Implication of logistics service quality on customer satisfaction	Logistics Service Quality, Customer Satisfaction 1, Information quality 2, Order procedure, 3, Timeliness 4, Order condition 5, Order accuracy, 6, Order discrepancy handling 7, Personnel contact quality	Correlation Analysis	To investigate the implication of logistics service quality dimensions on customer satisfaction	Jumia online market	-Research title -Research Objective - Sampled industry - variables and attributes
Melkamu Ayenew (2016)	Logistics practices	Logistics Practice 1, Customer service 2, Inventory management 3, Supply 4, Transportation 5, warehousing	Descriptive statistics (mean and standard deviation)	To Describe the current practice and challenges of logistics	Ethiopian medium and large leather footwear manufacturing firms	- Research title - Research Objective - Sampled industry - Attributes - Analysis tool

Conceptual frame work of the study

Based on the above literatures the researcher developed the following conceptual framework. The study intended to assess the effect of logistics activities i.e. customer response, inventory planning and management, supply, transportation and warehouse on sales volume in Heineken Breweries S.C. Those dimension linked with the level of sales volume (Fig. 2.3)

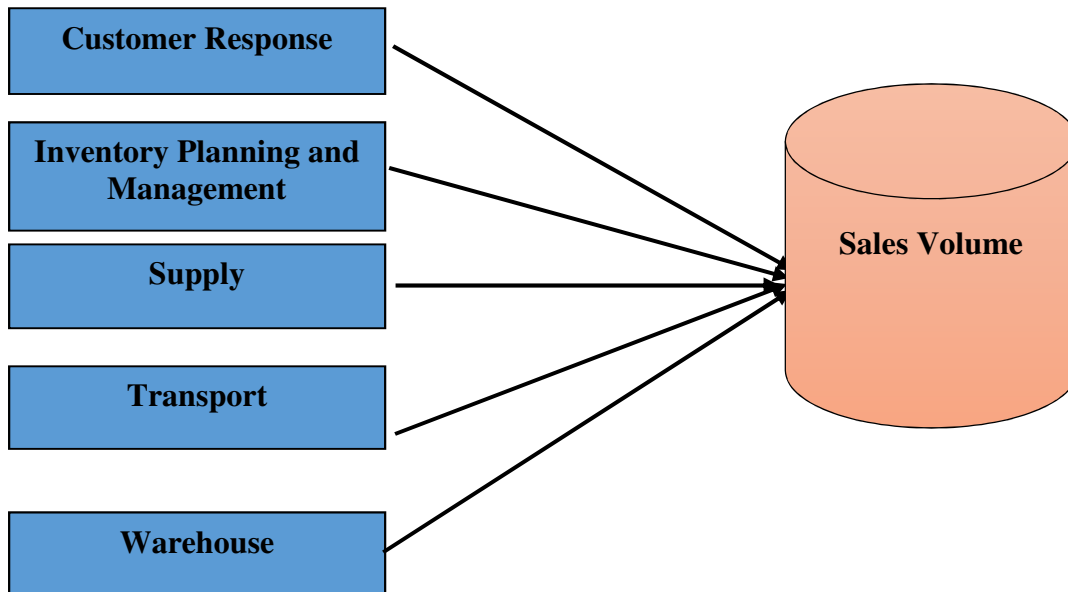


Figure 2.2: Conceptual framework of the study based on the review literature

The framework proposed that logistics activities has a significant effect on level of sales volume.

Accordingly logistics activities constructed in five dimensions. Includes

Customer response: determined using pillar of perfect customer order which intern determined from on time in full deliveries along with product availability. In this dimension the importance of fulfilling customers' expectations that can affect sales and profitability are considered which in turn has an implication on market share of company.

Inventory planning and management: defined by forecasting bias taking in to consideration the budget volume traded versus the actual volume traded along with budget consumption level to produce finished products versus the actual consumption level. The main concern of the

company under this dimension is manage customer satisfaction by giving due focus for stock outs. Stock-outs have been reported as the most frequently mentioned cause of frustration for dissatisfied customers with reaction of substitute by same brand, delay purchase, substitute by different brand and do not purchase at all (Desta, 2016), as witnessed from (Corsten and Gruen, 2003).

Supply: built up from supplier on time in full performance in which supplier responsiveness is a due attention area. Accordingly supplier OTIF will be considered in terms of number of total purchase orders processed on time in full.

Transport: constituted by truck arrival, departure and residence time from which the company can conclude how much from total traded volume was delivered within the agreed time and how much was delayed.

Warehouse: composed of pillars of receiving, storage, order picking, packing and shipping accuracy

Last but not least the dependent variable of the study i.e. sales volume is the amount of volume traded to customers. Under this study this variable is considered from volume packed, volume budget, and volume traded and lost sales. This is where the company will get its revenue on the level of sold volume.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter dealt with the research design and methods of the study. It consists study areas, research design, research approach, study population, sample and sampling techniques, sources of data, data collection tools, data collection procedure, validity, methods of data analysis and model specification and ethical consideration.

3.1 Description of the Study Area

The research took Heineken Breweries S.C as where the details in practice are analyzed; i.e., a company which exists after the acquisition of state owned Harar and Bedele Breweries in 2011 and followed by the opening of Kilinto Brewery in 2015. During acquisition the company only had technical capacity of 1mhl which is 550khl of Bedele, 500khl of Harar with only two dominant brands but now the company in total has a 4mhl of production capacity with eleven portfolio brands. Bedele Breweries S.C which is 483km from Addis Ababa with more than 32 million population produces product Bedele Regular, Bedele Special, and Sofi brands from 100% natural ingredients and refreshing natural water on 250,000 m² surface coverage in its major market in north west, west, south, central and south west of Ethiopia and from abroad USA, Canada, Australia, Israel and Sudan on the other hand Harar Breweries S.C which is 530km east of Addis Ababa is known for producing brands like Harar Beer, Harar Draught, Sofi, and Buckler. Kilinto, in the outskirts of Addis Ababa, is home to the Walia brand but also produces other brands like Heineken Bedele Special and Sofi (<http://heinekenethiopia.com>, accessed in 2018).

This research measures logistics activities of Heineken Ethiopia in relation to their effect in terms of sales volume which is mainly performed by logistics department. This department is under

the umbrella of logistics manager consists of warehouse manager, transportation manager, purchasing manager, inventory planning and management manager and warehouse admins who are dedicated to contact customers. Under each manager there are assistant managers and coordinators who are responsible for the day to day operation of the company which is hand to hand to the very essence of the company which is producing and selling of beers.

This department is crucial in shaping organizational performance with the total of 85 employees by taking responsibilities to have better performance in customer service to maintain and attract new customers, better inventory levels that can meet customers demand with no loss sales accompanied by less warehouse holding costs, efficient transportation services to bring inputs to the production site and to deliver products to potential customers the right quality on the right time, finding best supplier for input products and arranging the supply to be on time as needed for production and keeping inputs till they are needed for production and output products in warehouse till it is needed by the potential customer (Heineken Breweries S.C employee register, 2018).

3.2 Research Design

Descriptive research design was used to acquire information regarding the present status of the phenomena and to describe what exists with regards to variables in a scenario. Therefore, in order to assess the effect of logistics activities on level of sales volume at Heineken breweries S.C, Ethiopia descriptive research design was applied; because the researcher collected information on the sales volume of the company in relation to the factors that influence i.e. logistic activities, with an aim to describe, examine and determine the effect of logistic activities on level of sales volume at Heineken breweries S.C, Ethiopia. Moreover, it also used explanatory type whereby the effect of logistics activities on the level sales volume in the case of Heineken Breweries S.C will be assessed and explained. Such design will help to observe the influence of independent variables on the dependent variable to clearly view the cause and effect link between those study variables.

3.3 Research Approach

In order to achieve the objectives of this study and thereby to give answer for the basic research hypothesis, quantitative research approach had been used by the researcher. There are compelling reasons why the researcher stick to use quantitative method. For instance, the adoption of positivist paradigm entails that measurement remains an essential element since its basic assumption in social and economic phenomenon can be measured. So, this helps to deeper insights on the issue, to significantly strengthen the analyses and thus enhance confidence in the conclusions.

3.4 Population of the Study

The population of the study was Heineken Breweries S.C, Ethiopia in revealing the effect of logistics activities such as customer response, supply, transportation, warehousing and inventory planning and management on level of sales volume.

3.5 Sampling Technique

From the five registered beer factories, this study purposively selected Heineken Breweries S.C, Ethiopia under the below criteria's in mind:-

1. Logistics Activities Implementation: beer companies' logistics department lacks a proper categorization under the five dimensions; which means almost all companies are practicing logistics activities for their day to day operations not in formal categorization but in the traditional way of considering logistics in terms of transportation and warehousing (Ayenew, 2016).

2. Production capacity: it is obvious to say as production capacity increases related activity density will also increases. Africa produces 145 mhl and Ethiopia who is the fourth largest beer producer country in Africa after South Africa, Nigeria, and Angola contributes 9.95mhl. From this volume currently Heineken Breweries S.C has production capacity of 4mhl which is almost

half of the country contribution to the total Africans portion. Accordingly the finding was generalized to the whole beer factories.

3. Sales Volume - is the number of units sold within a reporting period, the company is the second larger market share owner in the beer industry.

4. Portfolio Brands - Heineken with its plenty of SKUs (Walia, Bedele, Harar, Buckler, Sofi, Heineken, Hakim Stout, and Sergegen) was considered.

In fact as the researcher points of view and depth investigation, the logistic activity of this company varied with the other. In addition this company produces more than eleven portfolio brands. So, taking all the above consideration into account, the researcher took Heineken Breweries S.C purposively.

3.6 Data Source and Types

Secondary source of data was used for this particular research. Those data gathered from the company data base called Heilite (system data base designed by International Business Machines Corporation, IBM) which provides many functionalities and Brewery Comparison System (BCS). The gathered data taking in to consideration the objective of the study were sales volume report, cash deposits (payment from customer), posted sales order, posted sales shipment, posted sales invoice, purchase order, posted purchase invoices, volume traded (actual), volume budget, volume packed (actual), item ledger entry, value ledger entry, truck gate entry date and time record, truck residence time record, obsolete full product items value, physical inventory count value, system inventory value, warehouse full product breakage and customer complain records. The coverage of data for this particular study was also taken from 2013 to 2018.

On the other hand related existing studies, published and unpublished sources, conference papers, policies and procedures regarding customer response, inventory planning and management, supply, transportation, and warehousing were used as information on theoretical frame work as well as empirical evidences of the study.

3.7 Validity of Data Sources

Validity is the degree which measures whether a test measures what it supposed to measure and can be defined as the accuracy and meaningfulness of the inferences (Creswell, 2009). It is the degree to which results obtained from the analysis of the data actually represents the phenomena under study. Accordingly, proper detection by the researcher advisor and advices of subject matter expert and proposal defense with internal examiner was taken in to consideration to ensure the content validity of the instruments. Besides the researcher used data which is gathered from the sampled company in the measurement which was related to central objective of the study.

Accordingly to Heineken Ethiopia logistics process standard (2012) and Business Comparison System guidelines (2016), the Brewery Comparison System (BCS) is the formal operational benchmarking and reporting system of Global Supply Chain (GSC). It is used by more than 200 production units such as breweries, soft drinks, water plants and cider manufacturing companies spanning all corners of the world. It is also a tool for operational management to realize operational cost leadership and impact analysis through: internal reporting against global standardized definitions and calculation methods, operational control and reporting by comparing actual versus target results per production unit and as whole company level and internal benchmarking information on production unit level, company as a whole, regional level and global.

The second data source i.e. Heilite definition of IBM, it is a System which contains recorded transaction, not only for logistics activities, but also the reset functional performances. In which traded volume, posted sales orders, posted purchase order can be reached from. This system includes production postings, contains facts on how much is the consumed input materials in order to pack certain level of volume in the given specific month which is ready for sales, vendor postings, contains how much input materials purchased and what is the cost amount of it in the process of packing a certain, customer postings, contains how much is sold for certain customer in certain period of time which includes the sales volume (hls), and sales amount along with cost of produced full product. Last but not least movement trucker, includes movements of items and full products in every production node till the final product is reached and ready for sale.

More importantly BCS and Heilite systems i.e. secondary data sources contains not only, logistics activities performance but also other cross functional transactions. According to the company policy and procedure those two systems are under local, internal and international auditors' supervision on yearly basis in addition to Ethiopia Ministry of Revenue audit. Therefore, the researcher concluded the data found very good for the raised research questions and hypothesis, further analysis and finding of the study.

3.8 Data Analysis

After data were collected, data processing had been carried out. The raw data was converted into suitable form for analysis and interpretation. This was achieved through sequences of activities including coding, entry, and tabulation with the aim making sure the completeness, internal consistency and appropriateness of the data to each of the variables. Statistical analysis had been carried out by using Excel and Statistical Package for Social Science Software (v.24).

Descriptive statistic such as mean, standard deviation and graphical presentation was prepared to give a deeper analysis of data. In addition, inferential statistics i.e. regression analysis was also applied to indicate the relationship and strengthens between sales volume and logistic activities.

3.9 Model Specification

The following model was formulated to answer the issued hypothesis. The independent variables included in the model were the five logistic activities: customer response (x_{1i}), inventory planning and management (x_{2i}), supply (x_{3i}), transport truck arrival time (x_{4i}) and warehousing (x_{5i}). However, the dependent variable is seals volume (Y_i).

The following regression model was used to indicate how the dependent variable were predicted by the independent variables. Therefore, the operationalization of multiple linear regression equations in this study is shown as follows:

$$Y_i = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} + \varepsilon_i$$

Where the variables are defined as:

Y_i = sales volume

α = Constant term

β_i = Coefficients

x_{1i} = customer response

x_{2i} = inventory planning and management

x_{3i} = supply

x_{4i} = transportation

x_{5i} = warehousing

ε_i = Error term

Under the assumptions of:

- $\varepsilon_i \sim N(0, 1)$ mean zero and variance 1
- Linear relationship between outcomes (y) and explanatory variable (x)
- Outcome variable (y) should be normally distributed for each value of explanatory variable (x) (Normality Test)
- Standard deviation of y should be approximately the same for each value of x (Heteroscedasticity)
- Fixed independent observations
- The observations (explanatory variables) should be independent (Multicollinearity)

I. Normality Test

The normality test is used to test whether in the regression model, both variables (Dependent and independent) have a normal distribution or at least close to normal (Ghozali, 2005). In principle, normality can be detected by looking at the spread of data (dots) on the diagonal axis of the graph or by looking at the residual histogram or by using a test called Kolmogorov-Smirnov and Shapiro-Wilk.

II. Multicollinearity Test

Test of multicollinearity is a test whether the regression model found a correlation between independent variables. If there is a correlation, then there is a problem with multicollinearity (Ghozali, 2005). A good regression model should not have a correlation between independent variables.

Multicollinearity can be seen from (1) *tolerance* value and its opponent (2) *Variance Inflation Factor* (VIF). Both of these measurements show which independent variables are explained by other independent variables. *Tolerance* measures the variability of selected independent variables that are not explained by other independent variables. So, a low *tolerance* value is the same as a high VIF value (because of $VIF = 1 / Tolerance$). The common *cut-off* value used to indicate multicollinearity is *tolerance* value <0.10 or equal to VIF value > 10 (Ghozali, 2005).

If there is no detection assumption in the regression model as above, the regression model used in this study is free from multicollinearity, and vice versa.

III. Heteroscedasticity test

Heteroscedasticity test is to test whether in the regression model there is an inequality of variance from the residual one observation to another observation. If the residual variance from one observation to another observation remains the same, it is called homoscedasticity and if

different variance is called heteroscedasticity. A good regression model should be free from heteroscedasticity (Ghozali, 2005).

The way to find out whether there is heteroscedasticity or not is to look at the plot between the predicted value of the dependent variable, ZPRED and the residual ZRESID. Detection of the presence such as wavy, widened, and narrowed or absence of heteroscedasticity can be done by seeing the presence or absence of a particular pattern on the scatterplot graph between ZRESID and ZPRED where the Y axis is Y predicted, and the X axis is the residual.

3.10 Variables of the Study and Operational Definition

Logistics has comprised of five interdependent activities these are customer response, inventory planning and management, supply, transportation, and warehousing. Accordingly those logistics activities were independent variable and sales volume was dependent variable.

Dependent Variables – Sales volume as a dependent variable was represented as total sales volume in hectoliters which the Heineken Ethiopia sold over 2013 to 2018 European Calendar. Accordingly the company audited sold volume and packed volume reports were considered. The researcher also takes in to consideration the difference between how much the company had packed volume in hectoliters which is ready for sale, and how much the company actually traded to the market.

Y_i (level of sales volume) = Volume Traded

Independent Variables - a variable which causes or forces something to happen over the dependent variable. As per the literature reviewed there are five existing productivity indicators:-

1. **Customer Response** – the rate to which customer obtains responses. In which perfect customer order is the main indicator which is calculated from on time in full deliveries (on time deliveries and in full deliveries) and Product Availability.

Customer Response = Perfect Customer Order

- 2. Inventory planning and management-** this is where inventory planners and inventory turnover got a focus. In which forecasting bias is the main indicator which is calculated from monthly planned vs. monthly actual (hl), finished product stock level (target vs. actual), average stock value during the month vs. real consumption during the month.

Inventory planning and management = forecasting bias

- 3. Supply** – this is where the rate of buying for process inputs is taken in to consideration. In which the number of purchase orders processed under supplier OTIF is the main indicator calculated from, on time in full deliveries (on time deliveries and in full time deliveries) and product availability.

Supply = supplier OTIF

- 4. Transportation** – this is where inbound and outbound transportation activities are taken in to consideration through truck arrival time, departure time and residence time to delivered orders in terms of volume either via own trucks or third parties.

Transpiration = total volume delivered within the agreed time and delayed deliveries

- 5. Warehouse** – this is where mission of storage, handling and distribution centers will be taken in to consideration. In which receiving accuracy, storage accuracy, order picking accuracy, packing and shipping accuracy

Warehouse = receiving accuracy + storage accuracy + order picking accuracy + packing and shipping accuracy

3.11 Operational Variables Measurement and Instrumentation

Table 3.1: Indicators of each logistics activities variable in relation to sales volume

Variables	Indicators
Customer Response (x_{1i})	1, Perfect customer order 1.1 On Time In Full Deliveries 1.1.1 On Time Deliveries 1.1.2 In Full Deliveries 1.2 Product Availability
Inventory Planning and Management (x_{2i})	1, Forecasting Bias 1.1 Monthly Planned - Monthly Actual (hl) 1.2 Finished Product Stock Level (Target) 1.3 Finished Product Stock Level (Actual) 1.4 Average stock value during the month 1.5 Real consumption during the month
Supply (x_{3i})	1, Supplier OTIF 1.1 On Time In Full Deliveries 1.1.1 On Time Deliveries 1.1.2 In Full Deliveries 1.2 Product Availability
Transportation (x_{4i})	1, Truck Arrival Time (TAT) 2, Truck Departure Time (TDT) 3, Residence time of Trucks
Warehouse (x_{5i})	1, Receiving Accuracy 2, Storage Accuracy 3, Order Picking Accuracy 4, Packing and Shipping Accuracy
Sales Sales Volume (Y_i)	1, Volume Traded 2, Volume Packed 3, Volume lost (unsold volume)

3.12 Ethical Consideration and Data Collection Procedure

Before data collection, the proposal was submitted to Addis Ababa university school of commerce department of logistics for evaluation and get the necessary feedbacks. Supportive letters was delivered to department of logistics for their collaboration in the journey of this research. Confidentiality of data was assured for the firm for any information used. The researcher has been get full collaboration in the sampled firm to collect data inputs with their definitions, published and unpublished sources, conference papers, policies and procedures

regarding customer response, inventory planning and management, supply, transportation, and warehousing. Accordingly the researcher collected all required data and document which helped to achieve the objective of the study.

All in all the research was done to assess the effect of logistics activities on level of sales volume at Heineken breweries S.C, Ethiopia, so, any part of the work or its outcome projects does not have organization's agenda. Efforts have been exerted to ensure that the work is completed within its relevance, at optimal cost and yielding maximum impact.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Introduction

This chapter attempted to present, interpret and discuss the data collected and relate them to the theory explained in the second chapter of this study. At the same time, the data was analyzed in association with the research questions and hypothesis raised in chapter one.

In terms of organization, this chapter is divided into two broad parts. The first part dealt with the descriptive analysis and the second part discussed the inferential result such as ordinary list square diagnosis and regression analysis.

The data obtained from secondary source using Brewery Comparison System and Heilite System were presented from 2013 to 2018. Logistics activates under five dimension were presented under their indicators in order to review their impacts on sales volume.

4.1 Descriptive Analysis of Logistics activities of Heineken Breweries S.C

I. Customer Response

As discussed in chapter two customer response was measured with pillar of perfect customer order which has a meaning of the relative number of customer orders that were available to deliver, delivered on time and in full, the right quantity at the right quality with in the agreed time, compared to the initial customer request. Initial customer demand for the purposes of product availability refers to the order quantities and Stock Keeping Units (SKUs) initially requested by a customer.

As per the data collected from the company, regarding customer response dimension of logistics activity within fiscal year of 2013 to 2018, in general the company traded 66% of the products available for sales within a given period perfectly to its customers with monthly average. As

depicted by the below table (table 4.1). The difference between the minimum and the maximum values indicate the presence of wide traded volume variation. According to this result the subset pillars; i.e., on time in full deliveries, as well as in full deliveries along with product availability had a huge range variation. This result is in line with <http://heinekenethiopia.com> which informed that the company during the acquisition of Bedele and Harar in 2011 till the opening of Kilinto Brewery; i.e., 2015, the company had a technical capacity of 1mhl which later upgraded to 4mhl with the opening of Kilinto brewery. This implied that the production capacity variation affects the product availability, on time in full delivery which in turn results by far difference between the min and max.

Table 4.1: Descriptive analysis on customer response of Heineken Breweries S.C, Ethiopia

Variables	Mean	Std. Dev.	Minimum	Maximum
Perfect customer order	131,284	62,475	39,816	268,808
On time in full deliveries	172,715	82,191	52,382	353,640
On time deliveries	126,658	60,273	38,413	259,337
In full deliveries	172,715	82,191	52,382	353,640
Product availability	199,658	92,609	59,190	395,247

Source: Own data, 2019

II. Inventory Planning and Management

Accordingly this section has two parts one is the finished product expected stock level versus actual and the second is the average input stock level actual with the real consumption.

Having this in mind, the study result illustrated the forecasting measures for both input materials and finished product level is different. The company had a positive forecasting bias when it comes to input materials which is monthly average stock value was greater than the real consumption of materials. In general the company consumed input material which worth 62% of the total expected consumption during the indicated period i.e. the actual ended up with lower consumption by Birr 3m, the remaining after consumption during production process. This implies the company holds stock to secure the production process (Table 4.2). As per the

Brewery Comparison System guideline (2016), companies need to hold at least 3 month stock ahead of time in order to secure from price inflation and lack of foreign currency; this is what happened to the company under this study. Furthermore, the company had a high different cost between minimum of the real consumption of materials and the maximum due to the company production capacity was far low during those introductory periods.

The second stream for the planners is finished product level in which the actual with expected finished product stock level is considered along with the budgeted finished product; i.e., to be sold volume versus actual finished product sold. This section of the planner showed the forecasting bias which is going to be negative as the actual sold was by far higher than budgeted to be sold volume. Which is monthly planned versus monthly Actual had a minimum of -23,006 with a maximum of 93,362 and monthly finished product planned versus Monthly Actual had a minimum of -4050 and maximum of 4780. So, in all cases the actual is a bit far away from the planned. In this regard huge average forecasting bias, 7,256.65 (SD±3,453.22), recorded in every months.

Table 4.2: Descriptive analysis on inventory planning and management of Heineken Breweries S.C, Ethiopia

Variables	Mean	Std. Dev.	Minimum	Maximum
Forecasting Bias	7,257	3,453.22	2,201.00	14,858.00
Monthly Planned - Monthly Actual (hl)	4,403	20,550.90	-23,006.19	93,362.00
Finished Product Stock Level (Expected)	8,473	4,082.85	1,821.00	15,763.00
Finished Product Stock Level (Actual)	8,599	4,427.93	1,715.00	17,017.00
Monthly Finished product planned - Monthly Actual (hl)	126	1846	-4050	4781
Average stock value during the month	112,121,969	92,189,838	8,705,449	320,623,577
Real consumption during the month	69,637,196	27,471,891	27,340,635	16,516,573
Monthly Average stock value during the month - Real consumption during the month	42,484,774	81,132,404	24,151,602	61,491,403

Source: Own data, 2019

III. Supply

Supply was measured from supplier OTIF part which is represented by number of delivered orders in full, number of delivered orders on time and total number of delivered orders furthermore this dimension can be linked with the pillars in customer response, product availability, and inventory planning specially with average actual material consumption with budgeted consumption (Brewery Comparison System, 2016) because if a company avails the input materials to the production process on time in full, product availability will be guaranteed and the reverse is true.

Taking this consideration into account, this Study found out check the purchasing order of the company. As the result indicated in every month on the average 12,911.31 (SD±10,616.05) numbers of purchasing order processed on time in full. The minimum order was 1002, whereas, maximally 36,921 order was recorded. In general within the indicated duration, the company has a total of 929,614 purchasing orders processed punctually. The maximum and minimum result reviled that the order processed on time in full varied across a given duration.

Taking this consideration into account, this study found out total orders processed on time in full indicated in every month on the average 12,911.31 (SD±10,616.05) number of purchase order processed on time in full. The minimum order was 1002, whereas, maximally 36,921 order was recorded. In general within the indicated duration, the company has a total of 929,614 purchasing orders processed punctually. The maximum and minimum result reviled that the order processed on time in full varied across a given duration.

Table 4.3: Descriptive analysis of Supply of Heineken Breweries S.C, Ethiopia

Variables	Mean	Std. Dev.	Minimum	Maximum
Number of Total Purchase orders Processed on time in full	12,911	10,616	1,002	36,921

Source: Own data, 2019

IV. Transportation

The product arrival time is undertaken with the following consideration: planned truck arrival time versus actual arrival time, planned departure time versus actual departure time along truck residence time which is the variance between truck arrival time and truck departure time. Accordingly, the impact of transportation on sales volume depends on traded volume within the agreed time and the delayed deliveries.

Thus, as a result revealed in this study, the company on the average deliveries 126,658hls (SD $\pm$ 60,274) product on time within each month. A minimum punctual arrival volume was 38,413hls; while, the maximum was 259,337hls. Still the range indicates a wide gap along periods.

In other way round, there were 4,009,587hls delayed delivery within the study period. On the average 55,689hls (SD $\pm$ 26.501.12) late arrival sales of product was recorded averagely in every month. Comparably, the on time provision of the products above two times larger than that of the delayed deliveries.

V. Warehouse

Warehouse logistics activity has attritions of receiving, storage, order picking and packing and shipping accuracies while dealing with its effect on sales volume. Accordingly, to illustrate briefly the researcher divided this portion into two parts; one is while receiving input materials and how it was handled in the warehouse and the other is how the full products are handled during order picking, packing and shipping.

As the result reviled in the table below, on average the company received worth of 3,948,374 (SD $\pm$ 3,246,464) Birr monthly for materials accurately. The minimum accurately received materials amounted to 306,562 Birr; whereas the maximum was 11,290,755 Birr with a total sum of 284,282,908 Birr for products accurately received. When it comes to storage accuracy, the company holds materials worth monthly average of 2,747,203 (SD $\pm$ 9,657,508) Birr accurately. A minimum recorded storage accurately was 133,954 Birr; while a maximum was 70,121,988

Birr. In general the company stored materials which worth 197,798,594 Birr accurately within the entire study time. This implies the storage accuracy was not that much far apart from receiving accuracy.

In the case of full product handling during order picking, the company on the average picks products worth 46, 057(SD±21,917.36) Birr for each month. Regarding packing and shipping cases, the company handled products worth 4,445,086 Birr within the six surveyed years. On the average it was 61,737 (SD±55,056.62) Birr per each month. This indicates the company performed packing and shipping pillars accurately than order of picking.

Table 4.4: Descriptive analysis on warehouse of Heineken Breweries S.C, Ethiopia

Variables	Mean	Std. Dev.	Minimum	Maximum
Receiving Accuracy	3,948,374	3,246,464	306,562	11,290,755
Storage Accuracy	2,747,203	9,657,508	133,954	70,121,987
Order Picking Accuracy	46,057	21,917	13,968	94,303
Packing and Shipping Accuracy	61,737	55,057	6,563	239,397

Source: Own data, 2019

VI. Sales Volume Descriptive Analysis

The company has three types of volumes which are volume packed, production output which is ready for sales, volume traded, of which actually sold to customers and volume budget, expected volume. Accordingly, the company had packed volume within the previous 6 indicated years. But, the total actual traded value of the product was lower than budgeted volume. Moreover, this indicated that the volume packed is larger than the other volumes. The volume budget was 91% of what was packed and the volume traded was 89 % of what was packed during the study periods. Most importantly the minimum valued 13% of the maximum volume handled. Which showed there is a variance between those extreme values since the study considers scenarios where the company has a 1mhls capacity right after acquisition from government of Ethiopia.

4.2 The Role of Logistics Activities on Sales Volume in Heineken Breweries S.C

I. Model Specification Diagnosis Test

❖ Detecting of Outliers

Primarily, the existence of outliers is detected by using a Cook's distance. If the distance greater than one, the extreme value which capable to affect the distribution exist. Otherwise, the outlier who capable to interrupt the outcome is not detected.

Therefore, as the result reviled, the minimum Cook's distance value is 0.000; while, the maximum is 0.470. Thus, the estimated distance is less than the expected threshold value 1, so the problem of outlier is not obvious in this study.

Table 4.7: Tests of outliers by using a Cook's distance

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.470	.022	.069	72

Source: Own data, 2019

❖ Assessment of Normality

The explanatory variables of this study were customer response (x_{1i}), inventory planning and management (x_{2i}), supply (x_{3i}), transportation (x_{4i}) and warehouse (x_{5i}) and the dependent variable was Sales Volume (Y_i).

The test of normality is done by Kolmogorov-Smirnov and Shapiro-Wilks tests. According to Field (2009), when the test is significant if $p > 0.05$. That is, if the significant value of the distribution above the threshold of the probabilistic result (0.05), the researcher has full evidence to conclude that the distribution is normal.

In fact, for the tests on samples from 5 to 2,000 Shapiro-Wilks test is recommended, whereas, for the largest sample (n) which is above 2,000, Kolmogorov-Smirnov is suggested. Thus, the

Shapiro-Wilks normality test was used for this research. Accordingly, the result illustrated that all of the tested variables found to be normal with 0.05 level of significant, because as the above expression the p-value of all the explanatory variables are above the significant level.

Table 4.8: Test of normality

Variables	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	statistic	Df	Sig.	statistic	Df	Sig.
x_{1i}	0.181	71	0.200*	0.957	71	0.789*
x_{2i}	0.219	71	0.200*	0.987	71	0.780*
x_{3i}	0.345	71	0.051*	0.805	71	0.089*
x_{4i}	0.143	71	0.200*	0.924	71	0.118*
x_{5i}	0.190	71	0.200*	0.924	71	0.118*

a. Lilliefors Significance Correction;

df: degree of freedom;

Sig: significance;

* Indicates significant with 0.05 level of precision

Source: Own data, 2019

❖ Assessment of Multicollinearity

Multicollinearity exists when there are strong correlations among the predictors. If the the tolerance value below 0.10 or the Variance Inflation Factor (VIF) greater than 10, Multicollinearity problem would be detected and be a serious problem for the distribution (Field, 2009). Tolerance is a test statistics used to indicate the variability of the specified independent variable whether explained by other independent variables in the model or not.

As the study result illustrated in the table below, the entire variables tolerance are greater than 0.10 and their VIF values also lower than 10. So, there is no Multicollinearity problem that alters the analysis of the regression mode.

Table 4.9: Collinearity Statistics

Variables	Tolerance	VIF
x_{1i}	0.293	3.418
x_{2i}	0.991	1.009
x_{3i}	0.299	3.340
x_{4i}	0.643	1.555
x_{5i}	0.963	1.038

Source: Own data, 2019

❖ Correlation Analysis

A correlation analysis was used to examine the relationships and strengthens between independent variables, customer response (x_{1i}), inventory planning and management (x_{2i}), supply (x_{3i}), transportation (x_{4i}) and warehouse (x_{5i}) and the dependent variable is sales volume (Y_i).

Basically, the test helps to identify important dimensions which are capable to affect the dependent variable, sales volume. According to correlation analysis the results indicated, most of the explanatory variables are linearly associated with sales volume at 0.01 and the remaining are significant with 0.05 level of significance. As depicted in the below table three variables i.e. customer response (x_{1i}), supply (x_{3i}) and transportation (x_{4i}) develop strong positive association with sales volume. However, inventory planning and management (x_{2i}) develop strong negative association. As a matter of fact the warehouse logistics activity had no significant association with sales volume.

Table 4.10: Pearson correlations matrix

	Y_i	x_{1i}	x_{2i}	x_{3i}	x_{4i}	x_{5i}
Y_i	1					
Sig. (2-tailed)						
x_{1i}	0.972**	1				
Sig. (2-tailed)	0.000					
x_{2i}	-0.031	0.094	1			
Sig. (2-tailed)	0.035	0.433				
x_{3i}	0.876**	.834**	0.07	1		
Sig. (2-tailed)	0.000	0.000	0.558			
x_{4i}	0.972**	0.870**	0.094	.834**	1	
Sig. (2-tailed)	0.000	0.000	0.433	0.000		
x_{5i}	0.164*	0.152	0.029	0.063	0.152	1
Sig. (2-tailed)	0.026	0.202	0.081	0.600	0.202	

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

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Own data, 2019

❖ Normality of the Error Term

The error term should be uniformly normally distributed with a mean of zero and standard deviation of one. This test is done by using histogram with a normal curve. As a result indicates the assumption is achieved, because the mean of the error term is $2.33 \cdot 10^{-15}$ which is approaching to zero and the standard deviation 0.971 which is nearest to one. Therefore, the distribution of the random error term is standardized normal

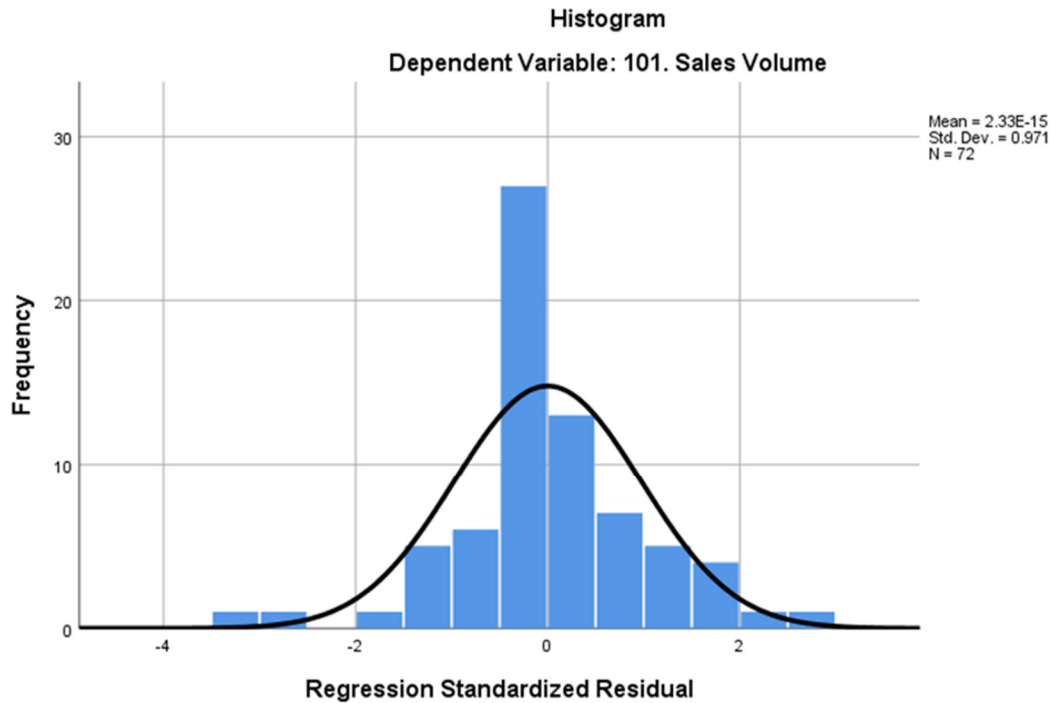


Figure 4.1: The normality tests of the error term

Source: Own data, 2019

❖ Assessment of Heteroscedasticity

When the error term varied with the independent variables, the problem of Heteroscedasticity could be occurred. This is tested by drawing a graph with standardized predicted values versus standardized residual curve. In the curve, if any continuity trend observable, i.e., if standardize perception distribution shows either increment or decrement trend over the standardized residual, the problem is detected otherwise it is safe from the problem. In that regard, the distribution of the data did not indicate any such kinds of trend; hence, the Heteroscedasticity problem is not real (Figure 4.2)

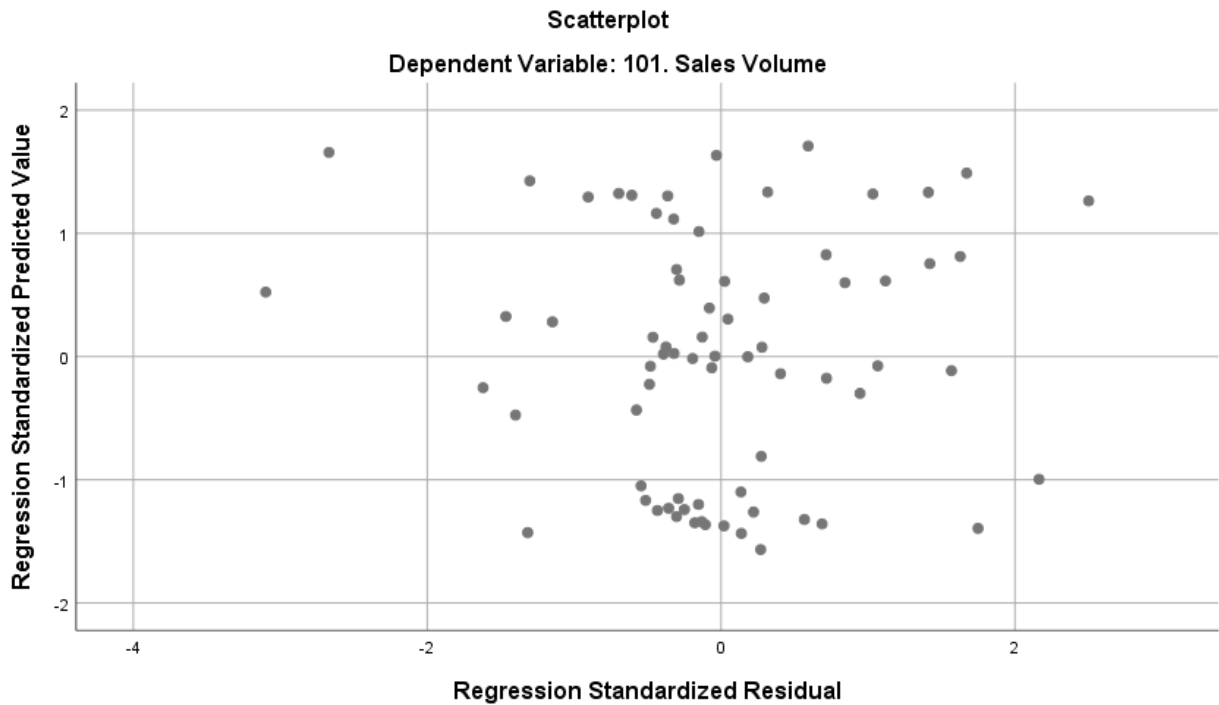


Figure 4.2: Heteroscedasticity Test

Source: Own data, 2019

❖ Regression Analysis

Regression analysis was conducted to examine the causal and strengthens of a relationships between the dependent and independent variables; but, before giving more explanation about which logistics activity is the determinant factor for dependent variable, sales volume, primarily, there should be a test to check whether other misspecification problems are occurred to hinder the quality of the model or not. Which was tested by using the ANOVA test.

As the result illustrated in the table below, the F-test of the p-value is 0.000 and the significant value is 0.05. Hence, the significance (sig.) value is greater than that of the p-value; therefore, accept the hypothesis which is stated that the model is fitted or good.

Table 4.11: Model Determination (ANOVA^a)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	508239480479.794	4	127059870119.948	620.901	.000 ^b
Residual	13710747538.192	67	204638022.958		
Total	521950228017.986	71			

a. Dependent Variable: (Y_i) sales volume

b. Predictors: (Constant), customer response (x_{1i}), inventory planning and management (x_{2i}), supply (x_{3i}), transportation (x_{4i}), warehouse (x_{5i})

Source: Own data, 2019

Having the above concept in mind, the next question which follows would be how much is the model good. The answer is given by the goodness of fit test (R^2) value. That is, the value of R square used to measure how much of the variation in the dependent variable, sales volume, identified by the regression. The larger the value of R square, the better it fits.

The below table display R, R square, adjusted R square, and the standard error of the estimate. R is the multi-correlation coefficient which is measuring the relationship between the dependent and predictor variables. The values of R range from -1 to 1. The sign of R indicates the direction of the relationship (positive or negative). The absolute value of R indicates the strength, with larger absolute values indicating stronger linear relationship. So, the value of R is 0.815 which implies the dependent and the predictors have developed strong linear association. Moreover, as mentioned before R Square is helped to quantify the proportion of variation in the dependent variable explained by the regression model. It is ranged from 0 to 1. Small values indicate that the explainable level of the independent variables to determine the dependent variable is weak. The sample R squared tends to optimistically estimate how well the models. R squared and adjusted R square somehow has the same meaning and purpose. But, adjusted R square is applicable for the small numbers of observation ($n < 30$) or numbers of variables (No. of variable < 5) (Julie, 2011). So, in the case of this study, the researcher used R square, because the numbers of variables as well its sample size larger than what the above criteria indicated. In that regard, the R square value is 0.665. This indicated that the five independent variables of the model

accounted 66.5% of the variation over sales volume (the dependent variable); whereas, the rest variation can cover by other unknown variable which is not included in the study.

Table 4.12: Logistics activities and their effect on level of sales volume

R	R²	Adjusted R²	Std. Error of the Estimate
0.815	0.665	0.658	0.32827

Source: Own data, 2019

The other misspecification problem which capable to affect the model be identified by the t-test statistics. That is, the researcher checked whether all the factors are equally important to affect the dependent variable or not, by using t-test statistics. If the p-value is lesser than the sig value (0.05), the factor/s are important to determine the model otherwise the factor should be rejected in the model. According to this study result almost all independent variables are important to determine sales volume except for warehouse logistics activity. Moreover, the sign of all independent variables except inventory planning beta coefficient (β) indicates a +ve sign; i.e., any increments of the independent variables lead to increase the dependent counterpart. This conclusion did not work for inventory planning and management as it has –ve sign; i.e. any increments of the independent variables lead to decrease the dependent counterpart.

❖ The Magnitude of the Impact of Logistics Activities on Sales Volume

Table 4.13: The determinant factors of logistics activities on sales volume

Variables	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
	Beta	SE	Beta		
Constant	11629.618	4293.534		2.709	0.009*
Customer Response (X_{i1})	1.094	0.050	0.797	21.768	0.000*
Inventory Planning (X_{i2})	-5.670	0.924	-0.122	6.136	0.000*
Supply (X_{i3})	1.754	0.292	0.217	6.003	0.000*
Transportation (X_{i4})	1.275	0.449	0.017	2.839	0.009*
Warehouse (X_{i5})	0.000	0.000	0.033	1.635	0.107

Source: Own data, 2019

H1: Customer Response Logistics Activity has significant effect on the level of Sales Volume at Heineken Ethiopia

Primarily, the researcher wanted to check whether the effect of customer response (x_{1i}), is statistically significant determinant of sales volume (Y_i) or not. Hence, the result indicated, (x_{1i}) has statistically significant associated with the dependent variable sales volume (Beta= 1.094, p-value = 0.000 < sig. value = 0.05). Therefore, there is evidence that the two variables positively associated to each other. This impels that taking the remaining effect as a constant, for a unit increment of customer response the effect would lead to an increase in sales volume by 1.094 times.

H2: Inventory Planning and Management Logistics Activity has significant effect on the level of Sales Volume at Heineken Ethiopia

The second hypothesis which the researcher carried out was to test whether inventory planning and management (x_{2i}) has a significant effect on level of sales volume (Y_i). As the result indicated even though this logistics activity has a significant impact on level of sales volume, there is negative relationship between the two variables. This impels that taking the remaining effect as a constant for each one unit increase in inventory planning and management there is sales volume decrease by 5.670 times.

As discussed in the descriptive statistics part of this study, (x_{2i}) had high variance between the minimum and maximum value for both finished product forecast and input materials consumption due to tendency to budget more than what is actually sold and/or consumed. As per the Brewery Comparison System (2016), the company is required to hold at least three month inventory in order to tackle production stoppage, unstable input materials price and foreign currency shortage. Which implies the company has stock holding strategy without having proportionate sales.

H3: Supply Logistics Activity has significant effect on the level of Sales Volume at Heineken Ethiopia

Regarding the third hypothesis, the researcher want to test whether supply (X_{i3}) is significantly important to evaluate the sales volume or not. As the result indicated (Beta= 1.754, p-value = $0.000 < \text{sig. value} = 0.05$), the two variables developed strong positive association. Therefore, taking the remaining effect as a constant for every one unit increase in supply there is 1.754 times increase in level of sales volume.

H4: Transportation Logistics Activity has significant effect on the level of Sales Volume at Heineken Ethiopia.

Transportation logistics activity has a strong positive association with the level of sales volume taking the remaining effect as a constant, one unit incase in transportation brings 1.275 times increase on (Y_i). Which implies the more the company reached its customers with in the agreed time taking in to consideration the truck arrival, departure and residence time (Beta= 1.275, p-value = $0.000 < \text{sig. value} = 0.05$).

H5: Warehousing Logistics Activity has significant effect on the level of Sales Volume at Heineken Ethiopia.

Meanwhile, the study want to test the hypothesis which is stated that whether warehouse logistic activity has a significant effect on the sales volume or not. As a result this logistic activity did not a significant influence on the seals volume.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

Introduction

This final part of the thesis deals with the summary of the findings of the study, the conclusions and the recommendations based on findings.

5.1 Summary of Findings

The general objective of the study was to assess the effect of logistics activities on level of sales volume at Heineken breweries S.C, Ethiopia.

To achieve this objective, the study used purposive sampling having certain criteria in mind. Accordingly Heineken Breweries S.C was a sample and the population in which the study inferred was total beer factories registered in Ethiopia which are five in total.

Data were obtained from secondary data sources along with document review i.e. published and unpublished related documents were reviewed. The data obtained was analyzed in two parts i.e. under descriptive part, using various statistical tools include mean, standard deviation, minimum, maximum and total sum, and in the inferential part different tests were tested in relation to the gathered data, correlation among variables and the most determinant variables were also identified.

Based on the finding of this study customer response (x_{1i}), supply (x_{3i}) and transportation (x_{4i}) were positively affect the level of sales volume (Y_i). Whereas inventory planning (x_{2i}) negatively affects the level of sales volume with significant association with sales volume (Y_i) and warehouse (x_{5i}) did not have any influence on the dependent variable.

.

Customer response (x_{1i}) is statistically significant determinant of sales volume (Y_i) with a strong positive association, meaning other things remain constant, the change in customer response affects what is going to be on sales volume depending on the direction of (x_{1i})

This finding was reconciled with the findings of Alemu (2016) and, Setiawan and Hadi (2013) since they worked on the logistics activity dimension i.e. customer response. As per the finding of Hana, there is a positive correlation between the dimensions of logistics service quality and customer satisfaction which is hand to hand with this study. Her research showed that timeliness and order procedure plays the most important role in customer satisfaction level followed by order accuracy, information quality, order discrepancy handling, order condition and personnel contact quality respectively. However, this study finding contradicts with the result of Setiawan and Hadi (2013), since they came up with an idea of logistics performance has significant contribution to retails sales level but customer service has not had positive contribution to sales level compare to operation metric and logistics cost.

The result regarding the hypothesis of supply (x_{3i}) showed, other things remains constant, this dimension of logistics activity has positive and strong association with the level of sales. Accordingly this finding was reconciled with Tariku (2016) since he performed his research on procurement performance and its link with operational efficiency. He came up with finding that procurement performance have a link with operational efficiency which is in lieu with the conclusion of this study.

As per this study finding, transportation logistics activity (x_{4i}) has a strong positive association with the level of sales volume which goes in lieu with Setiawan and Hadi (2013) finding on operation metric, in which transportation was considered as a measurement area, has a positive significant effect on the level of sales.

When it comes to the inventory planning and management (x_{2i}), this study found out it has a significant negative association with sales volume which contradicts with Melese (2017) since he found out that inventory planning and management has significant positive association with service delivery.

5.2 Conclusion

Based on the results of the discussions that have been conducted regarding the effect of logistics activities on the level of sales volume customer response, inventory planning and management, supply and transportation logistics activity logistics activities has significant effect on the level of sales volume at Heineken Ethiopia whereas warehousing logistics activity has no significant effect on the level of sales volume. From the results of the conclusions above, alternative hypothesis proposed for customer response, supply, inventory planning and management and transportation are accepted and the hypothesis for warehousing was rejected.

In Heineken Breweries S.C, customer response logistics activity showed significant and positive relation with level of sales volume. From this the researcher concluded that from high customer satisfaction, better retention and more repeat purchases appear. Happy customers, in turn, advocates brand. All the while, the company reacts quickly to changing market demands and address evolving customer needs which contributes to be the best competitor in the existing market share. Perfect customer order expressed in terms of on time in full deliveries and product availability are vital in making shows in the market.

Supply and level of sales volume also develop a positive association. So the researcher concluded that from supplier on time in full deliveries, the company obtained inputs for the production process which allowed finished product availability to the market by meeting even the variation of unexpected demand and supply. Accordingly the company took market shares even on worst scenarios.

Transportation also has positive and significant relation with sales volume, in which the researcher reached in a conclusion that the company delivered majority of its products with in the agreed time as truck arrival, departure and residence time are considered in the operation. Not only this but also the company delivered its products on the level of quality, quantity and place required by the customers.

Last but not least inventory planning and management has negative and significant relation with sales volume which is the less company planned to sale, the actual traded volume was higher, the reverse is also true i.e. the higher planned to sale the actual traded is lower. This is not the only conclusion to consider but also the company holds huge amount of safety stocks with no related sales volume therefore the planned stock level is higher but ended up consuming less and producing less than what the planned stock could offer to produce.

5.3 Recommendations

Based on the findings of the study, the following recommendations are provided by the researcher to improve logistics activities and sales volume of Heineken Breweries S.C.

As per the finding the company could improve sales volume by giving a due attention to improve inventory planning and management, supply, transportation and customer response logistics activity respectively.

❖ To improve inventory planning and management:

- ✓ The company should work on forecasting accuracy which depends on updated market information. Furthermore looking in to the trend and current market scenario, the company should decide whether the three month stock is still required or not.
- ✓ The company should use automated ordering and replenishment software which could also show stock out level.

❖ To improve supply logistics activity:

- ✓ The company should consider supplier responsiveness during selection of their suppliers.

❖ **To improve transportation logistics activity:**

- ✓ The company used own truck and majority was third party transporters in delivering products to customer and the result showed on time in full delivery is lower than the available product.
 - Accordingly the company should analyze transport performance of third party transportation companies and own truck deliveries.
 - Reward and recognition should be given according to performance evaluation.
 - Strategic use of third-party logistics providers should be implemented.
- ✓ The company should analyze the reason behind delayed deliveries and should act accordingly since the more delayed order would be the chance to be lost sales is high.

❖ **To improve customer response of logistics activity:**

- ✓ When comparing the product availability with on time in full deliveries, it showed there are ready products for sales but on time in full delivery was lower. The company should work regularly on voice of customers to make sure the company has got the updated information regarding their products i.e. availability and service i.e. on time in full deliveries so that immediate solution will be given to the customer requirements.
- ✓ Crating awareness for logistics employees on the necessity of perfect customer order in a manner they can recall their contribution on level of sales volume traded.

5.4 Suggestion for Further Studies

Most studies regarding logistics activities were conducted using primary data obtained from questionnaires, interview and observation but there should also be a secondary data source analysis. Therefore the researcher suggested to analyze the area using primary and secondary data sources. Moreover this study could be replicated for other sectors, not only in beer industry.

References

- Anna, Alberto, & Carlo (2011). *Using system dynamics in warehouse management, a fast-fashion case study*: Journal of Manufacturing Technology Management, Vol. 22 Iss 2 pp. 171 – 188.
- Belay Tariku (2016). *Assessment of procurement performance and its link with operational efficiency*. Addis Ababa University, School of Business and Economics.
- Creswell, J.W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. 3rd edition. LA: Sage.
- Fasika, Klaus and Marcus (2014). *Identifying the Characteristics of the Supply Chain Processes in Developing Country: A Manufacturing Industry Perspective*
- Fekadu Melese (2013). *Logistics Practices in Ethiopia*. Swedish university of agricultural sciences (SUAS).
- Frazzle, E. (2002). *Supply Chain Strategy -the logistics of supply chain management*. New York: McGraw-Hill.
- Geoff (2006). *Reconstructing inventory management theory*, International Journal of Operations & Production Management, Vol. 26 Iss 9 pp. 996 – 1012.
- Hadi, S. and Setiawan, M. (2013). *The Impact of Logistics Performance on the Sales Level*. Tadulako University. pp. 1 – 4.
- Hana Alemu (2016). *Implication of logistics service quality on customer satisfaction*. Addis Ababa University, School of Business and Economics.
- Heineken Breweries Ethiopia (2019). *Our Breweries*. <http://heinekenethiopia.com/our-breweries/>
- Heineken Ethiopia Logistics Process Standard (2012)
- International Monetary Fund report (2013).
- Ionescu, Daniela, and Ovidiu [ND]. *Why do logistics and transport matter for development?* pp. 34-39

- Ismail, Haliland and Mustafa (2012). *The role of logistics in regional development*, university of târgujiu.
- Jeffrey, J. (2014). Ethiopia: *The battle of the brewers*: <https://africanbusinessmagazine.com/uncategorised/battle-brewers/2/>.
- Kent (2001). *Global Logistics Management*: p.17
- Klimenok, S. (2017). *Marketing and sales development in the logistics startup*. pp. 8-10.
- Kong, B. and Choe, M. (2011). *Logistics as a strategic role for the creation of Customer*: Linnaeus University. pp. 11-13.
- Kunadhamraks and Hanaoka. (2008). *Logistics performance of intermodal transportation in Thailand*.
- Leelt Desta (2016): *Assessment on logistics management practices and challenges in retailing industry*: some selected foodstuff retail stores in Addis Ababa.
- Luchen, Theo, N. (2011). *Determinants for assigning Value-added Logistics services to Logistics centers within a Supply Chain Configuration*.
- Matiwos Ensermu (2013). *Logistics and Supply Chain Management*. Addis Ababa, Ethiopia: Addis Ababa University. pp.40-62.
- Melkamu Ayalew (2016). *Logistics practices in Ethiopian medium and large leather footwear manufacturing firms*.
- Mensah, Diyuoh, and Oppong. (2014). *Assessment of supply chain management practices and its effects on the performance of Kasapreko Company*. Ghana: Vol.2, No. 1, pp.1- 16.
- Nege, Vichayanan, Rattanawiboonsom, Mahmood, and Rurkwararuk. (2016). *The Critical Factors Affecting Logistics Activities: An Empirical Study of Garment Industry*: Myanmar University.
- Odhiambo, H. Onyango, R. Kibet, Y. and Kimutahi, G. (2017). *Effect of Logistics Activities on Performance of Agro Processing Firms*. Uasin Gishu, Kenya: Kisii University. pp. 21-23.
- Processes in Developing Country: A Manufacturing Industry Perspective.

Rafele (2004). *Logistic Service Measurement*

Ronald, H. (1997). *Business logistics importance and some research opportunities*, Ohio U.S.A.

Sahay and Ramneesh (2003). *Supply chain management practices in Indian industry*:
International Journal of Physical Distribution & Logistics Management, Vol. 33 Iss 7 pp.
582 – 606.

Tewodros Bogale (2016). *Assessment of warehouse performance*. Addis Ababa University,
School of Business and Economics.

Toyli, *et al* (2008). *Logistics and Financial Performance*.

Yin, R. K. (2003). *Applications of case study research*. 2nd ed.

Yin, R. K. (2003). *Case study research: Design and methods*. 3rd ed.