ST.MARY UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THE EFFECTS OF PHYSICAL DISTRIBUTION PRACTICE ON

SERVICE QUALITY,

IN THE CASE OF ETHIOPIAN PHARAMACEUTICAL MANUFACTURING SHARE COMPANY

BY

BEAMLAK ASHENAFI

JUNE, 2020

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF ART IN BUSINESS ADMINSTRATION

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Declaration

I, Beamlak Ashenafi declare that the thesis entitled "The effect of physical distribution practice on service quality: in the case of Ethiopian Pharmaceutical Manufacturing Share company" is my original work and has not been presented for a degree in any other university and that all sources of material used for the project have been duly acknowledge.

Beamlak Ashenafi

Signature_____

Date: June, 2020

Endorsement

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

_____   _____

Advisor   Signature

Acknowledgment

Words won't be enough for me to thank my beloved God; he has been an amazing father and a guide in my life. I like to express my deepest gratitude to the Almighty God for his blessing and for making me accomplish this achievement. Besides, I would like to thank my beloved families for their encouragement, support in this paper, and in my life too.

I would like to thank my advisor Dr. Mesfin Workenh for his advice and guidance. And also I would like to thank Surafel Eshetu from the bottom of my heart for his support, guidance, comments, building ideas, cooperativeness, his advice, and help from the starting to the accomplishment of this study.

I would like to acknowledge the employees and customer of Epharm for their valuable information to conduct this study. Moreover, my heartfelt thanks go to everyone that has contributed to this thesis directly or indirectly.

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Acronyms

EPHARM   Ethiopian pharmaceutical manufacturing share company

TOC   Theory of constraints

EOQ   Economic order quantity

EPQ   Economic production quantity model

JELS   Joint economic lot-sizing

FRP   Forward-reserve problem

SLAP   Storage location assignment problem

SPSS   Statistical package for social science

Abstract

The purpose of this research paper is to investigate the effects of physical distribution practice on service quality in the case of Ethiopian pharmaceutical share company. The objectives of this study were to examine the effect of product availability, warehouse management, inventory control, transportation, customer service on service quality. The service quality dimensions were assessed by serqual models which are reliability, responsiveness, assurance, empathy, and tangibility. To investigate and assess the objectives of this study, both descriptive and explanatory research designs with a quantitative research approach has been employed. For data collection, both primary and secondary sources of data have been used. With regard, questionnaires were distributed to 53 customers of the company, and from those 48 were properly filled and returned to the researcher. The questionnaires were tested and analyzed by using a software package called statistical package for social science version 24. The test includes a one-sample t-test, ANOVA, correlation, normality, and regression. The researcher has found out that the service quality is affected and explained by the practice of physical distribution. Likewise, the customers are not satisfied with the customer service, timeliness, product availability, and transportation service. Besides, warehouse management, inventory control, had a positive and significant effect on service quality; as the location of the warehouse is good and accessible to the customers. Based on the findings the researcher recommends the management of the company to observe its customer service, product availability, timeliness, empathy, transportation service, and stock availability.

***Key Words:** physical distribution practice, service quality, epharm*

CHAPTER ONE

INTRODUCTION

This chapter presents the indication of the entire paper. It includes the background of the study, statement of the problem, research questions, the objective of the study, the significance of the study, the scope of the study, limitation of the study, definition of terms, and organization of the study.

1.1. Background of the study

Physical distribution describes the method by which a product or a group of products are physically transferred, or distributed from their point of production to the point at which they are made available to the final customer. Rushton, Croucher & Baker (2010) Distribution is involved in the process of making a product or service available for use or consumption by the consumer or business user. It involves planning, implementing, and controlling the physical flow of materials, final goods, and related information from points of origin to points of consumption to meet customer requirements at a profit. In short, it involves getting the right product to the right customer in the right place at the right time. Kotler, Wong, Saundes & Armstrong (2005)

The broad range of activities concerned with efficient movement of finished products from the end of the production line to the consumer, and in some cases includes the movement of raw materials from the source of supply to the begriming of the production line. These activities include freight transportation, warehousing, material handling, protective packaging, order processing, inventory control, plant and warehouse site selection, and customer service. Hason (1969) Customer service is the level of customer service the distribution activities support, Transportation is how the firm ships its products, inventory control is the quantity of inventory the firm maintains at each location, protective packaging and materials handling how the firm packages and efficiently handle goods in the factory, warehouse, and transport terminals, order processing is how the firm handles orders and warehousing is the distribution system's location of stock and the number of warehouses the firm maintains. Kurtz (2012)

Service quality is the difference between consumers' perceptions of the services provided by the given firm and their expectations towards that service. It implies that when consumers' perceptions exceed their expectations, they are satisfied and the service firm delivers superior

service. While consumer's perceptions are less than their expectations this indicates that consumers are dissatisfied with the service and the firm provides an inferior service. Service quality is based on the notion that consumers always have an expectation of such service, and this expectation may vary from country to country, culture to culture, and person to person, which makes measuring service quality a challenging task. Almomani (2017)

Customer service and satisfaction have become the cornerstones of marketing strategy in many businesses, and distribution is an important customer service element. Companies can gain a powerful competitive advantage by using improved logistics to give customers faster delivery, better service, or lower prices. Kotler, Wong, Saundes & Armstrong (2005) Effective distribution provides customers with convenience in the form of availability (what, where, when the right product, at the right place, at the right time), access (customers' awareness of the availability and authorization to purchase), and support. Yeboh,Owusu,Boakys & Mensah (2013).

Physical distribution service quality plays a key role in supply chain management. A successful distribution system will bring high values and profit for the company. Through physical distribution service activities, a company can bring good perceived values to customers. Physical distribution service quality also contributes significantly to the success of the supply chain, in general, and the retail supply chain, in particular. Moreover, the development of different business channels helps consumers have more choices and comforts as well as creates means for companies to get access to consumers Nguyen (2019).

The Ethiopian Pharmaceuticals Manufacturing Share Company (EPHARM) is a pioneer in the pharmaceutical manufacturing industry of Ethiopia. Epharm was established as a joint venture in 1964 by the Ethiopian government and a British company by smith and nephew. A few years later, in December 1975, the company was fully nationalized by the state. Since January 2002; it has been reorganized as an Ethiopian pharmaceutical manufacturing share company. Through 50 years of experience, the Epharm factory has become a role model for newly established pharmaceutical manufactures in the country. By using modern and highly sophisticated machinery quality control instruments and other complimentary appliances the factory has increased its productivity and thus has become highly profitable. The company produces 65 different pharmaceutical products and also it introduces several new products and also it

introduces several new products. It has eight dosage form manufacturing lines including tablets, capsules, oral liquids, topical preparations, ampoules IV fluids, Vilas, and oral powders.

1.2. Statement of the problem

In this highly dynamic and competent environment maintaining the quality of services through effective physical distribution ensures the satisfaction of the customers, which greatly affects the performances of the company. A company can attract and retain customers by providing and fulfilling a quality service in physical distribution. Physical distribution plays a great role in being competitive and serving demand by holding down the cost of distribution.

As per a formal interview with the marketing manager and customers of Epharm, the researcher was able to recognize the gap of this manufacturing company. One of the major challenging factors is there is a lack of product availability in this manufacturing company. The customers do not get the products that they are looking for. Besides, the products, of the manufacturer are not found in the stock, and also the assorted products are not always found in the stock. Moreover, the orders are not fully and consistently supplied to the customer. Besides, the company does not provide its products by scheduled time or at a specific time to its customers. This means the service is not provided to the customer on time, products do not arrive at the customer as it is promised. Most of the time a lot of companies loses their customers since they do not provide products on time and make their products available. Thus, they cannot attract and retain existing and potential customers.

In (2017), Abel conducted research which is titled logistics management practice in the case of awash bank s.c. The researcher stated that there is a lack of coordination, lack of skilled manpower in inventory management, giving less attention to warehouse management, lengthy purchasing process and, lack of adequate transportation in the distribution of stokes. In (2016), Addishiwot conducted a thesis which is titled assessment of Logistics Performance in Flower Industry in the case of Floriculture Company in Ethiopia. The researcher tries to mention there is a lack of market to absorb the production, lack of coordination among traders to increase their capacity to search for potential markets and control the activities of the middlemen, poor product handling; packing is traditional and only in sacks imperfect pricing system, middlemen decide on the price since the product is perishable, limited access to external markets.

The previous paper works try to investigate the inventory management, coordinating, purchasing process, distributing of stock, markets that absorb products, coordination among traders, product handling, packing, and pricing system. But these papers do not address or distinguish the issue of physical distribution with the service quality.

This research tries to fill the gap of the study by conducting a study on the effect of physical distribution practice on the service quality by considering the dimensions of both service quality and physical distribution. It tries to examine the effect of physical distribution on service quality by the given the dimensions of physical distribution i.e. customer service, warehouse management, inventory control, product availability and transportation service. With the dimensions of Service quality counter parts i.e. with the reliability, assurance, empathy, responsiveness, and tangibility.

1.3. Research questions

1.3.1. Main research question

- How does physical distribution practice affect service quality?

1.3.2. Sub research questions

- What does the practice of physical distribution looks like?
- How does the product availability affect the service quality of the company?
- How does the customer service affect the quality of the service?
- What is the effect of transportation service on service quality?

1.4. Research objectives

1.4.1. General objective

The general objective of this study is to investigate the effect of Physical distribution practice on service quality in the case of EPHARM.

1.4.2. Specific objectives

Particularly, the specific objectives of the study are:

- To assess the physical distribution practice of the company.

- To examine the effect of product availability on service quality.
- To identify the effect customer service on service quality.
- To assess the effect of transportation service on service quality.

1.5. Significance of the study

This research enables Epharm to insight into the practice of physical distribution towards service quality. Besides, it will be used   as a secondary data for other researchers. Moreover, it will also help the researchers to gain knowledge and experience.

1.6. Scope of the study

This study delimited its conceptual view on product availability, warehouse management, inventory control, customer service and transportation service under the SERVQUAL dimensions. It also tries to see the effect of the physical distribution practice on SERVQUAL dimensions.

Epharm distributes its physical products all over the regions and cities of Ethiopia. Due to the difficulty of maintaining the time, the budget, a large number of population areas, and geographical location the study delimits the research on Ephram's customers which is located in Addis Ababa.

This study used both descriptive and explanatory design together with quantitative research approaches. The primary and secondary sources of data are used to collect the data. The data were collected through questionnaires from the customers of the company and the data were analyzed by using SPSS version 24 software application. Both descriptive and inferential statistics were used to analyze the data based on the objectives of the study.

1.7. Limitation of the study

The researcher was managed to get some published articles and studies that are conducted on the effect of physical distribution towards service quality.

1.8. Organization of the study

The paper is organized in five chapters. The first chapter introduces the research paper, it covers the background of the study, statement of the problem, research questions, the objective of the

study, the scope of the study, the significance of the study, limitation of the study, organization of the study, and definition of the study. The second chapter contains the review of related literature which explores different kinds of literature that are related to the topic. The third chapter explains the research methodology that is applied to the paper. In the fourth chapter, the researcher presents data analysis, interpretation, and findings. And finally, the fifth chapter presents the summary, the conclusion, and the recommendation of the paper.

1.9. Definition of terms

Physical distribution is the group of activities associated with the supply of finished products from the production line to the consumers.

Service quality is the difference between consumer's perceptions of the services provided by a service firm and their expectations toward that service.

A service is an act or performance offered by one party to another. Although the process may be tied to a physical product, the performance is essentially intangible and does not normally result in ownership of any of the factors of production.

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

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter presents a review of related literature that has been critically studied and selectively adopted for this study. Relatively rich scholarly works including journal articles, books, and periodicals as well as professional complements were considered relevant sources of the reviewed literature.

2.1. Theoretical review

2.1.1. Theories of distribution

System Theory

Physical distribution can be viewed as a system of components linked together for the efficient movement of products. Using a system approach to describe physical distribution, the components include; customer service, transportation, warehousing, order processing, inventory control, protective packaging and materials handling. These components are interrelated, hence: decisions made in one area affect the relative efficiency of others. For example, a small business that provides customized personal computers may transport finished products by air rather than by truck, as faster delivery times may allow lower inventory costs, which would more than offset the higher cost of air transport. Viewing physical distribution from a systems perspective can be the key to providing a defined level of customer service at the lowest possible cost. (Alderson, 1957)

Bargaining Theory of Distribution

Bargaining between manufacturers and retailers over the terms of trade is an important characteristic of many distribution channels. The relationship between manufacturers and their retailers often hinge on the importance of negotiation and its effect on each party's share of the pie, as well as on channel coordination. This role of bargaining power by participants exists in distribution systems in a wide range of industries. Iyer and Miguel (2003)

2.1.2. Models of physical distribution

2.1.2.1. Inventory models economic

Order quantity models

As Bartmann, & Beckmann (1992) stated that the fixed order size inventory models, the economic order quantity (EOQ) model is most well-known. The basic EOQ model is a formula for determining the optimal order size that minimizes the sum of carrying costs and ordering costs. The model is derived under a set of restrictive assumptions, as follows:

• Demand is known with certainty and is constant over time.

• No shortages are allowed.

• Lead time of orders is constant.

• The order quantity is received all at once.

Economic production quantity models

Economic Production Quantity model (EPQ) determines the quantity a company or retailer should order to minimize the total inventory costs by balancing the inventory holding cost and average fixed ordering cost. The EPQ model was developed by E.W. Taft in 1918. The classical economic production quantity model has been widely used. Numerous research efforts have been undertaken to extend the basic EPQ model by releasing various assumptions or adding new so that the model conforms more closely to real-world situations. Recently, re-work activities have attracted considerable attention because of the reduction of natural resources and the rise in the cost of raw material. Bartmann, & Beckmann (1992)

Joint economic lot-sizing models

Inventory models that address issues of inventory coordination between a buyer and a seller have been extensively studied in the literature. This class of inventory models is commonly referred to as joint economic lot-sizing (JELS) models. The objective of these models is the development of a jointly coordinated buyer-seller inventory strategy that is more beneficial to each member's non-coordinated inventory strategy. Bartmann, & Beckmann (1992)

Single-period models

The newsvendor model is a single-period, probabilistic inventory model, which objective is to determine the order quantity that minimizes expected underage costs (costs due to shortage) and overage costs (costs due to holding inventory). It is investigated the so-called fuzzy newsboy problem where its shortage cost is vague and given by an L shape fuzzy number. Then, the total expected profit function was considered to be a fuzzy number. An optimal ordering quantity realizing the fuzzy max order of the profit function (fuzzy min order considering the profit function) was found and compared with the optimal ordering quantity of the non-fuzzy newsboy problem. Bartmann, & Beckmann (1992)

Multi-period models

The main difference between the single-period model and the multi-period model is that the multi-period model may involve stock leftovers from previous periods, which makes the optimal choice of order quantities more complicated.

In real-world applications, inventory and production decisions are interdependent and temporal. Fuzzy logic has been useful in formulating multi-period lot-sizing models. Bartmann, & Beckmann (1992)

2.1.2.2. Warehousing models

Storage allocation and assignment

A popular approach to reducing the amount of work associated with order picking is to divide the warehouse into a forward area and a reserved area. The forward area is used for efficient order picking. The reserve area holds the bulk storage and is used for replenishing the forward area and for picking the products that are not assigned to the forward area. The forward and reserve area may be distinct areas within the warehouse or the forward and reserve area may be located in the same (pallet) rack. In the latter case, the lower levels represent the forward area, the higher levels represent the reserve area. In some facilities, the reserve area is once again subdivided into two separate areas: one for order-picking and one for replenishing. Berg (1999)

Berg (1999), the forward-reserve problem (FRP) is the problem of deciding which products should be stored in the forward area and in what quantities. If a product is not assigned to the forward area, then it is picked from the reserve area. It is described as a heuristic for the FRP that

attempts to minimize the total costs for picking and replenishing. The costs in the model for picking in the forward area and for replenishing depend on the size of the forward area.

Berg (1999), in these operations, it is possible to reduce the number of replenishments in busy periods, by performing replenishments in the preceding idle periods. This not only increases the throughput during the busy periods, but it also reduces possible congestion and accidents. A typical example is a distribution center in which trucks are loaded during the afternoon so that the workforce is available in the morning hours for replenishing the forward area. It is considered as a picking period during which the order-picking operation takes place. Before the picking period, the forward area is replenished in advance. Their objective is to end the allocation of product quantities to the forward area, which minimizes the expected labor time during the picking period.

Storage location assignment

The storage location assignment problem (SLAP) concerns the assignment of incoming stock to storage locations. For automated storage-retrieval systems, Berg (1999), Hausman, et al. present three storage location assignment policies: class-based storage, randomized storage, and dedicated storage.

The class-based storage policy distributes the products, based on their demand rates, among several classes and reserves a region within the storage area for each class. Accordingly, an incoming load is stored at an arbitrary open location within its class. The class-based storage policy and the dedicated storage policy attempt to reduce the mean travel times for storage/retrieval by storing products with high demand at easily accessible locations. Berg (1999)

2.1.3. Service Quality Models

2.1.3.1. Gap Model of Service Quality

As Bhattacharjee (2012) stated that, this model can help a firm desirous of improving service quality to focus better on its strategies and service processes.

Service is intangible and the only way to measure quality in service is to measure the expectation of the customer before the receipt of service and measure his perception after the experience, that

is, the service encounter. The gap between the two is a measure of service quality. The larger the gap, the worse is the service quality; the narrower the gap, the better the service quality of the firm.

The model professes two types of gaps:

The Customer Gap

Customer Gap is the gap between customer expectations and customer perceptions. This, in other words, is the service quality shortfall as seen by the customers. Customers develop expectations from receipt of external stimuli from many sources ranging from those that are company controlled to social influences. Bhattacharjee (2012)

Bhattacharjee (2012), the customer gap indicates the difference between actual performance and the customer's perception of the service. There are a lot of subjective judgments made by customers. Last experiences may prejudice them and change their estimation of quality.

The service performance is measured by the perceived service quality. The quality of service has two components:

Technical Quality: This is the result of the service operations process.

Functional Quality: This is about the process, especially concerning the interaction between the customer and the service provider.

The Provider Gap

There are four provider gaps and these in total are the cause of the Customer Gap. The four provider gaps are:

Gap 1: Customer Expectation, Management Perception Gap

Top management cannot perceive what the customer wants, and is the main reason why a firm cannot meet a customer's expectations. The company is blinded by a perceptual veil of ignorance, arrogance, or criminal neglect. Bhattacharjee (2012)

Some of the reasons why Gap-1 can occur are: Inadequate marketing research, Lack of upward communication in the organization, Insufficient focus on relationship building

Gap 2: Management Perception, Service Quality Expectation Gap

This gap is created in the design process of the service product and lying down of specifications for service quality during service transactions. In the design process, this gap arises during the translation of management's perception of customer-expectation into design specifications. Bhattacharjee (2012)

This gap implies that even if the firm has crystal-clear knowledge and understanding of the customers' expectations, there would be scope for misunderstanding this, leading to setting the wrong specifications, service designs, and standards. Bhattacharjee (2012)

Some reasons for Gap-2 to occur are Failure to connect service design to service positioning, unsystematic new-service development process, Lack of customer-defined service standards, Absence of a formal process of setting service quality goals, etc.

Gap 3: Service Quality Specifications, Service Delivery Gap

This occurs at the service provider level when there is a deviation from service standards specified and delivered to the customers. The management's perception and service design standards might be accurate and perfect. But if the interacting service provider during service delivery falls short of the standards specified, the customer will get an impression of a poorly performing firm. This becomes especially important for that firm that is heavily dependent on people in performing the last transaction. Bhattacharjee (2012)

Some of the reasons for Gap-3 to occur are: Ineffective recruitment, role ambiguity; Role conflict; Lack of empowerment, control, and poor teamwork; Failure to match supply and demand, customers not co-operating or failing to live up to their roles

The service firm must ensure that systems, processes, and people are in the right place. This will make sure that service delivery is as per the design standards set.

Gap 4: Service Delivery, External Communications to Customer

This is essentially a communication gap. The gap is the difference between service delivery intention and capability and what is being communicated to the customers. An over-hyped communication raises the expectations of the customer - and his benchmark of service quality and his expectations from the service delivery sky-rocket. It will be difficult than for the firm to meet the expectation and there would inevitably be a shortfall. The tragedy is the customers

would have been satisfied without the hype. But now they go back with memories of disappointment and are dissatisfied. This results from inadequate communication from the firm. Bhattacharjee (2012)

As Bhattacharjee (2012) stated that the causes of Gap-4 are Lack of cohesiveness in marketing communications, Absence of strong internal marketing program, not being able to meet customers, expectations through communications, Over-promising in advertising and personal selling; inadequate horizontal communication between sales and operations, differences in policies and procedures across branches, etc.

2.1.3.2. Service Triangle Marketing Model

As Bhattacharjee (2012) stated, it is said that services marketing is a game of promises played amongst three entities engaged in the service transaction. The three entities in a service transaction are:

The Company

This is the organization that has dreamed up the service product and its various benefits. It offers the service product to the customer to achieve its service goals to the customers.

The Customer

The customer is the one who wants his needs and desires satisfied.

The Provider

They are the internal customers of an organization who invariably complete the service transaction on behalf of the company. They are mostly employees, but also include franchisees, channel partners, distributors, wholesalers, retailers, etc.

Three different types of marketing take place during the service transaction amongst the three entities:

External Marketing: The Company does external marketing on the customer. It promises benefits, explains features, and assures satisfaction by way of advertising, public relations exercises, and other forms of corporate communication. It uses mass-media to convey its promises. It makes promises to the customers.

Internal Marketing: The Company does internal marketing to its providers. The company has to provide working space like offices, and equipment, like computers, and telephones to its provider. It also has to recruit, select, and train appropriate employees, channel partners, and franchisees. It enables the providers to complete the service transaction. The company enables its promises.

Interactive Marketing: The providers do interactive marketing with the customer. The provider is the one who interacts with the customers. The provider is the face of the company and represents the company. Both the customer as well and the provider get instant feedback about each other during a service transaction. Their transaction reflects the perception of the quality of the service. The provider keeps the promises made by the company to the customers. Task Give some examples of major external and interactive marketing campaigns run by services firms.

2.1.3.3. SERVQUAL Model

Dimensions of Service Quality

Bhattacharjee (2012) stated the models of SERVQUAL

- **Reliability**: The service should be performed with dependability, and as per its promise.

- **Responsiveness**: This concerns the attitude of the service provider to be willing to provide service. It also includes their sensitivity as well as timeliness in responding to customer requests.

- **Assurance:** This relates to the knowledge, skill, and competence of the service providers. It also indicates their ability to generate trust and faith, and also capability in service delivery with politeness and consideration.

- **Empathy:** This dimension relates to caring, feeling as well as the ability to give personalized service.

- **Tangibles**: This is a measure of the effectiveness of the physical evidence of the service provider like design layout and facilities.

2.2. Empirical review

2.2.1. Effectiveness of physical distribution

Isoraite (2005) Transport effectiveness refers to the effectiveness of the transport agency's organizational systems in achieving its internal and external objectives. The assumption is that effective organizational systems produce consistent standards and behavior in an organization and ultimately, good country-level results. Poor results can be traced to weak organizational systems.

Effective warehouse management has many dimensions that depend on business types, size of the business, or competition environments. Effective warehouse design provides the maximization of space using, equipment allocations and the accessibility to all items. Generally, they have four types of tactical and operational decision problems for a warehouse manager; they are warehouse layout design, picking policies, storage assignment policies, and warehouse routing policies. Layout design concerns both the layout of the facility containing the order-picking system and layout within the picking system.

If a company has an effective physical distribution it will provide a service that the customers are looking for. It will also enhance a quality service to its customer. This will enable the company to be in the competitive in the market and satisfy the needs and wants of its customer.

H1:- when a physical distribution is effective, the company will be successful through warehouse management, inventory control, customer service, transportation service and making product available to the customers.

2.2.2. Effect of service quality on physical distribution

Four factors are put into discussion, namely personnel quality, information quality, order quality, and timeliness. Tran (2018)

Personnel quality

It is asserted that the interaction between the customers and the companies' staff affects customer satisfaction with Logistics Service Quality. It is also indicated some key indicators of high personnel quality, including the ability to distinguish regular customers, knowledge about products and services offered to the customers, the ability to learn customers' preferences, and

the ability to provide attention to the individual customer. Besides, poor personnel quality could lead to the result of which the customers switch to another logistics services provider.

Information quality

Information quality has a prominent role in Logistics Service Quality. It is denoted that when the customers have more information, they can make better decisions, and it is also true to the companies since rich information allows them to make better operational decisions. The service performance of the companies can be improved further throughout better information provision, trustworthy information, and the information must be provided in different languages.

Order quality

Order quality reflects the average effectiveness and success of a logistics company. Empirical evidence shows that order quality is obtainable when goods are delivered to the customers without any damages. The measurement of order quality is also detected through how many customers complain about logistics services.

Timeliness

Timeliness plays a critical role in promoting the relationship between customers who use logistics services. Empirical evidence shows that timelines help when the companies can deliver logistics services with flexible timelines; customer satisfaction with logistics services is improved accordingly.

H2: understanding and maintaining the effect of physical distribution on service quality will help to prevent the problems that occur on the variables of both physical distribution and service quality.

2.3. Conceptual framework

The conceptual framework is a structure that the researcher believes can best explain the natural progression of the phenomenon to the studied. Adom, Joe, Hussein (2018)

In this research, the independent variables are transportation service, inventory control, warehouse management, and product availability. And the dependent variable is service quality.

Figure 1

Independent Variable   **Dependent Variable**

| Transportation service |

| Inventory control |

| Product availability |

| Warehouse management |

| Customer service |

Service Quality

- **Tangibility**
- **Responsiveness**
- **Assurance**
- **Reliability**
- **Empathy**

Source: - own (2020)
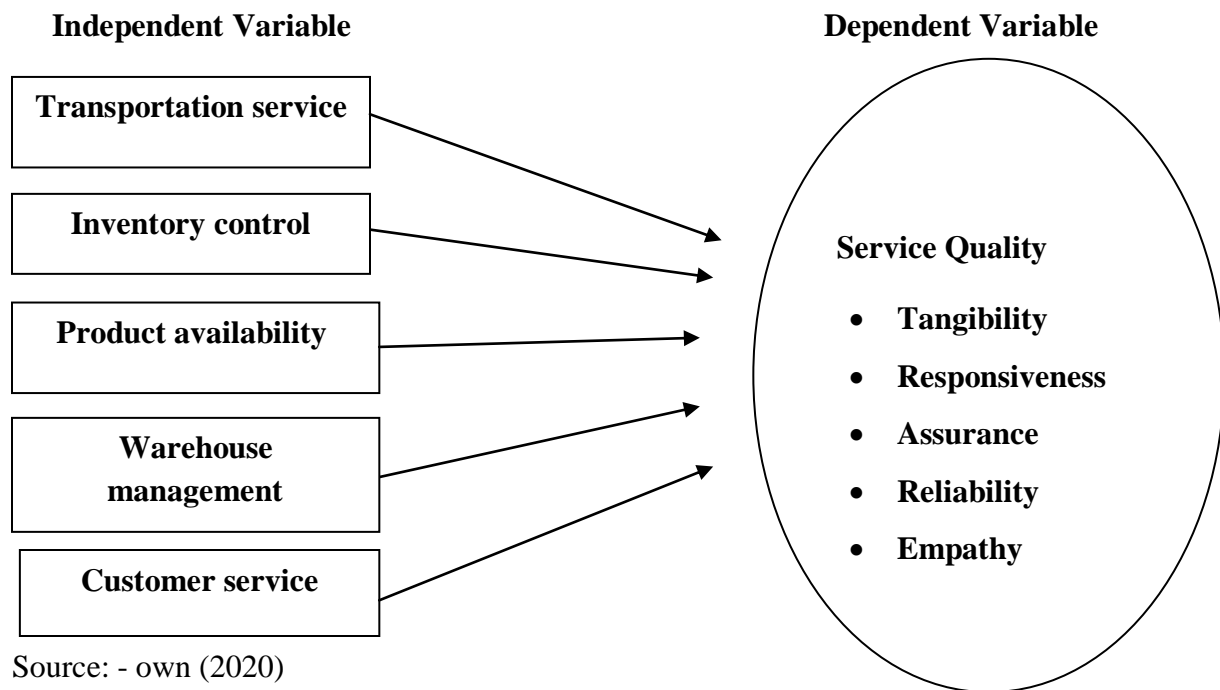
CHAPTER THREE

RESEARCH METHDOLOGY

Introduction

This chapter discusses how the research has been carried out. It contains the research approach, the research design, data types and sources, population of the size, data analysis techniques, validity and reliability, and ethical considerations of the research.

3.1. Research approach

There are three types of research approaches according to Creswell (2009) and those research designs are qualitative, quantitative, and mixed methods.

Qualitative research is a means for exploring and understanding the meaning of individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participants setting, data analysis inductively building from particulars to the general theme, and the researcher interpreting the meaning of the data.

Quantitative research is a means of testing objective theories by examining the relationship among variables. These variables can be measured, typically on instruments so that numbered data can be analyzed using statistical procedures.

Mixed is an approach to inquiry that combines or associates both qualitative and quantitative forms.

From the following research approaches the researcher used a quantitative research approach to conduct the study.

3.2. Research design

Research design is a plan of methods and a procedure that is used by researchers to collect and analyze the data which is needed. Shukala (2010)

According to belay & Abdinasir (2015), there are three kinds of research designs. Those are descriptive research design, explanatory research design, and exploratory research designs. Descriptive research design is a type of research whose major goals or task is that of describing a

particular state of affair determining the type, forms, magnitude of its existence. Explanatory research, explains the means of a reason for occurrences of certain behavior. As Shukala (2010) exploratory research design deals with exploring the phenomena.

Accordingly, this research conducted both explanatory and descriptive research design to explain and suggest the relationship between service quality and physical distribution.

3.3. Data type and sources

In this research, the researcher used both primary and secondary data. The primary data are information that is gathered for the first time which is obtained from the questionnaire. The secondary data is data that is collected for some other purposes for this research the researcher used reports and magazines that were prepared for this purpose.

3.4. Population of the study

The target population for this study is the whole customers of the company which is found in Addis Ababa. The company has 53 customers. The reason behind taking the whole population than using a sampling procedure is because of the number of the population is small and it is possible to reach the entire population and collect the required information.

3.5. Data collection instruments

A questionnaire is a research instrument consisting of a set of questions or items intended to capture responses from respondents in a standardized manner. Structured questions ask respondents to select an answer from a given set of choices Bhattacharjee (2012).

The researcher used closed ended questionnaire in order to collect data from the customer of Epharm. The questionnaire has been designed from physical distribution and service quality dimensions and the questionnaire has been pretested.

3.6. Data analysis techniques

The data were collected through questionnaires from the customers of the company and, it was analyzed by using SPSS 24 software application. Both descriptive and inferential statistics were used to analyze the data based on the objectives of the study.

All the descriptive information on the survey data was analyzed using descriptive statistics such as Percentage, frequency; mean and standard deviation were used. Concerning inferential statistics, one sample t-test has been conducted to test the significance of the average response of the customers. Besides correlation analysis was conducted to check the relationship between the variables. Besides multiple regression analysis was conducted to examine whether the independent variables have any influence on the dependent variables and to estimate the magnitude of their contribution. Accordingly, normality test has been conducted to determine whether sample data has been drawn from a normally distributed population.

3.7. Validity and reliability

3.7.1. Validity

Validity refers to the credibility or believability of the research. These are the findings and a valid measure of intelligence. It is concerned with whether the findings are really about what they appear to be about. Validity defined as the extent to which data collection method or methods accurately measure what they were intended to measure. In order to achieve this objective, the researcher was taken different steps to ensure the validity of the study:

Data was collected from the reliable sources, from those respondents who have good understanding and experiences in using the service of the company. Survey questions were prepared based on previous empirical review and literature review to ensure result validity. The questionnaire has been examined by researchers and the advisor of this thesis.

3.7.2. Reliability

The test of reliability is another important test of sound measurement. A measuring instrument is reliable if it provides consistent results. Kothari (2004) Reliability estimates the Consistency of the measurement or more simply, the degree to which an instrument measures the way each time it is used under the same conditions which the same subjects.

To measure the reliability of the constructs the researcher conducts internal consistency reliability using Cronbach alpha. As per Cramer, D. and Howitt D. (2004), internal consistency reliability is a measure of consistency between different items of the same construct. Cronbach's Coefficient is the most widely used test for the internal consistency of an item making up a scale.

Cronbach's alpha coefficients should fall within a range of 0.70 to 1.00. Sun, Chou, Stacy, Ma, Unger and Gallaher, (2007)

Cronbach's alpha coefficient of the factors is displayed in the following table. The result shows that there is high internal consistency among the variables, so the dimensions are sufficient to measure the constructs.

Table 1 Result of the Reliability Statistics

Factors	Cronbach's Alpha	No of Items
Physical distribution Dimension		
Customer Service	0.860	2
Ware House	0.764	2
Transportation Service	0.754	4
Product availability	0.733	3
Inventory Control	0.717	2
Total		15
Service Quality Dimension		
Timeliness	0.749	4
Tangibility	0.707	4
Reliability	0.870	5
Responsiveness	0.740	4
Assurance	0.867	5
Empathy	0.775	4
Total		26

Source: SPSS output

3.8. Ethical consideration

Ethical issues were considered while conducting this research. Before the data were collected for the study, the researcher notifies and guaranteed the respondents for their confidentiality. The purpose of the study was informed to the respondents and some further information's the respondents like to know.

CHAPTER FOUR

RESULT AND DISCUSSION

In this section, the results and findings of the effects of physical distribution practice on service quality are provided. The Data were collected through closed-ended questionnaires based on the dependent and independent variables. The data were analyzed through different statistical measures figures and summarized using tables.

As stated in the research methodology, 53 questionnaires were distributed to different respondents of customers of Epharm. Out of the total 53 questionnaires, 48 were filled and returned to the researcher which makes the response rate to be 90. 6%. Data were collected and analyzed to assess the factors of physical distribution on the service quality of Epharm.

4.1. Presentations of the finding and analysis

Descriptive analysis was used to summarize the demographic characteristics of the respondents. The table shown below summarizes the respondent's demographic distributions based on age, sex, marital status, and education background.

Table 2 The percentage and frequency distribution of demographic characters

Items	Categories	Frequency	Percent
Gender	Male	29	60.4
	Female	19	39.6
Age	20-30	9	18.8
	31-40	20	41.7
	41-50	13	27.1
	Above_50	6	12.5
Marital Status	Single	6	12.5
	Married	39	81.3
	Divorced/Separated	1	2.1
	Widowed	2	4.2
Educational background	Degree	30	62.5
	Masters	16	33.3
	PhD	2	4.2
	Total	**48**	**100.0**

Source, questionnaire, 2020

As shown in the table 4.2.1 above the gender distribution of the respondents which is 60.4% are male while the rest 39.6% are female. This shows that the number of male employees participated in responding to the questionnaire is higher than the female counterparts.

The age distribution of the respondents show that 18.8% of the respondents are between the ages of 20-30; 41.7% of the respondents are found between the ages of 31-40; 27.1% of the respondents are found between the ages of 41-50 and 12.5% of the respondents are more than the age of 50. The marital status we can see that 12.5% of the respondents are single; 81.3% of the respondents are married , divorced/separated are 2.1% and widowed are 4.2% each.

The table above also shows that 62.5 % of the respondents are 1st Degree holders; 33.3% of the respondents have a MA degree and 4.2% have a PHD.

This table presents the demography of the respondents. It is a table that show only the respondents information it doesn't have a factor on the answers of the questionnaire.

4.2. The effects of physical distribution practice on service quality

This part explains the one sample statistics for the variables used in the Physical distribution practice and the dimensions used in the service quality. The mean values of each statement of factors of physical distribution intention are assessed with respect to the output of a one-sample t-test.

One sample *t*-test is a statistical procedure often performed for testing the mean value of a distribution. It can be used under the assumption that sampled distribution is normal. For large samples, the procedure often performs well even for non-normal populations. Moreover, the t distribution approximates to normality with increasing sample size. Burns, B.R and Burns.A.R, (2008)

One sample *t*-test consists of two outputs. The first contains descriptive statistics and the second box contains a one-sample test. The descriptive part reports the mean, standard deviation, standard error, and number of the sample size. One sample test displays the results more relevant to the one-sample *t*-test. These are t-value (a distance of the mean from the population mean or it tells how many units away from the average mean); the degree of freedom (the t-distribution changes shape based on the number of degree of freedom or the ability of a number in a given set to assume any value) and the significance level. In the significance level, if the number is less than the predetermined alpha level (usually .05) this means the sample mean is significantly different than the midpoint of the Likert scale or test value. If it is more than the predetermined alpha level, there is no significant difference between the sample and the midpoint of the Likert

scale. The mean difference is the difference between the observed sample mean and the specific test value. The sign of the mean difference corresponds to the sign of the *t*-value.

The research objective was to study the practice of product distribution, and its impact on service quality; which are the independent and dependent variables, respectively. The physical distribution was measured using five dimensions while the service quality was studied using its six dimensions. One sample t-tests were employed to evaluate the existing practice of product distribution, and the level of service quality. As to the physical distribution and its dimensions, the following table presents the one-sample t-test analysis result.

Table 3 Customer Service as a dimension of physical distribution

| | One-Sample Statistics | | | Test Value = 3 | | | | 95% Confidence Interval of the Difference | |
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The level of service is realistic and competitive to meet the needs of each geographic area, market segment and product group.	48	2.52	1.09	-3.04	47	0.00	-0.48	-0.80	-0.16
The management carries out periodic interviews with the customers to determine customers' real service needs verses existing service levels	48	2.35	1.06	-4.21	47	0.00	-0.65	-0.95	-0.34
Customer Service	48	2.44	0.95	-4.11	47	0.00	-0.56	-0.84	-0.29

Source: questionnaire, 2020

In the first dimension, customer service was rated with an average agreement of M=2.44, which was significantly different from the moderate level (t-value=4.11, p-value=0.000< 0.05). The Mean difference, MD=-.56 and its 95% CI range -0.84-0.29 indicated that the average agreement to customer service was significantly below the average agreement level. The result also indicated that the overall customer service provision practice was rated within the 95% CI range of 2.14-2.79; which was significantly below the moderate value, 3.0., hence a low-level practice.

The customer service was assessed using two items where respondents gave their agreement of each statement. Respondents were disagreed, M=2.52, to the first statement that stated: the level of service is realistic and competitive to meet the needs of each geographic area, market segment, and product group. Similarly, The management carries out periodic interviews with the customers to determine customers' real service needs versus existing service levels has disagreed with the average agreement rating of M=2.35.

Customer service is one of the major factors that a company must consider. Kurtz (2012) stated that physical distribution system begin by establishing acceptable levels of customer service. These designers then assemble physical distribution components in a way that will achieve this standard at the lowest possible total cost. This overall cost breaks down into the following components: transportation, warehousing, inventory control, and customer service/order processing. Kotler, Wong, Saundes & Armstrong (2005) also stated that maximum customer service implies rapid delivery, large inventories, flexible assortments, liberal returns policies and a host of other services.

Table 4 Ware house management as a dimension of physical distribution

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The warehouse use the same unit size during procurement and receiving stage	46	3.43	1.20	2.45	45	0.02	0.43	0.08	0.79
The warehouse is close to the customer	47	3.23	1.03	1.56	46	0.12	0.23	-0.07	0.54
Warehouse	48	3.35	0.74	3.30	47	0.00	0.35	0.14	0.57

Source: questionnaire, 2020

On average, the level of agreement towards the warehouse management was rated with M=3.35; which is significantly above the moderate level agreement (t-value=3.30, p-value=0.000<0.05). Using the 95% CI of the mean difference, MD=0.35, the respective confidence interval for the warehouse service was in the range 3.14-3.57, which is significantly above the moderate level agreement.

The warehouse services that were evaluated using two statements were found adequate. The statement, the warehouse uses the same unit size during the procurement and receiving stage was agreed with M=3.43. Similarly, the proximity of the warehouse to customers was moderately appreciated with the M=3.23 average agreement.

Table 5 Transportation Service as a dimension of physical distribution

				Test Value = 3					
	One-Sample Statistics							95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The company delivers the products in the required amount	48	2.83	1.48	-0.78	47	0.44	-0.17	-0.60	0.26
The transportation practice of the enterprise satisfies customers by delivering safely.	48	3.21	1.13	1.28	47	0.21	0.21	-0.12	0.54
Schedule or transit times are applied to you	48	2.83	1.15	-1.00	47	0.32	-0.17	-0.50	0.17
Corrective action are taken when a service failure occurred	48	2.65	1.25	-1.97	47	0.05	-0.35	-0.72	0.01
Transportation Service	48	2.88	0.95	-0.88	47	0.39	-0.12	-0.39	0.16

Source: questionnaire, 2020

The table above 4.2.3 shows the one-sample t-test statistics for the transportation service dimension rated with M=2.88 in the 95% CI range of 2.61-3.16 that was in the moderate level practice. The transportation service assessed with four statements as presented in the above table. Respondents agreed with M=3.21, that the transportation practice of the enterprise satisfies customers by delivering safely as per the second statement. The delivery of products in the required amount (the first statement) and applying Scheduled transit times (third statement) was both similarly moderately rated with M=2.83. Whereas, the capacity of taking Corrective action during a service failure was only rated with M=2.65.

The choice of transportation carriers affects the pricing of products, delivery performance and condition of the goods when they arrive all of which will affect customer satisfaction. Kotler,

Wong, Saundes & Armstrong (2005). A company should prefer its transportation mode and should deliver on time in order to satisfy the customer.

Table 6 Inventory Control as a dimension of physical distribution

| | One-Sample Statistics | | | Test Value = 3 | | | | 95% Confidence Interval of the Difference | |
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The flow of finished goods inventory is reasonable and acceptable within service limits	48	2.85	1.09	-0.93	47	0.36	-0.15	-0.46	0.17
Receiving, issuing, accounting and sorting responsibilities are segregated properly.	48	3.65	1.04	4.30	47	0.00	0.65	0.34	0.95
Inventory Control	48	3.25	0.95	1.83	47	0.07	0.25	-0.02	0.52

Source: questionnaire, 2020

The above table 4.2.4 portrays the one-sample t-statistics that (t (48) =1.83, p=0.07>0.05) and confidence interval lies between (2.98 - 3.52). Inventory control dimension was also a moderate level agreement with M = 3.25 (t-value=1.83, p-value =0.07 > 0.05) which falls within the 95% CI range of 2.98 - 3.52. The activities during the inventory control were receiving, issuing, accounting, and sorting responsibilities are expected to be segregated properly. Rating this second statement, respondents provided above moderate level agreement with M = 3.25. However, respondents had reserved only within the moderate level rating, M = 2.85, that the flow of finished goods inventory is reasonable and acceptable within service limits.

Table 7 Product availability as a dimension of physical distribution

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The assorted products (mix) are always in stock.	48	2.42	1.20	-3.37	47	0.00	-0.58	-0.93	-0.23
The units ordered are fully supplied.	48	2.83	1.19	-0.97	47	0.34	-0.17	-0.51	0.18
All orders are consistently supplied.	48	2.60	1.07	-2.57	47	0.01	-0.40	-0.71	-0.09
Product Availability	48	2.62	0.93	-2.84	47	0.01	-0.38	-0.65	-0.11

Source: questionnaire, 2020

Product availability dimension was the least practiced dimension with M=2.62 that falls within the 95% CI range of 2.35-2.89 and was significantly below the moderate average agreement level (t-value=2.84, p-value=0.010<0.05). This dimension was assessed using three statements that were not appreciated by the respondents. The required quantity of products was not available in the stock, that respondents disagreed with the M=2.42 low-level rating to the first statement.

Hence, the required amount of order cannot be fully and consistently supplied to the customers. As Kotler, Wong, Saundes & Armstrong (2005) stated that most companies must store their tangible goods while they wait to be sold. To ensure they can meet orders speedily, they must have stock available. A storage function is needed because production and consumption cycles rarely match. The storage function overcomes differences in needed quantities and timing.

Table 8 Summary of aggregate response of each dimension on overall product distribution

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
Customer Service	48	2.44	0.95	-4.11	47	0.00	-0.56	-0.84	-0.29
Warehouse management	48	3.35	0.74	3.30	47	0.00	0.35	0.14	0.57
Transport Service	48	2.88	0.95	-0.88	47	0.39	-0.12	-0.39	0.16
Product Availability	48	2.62	0.93	-2.84	47	0.01	-0.38	-0.65	-0.11
Inventory Control	48	3.25	0.95	1.83	47	0.07	0.25	-0.02	0.52
Product Distribution	48	2.88	0.71	-1.17	47	0.25	-0.12	-0.33	0.09

Source: questionnaire, 2020

Aggregating the responses to the statements in each dimension, and overall physical distribution measure was computed. The overall product distribution, which was an aggregate of its five dimensions, was evaluated to its moderate level practice with an average rating of M=2.88 and a 95% CI range of 2.67-3.09. The warehouse and Inventory control dimensions were relatively better practiced compared to the other dimensions; followed by the transportation service dimension which is within the moderate level practice. However, the customer service and the product availability dimensions were poorly addressed by the organization.

To enable see the service Quality of EPHARM as a dimension of Timeliness, Tangibility, responsiveness, assurance, reliability, and empty. Details of the summary of each response of the dimensions are summarized with the tables below.

Table 9 Timeliness as a dimension of Service Quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	df	p-value	Mean Difference	Lower	Upper
The time it takes EPHARM to supply from receipt of order is right.	48	2.58	1.09	-2.65	47	0.01	-0.42	-0.73	-0.10
The average delivery time is reliable.	48	2.75	1.14	-1.52	47	0.14	-0.25	-0.58	0.08
The percent units delivered in specified time is consistent.	48	2.73	1.01	-1.87	47	0.07	-0.27	-0.56	0.02
Products always arrive when promised.	48	3.10	1.22	0.59	47	0.56	0.10	-0.25	0.46
Timeliness	48	2.79	0.84	-1.73	47	0.09	-0.21	-0.45	0.03

Source: questionnaire, 2020

Timeliness of service was rated with an M=2.79 average level agreement. This rating was not significantly different from the average level agreement; and found to fall within the 95% CI range of 2.55-3.03. All the four statements measuring the timeliness dimension were moderately rated from the low-level rating to the first statement, M=2.58, to relatively better rating (M=3.10) to the forth statement that the arrival of products in the promised time.

The reliability of delivery time (the second statement) and in time delivery of products (third statement) were only agreed to the respective average of M=2.75 and M=2.73 that were at the moderate level of 95% CI range.

Timeliness is the order cycle time performance of the entire distribution system linking buyers and sellers. For the buyer, it is the time elapsed between placing and receiving an order. Timeliness encompasses the duration of one order cycle for a single customer as well as central tendency and variability across multiple order cycles for one or more customers. In order to that a company should get a consideration about it. Mentzer, J., Gomes, R, & Krapfel, R. (1989).

Table 10 Tangibility as a dimension of Service Quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
The service provider has modern equipment.	48	3.50	0.77	4.49	47	0.00	0.50	0.28	0.72
The service provider has attractive physical facilities	48	3.58	0.77	5.27	47	0.00	0.58	0.36	0.81
The employees delivering the services are neat, disciplined, professional in their appearance,	48	3.48	1.17	2.85	47	0.01	0.48	0.14	0.82
Appearance of the physical facilities are consistent with the type of service industry	48	3.65	0.89	5.04	47	0.00	0.65	0.39	0.90
Tangibility	48	3.55	0.67	5.69	47	0.00	0.55	0.36	0.75

Source: questionnaire, 2020

The tangibility of service was rated with high-level agreement M=3.55, in the 95% CI range (3.36-3.75) that was significantly above the moderate agreement level. Each of the four statements related to tangibility was rated to the above moderate level agreement that specifically ensures the tangibility of service provided.

Availability of modern equipment (M=3.50), the attractiveness of service facility (M=3.58), consistency of the service facility with industry-standard (M=3.65), and the provision of service by disciplined and professional employees (M=3.48) are all positively recognized by customer respondents.

Table 11 Responsiveness as a dimension of service quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
The employees makes the information easily obtainable	48	3.17	0.78	1.48	47	0.15	0.17	-0.06	0.39
the employee gives prompt service	48	3.33	1.00	2.32	47	0.02	0.33	0.04	0.62
The employees are happy and willing to serve the customer	48	3.73	0.89	5.66	47	0.00	0.73	0.47	0.99
The employees are too busy to respond to the customer's request	48	2.92	1.01	-0.57	47	0.57	-0.08	-0.38	0.21
Responsiveness	48	3.29	0.60	3.32	47	0.00	0.29	0.11	0.46

Source: questionnaire, 2020

The responsiveness dimension was also positively rated with M=3.29, which was significantly above the moderate level agreement (t-value=3.32, p-value=0.000<0.05). It falls within the 0.5% CI range of 3.211-3.46. Regarding responsiveness, respondents had significantly high-level agreement M=3.73 in terms of the willingness of employees to serve customers. The provision of prompt service by employees was rated with M=3.33, which was slightly above moderate level service provision.

Table 12 Assurance as a dimension of service quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
The employees have the required skill in providing services.	48	3.69	0.78	6.14	47	0.00	0.69	0.46	0.91
The customers feel safe on the service	48	3.60	0.89	4.69	47	0.00	0.60	0.34	0.86
The employee trust worthy,	47	3.55	0.88	4.31	46	0.00	0.55	0.29	0.81
The employees inspire confidence ,	48	3.29	0.68	2.96	47	0.00	0.29	0.09	0.49
The employees of the service provider polite to the customer,	48	3.63	0.82	5.31	47	0.00	0.63	0.39	0.86
Assurance	48	3.55	0.64	5.99	47	0.00	0.55	0.37	0.74

Source: questionnaire, 2020

The assurance dimension of service quality was highly rated with the M=3.55 average agreement, which was significant (t-value = 5.99, p-value=0.00<0.05). The assurance quality of service was in the 95% CI in the range of 3.37-3.74.

Table 13 Reliability as a dimension of Service Quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
The firm meets their promised time-frames for response	48	2.75	1.28	-1.35	47	0.18	-0.25	-0.62	0.12
The firm is sympathetic and reassuring, when the customer has problems	48	3.02	1.10	0.13	47	0.90	0.02	-0.30	0.34
The service provider gives accurate information to the customer.	48	3.23	1.08	1.47	47	0.15	0.23	-0.08	0.54
The service is provided on time as promised.	48	2.65	1.12	-2.19	47	0.03	-0.35	-0.68	-0.03
The company keep accurate records	48	3.81	0.57	9.86	47	0.00	0.81	0.65	0.98
Reliability	48	3.09	0.83	0.77	47	0.45	0.09	-0.15	0.33

Source: questionnaire, 2020

The reliability dimension of service quality was rated moderately with respective average agreement level of M=3.09. The 95% CI for the reliability of service was within the range 2.85-3.33.

Reliability of service was assessed using five statements. Among them, accurate record keeping (fifth statement) was the most appreciated with M=3.81. However, the reliability of provision of service in promised time was agreed to low level rating of M=2.65. Therefore, the service was not reliable in terms of timely provision of service. This was also assured by the first statement, the firm meets their promised time-frames for response, that were given low level agreement with M=2.75 average rating. Also to the reply for the statement, the service is provided on time as promised, with relatively low level agreement of M=2.65. Sympathy to customer problem (M=3.02) and provision of accurate information to customers (M=3.23) were moderately agreed

by the respondents. As Bhattacharjee (2012) stated that reliability concerns the attitude of the service provider to be willing to provide service. It also includes their sensitivity as well as timeliness in responding to customer requests. A company should consider its reliability, in order to fulfill the customers' needs and wants.

Table 14 Empathy as a dimension of Service Quality

	One-Sample Statistics			Test Value = 3				95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
The service provider gives individual attention.	48	2.83	1.04	-1.11	47	0.27	-0.17	-0.47	0.13
The employees know promptly what our needs are.	48	3.19	0.87	1.50	47	0.14	0.19	-0.06	0.44
The service provider and its employees provide the customers interest at heart	48	2.88	1.06	-0.81	47	0.42	-0.13	-0.43	0.18
The service provider have operating hours convenient to all customers	48	3.56	0.62	6.33	47	0.00	0.56	0.38	0.74
Empathy	48	3.11	0.73	1.09	47	0.28	0.11	-0.10	0.33

Source: questionnaire, 2020

The empathy dimension of service quality was rated moderately with the respective average agreement level of M=3.11. The 95% CI for the Empathy dimension was within the range of 2.90-3.33.

The Empathy dimension of service was evaluated using four observations in the table above. The convenience of operating hours to customers was rated with M=3.56 high-level agreement. However, providing attention to the customer, and knowledge of customer needs are only agreed to the moderate level with M=2.83 and M=3.19 agreement level. Overall, the Empathy dimension was rated with M=3.11 which is within the moderate level rating.

Table 15 Summary of aggregate response of each dimension on overall product distribution

| | One-Sample Statistics | | | Test Value = 3 | | | | 95% Confidence Interval of the Difference | |
	N	Mean	Std. Deviation	t-value	Df	p-value	Mean Difference	Lower	Upper
Timeliness	48	2.79	0.84	-1.73	47	0.09	-0.21	-0.45	0.03
Tangibility	48	3.55	0.67	5.69	47	0.00	0.55	0.36	0.75
Reliability	48	3.09	0.83	0.77	47	0.45	0.09	-0.15	0.33
Responsiveness	48	3.29	0.60	3.32	47	0.00	0.29	0.11	0.46
Assurance	48	3.55	0.64	5.99	47	0.00	0.55	0.37	0.74
Empathy	48	3.11	0.73	1.09	47	0.28	0.11	-0.10	0.33
Service Quality	48	3.24	0.55	3.00	47	0.00	0.24	0.08	0.40

Source: questionnaire, 2020

The overall service quality was rated with M=3.24; which was significantly above moderate level (t-value=3.00, p-value=0.000<0.05). The mean difference, MD=0.24, was within the 95% CI range of 0.08-0.40. The result indicates that, the service quality was positively rated within the 95% CI range of 3.08-3.40; which was slightly significantly above moderate level service provision.

The service quality was highly rated to its tangibility and assurance dimensions, each agreed with M=3.55 average level agreement. The responsive dimension was also rated positively with M=3.29. Whereas, the timeliness dimension of service quality was the least rated with M=2.79 average rating.

4.3. Relationship between physical distribution practice and service quality

One of the objectives of this research was to assess the relationship between the provisions of physical distribution according to service quality. Hence, a correlation analysis between physical distribution dimensions and service quality dimensions was conducted. The analysis result in the table below depicts the two variables that had a significant linear relationship.

According to Muijs, (2004) cited in Wogari, M., (2016), Pearson correlation coefficients vary between -1 and +1, with +1 indicating a perfect relationship (a high score on variable X= a high score on variable Y), -1 a perfect negative relationship (a high sore on X=a low score on Y), and 0= no relationship. The strength of the relationship is the closer to +1 or -1, the closer to 0 the weaker. As per Muijs, (2004); the cut-off points for the interpretation of the strength of correlation coefficients are: (+ or-) 0.80 to (+ or-) 1 is very strong; (+ or-) 0.50 to (+ or-) 0.79 is Strong correlation; (+ or-) 0.30 to (+ or-) 0.49 is Moderate correlation; (+ or-) 0.10 to (+ or-) 0.29 is Modest correlation and Less than 0.1 weak correlations.

The timeliness of service quality was significantly correlated with physical distribution and its dimensions.

Timeliness was relatively highly correlated with product availability (r=0.651) and transportation service (r=0.566) than other physical distribution dimension. The overall physical distribution was significantly highly related to the timeliness of service with a correlation of r=0.632. That is, the physical distribution practice would have impacted (0.6322) = 40% of the timeliness of service quality.

The tangibility of service quality was significantly correlated to customer service (r=3.80), product availability(r=0.358), and inventory control (r=0.444). It was not significantly related to the warehouse and transportation service dimension. The overall physical distribution was found to have no significant relationship with the tangibility of service quality (r=0.256, p-value=0.068>0.05).

The correlation of the service reliability with the overall physical distribution was significant (r=0.682, p-value=0.000<0.05). This indicated that with all factors kept constant, the physical distribution could impact 0.6822 = 46.5% of the service reliability. Whereas the warehouse dimension was not significantly related to reliability of service (r=0.005, p-value=0.974>0.05),

the other four physical distribution dimensions had positively significantly related to service reliability.

The Customer and the Inventory control dimensions were directly significantly correlated to responsiveness dimension with correlation values r=0.375 and r= 0.751 respectively. It was not significantly related to the other three dimensions. However, the overall physical distribution was positively related to the responsive dimension of service quality with r= 0.377. It indicates that the overall physical distribution could have impacted 14% of the service responsiveness.

Assurance of service was significant to all physical distribution dimensions except the warehouse dimension (r=.099, p-value= 0.502>0.05).

Assurance was highly positively related to customer service (r= 0.506), transportation service (r=0.577), product availability (r=0.678) and inventory control (r=0.683). These resulted in the correlation of r=0.694 between physical distribution and assurance of service. Hence, physical distribution would have impacted 48% of service assurance.

Table 16 Correlation Matrix

		Timeliness	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Service Quality
Customer Service	Pearson Correlation ,r	.393**	.380**	.669**	.375**	.506**	.531**	.641**
	p-value	0.006	0.008	0.000	0.009	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Warehouse	Pearson Correlation, r	.305*	-0.139	0.005	0.012	0.099	-0.037	0.063
	p-value	0.035	0.347	0.974	0.934	0.502	0.801	0.669
	N	48	48	48	48	48	48	48
Transport Service	Pearson Correlation, r	.566**	0.031	.604**	0.109	.577**	.544**	.571**
	p-value	0.000	0.835	0.000	0.461	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Product Availability	Pearson Correlation, r	.651**	.358*	.602**	.328*	.678**	.589**	.720**
	p-value	0.000	0.013	0.000	0.023	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Inventory Control	Pearson Correlation, r	.387**	.444**	.577**	.761**	.683**	.565**	.736**
	p-value	0.007	0.002	0.000	0.000	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Product Distribution	Pearson Correlation ,r	.632**	0.266	.682**	.377**	.694**	.614**	.738**
	p-value	0.000	0.068	0.000	0.008	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Source: SPSS Output for the data collected by the researcher

The Empathy dimension was not related to the warehouse dimension. However, it was directly and significantly distributed to the physical distribution and its dimensions. The correlation r=0.614 would imply that 37.7% of service empathy was accounted for the physical distribution practice.

The service quality in general had a correlation of r=0.738 with the product distribution. This implies that $(0.738)2 = 54.5\%$ of the service quality was as the result of the physical distribution impact. Service quality was also highly positively related to customer service dimension (r= 0.641), transportation service (r=0.571), product availability (r=0.720) and inventory control (r=0.736).

4.4. Normaility

Normality test is used to determine whether sample data has been drawn from a normally distributed population. As it is shown in the graph, histogram was used to show the residuals are normally distributed.

Figure 2

Histogram
Dependent Variable: ServiceQuality

Mean = 3.06E-15
Std. Dev. = 0.989
N = 48
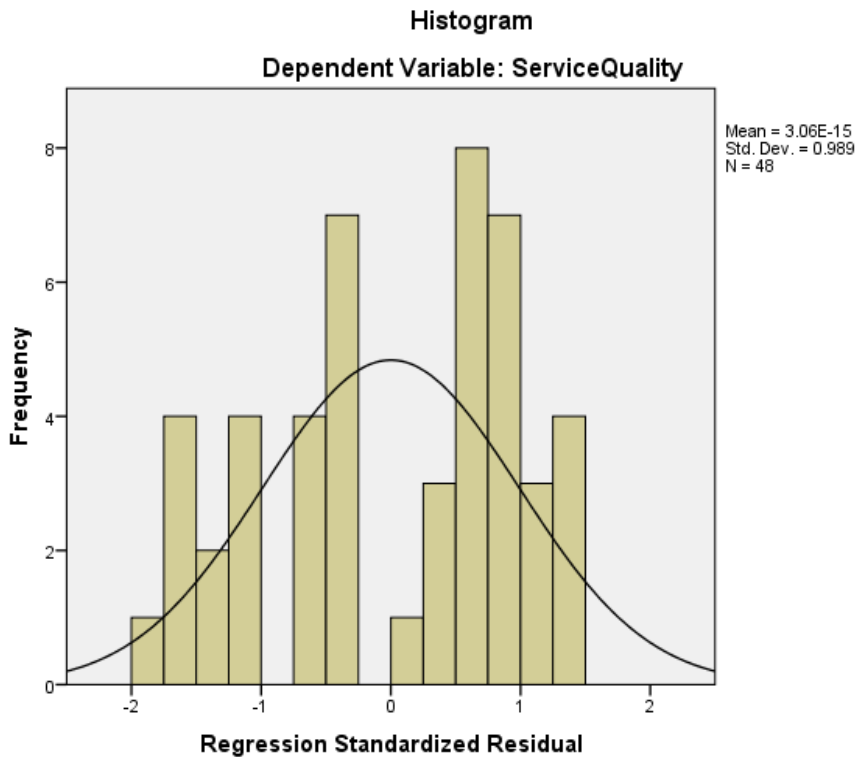
Source: questionnaire, 2020

4.5. Regression Results

In this section, the researcher used regression analysis to test the extent of the impact of the independent (explanatory) variables on the dependent (explained) variable, which is the Service Quality.

The beta coefficients can be negative or positive besides having the t-value and its significance of that *t*-value is associated with each. If the beta coefficient is not statistically significant (i.e., the *t*-value is not significant) no statistical significance can be interpreted from that predictor. If the beta coefficient is significant, examine the sign of the beta. If the regression beta coefficient is positive, the interpretation is that for every one-unit increase in the predictor variable the dependent variable will increase by the unstandardized beta coefficient value.

To further illustrate the impact of physical distribution on the service quality, regression analysis was conducted. Using the overall physical distribution as an independent variable, the regression analysis result in service quality was presented in the table below. The regression equation with R-square=53.5% indicated, the variability in the service quality that was the result of product distribution. This regression equation was represented with the formula *Service quality = 1.602 + 0.568 (product distribution).* The result indicated that the coefficient, B=0.568 is the amount of service quality improvement for a one-point improvement in product distribution.

Table 17 Regression Analysis

Model	Unstandardized Coefficients	Standardized Coefficients			ANOVA				
	B	Beta	t-value	p-value	F	p-value	R	R Square	Adjusted R Square
1 (Constant)	1.602		7.055	0.000	55.036	0.000	0.738	0.545	0.535
Product Distribution	0.568	0.738	7.419	0.000					

Source: SPSS Output for the data collected by the researcher

Further, a stepwise regression analysis of physical distribution dimensions on service quality was conducted. As Weng & Chen (2016), Stepwise regression aims to select a model step by

step, adding or deleting one predictor only based on the statistical significance. It is a way to build a model by adding or removing predictor variables, usually via a series of F-test or T-test. The variables to be added or removed are chosen based on the test statistics of the estimated coefficients. It enables to manage large amounts of potential predictor variables, and fine tuning the model to choose the best predictor variables from the available options. And also it enable to watch the order in which variables are removed or added can provide valuable information about the quality of the predictor variables.

Table 18 Step-wise regression for significant Coefficients

| Model | | Unstandardized Coefficients | Standardized Coefficients | t-value | p-value | ANOVA | | | | |
		B	Beta			F	p-value	R	R Square	Adjusted R Square
1	(Constant)	1.848		9.411	0.000	54.272	0.000	0.736	0.541	0.531
	Inventory Control	0.428	0.736	7.367	0.000					
2	(Constant)	1.644		9.438	0.000	46.396	0.000	0.821	0.673	0.659
	Inventory Control	0.280	0.481	4.631	0.000					
	Product Availability	0.261	0.444	4.268	0.000					
3	(Constant)	2.182		10.732	0.000	46.249	0.000	0.871	0.759	0.743
	Inventory Control	0.335	0.576	6.170	0.000					
	Product Availability	0.291	0.494	5.421	0.000					
	Warehouse	-0.237	-0.321	-3.960	0.000					
4	(Constant)	2.148		12.636	0.000	54.745	0.000	0.914	0.836	0.821
	Inventory Control	0.259	0.445	5.343	0.000					
	Product Availability	0.259	0.439	5.697	0.000					
	Warehouse	-0.269	-0.364	-5.331	0.000					
	Customer Service	0.195	0.336	4.481	0.000					

Source: SPSS Output for the data collected by the researcher

The result indicated that , the inventory control dimension that were highly correlated to service quality was included in the first step and found to have explained 53.1% of the variability in service quality. In step two, product availability was included in the regression equation raising the adjusted R-square (i.e. coefficient of determination) to 65.9%. In subsequent steps, warehouse and customer service dimensions were included and found to significantly improve R^2 to 82.1%. Hence, it was found that the variability service quality was impacted up to 82.1% by the practice in the physical distribution dimensions. The regression model found was:

Service quality =2.148 + 0.259 (inventory control) + 0.259 (product availability) - 0.269 (warehouse) + 0.195 (customer service).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1. Summary of major findings

This research paper has been conducted to investigate the effect of physical distribution practice on service quality. The physical distribution practice was examined by the warehouse management, inventory control, product availability, transportation service and customer service. Besides, the service quality dimension was measured by serqual model which contains reliability, responsiveness, empathy, tangibility, and assurance. As a target population the whole customer of the company which is found in Addis Ababa has been reached to fill 39 likert scale questionnaires. The questionnaires were analyzed by descriptive information and inferential statistics. The inferential statistics includes one sample t-test, multiple regression, correlation, normality and step wise regression.

The finding of inferential statistics shows that warehouse management and inventory control have a positive response from the customers. The ware house use the same unit and size during procurement and receiving and also nearly available to the customer's premises. In addition tangibility, responsiveness, and assurance have also a positive response from the customers of the company. Besides, timeliness, reliability and empathy have moderate attitude by the customers. Customer service and product availability have a negative response. The company's customer service and availability of product activities were not found satisfactory by the customers.

5.2. Conclusions

The aim of this research was to identify and analyze the effect of physical distribution practice on service quality.

Mainly, the research were intends to investigate the relationship between the physical distribution practice on service quality. And the finding shows that the physical distribution practice has an impact on service quality. As per the regression analysis shows the service quality in EPHARM has been affected and explained by physical distribution practices. Considering the stepwise regression: Inventory control alone has highly explained the service quality in EPHARM. Overall the inventory control, ware house management, availability of products, and Customer service have highly impacted on service quality which explained about 82.1%. Besides, the correlation analysis shows that service quality had a correlation with the physical distribution.

One of the objectives of this research paper was to assess the practice of physical distribution on service quality; accordingly the analysis and the finding of this study the researcher concluded that the customers are not satisfied with the customer service, timeliness, product availability and transportation service that is provided by the company. The company also does not asses the realistic needs of the customer to fill the gaps of the existing needs. Moreover, the company's service is not competitive to meet the geographical area, market segment and product group.

Besides, warehouse, inventory control, had a positive and significant effect on service quality; as the location of the warehouse is at good and accessible to the customers.

5.3. Recommendations

Based on the findings and conclusions, the researcher forwards the following recommendations.

- As it is shown in the findings the company does not have good or satisfactory customer service. Hence, The Company should fulfill the needs and wants of the customer by providing a service that consider reliability, empathy, assurance, tangibility and responsiveness. Customer service is a major activity that a company takes in consideration in order to satisfy the needs of the customers. Customer service is the act of taking care of the customer's needs. A company should also improve its customer service in order to be competitive in the market by addressing the target customer and by fulfilling their needs.

- The company should also improve its transportation system in accordance of delivering the products on time. One of the major marketing tips is making available the products at the right time. The company has to make available its product in order to satisfy the customers and giving the appropriate service to them.

- The company should have enough stock and makes available its products to ensure consistency of supply. The company should attempt serious and regular inspection on their stock, availability of products in the store.

- Service quality of the company has shown some weakness regarding the dimensions like Timeliness and reliability. This manufacturing company should aspect its service whether it fulfills the dimensions of a service quality. Besides, in order to be competent in the market and satisfy its customers the company should provide a quality service. Accordingly, the company should have a good physical distribution service to delight the customers by delivering the promised-on time. Therefore, the company should improve its time that it supplies or the products to the customers. Moreover, dependability and trust needs to be developed among the customers of the company. And most importantly, the company needs to put itself under the shoes of the customer to have a caring and sensing attitude.

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APPENDIXES

ST. MARY'S UNIVERSITY

SCHOOL OFGRADUATE STUDIES

DEPARTMENT OF MARKETING MANAGEMENT

Appendix 1:- Questionnaire

Greetings,

Dear Respondents my name is Beamlak Ashenafi and I am a graduate student Saint Mary's University. Currently, I am undertaking my thesis under the title "The effects of physical distribution practice on service quality" by taking a survey on Ethiopian pharmaceutical manufacturing Sh.Co. for partial fulfillment of Master of Art Degree in Marketing Management. The study is intended to assess the effects of physical distribution practice management practice on service quality, in the case of Ethiopian pharmaceutical manufacturing Sh.Co. The purpose of this questionnaire is to assess your thoughts and feelings about the physical distribution practice and service quality that is conducted by the company. The result of this study is believed to benefit the company management to focus their attention on the management of physical distribution and to provide efficient distribution system. The completion of the research substantially depends on your cooperation and of the information you give in this questionnaire. Furthermore, the information you provide will be solely used for academic purpose. Therefore you are requested to give a genuine response to the questions. There is no need of writing your name and be assured that any information you provide will be kept in a strict confidential manner.

General Instructions

> ➢ There is no need of to mention your name

> ➢ In all cases where answer options are available please tick (√) in the appropriate box.

Thank you for taking your treasured time to fill out the questionnaire. I appreciate your collaboration in advance. For any inquiry please feel free to contact me through;

My email: beamlakashegmail.com or Mob. +251 983-027280

Part I. General Information

1. Gender

Male ☐   B. Female ☐

2. Age

20-30 ☐   B. 31-40 ☐   C. 41-50 ☐   D. Above 50 ☐

3. Marital status:

A. Single ☐   B. Married ☐   C. Divorced/separated ☐

D. Widowed ☐

4. Educational background

High school graduate ☐   B. Diploma ☐   C. Degree ☐   D. Masters ☐

E. PhD ☐

Part II

Please rate your level of agreement to the following statements regarding physical distribution using the following five point scales.

1. **Strongly Disagree**   2. **Disagree**   3.**Neutral**   4. **Agree**   5. **Strongly Agree**

No	Physical distribution dimensions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The level of service is realistic and competitive to meet the needs of each geographic area, market segment and product group.					
2	The management carries out periodic interviews with the customers to determine customers' real service needs verses existing service levels.					
3	The warehouse use the same unit size during procurement and receiving stage					
4	The warehouse is close to the customer					
5	The company delivers the products in the required amount					
6	The transportation practice of the enterprise satisfies customers by delivering safely					
7	Schedule or transit times are applied to you					

No	Physical distribution dimensions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
8	Corrective action are taken when a service failure occurred					
9	The assorted products (mix) are always in stock					
10	The units ordered are fully supplied.					
11	All orders are consistently supplied					
12	The flow of finished goods inventory is reasonable and acceptable within service limits					
13	Receiving, issuing, accounting and sorting responsibilities are segregated properly.					
14	The time it takes EPHARM to supply from receipt of order is right					
15	The average delivery time is reliable					
16	The percent units delivered in specified time is consistent					
17	Products always arrive when promised.					

Part III

Please rate your level of agreement to the following statements regarding service quality using the following five point scales.

1. Strongly disagree   2. Disagree   3. Neutral   4. Agree   5. Strongly agree

No	Service quality dimension	Strongly disagree	disagree	Neutral	Agree	Strongly agree
1	The service provider has modern equipment					
2	The service provider has attractive physical facilities					
3	The employees delivering the services are neat, disciplined, professional in their appearance,					
4	Appearance of the physical facilities are consistent with the type of service industry					
5	The firm meets their promised time-frames for response					
6	The firm is sympathetic and reassuring, when the customer has problems					
7	The service provider gives accurate information to the customer.					
8	The service is provided on time as promised.					

No	Service quality dimension	Strongly disagree	disagree	Neutral	Agree	Strongly agree
9	The company keep accurate records					
10	The employees makes the information easily obtainable					
11	the employee gives prompt service					
12	The employees are happy and willing to serve the customer					
13	The employees are too busy to respond to the customer's request					
14	The employees have the required skill in providing services.					
15	The customers feel safe on the service					
16	The employee trust worthy					
17	The employees inspire confidence					
18	The employees of the service provider polite to the customer					
19	The service provider gives individual attention					
20	The employees know promptly what our needs are					
21	The service provider and its employees					

No	Service quality dimension	Strongly disagree	disagree	Neutral	Agree	Strongly agree
	provide the customers interest at heart					
22	The service provider have operating hours convenient to all customers					

Thank You!

Appendix 2

		Timeliness	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Service Quality
Customer Service	Pearson Correlation ,r	.393**	.380**	.669**	.375**	.506**	.531**	.641**
	p-value	0.006	0.008	0.000	0.009	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Warehouse	Pearson Correlation, r	.305*	-0.139	0.005	0.012	0.099	-0.037	0.063
	p-value	0.035	0.347	0.974	0.934	0.502	0.801	0.669
	N	48	48	48	48	48	48	48
Transport Service	Pearson Correlation, r	.566**	0.031	.604**	0.109	.577**	.544**	.571**
	p-value	0.000	0.835	0.000	0.461	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Product Availability	Pearson Correlation, r	.651**	.358*	.602**	.328*	.678**	.589**	.720**
	p-value	0.000	0.013	0.000	0.023	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Inventory Control	Pearson Correlation, r	.387**	.444**	.577**	.761**	.683**	.565**	.736**
	p-value	0.007	0.002	0.000	0.000	0.000	0.000	0.000
	N	48	48	48	48	48	48	48
Product Distribution	Pearson Correlation ,r	.632**	0.266	.682**	.377**	.694**	.614**	.738**
	p-value	0.000	0.068	0.000	0.008	0.000	0.000	0.000
	N	48	48	48	48	48	48	48

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

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

Model		Unstandardized Coefficients	Standardized Coefficients	t-value	p-value	ANOVA				Adjusted
		B	Beta	t-value	p-value	F	p-value	R	R Square	R Square
1	(Constant)	1.602		7.055	0.000	55.036	0.000	0.738	0.545	0.535
	Product Distribution	0.568	0.738	7.419	0.000					