REVERSE LOGISTICS PRACTICE AND CHALLENGES IN CASE OF ETHIOPIAN PHARMACEUTICAL SUPPLY AGENCY (EPSA) JIMMA BRANCH, SOUTH WEST ETHIOPIA.

A RESEARCH PAPERSUBMITTED TO DEPARTMENT OF MANAGEMENT LOGISTICS TRANSPORTATION MANAGEMENT (M.A) IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTERS DEGREE LOGISTICS AND TRANSPORTATION MANAGEMENT

By:

Awol Abazinab

Under the Supervision of

Mesfin Mokennin: (PH.D. scholar) and

Abera Jaleta (MBA)

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTEMENT of MANGMENT LOGISTICS AND TRANSPORTATION MANGMENT

JULY, 2020

JIMMA, ETHIIOPIA

REVERSE LOGISTICS PRACTICE AND CHALLENGES IN CASE OF ETHIOPIAN PHARMACEUTICAL SUPPLY AGENCY (EPSA) JIMMA BRANCH, SOUTH WEST ETHIOPIA.

BY: AWOL A/ZINAB

MAIN ADVISOR: Mesfin Mokennin: (PH.D. scholar)

CO-ADVISOR: Abera Jaleta (MBA)

DECLARATION

I, AWOL Abazinab, the undersigned, declare that this thesis is my own original work and has not been presented in any other University. All sources of materials used for this thesis have been duly acknowledged.

Declared by Name: **Awol abazinab ababulgu**

Signature: _____ Date: ***July, 2020***

STATEMENT OF CERTIFICATION

This is to certify that **Awol Abazinab** has carried out his thesis on the topic of "REVERSE LOGISTICS PRACTICE AND CHALLENGES IN CASE OF ETHIOPIAN PHARMACEUTICAL SUPPLY AGENCY (EPSA) JIMMA BRANCH, SOUTH WEST ETHIOPIA" under my Advisors. This work is original in its nature and it is suitable for submission in partial fulfillment of the requirement for the award of Masters of Arts Degree in Logistics and Transportation Management.

Mesfin Mekonnin (PhD Scholar) _____ _____

(Advisor) Signature Date

Abera Jaleta (MBA) _____ _____

Co-Advisor: Signature Date

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

LTM PROGRAM

Board of Thesis Examination

Approval Sheet

Members of the Board of Examiners

External Examiner	**Signature**	**Date**
_____	_____	_____
Internal Examiner	**Signature**	**Date**
_____	_____	_____
Main Adviser	**Signature**	**Date**
_____	_____	_____
Co-Adviser	**Signature**	**Date**
_____	_____	_____

ACKNOWLEDGEMENT

I would like to thanks to my advisers, **Mr. Mesfin Mekonnin (PhD. Scholar) and Mr.Abera Jelata (MBA)** their support in providing relevant orientation and guidance in the preparation of this research and from starting research proposal. I could not have finalized this protocol without their continuous professional guidance and constructive comments, scarifying their valuable time.

Above all, thanks to the Almighty God for the strength gave me to carry out this academic work.

Finally, I would like to express my deep appreciation and great honors for my family and for seka chekorsa administrative higher management staff for their remarkable support, sharing most of the family time and continuous encouragement both ideally and financially. Also including psychological and moral aspect of support.

ABSTRACT

Reverse logistics is an important process that is often misunderstood. Many organizations do not understand what processes and procedures to follow and how to manage reverse logistics efficiently. Though studies was showing the positive impacts of adoption of various reverse logistics practices, the researcher will be finding no research works that specifically shown how adoption of reverse logistics practices can impact on organization in the case of EPFSA in Jimma branch. The objectives of this study to determine best practices in reverse logistics, reverse logistics challenges that organizations face to manage their reverse logistics more efficiently effectively. In order to investigate the study was employed a Descriptive research design and it was used both quantitative and qualitative method. The researcher was collecting data relate with the extent of organization' revere logistics practices and its challenges by using structured questionnaires, interview, observing and different secondary documents. The paper was used a Purposive sampling technique in order to select sample respondents from the target population of the study. Regarding the reverse logistic practices of the agency, the agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities. Thus, the agency has facilities for returned products and the agency's branches easily access the facilities for the recall products. The agency RLP could have a potential for sustainable development of the catchment public health facility & had a potential to develop a branch itself, and also concerned with environmental issues. Quality defects products had not been immediately collected for recall from the facilities, The agency had no a modern way of disposal for damaged and expired products yet, Products had a complaint from the facilities had not been returned easily. Thus, products quality defects test should have to conducted at a branch level in order to immediate quality test achievements and to tackle recall after distribution and hence to prevent delay on reverse logistic practices.

Key Words: Reverse Logistics Practice, Reverse Logistics Challenges, and Reverse Logistics and Environment

ABERRATION OR ACRONYMS

CLSC	Community of Logistics and Supply Chain.
CSCM	Council of Supply Chain Management
EPFSA	Ethiopian pharmaceutical fund supply agency
EWGORL	European Working Group on Reverse Logistics
FMHACA	Food and Medical Health Administration Control Authority
GSCM	Green supply Chain Management
ISs	Information Systems
IPLS	International Pharmaceutical Logistics Strategy.
LC	Logistics Challenges
PSC	Pharmaceutical Supply Chain
RDF	Revolving Drug Fund
RL	Reverse Logistic
RLC	Reverse Logistic Center
RLs	Reverse Logistics
RLP	Reverse Logistic Practice
SC	Supply Chain
SCs	Supply Chains
SPSS	Statistical Package for Social Science

LIST OF TABLE

Table 3.1: sample size from focus group 22

Table 3.1: Reliability test of Variables 24

Table 4.1: Age of respondents 27

Table 4.2: Work experience in the agency (in years) 28

Table 4.3: Respondents Department of their work in the agency 29

Table 4.4: Respondents Position in the agency 29

Table 4.5: Descriptive Statistics of Reverse Logistic Practices of EPSA Jimma Branch 31

Table 4.6: Descriptive Statistics Forecasting problem 35

Table 4.7: Descriptive Statistics Transportation infrastructure 37

Table 4.8: Descriptive Statistics Product quality defects 39

Table 4.9: Descriptive Statistics of EPSA Jimma branch Warehousing 40

Table 4.10: Descriptive Statistics of Disposal Mechanism 41

Table 4.11: Descriptive Statistics of Legal policy, systems & Environmental issues 43

Table 4.12: Summary of Challenges for reverse logistic practices in EPSA Jimma branch 44

LIST OF FIGURE

Figure 2.1 Dependent and independent variable..... 19

Figure 4.1: Sex distribution of Respondents..... 27

Figure 4.2: Educational level of Respondents 28

Table of Contents

DECLARATION I

ACKNOWLEDGEMENT II

ABSTRACT IV

ABERRATION OR ACRONYM V

LIST OF TABLE VI

LIST OF FIGURE VII

TABLE OF CONTENTS VIII

CHAPTER ONE 1

INTRODUCTION 1

1.1 Back ground of study 1

1.2 Statement of the problem 3

1.3 Research questions 5

1.4 Research objectives 5

1.4.1 Specific objectives 5

1.5. Significance of the study 5

1.7. Scope of the study 6

1.8. Organization of the Thesis 6

Chapter two 7

Literature review 7

2.1. Introduction 7

2.2 Theoretical Review 9

2.2.1 Definitions of Logistics 9

2.2.2 The Role of Logistics practices 9

2.2.3 Logistics activities 10

2.3. Reverse Logistics (RL) and Logistics Centers (LCs) 10
2.4. Reverse Logistics Strategies 11
2.4.1 Joint reverse logistics 12
2.4.2Manufacturer reverses logistics 12
2.4.3Third-party reverses logistics 12
2.5. Logistics Challenges 13
2.5.1. Logistics Challenges in different Countries (health different centers) 13
2.5. 2. Logistics Challenges in Ethiopia 15
2.6 Environmental concerns reverse logistics and challenges (reverse logistics or disposal) Process 16
2.7. Empirical Review 17
2.8. Conceptual frame work 19
Chapter three 20
Research methodology 20
3. Introduction 20
3.1. Study Area 20
3.2. Research Design 20
3.3 Sources and types of data 20
3.4. Sampling design 21
3.4.1 Target population 21
3.4.2 Sampling Technique and Sample size 21
3.5 methods of data collection, design and administration 23
3.5.1 Methods of data collection 23
3.5.2 Questionnaire design 23

3.5.3 Methods of Administration/ Quality Criteria 23
3.6. Methods of Data Analysis 25
3.7 Ethical Consideration 25
3.8 Dissemination of the result 25
CHAPTER FOUR 26
DATAANALYSIS, PRESENTATION, AND INTERPRETATION 26
4.1. Demographic Profile of the respondents 26
4.2. Descriptive Analysis of EPSA Jimma branch Reverse Logistic Practices 30
4.3. Descriptive Analysis for Challenges of EPSA Jimma branch Reverse Logistic Practices 34
4.3.2. TRANSPORTATION INFRASTRUCTURE 37
4.3.3. PRODUCT QUALITY DEFECTS 39
4.3.4. WAREHOUSE STANDARD 40
4.3.5. DISPOSAL MECHANISM 41
4.3.6. Legal, policy, System & Environmental issues 43
CHAPTER FIVE 45
5. SUMMARY, CONCLUSION, & RECOMMENDATION 46
5.1. SUMMARY OF MAJOR FINDINGS 46
5.2. CONCLUSION 50
5.3. RECOMMENDATION 52
References 53
Annex-I 57
SPSS statistical output 57
ANNEXE- II 61
Annex-III 66

CHAPTER ONE

1. INTRODUCTION

1.1 Back ground of study

Reverse logistics is one of the most critical aspects for any business related to manufacturing, distribution, and service and support of any type of product (Donald F Blumberg, 2004, p. 1). It is also practiced in different industries, including those producing steel, commercial aircrafts, computers, automobiles, appliances, and chemicals and medical items (Dowlatshahi, 2000, p. 144).

Reverse logistics sometimes referred to as "product take-back" is one of the concepts in the wider concept of Green Supply Chain Management (GSCM) that is seen as a possible solution to this. The disposal of products is no longer a responsibility undertaken solely by its consumers. This is mainly due to a number of legislative, environmental, and economic reasons. Stringent packaging and environmental regulations are driving companies to be more accountable for residual products and also the final products, even after product sale. When firms investigate the re-manufacture ability, re-usability, and recyclability of their products then there will be fewer disposals. Fewer disposed products can benefit companies and the environment (Rogers &Tibben-Lembke, 2001). Conceptually, reverse logistics can promote alternate uses of resources that can be cost effective and ecologically friendly by extending products' normal life cycles (Melbin, 1995). In fact, reverse logistics is the process of moving products and materials in the opposite direction from the conventional forward supply chain to regain value from unwanted goods or to properly dispose the unwanted material.

The following definition provided by The European Working Group on Reverse Logistics EWGORL (1998): The process of planning, implementing and controlling flows of raw materials, in process inventory, and finished goods from a manufacturing, distribution or use point to a point of recovery or point of Proper disposal. This definition clearly illustrates that the concept of reverse logistics focuses on activities with the goal of both value recovery and proper disposal. In this way, a clear distinction between reverse logistics and waste management

Concept is made, as the latter primarily focuses on waste collection and processing, and thus there is no reuse or recovery of economic value (de Brito &Dekker, 2003).

Given the recognized importance of materials management processes to the physical distribution of products, there is an area unknown and unexplored to some extent: the Reverse Logistics. According to Leite (2010) it is the return of products into the production process, either for recycling or for reintegration, considering both products consumed (post-consumer logistics) and not consumed (aftermarket logistics). Reverse logistics stands for all operations related to the reuse of products and materials. It is "the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal. More precisely, reverse logistics is the process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. Re manufacturing and refurbishing activities also may be included in the definition of reverse logistics." The reverse logistics process includes the management and the sale of surplus as well as returned equipment and machines from the hardware leasing business. Normally, logistics deal with events that bring the product towards the customer.

The importance of reverse logistics is underscored by its increasing popularity in both business and academic communities since the last decade (Nikolaou, Evangelinos, & Allan, 2013).Earlier, reverse logistics was often considered as a process that has little effect on enterprises as a whole. However, the evolving financial and competitive pressures, as well as the complexity in environmental regulations, have made it clear that reverse logistics is no longer an option for an organization to meet its goals and increase profitability (Partida, 2011).

Although there is considerable interest on environmental implications and waste minimization concerns of the pharmaceuticals industry, RL research in this industry is limited in comparison to other industries. The growing concern in relation to the environment in addition to the variety of products available in the market made companies and consumers seek mechanisms for the treatment of wastes. According to Martel; Vieira (2010), laws which aim at protecting the environment have become more stringent. The recognition of the need to meet the legislation being also sustainable, have made companies consider initiatives that deal with reverse logistics, i.e., what is the final destination of the products, and how they can be reintroduced in the chain.

Holistic approaches that include several stakeholders in the pharmaceutical and health care industries are emerging in recent times. Xie and Breen (2012) discuss the design for a RL network in the PSC in the context of the UK community PSC and provide a conceptual framework for greening the PSC using a cross-boundary approach. Typically, studies on RL in the pharmaceutical industry address issues either at the level of production or at the levels of distribution and sales. Additionally, product characteristics (e.g. expiry dates and pricing) and external factors (e.g. regulatory constraints, market behaviors, impact on consumers and environment, information systems (ISs) infrastructure) have to be considered in more detail. The focus on RL activities is from a manufacturer's perspective. In practice, product returns in this industry are mostly handled by third party players and distributors who form an integral part of the RL network. Given the critical value of drugs, the regulation of safe manufacturing, distribution and sale of medicines is also a priority for the government authorities.

1.2 Statement of the problem

Traditionally, organizations have focused on improving their forward logistics activities; most have not treated the reverse logistics process with the same care and diligence afforded to traditional areas of logistics. (Azevedo, 2011) indicated that most manufacturing firms often focus on forward logistics and as a result, they tend to overlook the importance of reverse logistic activities and its potential of improving the firm's and supply chain's performance.

Environmentally responsible practices in supply chain management are referred to as green operation. Reverse logistics, which involves flow of products or materials back upstream through the supply chain, is an important element of green operation.

Although reverse logistics increases the total cost of ownership (Tibben-Lembke, 1998), benefits of adopting reverse logistics and CLSC have been largely demonstrated in the literature. For example, economical sustainability of a CLSC has been assessed by Georgia is and Besiou (2010) and greenhouse gas emission reduction in CLSC has been proved by Paksoy et al. (2011). Also, good reverse logistics practices can make a firm more competitive by reducing the customer's risk when buying a product (Rogers and Tibben-Lembke, 2001), and thus increasing the customer value (Russo and Cardinally, 2012).

However, Guide and Van Wassen hove (2002) find the companies that have been most successful with their reverse SCs are those that closely coordinate them with their forward SCs. The relation between the forward and the reverse channels must be welled signed, because reverse distribution may take place through the original network or can be delegated to third-party logistics. And also in Ethiopian pharmaceutical supply fund agency jimma branch, there is no interesting and more activate reverse logistics practice that guarantee to environmental issue.

The study done by Fekadu (2013) on logistics practices of Ethiopia was mainly focused on the transportation and customer service practices using general attributes of infrastructure, performance, information system, human resources, business and political environments. He indicated that Ethiopian logistics system is characterized by poor logistics practices and lack of coordination of goods transport, low level of development of logistics infrastructure and inadequate fleets of freight vehicles in number and age, damage and quality deterioration of goods while handling, transporting and storage.

The main gaps that shown from different researches are more study focuses only on manufacturing sector, supply chain and organization linkage, logistics practices, and impacts of logistics outsource rather than logistics practice challenges concerning on pharmaceutical fund agent or on organization. My Motivation is there is an old model or manual waste disposal mechanism and unpredictable forecasting is providing in the case of Ethiopian pharmaceutical fund agency jimma branch.

The Purpose of the study Therefore, in our context (Ethiopia) EPFSA Jimma branch very few studies have been conducted to study logistics practice particularly the relationship between logistics adoption and with environmental impacts consideration.

According to Jack et al. (2010), reverse logistics capabilities should include the internal and external connectivity of information flowing the SC. These capabilities represent a bundle of information-related processes that enable a firm to better manage its reverse logistics activities that may in turns relate to cost savings. From a SC management perspective, the coordination and integration between forward and reverse flows can be achieved by designing proper order replenishment policies.

1.3 Research questions.

1 What specific reverse logistics activities are practicing in Ethiopian pharmaceutical fund agency Jimma branch?

2 What challenges are facing in to practice reverse logistics activities Ethiopian pharmaceutical fund agency Jimma branch?

3 What are the determinants of practicing reverse logistics activities in Ethiopian pharmaceutical fund agency Jimma branch?

4 What environmental issue does the agency concern for its disposal mechanism?

1.4 Research objectives

The objective of this study is to determine best practices in reverse logistics and reverse logistics challenges that organizations providing to manage their reverse logistics more efficiently effectively.

1.4.1 Specific objectives

- To describe the specific reverse logistics activities and logistics practicing in Ethiopian pharmaceutical fund agency Jimma branch?
- To determine the challenges are facing in to practice reverse logistics activities Ethiopian pharmaceutical fund agency Jimma branch.
- To identify the determinants of practicing reverse logistics activities in Ethiopian pharmaceutical fund agency Jimma branch.
- To identify the environmental issue which the agency concerned for its disposal mechanism.

1.5. Significance of the study

The study has a great significance for the EPFSA Government policy makers and investors.

The EPFSA Jimma branch would be benefiting since the outcome of the study helps them to easily understand the gap on their reverse logistics practices, considering waste disposal mechanism and take corrective actions that can enhance their capacity. It would also help these firms to identify, evaluate and monitor the key areas which can help them to maintain their pace and speed of their reverse logistics success and its challenges.

The government policy makers would benefit also from the outcome since it would assist them in examining the current policies towards the EPFSA sectors and improve them accordingly.

The findings of this study can also provide prospective investors with a realistic idea and informational base of what to expect when operating in the EPFSA sector of Ethiopia. Additionally, this study would serve as a point of departure for further research by academicians.

1.7. Scope of the study

This study was focus on reverse logistics and not on forward supply chain practices or processes. The reason for this is that best practices, problems and solutions in reverse logistics may not apply to forward logistics practices. In the previous section it became evident that reverse logistics is the opposite of logistics. In the same way, the forward supply chain is essentially the opposite of the reverse supply chain. According to Hall dorsson (2008:26), reverse logistics starts where the traditional principles of supply chain management come to an end, and that is when a product reaches the end of its life or use and is redundant to its users.

The scope of this study was description and evaluation of the reverse logistic practices of medicines and its challenges which includes forecasting problem, transportation infrastructure, disposal mechanism, product quality defects and warehouse standards in EPFSA jimma branch case studies .it as government organization.

1.8. Organization of the Thesis

The research paper consists of five chapters. The first chapter is the introductions chapter and contains statement of the problems, research questions, objective of the study, and significance of the study and delimitation of the study. Literature reviews were presented in chapter two. The third chapter dealt with the methodology used in the research activity. Data analysis and interpretation of the research results were discussed in chapter four. The final chapter covered the discussion of result, conclusions and recommendations. In addition other sections, namely, list of references and annexes are also parts of the research framework.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction

This chapter reviews literature related to the study under the following sub titles: Theoretical review, definition of reverse logistics, importance of reverse logistics, reverse logistics practices, reverse logistics problems and challenges, best reverse logistics practice, reverse logistics and environmental impacts and empirical review.

Studies on reverse logistics appeared in the 1980s and mostly dealt with technical and Operational issues such as network design, optimization, and production planning (Barnes 1982).Rubio et al. (2008) reviewed 186 research articles on reverse logistics published between 1995 and 2005 and found that 65% of them used mathematical models and 21% case Studies mainly dealing with the recovery of end-of-life products and inventory management.

Efforts to synthesize the research in an integrated broad-based body of knowledge have been Limited and information is mostly anecdotal (Jayant et al. 2012).For example, Bernon et al. (2011) review empirical findings and literature regarding retail reverse logistics operations in The UK and suggests that literature relating to retail reverse logistics is fragmented. This study aims to cover this gap by synthesizing three theories: resource based view of the firm, Transaction cost economics and institutional theory.

The literature of the study covers an explanation about the basic concepts which provide definition for logistics and the recent trends in logistics. The review also discussed about the general practices of logistics and the logistics challenges in different countries manufacturing firms. The theoretical and empirical literatures are presented and also conceptual frame work of the study included in this chapter. Although, in the review of empirical studies, it was difficult to get many literatures that are matched with the title of the study, the basic findings from some related studies are included.

According to Dornier; Ernst (2000), reverse logistics involves the return flow, considering either defective parts / packages or products returned / consumed that should go to a recycling processes. Importantly, the life-cycle of a product does not end when it reaches its useful life.

According to Benjamin et al. (2012), reverse logistics focuses on four main activities: reuse, product update, material recovery and waste management. According to Leite (2010), reverse logistics aims to plan, operate and control the return of goods after-sales and post-consumer. The products after sales are characterized by little use or even the lack of sales, i.e., products which eventually return to the organization for various causes, such as defects, errors or damages in transportation. Since the post-consumer products are characterized by the end of their useful life, after their utilization they will be sent to landfills, recycling or reuse.

Despite the growing concern about the environment and volume of production, no much is known about reverse logistics. Organizations understand reverse logistics activities as recycling and waste treatment. The lack of knowledge about this relatively new area, affect its deployment in the organizations, aggravated by the lack of synchronization between the processes of distribution and reverse logistics. Therefore, the implementation of reverse logistics in organizations has been delayed by a series of barriers, which are presented below.

According to Pires; Dantas (2010), the life cycle of a product does not end when it is discarded. The lack of involvement and commitment of the entire supply chain caused by the Mismatch of objectives, in addition to the lack of complete studies to ensure and prove the efficiency of reverse logistics processes along with the absence of clear legislation; induce the Companies to not worry about the final destination of their products.

Reverse logistics is very important in the pharmaceutical industry not only from the economic Point of view but also from the environmental and the regulatory points of view. In addition, the application of reverse logistics in this industry is more challenging than in any other industries, as most pharmaceuticals get destroyed when they are recalled or returned, they are seldom repaired or resold (Kabir, 2013, pp. 89, 97). Proper disposal of recalled, unused, and expired pharmaceuticals is an important issue with legal implications, as some of these products contain hazardous chemicals. Also, the sensitive nature of medicines as well as the potential harm from use of expired or non-effective medicines means that pharmaceutical companies must effectively implement reverse logistics to promptly clear their supply chain channels of expired and non-conforming drugs (Shaurabh, Saurabh, & Moti, 2013, pp.12, 18).

2.2 Theoretical Review

Frazzle (2002) indicated that a world-class logistics organization can be characterized by extensive use of logistics key performance and financial indicators, use of integrated logistics information systems, strategic use of logistics service and educating providers, a sense of urgency to leapfrog to world-class status, strategic use of third-party logistics providers, human-friendly logistics via logistics ergonomics and green logistics, order and discipline, justifiable use of automated storage and handling systems, and excellent land and building utilization.

2.2.1 Definitions of Logistics

Logistics is defined by council of logistics management as the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming to customer requirements. The integration of two or more logistics with in a network to create value, enhance efficiency and satisfy customers is called supply chain management (Fekadu, 2013).

On the other hand, logistics is defined in the Council of Supply Chain Management Professionals' Supply Chain Management Terms and Glossary (2010, 114) as:' The process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements.Needs and wants; optimizing the goods- or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way'. Simply to say, 'logistics is customer-oriented operation management'

2.2.2 The Role of Logistics practices

Logistics' role is to provide time and place utilities. Time and place Utilities facilitate the creation of global scale and scope economies while enhancing a firm's ability to provide high levels of seamless customer satisfaction (McGrath and Hoole, 1992). Similarly, Ronald (1997) argues that for many firms throughout the world, logistics become an increasingly important value-adding process for a number of reasons. Concerning logistics practices Lambert & Stock (2001) argues that good logistics practices can create a competitive advantage. More specifically they claim that best logistics practice plays an important role in three critical elements of the

Marketing concept. These elements are customer satisfaction; integrated effort and company profit (Lambert & Stock, 2001 as cited in Anna and Konrad, 2008).

Generally, the above arguments indicated that good logistics practice is increasingly recognized as the key enabler, which allows a company to gain and maintain its competitive advantage and ensure maximum customer satisfaction.

2.2.3 Logistics activities

The scope of logistics practices has been extended beyond its traditional coverage of transportation and warehousing to include packaging, labeling, assembly, purchasing, distribution, manufacturing, finance, customs clearance, and other forms of customer service (Luchen, Theo note boom, 2011). A common way to structure a company, from a logistics perspective, is in three main activities: procurement, operations and distribution (Aaronson, 2004; Christopher, 2005). However, the typical elements of logistic activities, such as customer services, sales forecasting, distribution communications, stock control, materials handling and ordering, amongst others, may give companies competitive advantages, especially when based on the exchange of reliable information between the links in the chain (Bowersox, Closs and Drayer, 2005, as cited in Wescley and Ricardo, 2011). Similarly, there are thirteen key logistics activities that are involved in the flow of products, from point of origin to point of consumption: these are customer service, demand forecasting, inventory management, logistics communications, material handling, order processing, packaging, parts and service support, plant and warehouse site selection, procurement, reverse logistics, traffic and transportation, warehousing and storage (Lambert & Stock, 2001 as cited in Anna and Konrad, 2008).A narrow and more traditional view of manufacturing logistics includes the planning, scheduling and control of all activities resulting in the acquisition, processing, movement and storage of inventory (David, Robin, Robert and Louis, 2007).

2.3. Reverse Logistics (RL) and Logistics Centers (LCs)

RL is "‘‘the process of moving goods from their typical final destination for the purpose of recapturing value, or proper disposal’’ (Rogers and Tibben-Lembke, 1999, p.2). Horvath et al. (2005) indicates that RL refer to a set of programs or competencies aimed at moving products in the reverse direction in the supply chain (i.e., from consumer to producer). RL involves planning, implementing, and controlling an efficient, cost effective flow of raw materials, in-process

Inventory, finished goods, and pertinent information from consumption to retrieval or proper disposal of the product (Rogers and Tibben- Lembke, 1998.)

With the progressive increase in environmental concerns, the efficiency focus, importance of value delivery through co-creation and co-production as well as the need for improving core competencies while strategically positioning in the global competitive market, the understanding of RL shifts towards the "coordinated", "centralized", "consolidated" and "integrated" network value chain (Flygansvaer et al., 2008). Although RL have large potential value of effective RL is often under estimated. Yet, the reason for neglecting to implement a state-of-the-art RL program is cost and control related (Genchev, 2009). RL leads to the fear of losing control over the organizational processes with the extra work involved in its multi-layer steps and results in the reluctance to pioneer a new organizational structure. But it is underestimated that if RL is used effectively it results in improved firm outcomes such as improved customer satisfaction, decreased resource investment levels, and reductions in storage and distribution costs. LCs is referred to by different names such as logistics village, distribution or distribution-storage center, cargo terminal or central depot. The main terms regarding this concept are; (1) Freight villages in the United Kingdom, (2) Plate Forme Lojistique in France, (3) Interpor to in Italy, (4) Transport Center in Denmark, (5) Güterverkehrszentrum in Germany (6) LC in U.S.A., China, Japan and Singapore. There is a twofold approach regarding the understanding of LCs; the first approach identifies a LC as the generator of business, on the opposite the other approach relates it to the transportation infrastructure.

Supply chain coordination is another dynamic capability which is important for reverse Logistics management. Coordination can be achieved via different governing mechanisms such as market mechanisms, contracts, and partnership arrangements. Supply chain coordination Proliferates when there is a culture of collaboration rather than competition among supply chain Partners (Cao and Zhang 2011). Further, collaboration allows for investment in assets specific to reverse logistics which reduces uncertainty. For example, ex-ante investments in sites like distribution or warehouse centre increase the site-asset specificity (Lamminmaki 2005).

2.4. Reverse Logistics Strategies

There are three reverse logistics strategies applicable in the industry**:** joint reverse

Logistics; manufacturer reverse logistics; and, third-party reverse logistics.

2.4.1 Joint reverse logistics

Joint reverse logistics refers to the horizontal alliance between firms in the mobile industry Such as joint **v**entures that carry out reverse supply chain operations such as establishing a Recycling centre, collaborative transportation and joint quality control (Kasper et al. 2011).

A Typical joint reverse supply chain contains four areas of collaboration: (i) waste disposal, (ii) Product/part/material in sales, (iii) cost sharing, and (IV) profit distribution (Nnorom et al. 2009). Joint collaborations allow logistics operation models to be scaled and benefit from Economies of scale as the number of returned mobiles phones increases (Jang and Kim 2010). A barrier to joint ventures is the fact that mobile phone companies are direct competitors Hesitant to expose vital technologies that are protected by patents, often involved in legal Disputes among them, thus working together in reverse logistics may expose intellectual Property rights (Ha et al. 2010).

2.4.2Manufacturer reverses logistics

Manufacturers of mobile phones can establish recycling centers and carry out mobile phone Reverse logistics operations without collaborating with other companies (Yamane et al. 2011). Manufacturers need to have the necessary scale to profit from recycling their own branded Phones (Dedrick et al. 2011) Feeding forward logistics with insights from reverse logistics increases quick response and drives research and development in new Directions. Furthermore, quality assessment and control can occur at the earliest time possible Thus resulting in fewer defects and fewer product returns (Scharnhorst et al. 2006).

2.4.3Third-party reverses logistics

Outsourcing reverse operations to specialist third-party or fourth-party logistics companies is not uncommon in mobile phone supply chains (Assava pokee and Wong that sanekorn 2012). Outsourcing contributes to reducing capital investment in manpower and specialized equipment and facilities thus making this business model suitable for small and medium-size enterprises with limited capacity to handle complex logistics operations (Polák and Drápalová 2012).

2.5. Logistics Challenges

A Cambridge dictionary defines the word “Challenge” as (the situation of being faced with) something that needs great mental or physical effort in order to be done successfully and therefore tests a person's ability. According to Dinh and Hinh T. (2014) poor trade logistics penalize firms that rely on imported inputs and doubly affect exporters, causes long and uncertain delays, and it is unacceptable to most global buyers. They also mentioned that challenges that face logistics operations have become a great concern at this time since they result in poor performances of logistics.

2.5.1. Logistics Challenges in different Countries (health different centers)

According to the study by Vietnam Ministry of Transport and the World Bank (2002) the major logistics constraints the Vietnam manufacturing industries faces are its dependence on imported inputs, its difficulty in establishing direct relationship with buyers, taxes and the restrictions placed on foreign owned companies. Related to this, insufficient container handling capacity, insufficient road development and maintenance, underused railways capacity, insufficient management, insufficient airfreight facility are the major problems in logistics infrastructures (Ministry of Transport, Vietnam & The World Bank, 2002).

Similarly, Goh and Pinaikul (2002) studied the factors hindering logistics development in Thailand and found that inefficient logistics information systems, acute transportation bottlenecks, climate changes, lack of modern logistics management techniques and expertise, high cost of acquiring and installing automated logistics equipment, and the current inefficiency of the logistics information systems. According to Edward (2004) the main logistics and supply chain management barriers in Europe are built inefficiencies in supply chain, ineffective communication structures, poor exchange of information, inappropriate culture, excessive reliance on forecasting and stockholding, managing problems rather than eliminating their causes.

Donald and David (1997) explored that the major logistics challenges facing Brazilian logisticians is inability to access and apply the growing logistics knowledge base and the wide variance in customer sophistication.

Clifford (2011) also mentioned the top ten logistics challenges as: infrastructure, the price of diesel, rising truck rates, capacity, the economy, ocean shipping, security, the green movement, the election and increased truck weight limits.

On the other hand, Alan and Rem kovan (2008) described that extended lead time of supply and extended and unreliable transit time are the main logistics challenges.

A study by Thomas (2009) reported in the fifth state of logistics survey that the increasing logistics cost in South Africa continue to be constraints and challenges to expand market into international trade.

Even the industry in China grows year of year, there were some major logistics challenges that interrupt the development like rising cost, financing bottlenecks, in-house mind-sets to handle logistics, localized services, lack of unified top level institutional coordination and imbalance transport infrastructure development (Li & Fung Research Centre, 2008).

On the other hand, David, Robin, Robert and Louis (2007) in their study argues that uncertainty and variability, human behavior, limitations of current information systems, data overload and bad data, product proliferation and shortening life cycles and misaligned decisions and performance measures are the major logistics problems for many manufacturing logistics sectors.

A study by Neil (2011) to identify the logistics challenges and present solutions for Sydney, Australia especially on the transportation sector explored that logistics challenges of Australia are grouped in to six: they were logistics challenges related to geography (traffic congestion, road changes, higher distances, geographical location of some places), demography (ageing population and growing concentration of population), environment (climate changes, green logistics, seasonal problems, natural disasters like cyclones and floods), legislation(transport regulations and funding disagreements) and technology (costly new technology, lack of integrated system, resistance to change, dependency on technology) as well as other challenges(rising fuel prices, security issues, delay due to maintenance of roads).

In response to the identified challenges he gave potential solutions like increased driver training, better forecasting and planning, improving transport networks and infrastructure.

A well-developed transport and communication infrastructure, a sound governmental industrial policy and a well-developed educational system are the necessary conditions for improved logistics and manufacturing. Until recently, African firms did not have this autonomy because of the heavy involvement by the government. As a result, bureaucratic procedures inside and outside the firm impeded the flexibility of the firm (Biersteker, 1992; Mkand awire, 1994 as cited in Hans, 1999).

2.5. 2. Logistics Challenges in Ethiopia

Since Ethiopia is locked country, the only means of logistics activity depend on port Djibouti and currently the government tries to negotiate to use Somali land and Mombasa ports as an option. Also, according to Tilahun (2014), in Ethiopia, problems in the maritime transport sector have become one of bottlenecks to international trade.

Similarly, Fasika, Klaus and Marcus (2014) in their research on the 12 types of industries found that long delays in customs and port handling as well as complex tariff for imported items are becoming the challenge for logistics and supply chain processes. They also found that the major supply challenges are inconsistency of quality raw material during bidding time and final delivery, unavailability of local suppliers for imported items and long processing and delivery time due to lengthy bureaucratic procedure involved in the purchase of the imported raw material. Their study also indicated that the major transportation challenges are Ethiopia having no access to sea (Land- locked country) and back ward transport infrastructure. Due to this the deliver process was expensive and challenging. This hinders the firms' competitiveness of the country.

Girum and Florian (2013) in their study indicated that the recently introduced 'Export Trade Duty Incentive Schemes Proclamation No 768/2012' has several instruments to minimize the problems of inventory stocking and lead time for establishments that import inputs, such as chemicals, for the production of commodities for the export market.

They found that bonded input supplies warehouse scheme is one of such instruments whereby exporters are allowed to store inputs without duty payments under the supervision of the customs authority. It is also indicated that this scheme reduces customs clearing time, overstocking of raw material inventory and lead time.

The above challenges that are found by different researchers are highly focused on transportation and supply side issues.

This study is not limited in its scope and tried to identify the general logistics challenges using different categories like environmental, technological, legislative, and it presented the critical ones that need immediate action.

Ethiopia is under developing country and looking different manufacturing and related technique from developed countries. Port is the other issue for fast logistics activity.

Ethiopia primarily uses the port of Djibouti as a gateway for the vast majority of its internationally traded goods with most of the goods essentially transported to and from the port by trucks. This situation has made Ethiopia's trade logistics very expensive and uncompetitive.

The other logistics challenges faced due to geographical and demographical condition of the country. The topographic barrier throughout the country makes the road transportation activity very slow and ineffective.

2.6 Environmental concerns reverse logistics and challenges (reverse logistics or disposal) process

The Ethiopian constitution has clearly stated people's right to live in a convenient, healthy environment and to use environmental resources effectively. The issue is also incorporated in various policies and principles of the nation.

There are many different types of plastic, and they cannot all be recycled together. So unless you're diligent about sorting all your plastics, then "recycling" that yogurt container may be doing more harm than simply throwing it away.

Recycling is generally far better than sending waste to landfills and relying on new raw materials to drive the consumer economy. The chief problem lies in plastic's complexity: There are as many types of plastic as there are uses. And since each type can only be recycled with its own kind, plastics need to be carefully sorted before they can be processed. The presence of enough foreign materials from food to dissimilar kinds of plastic can ruin an entire batch of would-be recyclables.

The reason for this is that many plastics contain additives blended into the original resin, and the different additives create discrepancies even within each category. Every container in the grocery store is made with a unique blend of chemicals plasticizers, moulding agents, dyes that combine to give a plastic its shape, color, strength, and flexibility (or lack thereof). As a result, they melt at varying temperatures and respond differently to new additives, and so they cannot all be melted down and recycled together to make a new product.

2.7. Empirical Review

Internationally, a number of studies have been done to try and establish the relationship between reverse logistics practices and organizational performance. Green et al. (2011) found out that successful implementation of GSCM practices such as green purchasing, cooperation with customers, Eco design and reverse logistics will lead to improved environmental and economic performance which support improved organizational performance. Further, their findings show that cost saving nature of reverse logistics should lead to improved economic performance and both environmental performance and economic performance should yield improved operational efficiency. These generate cost savings and reflect on an organization's ability to satisfy changing customer demands for environmentally sustainable products and services.

Eltayeb et al. (2011) investigated the outcomes of green supply chain initiatives among certified companies in Malaysia and environmental sustainability. Among the four possible outcomes they investigated, which included environmental outcomes, economic outcomes, cost reductions and intangible outcomes, reverse logistics was found to have a significant positive effect on cost reductions only. This study tests the hypothesis that reverse logistics practices have a positive effect on both the financial and marketing performance of organizational performance.

Ongombe (2012) looked at the relationship between reverse logistics and competitive advantage in water bottling companies in Nairobi. This study concluded that there was indeed a strong relationship between reverse logistics and competitive advantage. Companies that implemented reverse logistics practices benefitted from increased profit margins due to reduction in production costs and increased sales.

The research which comes closest to this study was done by Serut (2013) whose main concern was on the financial aspect of organizational performance. Although his study found a positive

Relationship between reverse logistics and organizational performance, this study argues that reverse logistics is a broad concept and therefore should be broken down into sub components of re use; remanufacture and recycle reverse logistics practices. The kind of data he collected was mainly concerned on the financial aspect of an organization's performance, while this study focuses on organizational performance as a whole which include marketing performance as well as financial performance.

Their study on logistic practices of Brazil found that the Brazilian economy is stabilizing and many firms, both domestic and international, are viewing Brazil as the primary focus of their manufacturing and distribution strategy. This was due to the fact that the country logistics is characterized by less delay in ports, availability of a nice infrastructure, and modern information management systems. The study by Dr. ObioraMadu (2016), Nigeria is among the lowest cost crude oil producer, and with international oil prices fixed in US Dollars, couldn't care less, until now, that the economy faces total melt down with the steep drop in oil prices. According to WTO, transaction cost of the type amenable to trade facilitation, can be as high as 10 – 15% of our total trade volumes which considering import and export alone is $15b - $21.6b (Import $61.6b, Export $82.6b, Total $144.2b,2014).

The study by Fekadu (2013) on the logistics practices of Ethiopian found that the density and quality of transport infrastructure is very low, the main freight transport companies lack capacity in terms of skilled human resource, management skills and number of fleets of vehicles, the main/big companies are government owned that will result in inefficiency, the efficiency of customs authority is very low and this causes a lot of delays at check points, and the number of days required to get foreign currency from national bank is also very long. The research done by Fasika, Klaus and Marcus (2014) on selected 12 types of Ethiopian manufacturing industries, on the characteristics of supply chain and logistics found that customer's comments and complaints collection were done mostly with help of data log manually and the level of practice of customer service is very less. They also found that although the companies have to set rules for effective negotiation procedure, procurement department's officers who were directly participating in purchasing cannot follow all rules because the marketing situations are highly variable and dynamic especially with raw material price.

In their study they also found that the supplier evaluation is largely based on minimum cost and contract breakdown will be done for minor price changes.

Concerning transportation most of the companies were using their own transport facilities to transport and distribute the final product to local customers. Some of the companies have started using third party logistics (3PL) providers for their distribution functions.

2.8. Conceptual frame work

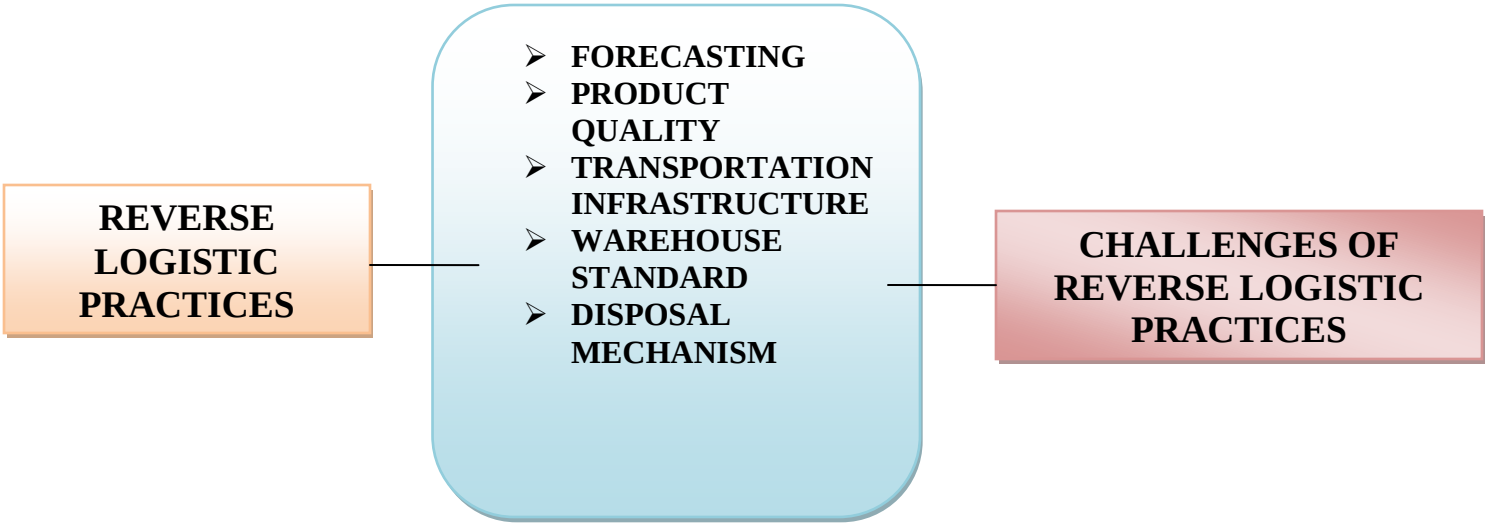


Figure 2.1General Variable of the Study.

CHAPTER THREE
RESEARCH METHODOLOGY

3. Introduction

Research methodology provides a means to systematically solve a research problem. This chapter explains the methodological approach adopted when conducting the research. This includes the research design; population and sampling technique, tool of data collection and method of data analysis are briefly explaining.

3.1. Study Area

The study was conducted on EPSA Jimma branch, which found in Jimma town. EPSA Jimma Hubs is located in Jimma town to south western direction of Ethiopia, which is located **346** Km away from the capital city of Ethiopia, Addis Ababa. It is the key governmental organization for the implementation of IPLS and distribution of essential health commodities (RDF and Program) for public and private health facilities found in found in 9 zones ,2 Special woredas and 1 Town Administration. It also provides supervisory, material support and Capacity building to health facilities for strengthening and enforces the implementation of IPLS and pharmacy service. Currently the hub has been serving a total of **334** public health facilities.

3.2. Research Design

Descriptive design was use to frame the study. Descriptive design or study is a method use to evaluate or survey participants' responses and identify relationships among factors. Mixed research approach which advocates qualitative and quantitative approach was use so as to investigate the research problem in detail and to triangulate the findings of quantitative data with qualitative data finding.

3.3 Sources and types of data

The data require to conduct this study is from both primary and secondary sources. Primary data are those which the researcher was collect through interviews and direct practical participation from different stakeholders. Secondary data was including the data which was used collect by other researchers (Kothari, 2004). Secondary data was collected through documentation, user

guides, online tutorials, books, newspapers, journal, manuals and internet searching information made available at the organization website. From the secondary data sources this will be documentary reviews. The sources of data are documents of the EPFSA Jimma branch.

3.4. Sampling design

3.4.1 Target population

The setting for this study is the EPFSA Jimma branch. The EPFSA provides different health centers by distribution of pharmaceutical drugs in terms of quality and quantity. Toward meeting this objectives the role of Jimma EPFSA are crucial. Therefore, the target population for this study is worker staff of Jimma branch EPFSA. Roughly there are about **132** including supportive staff workers who are currently working in the EPFSA jimma branch. Since the number of population size is fairly low, data were obtaining using census method by targeting all the population. According to Gupta (2007 p.101) when the universe is small one cannot resort to sampling method because in such situation completeness and accuracy can be ensuring only by the census method. For the purposes of this research, standardized questionnaire was used to gather the necessary information.

According to Burns, N. and Grove, S. (1993), a population is define as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. The study population of this had consists head of each departments and selected respondent members from each departments like warehouse and inventory management, distribution and fleet management, general service, fund administration, forecasting and capacity building and human resource EPFSA Jimma branch.

3.4.2 Sampling Technique and Sample size

Both non-probability and probability sampling techniques was used in this study. In the case of non-probability sampling, purposive sampling techniques are adopt to select sample respondents form the administration office and key information from each work process coordinators. The purpose of using this method (purposive sampling) is that it helps to select the sample from the area which is related with the research problems (objectives). With regard to probability sampling, systematic random sampling method is applied to select sample respondents from the lists of those workers in different work process. The aim of using this method is that it helps to

Minimize sampling bias and provide equal chance for all population as well as it allows simply draw samples from the lists.

The main factor was need to considered in determining the sample size is to keep it manageable enough and also to enable the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource .

Mugenda O, Mugenda A ,(2003), the data is collecting from, warehouse and inventory management, distribution and fleet management, general service forecasting and capacity building in EPFSA Jimma branch. The researcher was applies Yamane (**1976**) sample size determination formula to find the sample size of respondents.

n= $\frac{N}{1+N(e)^2}\frac{140}{1+140(0.5)^2}$ **=112**

n= sample size need to choose

N= total population size of the study

e = error level which is 95% of confidence level

By using this sample size formula from the target population of **112** employees in the sample of the respondents are approximately **95** employees.

Table 3.1: sample size from focus group

Department	No of employees	Percentage (%)	Number selected	Round up number Respondents
Warehouse & Inventory Management	27	84.8	22.89	23
Distribution & Fleet management	20	84.8	16.96	17

General service	26	84.8	22.048	22
Forecasting & Capacity building	13	84.8	11.024	11
Fund administration	26	84.8	22.048	22
TOTAL	***112***	**84.8**	***94.98***	***95***

According to the above formula given above, **95** employees became a representative samples for the study. This study considers permanent employees of the company which will be selected using simple random sampling.

3.5 methods of data collection, design and administration

3.5.1 Methods of data collection

This study was incorporate methods of the data collection. The method that the researcher was expected to use in this study was based on the objectives and empirical frame work that that need to addressed in this study. First questionnaire and interview was prepared in line to the basic research questions and objectives of the study.

3.5.2 Questionnaire design

First of all questionnaire was prepared in line to the basic research questions and objectives of the study. The first sections of the questionnaire were about the demographic features of the respondents, and the rest questions were focus on the objectives of the study. The questionnaire was designing in both close and open ended questions that were answer by the respondents through scale measurements questions.

3.5.3 Methods of Administration/ Quality Criteria

3.4.3.1 Content validity

The idea of validity to questionnaire refers to the steps was take by the researcher to ensure clarity, wording and ordering of the questions. Thus to ensure the validity of the questionnaire, it was necessary to ask sample of the employee and leaders of the organization questions which

was written precisely and clearly. In addition, the questionnaire's reliability, especially their internal consistency was checked through the pilot study. Internal consistency was measures of reliability of items of a questionnaire which will be intend to measure the same construct. The researcher will check all the items in the employee's questionnaire can serve the purposes, and then the items that was not contribute to the objectives of the questionnaire was discarding.

3.5.3.2 Construct validity

One measure of validity as described by Me Burney and White (2007). They will be state that "face validity is researcher was attempted to support the interpretation of the measurement and its connection to the construct was seek professional judgment that there was a plausible connection between the surface features of the measure's content and the constructs as theoretically defined." One measure of validity as describe by Me Burney and White (2007).

3.5. 3. 3 Reliability test

Golafshani (2003) defines reliability as the extent to which results of a study are consistent over time and there is an accurate representation of the total population understudy. According to Tokeetal, (2012), the aim of reliability analysis is to find the extent to which an effect procedure produced the same result if the process is repeat over and over again under the same conditions. The most common technique was used in the literature to assess the scales reliability and stability is use of the Chronbach Alpha.

Table 3.1: Reliability test of Variables

	No of items	Corrected Item-Total Correlation	Cronbach's Alpha
Agency's Reverse Logistic Practices	11	.977	.989
Challenges of Reverse Logistic Practices	6	.977	.989
Warehouse standard	4	.978	.989
Legal, policy, System & Environmental issues	5	.978	.989
Disposal mechanism	5	.971	.989
Forecasting problem	6	.977	.989
Transportation infrastructure	5	.982	.988

Product quality defects	4	.844	.994

Source: Survey, 2020

Reliability analysis was subsequently done using Cronbach's Alpha which measures the internal consistency by establishing if certain item within a scale measures the same construct. Cronbach's alpha was calculated by application of SPSS for reliability analysis (see table above). An alpha value of 0.7 or above will be considered reliable.

The results of data analysis showed that the survey indicators, which were adopted from mature measurement scales, have good content validity. The Cronbach's α used in this study for the dimensions of each construct is higher than the critical value of 0.7, as proposed by (Nunnally, 1978), indicating that the internal consistency of the scale used in this research is good. Since the Sig. (2-tailed) value < 0.05, then the item is valid and if Sig. > 0.05alpha, the item is invalid. (Note that the Sig. (2-tailed) value also known as the *p-value, is in most valid circumstances take the "*0.000" value)

3.6. Methods of Data Analysis

The data that was collected through the state data collection methods was compiling, editing, process sing and tabulating to draw information from it prior to analysis. The data analysis is mostly quantitative data .So; descriptive statistical analyzing method is was apply. In the case of qualitative data textual explanation techniques was used. Both these methods allow organizing and summarizing the information. Both manual and computer programs (Excel) and SPSS were utilized to analysis and interpret the data. .

3.7 Ethical Consideration

The information was collected from companies is going to be kept confidentially in order to keep their ethical value. Institutional secured data like financial statements are not required for the analysis, and this in turn encouraged the firm representatives to freely respond for the items under study.

3.8 Dissemination of the result

The Findings of the study was presented to Jimma university business and Economics College. The summary was communicated to the EPFSA Jimma branch officials including the possible

Recommendations to improve the reverse logistic practice and challenges with regarding environmental issues. There was a consideration to publish the result in international peer-reviewed scientific journals.

CHAPTER FOUR

4. DATAANALYSIS, PRESENTATION, AND INTERPRETATION

This chapter contains the presentation, analysis and interpretations of data. The statistical techniques that were outlined in chapter three were applied to the data, and the results obtained are presented in this chapter. The first part describes the demographic characteristics of respondents in terms of sex, age group, and education level and service years.

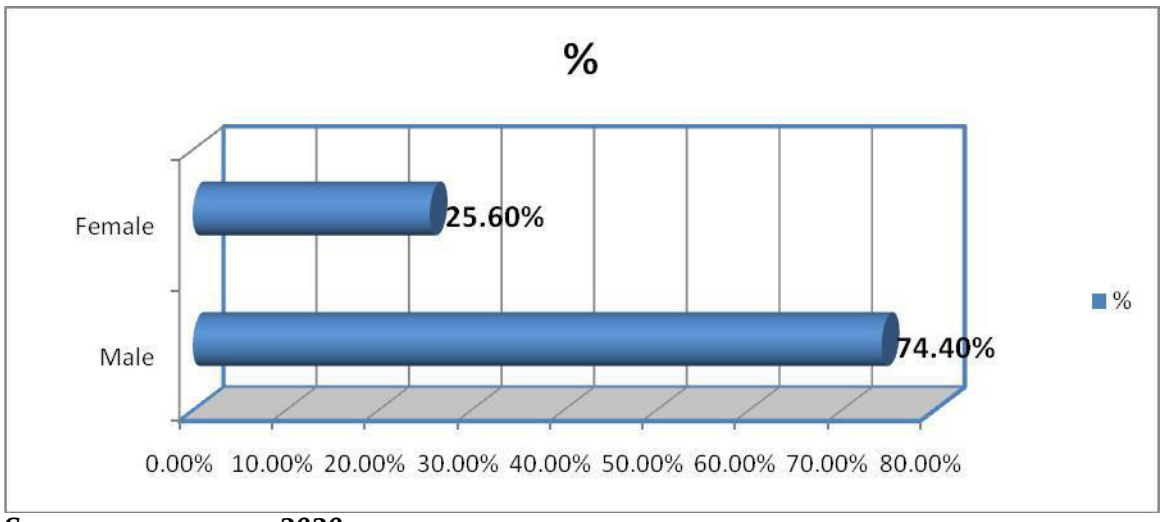
In the second part the analysis and interpretation of data gathered through questionnaire were discussed descriptions of the variables with their mean and standard deviation values. Mesfin (2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale (that ranges from strongly disagree to strongly agree in the survey questionnaire).

The study sought to collect data from 95staff's of EPSA Jimma branch but the researcher managed to collect 86 questionnaires. This represents a response rate of 90.5 percent which is very good for analysis. According to Bobbie (2004) a response rate of 60 percent is good and that of 90.5 percent is very good. However the confidence level of this study was 95% but the response rate found below this level, due to the situational analysis of COVID case not all the employees are found at their work. Thus, the attained study participants were feasible and logical amounts for this study.

4.1. Demographic Profile of the respondents

The first part of the questionnaire consists of the demographic characteristics of respondents. Accordingly, the following variables about the respondents were summarized and described in the subsequent figures and tables.

Figure 4.1: Sex distribution of Respondents



Source: own survey, 2020

As indicated the information above on figure 4.1, concerning sex wise distribution of respondents' larger proportion of respondents 74.4% were male whereas the remaining 25.6% were female. From this we can conclude that the proportion of male employees participated in survey is higher than female.

Table 4.1: Age of respondents

Age Category		**Frequency**	**Percent**
Valid	<25years	9	10.5
	25-30years	21	24.4
	31-35years	43	50.0
	36-40years	13	15.1
	Total	**86**	**100.0**

Source: own survey, 2020

According to the information observed above on table 4.1, Concerning the respondents percentage distribution by age category the study found that larger proportion (50%) of the agency staff's in the study area were aged between 31 and 35 years followed by 24.4 percent of the staff's aged between 25and30, 15.1 percent were in between 36-40 years. The remaining

least group 10.5 percent of the respondents indicated that they were<25 years. This suggests that most respondents have at their productive and maturity age which is essential for efficiency of the operational task of the agency.

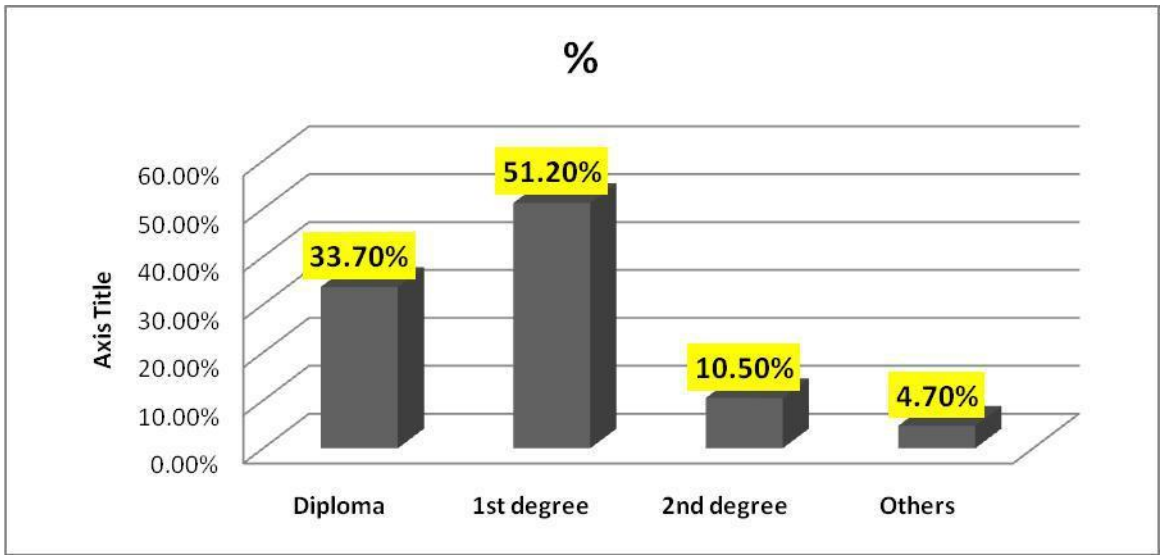
Table 4.2: Work experience in the agency (in years)

Experience		Frequency	Percent
Valid	<3years	16	18.6
	3-5years	23	26.7
	6-10years	36	41.9
	>10years	11	12.8
	Total	**86**	**100.0**

Source: own survey, 2020

As indicated on the above table, respondents work experience which revealed this study showed that, larger proportion 41.9 % of the participants were served for 6-10 years followed by, 26.7 % Were serve for 3-5 years and 18.6 % were include respondents those serve <3 years and the remaining least group 12.8% were served for more than 10 years. This could show that as the participants experienced enough to provide information for this study.

Figure 4.2: Educational level of Respondents



Source: own survey, 2020

In relation to respondents' educational level, as indicated on figure 4.2, the result showed that larger proportion 51.20% of the respondents were hold their first degree followed by 33.7% were

Possessed diploma 10.50% were had the 2nd degree the remaining least group 4.7% were found in others educational level status. This implies that most of the agency staffs found at the degree level. Thus, they had been qualified enough and had a potential to evaluate the agency's reverse logistic practices and the challenges which the practiced faced.

Table 4.3: Respondents Department of their work in the agency

Departments		**Frequency**	**Percent**
Valid	WIM	24	27.9
	Distribution	16	18.6
	Forecasting	9	10.5
	General service	19	22.1
	Fund administration	18	20.9
	Total	**86**	**100.0**

Source: own survey, 2020

According the information observed above on table 4.3, regarding respondents department of work the result showed that larger proportion 27.9 % were from WIM followed by 22.1% from general service, 20.9 % from fund administration, 18.6% were distribution and the remaining least group 10.5% were serve at forecasting department. This implies that employees selected proportionally from each department of the agency. This could be logical to collect data at different insight from different department of the agency.

Table 4.4: Respondents Position in the agency

Position/Responsibility		**Frequency**	**Percent**
Valid	Warehouse manager	18	20.9
	Dispatcher	8	9.3
	Officer	32	37.2
	Delivery personnel	8	9.3
	Team leaders	8	9.3
	Others	12	14.0
	Total	**86**	**100.0**

Source: own survey, 2020

The study sought to find the agency staff's position and responsibilities. The results indicated that larger proportion of respondents 37.2 % of them were officers from different departments followed by 20.9 % & 14.3 % of focal warehouse managers &others respectively. The least proportion 9.3 % of them was dispatcher, delivery personnel and team leaders with the same proportion (see Table 4.4 above). The above finding could suggest the participants of the study were found at their different title and responsibility holding level. Thus, they could able to evaluate the agency's reverse logistic practices well from different angles with a varied insight of the participants.

4.2. Descriptive Analysis of EPSA Jimma branch Reverse Logistic Practices

The descriptive statistics utilized are based on frequency tables to provide information on the demographic variables. Through tables, summary statistics such as means, standard deviations, minimum and maximum are computed for each Reverse logistic practices and Challenges affecting RLP implementation in this study. The findings which identified on this study presented as follows.

Mesfin (2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale (that ranges from strongly disagree to strongly agree in the survey questionnaire). A calculated mean value that ranges from 1 to 1.80 implies strong disagreement, a mean range from 1.81 to 2.6, from 2.61 to 3.4,from 3.41 to 4.2 and from 4.21 to 5.00 represented respondents' perceptions of somewhat disagree, neutral, somewhat agree and strongly agree respectively. The 0.8 served as a boundary for each elements of the measurement in the questionnaire.

Accordingly, the 0.8 was a result found by dividing the difference between the maximum (5) and minimum (1) scores to the maximum score (5) of the questionnaire. In the process of examining of the data, standard deviation was used. Small standard deviations (relative to the value of the mean itself) indicate that data are close to the mean whereas a large standard deviation (relative to the mean) indicates that the data points are distant from the mean. The mean is a poor fit of the data. Standard deviation is a measure of how well the mean represents the data (Field 2009). All of the variables were measured using a five point likert scale where 1 stands for Strongly Disagree and 5 stands of Strongly Agree. Therefore the interpretation made

using the mean of each variable, as a matter of fact the mean falls between the two ranges, hence if the mean approaches to 1 the interpretation would be the respondents didn't agree on the raised issue or variable and if it approaches to 5 the reverse would be true.

Table 4.5: Descriptive Statistics of Reverse Logistic Practices of EPSA Jimma Branch

	N	Mean	Std. Deviation
The agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities.	86	3.99	1.193
The agency's branches easily access the facilities for the recall products	86	3.77	1.155
The agency have facilities for returned products	86	3.94	1.099
The agency RLP could have a potential for sustainable development of the catchment public health facility	86	3.59	1.392
The agency RLP enables the facility to generate profits	86	3.51	1.317
The branch RLP could have a potential for sustainable development of the agency	86	3.55	1.316
Quality defects products had been immediately collected for recall from the facilities	86	3.13	1.335
The agency had a modern way of disposal for damaged and expired products	86	3.06	1.358
The agency had concerned the environmental issues in its RLP	86	3.51	1.387
Products had a complaint from the facilities had been Returned	86	3.12	1.418
The agency could not distribute near expired products to the service delivery points	86	3.22	1.409

The agency had been conducted quality measures for the products	86	3.15	1.435

Source: own survey, 2020

Table 4.2.; represents the calculated means and standard deviations for the practices of reverse logistic practices at EPSA Jimma branch. The mean for the statement 'The agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities is 3.99 which showed that average of the agency staffs' on the study areas were agree on for the agency having good transportation facilities. This could imply the existing good transportation facilities could support the reverse logistic practices of the agency. The study by Fekadu (2013) on the logistics practices of Ethiopian found that the density and quality of transport infrastructure is very low, the main freight transport companies lack capacity in terms of skilled human resource, management skills and number of fleets of vehicles, the main/big companies are government owned that will result in inefficiency, the efficiency of customs authority is very low and this causes a lot of delays at check points, and the number of days required to get foreign currency from national bank is also very long. Thus, transportation infrastructures the response time to the practices. Thus, the practices in EPSA Jimma branch are good.

Similarly the means of 'the agency's branches easily access the facilities for the recall products' shows that (3.77) which is found in the range of agree 3.41-4.2 this figure was revealed an agreement on average the staffs on the study area for the indicated statement above. This could suggest the agency could make a quick response for the RLP since it had been easily access to the catchment facilities.

Whereas the mean value of 'the agency have facilities for returned products' was 3.94, the findings showed that an agreement of respondents to the indicated statement above. This could assure as for the existence of product defects which cause for recall, delivery of near expiry & expired drugs for the facilities mainly indicated reasons for the returns of the products from the facilities.

On the other hand, the mean value for 'the agency RLP could have a potential for sustainable development of the catchment public health facility was 3.59 which is found in between from

3.41 to 4.2 with the range of agreement, which mean that average number of staffs response were agreed for the indicated statement above. The fact supported with the literature Effective reverse logistics practices will also significantly reduce costs relating to a product before the product is purchased, at the time of the purchase and after the purchase (Tibben-Lembke, 1998:51). From a logistics perspective, returned products that are handled efficiently can be reinserted into the forward supply chain, which can generate additional revenue, reduce operating cost and minimize the opportunity costs of writing off defective or obsolete products (Mollenkopf&Closs, 2005:35). Thus, according the finding of the paper EPSA Jimma branch practiced reverse logistics to create sustainable development along with its pharmaceutical supply chain system.

The mean value of 'the agency RLP enables the facility to generate profits was 3.51 which indicated that average number of respondents agreed on the above indicated statement. This could ensure the effectiveness of the RLP conducted on the agency. If the reverse logistics process is managed correctly, it can minimize logistics costs and improve revenue (Bernon M. R., 2011). Hence effective reverse logistics management can add significantly to an organization's profitability (Mollenkopf& Weathers by, 2003:24). If adequate resources (tangible/intangible or property-based/ knowledge-based) are targeted to reverse logistics programs, this can have tremendous positive financial impact. The mean value for 'the branch RLP could have a potential for sustainable development of the agency' was 3.55 which an agreement with average respondents ensured. Thus, EPSA Jimma branch had a potential to create sustainable development for the agency.

The mean value of 'Quality defects products had been immediately collected for recall from the facilities, was 3.13 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This imply that the activity determined by multi party operations which the immediate reporting system from the facilities and the quick response from the agency. Thus, the above finding informs that as there was a gap on the indicated core operations for the indicated practices. Practically, this operations involved by third party FMHACA which the regulatory body set to take immediate actions on quality defect products. Similarly, the mean value of the agency had a modern way of disposal for damaged and expired products was 3.06 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This is what the agency challenged in the past service year. However, currently the project for land fill waste disposal at the final stage.

But the finding indicated the past trend of the agency which traced the gap on the lack of modern disposal. Hence, it exerts measurable impacts on the RLP of the agency.

The mean value for 'the agency had concerned the environmental issues in its RLP' was 3.51 which indicated that average number of respondents agreed on the above indicated statement.RLP With the progressive increase in environmental concerns, the efficiency focus, importance of value delivery through co-creation and co-production as well as the need for improving core competencies while strategically positioning in the global competitive market, the understanding of RL shifts towards the "coordinated", "centralized", "consolidated" and "integrated" network value chain (Flygansvaer et al., 2008). This could support the agency to build a competitive market.

However the mean value for 'Products had a complaint from the facilities had been returned' was 3.12 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. Practically, the agency without the regulatory report data not considers only the compliant from the customer only. This could reduce the customer satisfaction for the service got from the agency. Similarly, the mean value for 'the agency could not distribute near expired products to the service delivery points' which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. The issuing system which the agency used is system based and the system not issued expired items. However due to unorganized warehouse operations missed happen to isolate expired items and mix idly delivered to service delivery points which indicates the gap of the RLP in the agency.

The mean value of 'The agency had been conducted quality measures for the products' was 3.15 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. Practically, the task not conducted at a branch level but it was conducted at the central level. The reason for most of respondents' response neutrality the information gap what they have but the consideration on the branch tasks only.

4.3. Descriptive Analysis for Challenges of EPSA Jimma branch Reverse Logistic Practices

According to Edward (2004) the main logistics and supply chain management barriers in Europe are built inefficiencies in supply chain, ineffective communication structures, and poor

Exchange of information, inappropriate culture, excessive reliance on forecasting and stockholding, managing problems rather than eliminating their causes.

4.3.1. Forecasting systems.

Table 4.6: Descriptive Statistics forecasting problem

	N	Mean	Std. Deviation
There are/is erratic availability of pharmaceuticals in the Agency	86	3.62	1.238
Unwanted product items returned from the facilities to the branch	86	3.78	1.172
Products supplied due to forecasting problem had been returned to the supplier	86	3.25	1.308
Slow moving products were stocked as supplied by forecasting problem	86	3.69	1.267
Over stocked pharmaceuticals products had been exist due to poor estimation of demand quantity	86	3.71	1.291
Products supplied with poor estimation had likely of expiration/wastage	86	3.72	1.233

Source: own survey, 2020

In relation to the forecasting problem as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.6 the result showed that, the mean value for 'There are/is erratic availability of pharmaceuticals in the agency' was 3.62 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This imply that if there was erratic availability of pharmaceuticals in the agency there exist an incidence of wastage due to availability of un wanted products, occurrence of stock out due to shortage of essential products and its indicates imbalance between the supply and demand. Thus it could be induced the practice of Reverse logistics for disposal, transferring overstock, and slow moving products to other branches.

The mean value for ‘Unwanted product items returned from the facilities to the branch’ was 3..78 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply as the branch support the facilities development through tackling the wastage of returned products. The products might be supplied there due to the forecasting problem of the facility. From this we can conclude that forecasting problem could enhance reverse logistic practices.

On the other hand the mean value for ‘Products supplied due to forecasting problem had been returned to the supplier’ was 3.25 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This suggests that the products once forecasted and supplied the returning process determined the agreement achieved due to the negotiations between the two parties. Thus, the product exposed for overstocked, slow moving or to be expired which could enhance the reverse logistics. And also being the supply done due to forecasting problem the reasons tackled its return process. Similarly, the mean value for ‘Slow moving products were stocked as supplied by forecasting problem’ was 3.69 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This implies that slow moving stocked products were susceptible to be expired either transferred for other distribution center or returned to the supplier.

Whereas the mean value for ‘Over stocked pharmaceuticals products had been exist due to poor estimation of demand quantity’ was 3.71 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could suggest the agency compiled demand estimation from the facilities the cumulative error of estimation from the facilities create poor estimation on the agency this could reflected by the existence of overstocked items at the agency.

The mean value for ‘Products supplied with poor estimation had likely of expiration/wastage, was 3.72 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This suggested that poorly estimated products had lack of demand from the customers and have been overstocked since not transferred and tends to be expired/wastage. The products after sales are characterized by little use or even the lack of sales, i.e., products which eventually return to the organization for various causes, such as defects,

errors or damages in transportation. Since the post-consumer products are characterized by the end of their useful life, after their utilization they will be sent to landfills, recycling or reuse.

4.3.2. Transportation infrastructure

Table 4.7: Descriptive Statistics Transportation infrastructure

	N	Mean	Std. Deviation
Poor transportation access for off road facilities for product recall/return	86	3.59	1.296
Transportation integration not feasible along with the warehouse of the catchment public health facilities.	86	2.64	1.283
Most of the facilities had been found at the off road site of the catchment	86	2.59	1.172
The facilities had a transportation access for returned products with uneconomical cost	86	3.65	1.309
The pharmaceuticals disposal site of the agency not accessible for products transportation	86	3.69	1.295

Source: own survey, 2020

In relation to the transportation infrastructure as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.7 the result showed that, the mean value for 'Poor transportation access for off road facilities for product recall/return' was 3.59 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This imply that the off road facilities for EPSA Jimma had poor transportation access. Thus it could be delayed the reverse logistic practices of the agency. Their study on logistic practices of Brazil found that the Brazilian economy is stabilizing and many firms, both domestic and international, are viewing Brazil as the primary focus of their manufacturing and distribution strategy. This was due to the fact that the country

Logistics is characterized by less delay in ports, availability of a nice infrastructure, and modern information management systems.

The mean value for ‘Transportation integration not feasible along with the warehouse of the catchment public health facilities.’ was 2.64 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This could imply as the transportation integration is feasible along with the warehouse of the catchment public health facilities. Thus it could be easily facilitated the reverse logistic practice from the on road public health facilities.

On the other hand the mean value for ‘Most of the facilities had been found at the off road site of the catchment’ was 2.59which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This suggests that as most of the catchment public health facilities of EPSA Jimma branch are on road site. Thus, product with quality defect or damaged products could easily return to the agency, since easy access of transportation. Whereas the mean value for ‘The facilities had a transportation access for returned products with uneconomical cost’ was 3.65 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could suggest the facility as easily conducted return practices and also the agency could be practiced recall activity with a reasonable cost of transportation.

The mean value for ‘The pharmaceuticals disposal site of the agency not accessible for products transportation’ was 3.69 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This suggested that agency transport products to disposal site with economical costs.

4.3.3. Product quality defects

Table 4.8: Descriptive Statistics Product quality defects

	N	Mean	Std. Deviation
Products collected after distribution due to delayed product quality test	86	3.69	1.295
Product quality test not conducted at branch level of the agency	86	3.98	1.217
There is poor reporting system for product quality defects from the facility	86	3.62	1.294
Products identified with Quality defect not isolated and quarantine in the warehouse	86	2.59	1.278

Source: own survey, 2020

Regarding products quality defect as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.8 the result showed that, the mean value for 'Products collected after distribution due to delayed product quality test' was 3.61 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This implies that distributed defected products might have a tendency to be used by a patient which had a life cost challenge. Thus it could be delayed the reverse logistic practices of the agency due products quality defect tests.

The mean value for 'Product quality test not conducted at branch level of the agency.' was 3.98which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply as the branch could be distributed the products before the test result have been approved. As a result, products recall can be conducted after distribution as delayed reverse logistic practices.

On the other hand the mean value for 'There is poor reporting system for product quality defects from the facility' was 3.62which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This suggests that as delayed the report of quality defects from the facility could be delayed the recalling practices to collect products from the facilities. Thus, delay of reporting from the facility could result a delay on reverse logistic practices.

The mean value for 'Products identified with Quality defect not isolated and quarantine in the warehouse' was 2.59 which is found in between 1.81-2.6 which mean average number of respondents were disagreed on the above statement. This implies the agencies isolated and quarantine the products which had quality defects. As a result it was quicken products reverse logistics.

4.3.4. Warehouse standard

Table 4.9: Descriptive Statistics of EPSA Jimma branch Warehousing

	N	Mean	Std. Deviation
Products could not maintained their location accuracy in the warehouse	86	3.48	1.317
Poor products arrangement in the warehouse make a challenge to easily identification of products in the warehouse	86	3.53	1.335
There is lack of space in the warehouse for the product storage	86	2.95	1.319
There is lack of storage materials in the warehouse for the product storage	86	2.78	1.314

Source: own survey, 2020

Concerning warehouse standard of the agency as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.9 the result showed that, the mean value for 'Products could not maintained their location accuracy in the warehouse' was 3.48 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This imply that keeping products their location fasten

Their picking from their location. As a result it fastens their distribution as well as their reverse logistic practices.

The mean value for 'Poor products arrangement in the warehouse make a challenge to easily identification of products in the warehouse' was 3.53which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply as products were poorly arranged without standard in the warehouse. As a result, products were vulnerable to damage, wastage and spoilage and make a reason for the practice of reverse logistics.

On the other hand the mean value for 'There is lack of space in the warehouse for the product storage' was 2.95which found in a range of 2.61-3.4 which mean that average of the study participants were neutral on the statement. This suggests that as there was enough space in the warehouse of the study area. Thus, there was a possibility to arrange products arrangement as per the standards in order to reduce products damage and wastage.

Additionally, the mean value for 'There is lack of storage materials in the warehouse for the product storage' was 2.78which found in a range of 2.61-3.4 which mean that average of the study participants were neutral on the statement. This implies the agency only needs the practiced since there was no lack of storage materials in addition to space. This also facilitates product isolation for easily identification. Thus, its aid to fasten the reverse logistic practices.

4.3.4. Disposal mechanism

Table 4.10: Descriptive Statistics of Disposal Mechanism

	N	Mean	Std. Deviation
The branch had no a fixed disposal site for product Disposal	86	3.63	1.189
Expiry Items are not recorded and reported regularly for their disposal	86	2.76	1.345
The agency had no reservoir space of unwanted products until the disposal conducted	86	3.45	1.360

The disposal committee had not been identified easily for the task	86	3.42	1.376
Delayed to certify the disposed items by the regulatory bodies	86	3.49	1.326

Source: own survey, 2020

In relation to disposal mechanism of the agency as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.10 the result showed that, the mean value for 'The branch had no a fixed disposal site for product disposal' was 3.63 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This implies that it made a difficult to estimate disposal cost with varied transportation cost happen as the disposal place varied. This, also delayed the deposal mechanism, as a result the reverse logistic practices could be delayed.

The mean value for 'Expiry Items are not recorded and reported regularly for their disposal' was 2.76which found in a range of 2.61-3.4 which mean that average of the study participants were gave neutral response on the statement. This could imply as there was a regular reporting system to notice product expired item status and to facilitate their disposal at the agency. As a result, is fastening the disposal activity as well as the reverse logistic processes.

On the other hand the mean value for 'The agency had no reservoir space of unwanted products until the disposal conducted' was 3.45 which found in a range of 3.41-4.2 which mean that average of the study participants were agreed on the statement. This suggests the agency had no enough space to reserve expired items which isolated from the warehouse. Thus, the agency need immediate disposal of expired products after isolated the expired drugs from the warehouse. Additionally, the mean value for 'The disposal committee had not been identified easily for the task' was 3.42which found in a range of 3.41-4.2 which mean that average of the study participants were agreed on the statement. This implies takes time to identify the disposal committee for the disposal activity. Thus, the disposal process might be delay, and hence delay the reverse logistic practices.

Whereas the mean value for 'Delayed to certify the disposed items by the regulatory bodies' was 3.49 which found in a range of 3.41-4.2 which mean that average of the study participants were agreed on the statement. This imply as there was a delay in certifying the disposed

Products. This also delays to finalize the disposal operations, and hence there happen a delay of the reverse logistic practices.

4.3.5. Legal, policy, System & Environmental issue

Table 4.11: Descriptive Statistics of Legal policy, systems & Environmental issues

	N	Mean	Std. Deviation
Legal issue is a barrier for the branch implementing Good RLP	86	3.48	1.344
Comply with policies is a challenge for the agency implementing Good RLP	86	3.52	1.299
Lack of system is a barrier for the agency implementing Good RLP	86	3.53	1.290
Managerial intention is a barrier for the agency implementing Good RLP	86	3.47	1.395
Commitment of the professionals a challenge for the agency RLP	87	3.34	1.310

Source: own survey, 2020

In relation to legal policy, system and environmental issues of the agency as a challenge for reverse logistic practice of EPSA Jimma branch, according to the information observed above on table 4.11 the result showed that, the mean value for 'Legal issue is a barrier for the branch implementing Good RLP' was 3.48 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This implies legal issues was a challenge to implement reverse logistic practice to the agency this, also delayed the deposal mechanism, as a result the reverse logistic practices could be delayed.

The mean value for 'Comply with policies is a challenge for the agency implementing Good RLP' was 3.52 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply as there was no flexible policy on the issues so it was rigid due to financial issues. As a result it delays the reverse logistic process. On the other hand the mean value for 'Lack of system is a barrier for the agency implementing

Good RLP' was 3.53 which found in a range of 3.41-4.2 which mean that average of the study participants were agreed on the statement. This suggests the agency had no fixed system on the reverse logistic system Thus, the agency follow dependent way of reverse logistic practicing method. This could able to delay the reverse logistic system.

Additionally, the mean value for 'Managerial intention is a barrier for the agency implementing Good RLP' was 3.47which found in a range of 3.41-4.2 which mean that average of the study participants were agreed on the statement. This implies the agency had poor managerial intention to concern its reverse logistic practices. Thus, the reverse logistic practices on the agency had not conducted on time and make a measurable delay.

Whereas the mean value for 'Commitment of the professionals a challenge for the agency RLP' was 3.34which found in a range of 2.61-3.4 which mean that average of the study participants were neutral on the statement. These imply as unknown status of the commitment professionals towards the RLP. However, practically the professionals on the agency had a commitment on practicing reverse logistic practices.

Table 4.12: Summary of Challenges for reverse logistic practices in EPSA Jimma branch

Challenges	N	Mean	Std. Deviation
Forecasting systems	86	3.70	1.284
Disposal mechanism	86	3.63	1.189
Transportation infrastructure	86	3.59	1.296
Warehouse standard	86	3.48	1.317
Legal, Policy, System & Environmental issues	86	3.48	1.344
Product quality defects	86	2.43	1.101

Source: own survey, 2020

In relation to the overall challenges on implementing effective reverse logistic practices on the study area, respondents were rated each category in general, according to the information observed above on table 4.12 the result showed that, the mean value for forecasting problem was 3.70, which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply forecasting problem rated by the highest number respondents as indicated on the mean value to be the main challenge of reverse logistic practices in EPSA Jimma branch, followed by disposal mechanism with a mean value of 3.63,

Transportation infrastructure with mean value of 3.59, warehouse standard and legal issues with similar mean value of 3.48 and product quality defects which was the least rated challenge with the mean value of 2.43. Thus, the agency should have to pay a great concern on its quantification analysis which conducted by the branch annually to adjust the frequently happened challenge of forecasting problem and also the agency should have to exceed its maximum effort to finalize its waste disposal landfill project and to go to functionalize the project to fix its disposal site.

CHAPTER FIVE

5. SUMMARY, CONCLUSION, & RECOMMENDATION

5.1. SUMMARY OF MAJOR FINDINGS

The study sought to collect data from 95staff's of EPSA Jimma branch but the researcher managed to collect 86 questionnaires. This represents a response rate of 90.5 percent which is feasible and logical for analysis.

Concerning sex wise distribution of respondents' larger proportion of respondents 74.4% were male whereas the remaining 25.6% were female. From this we can conclude that the proportion of male employees higher than female employees in EPSA Jimma branch.

Concerning the respondents percentage distribution by age category the study found that larger proportion (50%) of the agency staff's in the study area were aged between 31 and 35 years followed by 24.4 percent of the staff's aged between 25and30, 15.1 percent were in between 36-40 years. The remaining least group 10.5 percent of the respondents indicated that they were<25 years.

Regarding respondents work experience which revealed this study showed that, larger proportion 41.9 % of the participants were served for 6-10 years followed by, 26.7 % were serve for 3-5 years and 18.6 % were include respondents those serve <3 years and the remaining least group 12.8% were served for more than 10 years.

In relation to respondents' educational level, the result showed that larger proportion 51.20% of the respondents were hold their first degree followed by 33.7% were possessed diploma 10.50% were had the 2^{nd} degree the remaining least group 4.7% were found in others educational level status.

According the information observed , regarding respondents department of work the result showed that larger proportion 27.9 % were from WIM followed by 22.1% from general service, 20.9 % from fund administration, 18.6% were distribution and the remaining least group 10.5% were serve at forecasting department.

The study sought to find the agency staff's position and responsibilities. The results indicated that larger proportion of respondents 37.2 % of them were officers from different departments followed by 20.9 % & 14.3 % of focal warehouse managers & others respectively. The least proportion 9.3 % of them was dispatcher, delivery personnel and team leaders with the same proportion.

The mean for the statement 'The agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities is 3.99 which showed that average of the agency staffs' on the study areas were agree on for the agency having good transportation facilities.

Similarly the means of 'the agency's branches easily access the facilities for the recall products' shows that (3.77) which is found in the range of agree 3.41-4.2 this figure was revealed an agreement on average the staffs on the study area for the indicated statement above. This could suggest the agency could make a quick response for the RLP since it had been easily access to the catchment facilities.

Whereas the mean value of 'the agency have facilities for returned products' was 3.94, the findings showed that an agreement of respondents to the indicated statement above. This could assure as for the existence of product defects which cause for recall, delivery of near expiry & expired drugs for the facilities mainly indicated reasons for the returns of the products from the facilities.

On the other hand, the mean value for 'the agency RLP could have a potential for sustainable development of the catchment public health facility was 3.59 which is found in between from 3.41 to 4.2 with the range of agreement, which mean that average number of staffs response were agreed for the indicated statement above.

The mean value of 'the agency RLP enables the facility to generate profits was 3.51 which indicated that average number of respondents agreed on the above indicated statement. This could ensure the effectiveness of the RLP conducted on the agency.

The mean value for ‘the branch RLP could have a potential for sustainable development of the agency’ was 3.55 which an agreement with average respondents ensured. Thus, EPSA Jimma branch had a potential to create sustainable development for the agency.

The mean value of ‘Quality defects products had been immediately collected for recall from the facilities, was 3.13 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This imply that the activity determined by multi party operations which the immediate reporting system from the facilities and the quick response from the agency.

Similarly, the mean value of the agency had a modern way of disposal for damaged and expired products was 3.06 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. This is what the agency challenged in the past service year.

The mean value for ‘the agency had concerned the environmental issues in its RLP’ was 3.51 which indicated that average number of respondents agreed on the above indicated statement.

However the mean value for ‘Products had a complaint from the facilities had been returned’ was 3.12 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. Practically, the agency without the regulatory report data not considers only the compliant from the customer only.

Similarly, the mean value for ‘the agency could not distribute near expired products to the service delivery points’ which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement.

The mean value of ‘The agency had been conducted quality measures for the products’ was 3.15 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement. Practically, the task not conducted at a branch level but it was conducted at the central level.

‘There are/is erratic availability of pharmaceuticals in the agency’ was 3.62 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement.

The mean value for ‘Unwanted product items returned from the facilities to the branch’ was 3..78 which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply as the branch support the facilities development through tackling the wastage of returned products.

On the other hand the mean value for ‘Products supplied due to forecasting problem had been returned to the supplier’ was 3.25 which is in between 2.61-3.4 which average number respondents were neutral response for above indicated statement.

In relation to the overall challenges on implementing effective reverse logistic practices on the study area, the result showed that, the mean value for forecasting problem was 3.70, which found in a range of 3.42-4.2 which mean that average of the study participants were agreed on the statement. This could imply forecasting problem rated by the highest number respondents as indicated on the mean value to be the main challenge of reverse logistic practices in EPSA Jimma branch, followed by disposal mechanism with a mean value of 3.63, transportation infrastructure with mean value of 3.59, warehouse standard and legal issues with similar mean value of 3.48 and product quality defects which was the least rated challenge with the mean value of 2.43.

5.2. CONCLUSION

This study, eventually, drew a conclusive statement on the reverse logistic practices and the challenges which faced these practices. Regarding the reverse logistic practices of the agency, the agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities. Thus, the agency has facilities for returned products and the agency's branches easily access the facilities for the recall products. The agency RLP could have a potential for sustainable development of the catchment public health facility& had a potential to develop a branch itself, and also concerned with environmental issues. However, There were some problems in the practices which conducted by the branch. These are; Quality defects products had not been immediately collected for recall from the facilities, The agency had no a modern way of disposal for damaged and expired products yet, Products had a complaint from the facilities had not been returned easily and The agency could distribute near expired products to the service delivery points unknowingly while the products are not isolated well.

On the other hand, the study also identified the challenges which faced in the reverse logistic practices of the agency. In a forecasting problem, products supplied due to forecasting problem had not been returned to the supplier, and there are/is erratic availability of pharmaceuticals in the agency are identified challenges. Poor transportation access for off road facilities for product recall/return and the facilities had a transportation access for returned products with uneconomical cost are challenges from transportation infrastructure. There is poor reporting system for product quality defects from the facility and Products collected after distribution due to delayed product quality test some of challenges with products quality defects. From the warehouse standard challenges; Products could not maintained their location accuracy in the warehouse and Poor products arrangement in the warehouse make a challenge to easily identification of products in the warehouse indicated on this study. Concerning the disposal mechanism of the agency the branch had no a fixed disposal site for product disposal, delayed to certify the disposed items by the regulatory bodies and the disposal committee had not been identified easily for the task some of the identified challenges. Finally, the study was identified the challenges from legal, system and environmental issues and the study indicated Legal issue is a barrier for the branch implementing Good RLP, Comply with policies is a challenge for the

agency implementing Good RLP and Lack of system is a barrier for the agency implementing Good RLP as identified challenges on this study.

5.3. RECOMMENDATION

In order to accomplish its goals and to be effective EPSA Jimma branch should give due emphasis on its reverse logistic practices of pharmaceuticals. Cost effective and efficient movement of pharmaceuticals and medical equipment is relevant for the successfulness of agency. Based on the assessment made on practices of reverse logistics and its challenges, the following remarks were drawn:

Products quality defects test should have to conducted at a branch level in order to immediate quality test achievements and to tackle recall after distribution and hence to prevent delay on reverse logistic practices.

Even if the agency on the project of landfills wastes disposal construction it was not functioning yet. Thus, the branch pushes an effort on finalizing the project and ensures its ownership of modern disposal facility to conduct regular and uninterrupted waste disposal.

The agency should not distribute the expiry products without the needs determined the facility in order to tackle the accumulation of expired products items at the facility level for economical saving of the facility.

Facility consumption data should have to evaluate critically and quantification should have to done intensively in order to tackle erratic availability of products and to prevent demand estimation errors.

In order to easily identification of products in the warehouse products location accuracy should have to maintain and products are organized as per the standards. As a result it could able to minimize products wastage and damages.

It should be implemented feasible system to run effective way of pharmaceuticals reverse logistic practices at the branch as a means for sustainable growth for the public health facilities and the branch itself.

References

Alfred Eshikhati (2014), Relationship between reverse logistics and organizational performance: case study of manufacturing firms in Kenya, pp23-25

Amemba, S. C., Nyaboke, P. G., Osoro A. and Mburu, N. (2013). Elements of Green Supply Chain Management. European Journal of Business and Management, 5(12)2222- 2839.

Amini, M.M., Retzlaff-Roberts, D. &Bienstock, C.C. 2005. Designing a reverse logistics operation for short cycle time repair services. International Journal of Production Economics, 96:367-380.

Azevedo, S. G., Carvalho, H., & Cruz Machado, V. (2011). The influence of green practices on supply chain performance: a case study approach. Transportation Research Part E: Logistics and Transportation Review, 47(6), 850-871.

Barry, C. 2003. How to develop a reverse logistics strategy: eight tactics to try. Catalog Success Magazine. [Online] Available from: http://www.fcbco.com/articles-whitepapers/ReverseLogistics-Strategies.

Beamon, B.M. 1999. Designing the green supply chain. Logistics Information Management,

Bernon, M., Cullen, J. &Rowat, C. 2004. The efficiency of reverse logistics. Cran field School of Management, Sheffield Hallam University, the Chartered Institute of Logistics and Transport (UK), Department of Transport.

Carter, C.R. and Ellram, L.M. (1998). Reverse logistics: A review of the literature and framework for future investigation. International Journal of Business Logistics, 19(1):85{102.

Daugherty, P.J., Richey, R.G., Genchev, S.E. & Chen, H. 2005. Reverse logistics: superior performance through focused resource commitments to information technology. Transportation Research Part E, 41:77-92.

De Brito, M. P., Dekker, R., & Flapper, S. D. P. (2005).Reverse logistics: a review of case studies (pp. 243-281). Springer Berlin Heidelberg.

Flávia, C.R., Bernardi, C., Da Rocha, J.M. & Camargo, M.E. 2010. Strategic reasons, factors and advantages leading companies to reverse logistics: a case study. Global Journal of Management and Business Research, 10(6):37-48.

Genchev, S.E., Landry, T.D., Daugherty, P.J. & Roath, A.S. 2010. Developing reverse logistics programs: a resource based view. Journal of Transportation Management, 21(1):7-26.

Gupta, A. & Tiwari, G. 2009. Reverse logistics management: an effective strategy for revenue maximization in CPG Industry. Wipro Technologies.

Hazen, B. T., Cegielski, C. and Hanna J. B. (2011). Diffusion of green supply chain management examining perceived quality of green reverse logistics. The International Journal of Logistics Management 22 (3)373-389

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. Academy of Management Journal, 38(3), 635-672.

Jayaraman, V. & Luo, Y. 2007. Creating competitive advantages through new value creation: a reverse logistics perspective. Academy of Management Perspectives, 21(2):56-73

Ji, G. 2008. Reverse logistics operation management based on virtual enterprises and complaint service management. Journal of Service Science and Management, 1(1):51-66.

Langat, E. (2012). Reverse supply chain management practices in large scale manufacturing companies in Nairobi, Kenya. Unpublished MBA project UON, Kenya.

MosesKabergey, Salome Richu. (2015). Effect of Reverse Logistics on Operational Performance of Sisal Processing Firms in Nakuru County, Kenya. International Journal of Economics, Finance and Management Sciences. Vol. 3, No. 5, 2015, pp. 556-56

Ongombe, J. (2012). Reverse logistics and competitive advantage. An investigation of water bottling companies in Nairobi. Unpublished MBA project UON, Kenya. 70

Partida, B. 2011. Leaders show power of reverse logistics. Supply Chain Management Review, November: 62-64.

Pollock, W.K. 2007. Using reverse logistics to enhance customer service and competitive performance. Reverse Logistics Magazine, 8th edition, 2(5):12–16.

Ravi, V., Shankar, R. & Tiwari, M.K. 2005. Analyzing alternatives in reverse logistics for end of-life computers: ANP and balanced scorecard approach. Computers and Industrial Engineering, 48(2):27-356.

Richardson H.L. (2006). Looking forward in reverse. Logistics Today, 47(7):20-22. Available from: ABI/Inform Global: http://www.proquest.com [Accessed: 2008-03-06].

Rogers, D.S. &Tibben-Lembke, R.S. 1998. Going backwards: reverse logistics- trends and practices. Reverse Logistics Executive Council. Rogers, D. S., &Tibben Lembke, R. (2001). An examination of reverse logistics practices. Journal of Business Logistics, 22(2), 129-148.

Salema, M.I.G., Póvoa, A.P.B. &Novais, A.Q. 2006. A warehouse-based design model for reverse logistics. Journal of the Operational Research Society, 57(6):615-629.

Sarkis, J., Helms, M.M. &Hervani, A.A. 2010. Reverse logistics and social sustainability. Corporate Social Responsibility and Environmental Management, 17:337-354. 71

Serut, C. (2013). Adoption of reverse logistics on performance of manufacturing firms in Nairobi. Unpublished MBA project, UON, Kenya.

Srivastava, S. K., & Srivastava, R. K. (2006). Managing product returns for reverse logistics. International Journal of Physical Distribution & Logistics Management, 36(7), 524-546.

Tibben-Lembke, R.S. 1998. The impact of reverse logistics on the total cost of ownership. Journal of Marketing Theory and Practices, 6(4):51-60.

Steven, M. 2004. Networks in reverse logistics. In: Dyckhoff, H., Lackes, R. & Reese, J. (Eds.). Supply chain management and reverse logistics. Heidelberg: Springer.

Sople, V.V. 2007. Logistics management: the supply chain imperative. Dorling Kindersley, India: Pearson Education. .

Tibben-Lembke, R. S. (2002). Life after death: reverse logistics and the product life cycle. International Journal of Physical Distribution & Logistics Management, 32(3), 223-244.

Tompkins, J.A. 2010. Reverse logistics is not the reverse of logistics. Materials handling and Logistics News.

Waithaka, I. (2012). Reverse logistics practices in medical supplies: The case of Kenya Medical Supplies Agency. Unpublished MBA project, UON, Kenya.

Annex-I

SPSS statistical out put

Descriptive Statistics

	N	Mean	Std. Deviation
Agency's Reverse Logistic Practices	86	3.48	1.352
Valid N (listwise)	86		

Descriptive Statistics of RLP

	N	Mean	Std. Deviation
The agency has good transportation facilities or infrastructure which interconnected the branches with the catchment public health facilities.	86	3.99	1.193
The agency's branches easily access the facilities for the recall products	86	3.77	1.155
The agency have facilities for returned products	86	3.94	1.099
The agency RLP could have a potential for sustainable development of the catchment public health facility	86	3.59	1.392
The agency RLP enables the facility to generate Profits	86	3.51	1.317
The branch RLP could have a potential for sustainable development of the agency	86	3.55	1.316
Quality defects products had been immediately collected for recall from the facilities	86	3.13	1.335
The agency had a modern way of disposal for damaged and expired products	86	3.06	1.358
The agency had concerned the environmental issues in its RLP	86	3.51	1.387
Products had a complaint from the facilities had been returned	86	3.12	1.418
The agency could not distribute near expired products to the service delivery points	86	3.22	1.409
The agency had been conducted quality measures for the products	86	3.15	1.435

Valid N (listwise)	86		

Descriptive Statistics of forecasting problem

	N	Mean	Std. Deviation
There are/is erratic availability of pharmaceuticals in the agency	86	3.62	1.238
Unwanted product items returned from the facilities to the branch	86	3.78	1.172
Products supplied due to forecasting problem had been returned to the supplier	86	3.55	1.308
Slow moving products were stocked as supplied by forecasting problem	86	3.69	1.267
Over stocked pharmaceuticals products had been exist due to poor estimation of demand quantity	86	3.71	1.291
Products supplied with poor estimation had likely of expiration/wastage	86	3.72	1.233
Valid N (listwise)	86		

Descriptive Statistics transportation infrastructure

	N	Mean	Std. Deviation
Poor transportation access for off road facilities for product recall/return	86	3.59	1.296
Transportation integration not feasible along with the warehouse of the catchment public health facilities.	86	2.64	1.283
Most of the facilities had been found at the off road site of the catchment	86	2.59	1.172
The facilities had a transportation access for returned products with uneconomical cost	86	3.65	1.309
The pharmaceuticals disposal site of the agency not accessible for products transportation	86	3.69	1.295
Valid N (listwise)	86		

Descriptive Statistics of products quality defects

	N	Mean	Std. Deviation
Products collected after distribution due to delayed product quality test	86	2.43	1.101
Product quality test not conducted at branch level of the agency	86	3.98	1.217
There is poor reporting system for product quality defects from the facility	86	3.62	1.294
Products identified with Quality defect not isolated and quarantine in the warehouse	86	2.59	1.278
Valid N (listwise)	86		

Descriptive Statistics of warehousing

	N	Mean	Std. Deviation
Products could not maintained their location accuracy in the warehouse	86	3.48	1.317
Poor products arrangement in the warehouse make a challenge to easily identification of products in the warehouse	86	3.53	1.335
There is lack of space in the warehouse for the product storage	86	2.95	1.319
There is lack of storage materials in the warehouse for the product storage	86	2.78	1.314
Valid N (listwise)	86		

Descriptive Statistics of disposal mechanism

	N	Mean	Std. Deviation
The branch had no a fixed disposal site for product disposal	86	3.63	1.189
Expiry Items are not recorded and reported regularly for their disposal	86	2.76	1.345
The agency had no reservoir space of unwanted products until the disposal conducted	86	3.45	1.360
The disposal committee had not been identified easily for the task	86	3.42	1.376
Delayed to certify the disposed items by the regulatory bodies	86	3.49	1.326
Valid N (listwise)	86		

Descriptive Statistics of legal, system & environmental issues

	N	Mean	Std. Deviation
Legal issue is a barrier for the branch implementing Good RLP	86	3.48	1.344
Comply with policies is a challenge for the agency implementing Good RLP	86	3.52	1.299
Lack of system is a barrier for the agency implementing Good RLP	86	3.53	1.290
Managerial intention is a barrier for the agency implementing Good RLP	86	3.47	1.395

Commitment of the professionals a challenge for the agency RLP	87	3.34	1.310
Valid N (listwise)	86		

ANNEXE- II

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

Dear respondents

My name is **AWOL A/Zinab** conducting a study on **Reverse logistics practice and challenges in case of Ethiopian pharmaceutical supply agency jimma branch. (EPSA)** for the partial fulfillment of master's degree in logistics and transport management in Jimma University, college of business and economics department of management. I would like to extend my deep appreciation to your hub and you for the willingness and cooperation in undertaking this valuable research. Taking part in this study you will contribute towards alleviating the problem of reverse logistic practice of your facility. I request your cooperation to fill and respond truthfully for the asked Questions. If you

Have any question, you can contact me through **0938736350, 0983951916**. Finally, I would like to appreciate and thank you in advance for your dedication, time and genuine response to the questions.

Please Note:-

1. No need of writing your name. (For your confidentiality)
2. Indicate your answer with a check mark (√) on the appropriate block/cell for all questions.
3. If you need further explanation please contact me and discuss the matter freely at (Telephone No. , E-mail)

PART I: GENERAL INFORMATION AND DEMOGRAPHIC BACKGROUND OF RESPONDENTS

Please tick (✓) or provide your own answers where applicable.

1. Sex: Male ☐ Female ☐
2. Age: _____
3. Work experience in the agency (in years)?

<3years ☐ 3-5years ☐ 6-10 years ☐ >10years ☐

4. Educational level

Diploma ☐ 1st degree ☐ 2nd degree ☐ Others,_____

5. Department you work in the agency? _____
6. Position in the agency? _____

Section 2: Questions related to Agency's Reverse Logistic Practices

Please indicate your degree of agreement or disagreement to the below statements or practices that pertaining to agency's reverse logistic practices and challenges.

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

No/ code	Statements/Items	1	2	3	4	5
RLP	**Agency's Reverse Logistic Practices**					
RLP1	The agency has good transportation facilities or infrastructure which Interconnected the branches with the catchment public health facilities.					
RLP2	The agency's branches easily access the facilities for the recall Products					
RLP3	The agency have facilities for returned products					
RLP4	The agency RLP could have a potential for sustainable development of the catchment public health facility					
RLP5	The agency RLP enables the facility to generate profits					
RLP6	The branch RLP could have a potential for sustainable development of the agency					
RLP7	Quality defects products had been immediately collected for recall from the facilities					
RLP8	The agency had a modern way of disposal for damaged and expired Products					
RLP8	The agency had concerned the environmental issues in its RLP					
RLP9	Products had a complaint from the facilities had been returned					
RLP10	The agency could not distribute near expired products to the service delivery points					
RLP11	The agency had been conducted quality measures for the products					

Section 3: Questions related to Challenges of Agency's Reverse Logistic Practices

Please indicate your degree of agreement or disagreement to the below statements or practices that pertaining to agency's reverse logistic practices and challenges.

1= Strongly Disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly Agre

CRL	Challenges of Reverse Logistic Practices					
	Forecasting Problem					
CRL1	There are/is erratic availability of pharmaceuticals in the agency					
CRL2	Unwanted product items returned from the facilities to the branch					
CRL3	Products supplied due to forecasting problem had been returned to the Supplier					
CRL4	Slow moving products were stocked as supplied by forecasting problem					
CRL5	Over stocked pharmaceuticals products had been exist due to poor estimation of demand quantity					
CRL6	Products supplied with poor estimation had likely of expiration/wastage					
	TRANSPORTATION INFRASTRUCTURE					
CRL7	Poor transportation access for off road facilities for product recall/return					
CRL8	Transportation integration not feasible along with the warehouse of the Catchment public health facilities.					
CRL9	Most of the facilities had been found at the off road site of the catchment					
CRL10	The facilities had a transportation access for returned products with uneconomical cost					
CRL11	The pharmaceuticals disposal site of the agency not accessible for products transportation					
	PRODUCT QUALITY DEFECTS					
CRL12	Products collected after distribution due to delayed product quality test					
CRL13	Product quality test not conducted at branch level of the agency					
CRL14	There is poor reporting system for product quality defects from the facility					

CRL15	Products identified with Quality defect not isolated and quarantine in the warehouse.					
	WAREHOUSE STANDARD					
CRL16	Products could not maintained their location accuracy in the warehouse					
CRL17	Poor products arrangement in the warehouse make a challenge to easily Identification of products in the warehouse.					
CRL18	There is lack of space in the warehouse for the product storage					
CRL19	There is lack of storage materials in the warehouse for the product storage					
	DISPOSAL MECHANISM					
CRL20	The branch had no a fixed disposal site for product disposal					
CRL21	Expiry Items are not recorded and reported regularly for their disposal					
CRL22	The agency had no reservoir space of unwanted products until the disposal conducted					
CRL23	The disposal committee had not been identified easily for the task					
CRL24	Delayed to certify the disposed items by the regulatory bodies					
	Legal, policy, System & Environmental issues					
CRL25	Legal issue is a barrier for the branch implementing Good RLP					
CRL26	Comply with policies is a challenge for the agency implementing Good RLP					
CRL27	Lack of system is a barrier for the agency implementing Good RLP					
CRL28	Managerial intention is a barrier for the agency implementing Good RLP					
CRL29	Commitment of the professionals a challenge for the agency RLP					

Thank you for your time and Response!!!

Annex-III
Interview Guide
INTERVIEW QUESTIONS
FOR MANAGERIAL BODY/HIGHER OFFICIALS OF THE AGENCY

1. How do you evaluate the reverse logistic practices of the agency on the practical aspects?_____
   _____
   _____
2. How you comment these major challenges incidence on the agency on tackling implementing good RLP?

- Forecasting problem_____
  _____
- Product quality _____
  _____
- Warehouse Sstandards _____
  _____
- Disposal mechanism_____
  _____
- Transportation infrastructure ……_____
  _____
- Legal policy systems and environmental issues_____
  _____