PROSPECTS AND CHALLENGES OF REVERSE LOGISTIC PRACTICE, A CASE OF ETHIOPIAN PHARMACEUTICALS SUPPLY AGENCY JIMMA BRANCH.

A THESIS SUBMITTED TO JIMMA UNIVERSITY, COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF MANAGEMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTERS DEGREE IN LOGISTIC AND SUPPLY CHAIN MANAGEMENT.

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JIMMA UNIVERSITY

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Approved by the Board of Examiners:

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Internal Examiner	**Signature**
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External Examiner	**Signature**

CERTIFICATE

This is to certify that the thesis entitles "*Prospects and challenges of Reverse Logistics***:** *A Study on EPSA Jimma branch",* submitted to Jimma University for the award of the Degree of Master of Logistic and Supply chain management (LSCM) and is a record of bonafide research work carried out by Mr. *Siud Nega*, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Adviser's Name	*Date*	*Signature*
Dr. Mekonnen Bogale	_____	_____
Co-Advisor's Name	*Date*	*Signature*
Mrs. Tsigereda Aboye	_____	_____

DECLARATION

I hereby declare that this research Paper entitled **"*Prospects and Challenges of Reverse Logistic Practice, in Case of Ethiopian Pharmaceuticals Supply Agency (EPSA) Jimma Branch***. "Has been carried out by me under the guidance and supervision of Dr. Mekonnen Bogale and Mrs.Tsigereda Aboye.

The research paper is original and has not been submitted for the award of any degree or diploma to any university or institution.

Researcher's Name Signature Date

Siud Nega _____ _____

ABSTRACT

Reverse logistics is a process that enables organizations to become more environmentally capable through recycling, disposing, and reusing unfit or returned products. Nowadays, business firms are giving great attention to the forward flow of goods than reverse logistics. To the best knowledge of the researcher, there are a few researches that specifically show the impact of adoption of reverse logistics practices on the organizations. Thus, the objective of this study was to determine the prospects and challenges of reverse logistics practices in the Ethiopian pharmaceuticals supply agency of Jimma hub. To this effect, the study employed a Descriptive research design with both quantitative and qualitative methods. The required data was collected by using self-administered questionnaire, structured interview, and observing different secondary documents from 120 agency's employees. Descriptive analysis was performed through SPSS version 20.From the result we can see that the company's focus on recycling is very low. To reduce the cost from returned products and salvage any raw material from the returned product enough consideration must be given to recycling reverse logistics. Thus, the agency should have to enforce/strengthen its effort which was found on the way and should have to launch and becoming functionalize the new incineration establishment for its cost and time advantages. Since Ethiopia's pharmaceutical Supply Agency competition is mostly not with each other but with imported products for health program from donors and revolving fund as well, reverse logistics practice gives them a better barraging power to impress local suppliers, distributers and wholesalers.

Key Words: Disposal, Recycle, Reuse, Reverse Logistics, Reverse Logistics Challenges, Reverse Logistics and Environment, and Reverse Logistics Practice

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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 honor for my family and for EPSA Jimma branch 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.

Table of Contents

List of Tables

Acronyms

CLSC: Community Led Supply Chain

EOU: End of Use

EPSA: Ethiopian Pharmaceutical Supply Agency

GMP: Good Manufacturing Practice

PSC: Pharmaceutical Supply Chain

R&D: Research and Development

RL: Reverse Logistics

SD: Standard Deviation

CHAPTER ONE

INTRODUCTION

This chapter deals with different sub topics. The researcher discusses background of the study, statement of the problem, general and specific objective of the study, significance of the study, scope of the study and structure of the thesis will be put step by step.

1.1. Background of the Study

A supply chain could also be outlined as Associate in nursing integrated method whereby variety of assorted business entities (i.e., suppliers, makers, distributors, and retailers) work along in a shot to: (1) acquire raw materials, (2) convert these raw materials into mere final product, and (3) deliver these final product to retailers. This chain is historically characterized by a forward flow of materials and a backward flow of knowledge (Beamon, 1998). In recent years the concept of integration and collaboration of the availability chain isn't restricted to its forward flow however includes the backward flow that is thought to be the reverse flow or reverse supplying.

With increasing competition in pharmaceutical trade, trade players have to be compelled to return up with new ways in which of accelerating profit margins, client satisfaction and environmental conservation hence improved firm image, reverse supplying could also be the answer (Mogaka, 2015).

Rogers and Tibben-Lembke outlined reverse supplying as "the method of coming up with, implementing, and dominant the economical, cost-efficient flow of raw materials, in-process inventory, finished goods, and connected data from the purpose of consumption to the purpose of origin for the purpose of recapturing price or correct disposal." In day to day business activities, returns are bound to happen and organizations have to be compelled to return up with higher ways of handling the reverse flow of product by according reverse supplying importance and incorporating it as a part of overall business strategy as profitable and property business strategy (Mogaka, 2015)

Various reasons like pledge failures, incorrect product orders or cargo, damaged products, product recollects, reusable packaging materials and merchandise upgrading account for reverse flow (Kabir, 2013); (Kwame et al, 2014)

Recently, wide attention has been given to the study of reverse supplying within the pharmaceutical producing trade. Ample time and resources are currently being dedicated to the

understanding of reverse supplying practices by corporations WHO antecedently failed to do therefore. Almost all businesses should touch upon some nature of come thanks to problems with selling returns, quality problems, and overstock, product brought back for refurbishing or re-manufacturing. Learning to manage reverse flow is of key importance for varied industries since come rates dissent significantly from business to business (Tibben-Lembke, 2002); Kwame et.al, 2014) Not solely that however reverse supplying plays an excellent role in company's competitive advantage and insuring client property and satisfaction, decreasing resource investment levels, and reducing its storage and distribution prices, thereby increase its client loyalty (Abbas, 2012).

Reverse supplying or finish of life management of medicines is incredibly crucial. this is often as a result of as medicines are terribly helpful for action and insuring health care, they're additionally risky once not properly managed or if fallen into the incorrect hands. Generally the most sources of health risks as a result of medicines waste are contamination of drinkable, pollution caused by release of unhealthful pollutants, vulnerable aquatic life thanks to non-biodegradable chemicals, and reuse of invalid medication. (E. Ejigu, 2012).

Therefore, this paper will presents quantitative assessment on the current practice, challenges faced and future possibilities of implementing reverse logistics in EPSA Jimma branch. It will gives an insight in to the pharmaceutical's reverse logistics practice, its challenges as well future prospects that affect the company's overall performance in supply chain firms of Ethiopia.

1.2 Statement of the problem

Environmentally responsible practices in supply chain management are referred to us 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. (Mogaka, 2015). Companies and their supply chain managers can no longer afford to treat reverse logistics as an afterthought. There is just too much at stake in terms of brand protection, sustainability requirements and ultimately profitability ((Rogers et al, 2013); Mogaka, LilianMoraa, 2015). The European Working Group on Reverse Logistics, RevLog (1998), forwards the following definition: "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" (Marisa, 2002).

Business firms are giving great attention to the forward flow of goods by creating a much simple and fast supply chain these days. But they seem not to give the same attention to the backward flow of products that are unfit or returned. Especially in developing countries, firms seem to neglect the essence of implementing reverse logistics and obtain its benefits. Reverse logistics in the pharmaceutical industry is particularly important from the economic, environmental as well as regulatory point of view (Manjo, 2016). Improper management of returned drugs can involve rerouting into the black market and relabeled for sale or disposed of into sewerage and landfill. This would have negative impact on the health of the people and the environment in the long term. Another aspect has to do with securing and proper disposal of returned products. Thus, it is increasingly important to implement an improved reverse logistical chain to provide a cost effective, tract and trace options for the pharmaceutical supply chain (Kwame et.al, 2014).

Although reverse logistics increases the total cost of ownership (Tibben-Lembke, 2002), 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 Cardinali, 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 unavailability of clear government policies makes it difficult for the firms to decide the effective strategies to implement the RL. Among other barriers to reverse logistics like lack of capital and resources, lack of knowledge of standardized processes, misconception, etc., there comes the lack of managerial knowledge about the legal issues (Rogers & Tibben-Lembke, 1999). Clearly the involvement of top administration's and backing are essential for effective usage of green activities because they control all the secret weapons of the firm (González-Torre, Alvarez, Sarkis & Adenso-Díaz, 2010).

The previous studies investigated the drivers and barriers of reverse logistics only to evaluate the sustainability factor (Govindan & Bouzon, 2018). But this study adopted the prospect and challenges of reverse logistics 'through addressing drivers in relation to economic, market, environmental concerns. One more uniqueness of this research is that the drivers investigated with their performance measures of financial, market and environment. Previously, the managements role was taken either as part of driver or barrier. In our context (Ethiopia) EPSA Jimma branch very few studies have been conducted to study reverse logistics practice particularly the relationship between reverse logistics adoption and with financial, market and environmental impacts consideration. Therefore, this study fills this gap through providing current information on EPSA prospects and challenges of reverse logistics.

In Ethiopia, the story isn't any completely different from alternative developing countries. Since the pharmaceutical trade may be a straggly trade reverse provision may be a young idea. Not solely that however on the information of the student-researcher, very little analysis has been created in the country to look at the follow of reverse provision in prescribed drugs and therefore the challenges Janus-faced. Therefore, the study has tried to pinpoint the main problems regarding the flow of reverse provision within the Ethiopian Pharmaceutical provide Agency of Jimma branch, its challenges and what the long run holds.

1.3. Basic Research Questions

The following research questions were formulated:

- What is the current reverse logistics practice of EPSA Jimma branch?
- What are the drivers for implementing reverse logistics practice at EPSA Jimma branch?
- What are the challenges faced when implementing reverse logistics practices EPSA Jimma branch?
- What are the opportunities that encourage the implementation of reverse logistics with in EPSA Jimma branch?

1.4. Objectives of the study

1.4.1. General objective

The general objective of this study was to identify the prospects and challenges of implementing reverse logistics in EPSA Jimma branch.

1.4.2. Specific objectives

This study aimed to:

Assess the practice of reverse logistics in EPSA Jimma branch.

To find out the drivers for implementing reverse logistics practice at EPSA Jimma branch.

Identify the challenges involved in implementing reverse logistics in EPSA Jimma branch and

Identify the possible opportunities of implementing reverse logistics in EPSA Jimma branch.

1.5. Significance of the study.

The study will have a great significance for the EPSA, Government policy makers and investors.

The EPSA Jimma branch will 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 be benefited also from the outcome since it would be assist them in examining the current policies towards the EPSA 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 EPSA sector of Ethiopia. Additionally, this study would serve as a point of departure for further research by academicians.

1.6. Scope of the study

This study was focused 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), 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 study was designed to assess the practice of implementing RL and its challenges in the pharmaceutical supply chain. In order to do so, a case study was under taken on EPSA Jimma branch. The agency which is the only public supply chain organization as well with a larger percentage of distribution capacity in the supply chain. Thus the study was only focused on EPSA's current practice of the subject matter and the challenges the company faced in doing so on the bases of some selected key dimensions which have been adopted to identify issues in RL practice. A cross-sectional survey was conducted from April 3, to May 5/2021.

1.7. Limitation of the study

One of the limitations of this research was the absence of recent studies in the countries regarding prospects and challenges of RL practices. Because of this reason very few literatures are written in relation to the indicated issues. And also there is a shortage of latest literature reviews for this research in the world in general and in Ethiopia in particular as it is new emerging practice and the other limitation were lack of documentation in Jimma branch Ethiopian Pharmaceuticals Supply Agency.

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 was 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

RELATED LITERATURE REVIEW

This chapter explains past relevant literature from other researchers who have conducted research in the same field. It contains opinions, attributes, research outcomes and conclusions thereon from previous research work done by other people and organizations. Section 2.1 discusses the theoretical literature/ general overview of the subject matter. Section 2.2 presents the empirical literature. Section and presents Summary of empirical literature. Section 2.3 presents the framework of the study.

2.1. Theoretical Review

2.1.1. Concept of Reverse Logistics

In common scenario a product or service is developed to be manufactured or created and go through the supply chain (e.g. manufacturer-wholesaler-retailer) to be sold to a consumer. But products are returned to the manufacturer or retailer for any number of reasons. Some of the more common reasons are warranty failures, damaged products, product recalls, incorrect product orders/shipment, exchange of impaired products for functional ones, reusable packaging materials, product upgrading and so on. Whatever the reason, returned goods have to be processed in the best manner possible. Reverse logistics is then the proper handling of products back to manufacturer's or producer's end. Essentially, reverse logistics is the opposite of logistics management. Goods or materials move in the opposite direction of the supply chain, that is, from the customer back to the supplier (Kabir, 2013). The conception of RL dates from long time ago, but the denomination of this term is difficult to trace with precision. During the 1980s, the definition was inspired by the movement of flows against traditional flows in the supply chain (reverse distribution, reverse channel); at the end of the 1990s, RL was characterized by recovery of the value of EoU (end of use) products and the processes involved; now, a holistic view of the supply chain is proposed by considering forward and reverse flow from a business perspective, the so-called CLSC (Sergio et al, 2014).

The European Working Group on Reverse Logistics (RevLog) define reverse logistics in a most elaborate and fit to all possible situations way "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" (Roberta, 2012).

If we analyze carefully these definitions most of the authors agree that they are basically discarded products, used products, products or parts previously shipped, hazardous and nonhazardous waste from packages and products, information, raw materials, in process inventory and finished goods. These inputs identify the scope of the RL process. Some of them limit the input to only waste or recycled products, but others allow a wider concept where information, raw materials, inventories and goods are managed through the RL system. (Roberta Pinna and Pier Paolo Carrus, 2012).

Reverse logistics is getting a great attention these days since businesses are looking into different ways of competition as well the market is filled with customers with demands more than just the product but the environmental relevance of the product as well. Many forces drive reverse logistics, like, competition and marketing motives, direct economic motives and concerns with the environment (Kabir, 2013).

2.1.2. Reverse logistics practices

The implementation of reverse logistics is necessary to achieve the goals of sustainable development which focuses on both environmental and economic goals (Dowlatshahi, 2000); (Paul et al, 2014). The goal in reverse logistics is to achieve practice excellence so as to enhance customer equity by investing in resources to build customer loyalty and satisfaction ((Rust et al, 1999); Lilian Moraa Mogaka, 2015). This can be achieved by reducing cycle time through taking back returned items quickly and crediting them in a timely manner. As a by-product of enhancing customer equity and through its asset recovery efforts, reverse logistics yields other benefits to the firms including revenue generation, expense reduction, asset efficiency improvement and environment protection ((Carbone &Moatti, 2008); Lilian Moraa Mogaka, 2015)

Firms should efficiently and effectively get the products from where they are not wanted to where they can be processed, reused and salvaged. The firms must also determine the disposition of each product. That is, for each product inserted into the reverse logistics flow, the firm must decide its final destination ((Rogers& Tbben-Lembke, 2001); (Mogaka, 2015). Reverse logistics involves re-use and recovery of products, hence reducing the negative effects on environment and waste disposal ((Kleindorfer et al., 2005); (Paul et al, 2014).

Once a product has been returned, the firm has many disposal options from which to choose. If the product can be returned to the supplier for a full refund, the firm may choose this option first. If the product has not been used, it may be resold to a different customer. If the product cannot be sold "as is" or if the firm can significantly increase the selling price by reconditioning, refurbishing or remanufacturing the product, the firm may perform these activities before selling the product. If the product cannot be reconditioned in any way, because of its poor condition, legal implications or environmental restrictions, the firm will try to dispose of the product at the least cost. Any valuable materials can be reclaimed, any recyclable materials removed before the remainder is sent to a landfill ((Rogers &Tbben-Lembke, 1998); Mogka, LilianMoraa, 2015).There are three concepts on which reverse logistics is based and these are reuse, remanufacturing and recycling ((Eltayeb et al, 2011); (Mogaka, 2015).

2.1.3 Reuse

Is the process of collecting used products from the field, and distributing or selling them as used? Thus, although the ultimate value of the product is reduced from its original value, no additional processing is required (((M.Beamon., 1998); Wells and Seitz, 2005); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011). Mainly involves products returned by retailers back to manufacturers due to slow movement on the shelves, wrong orders or oversupply and packaging materials taken back such as beer and soda bottles (Mogaka, 2015). (Kleber et al (2003); LilianMoraaMogaki, 2015), conducted a case study on reverse logistics in Schering (a pharmaceutical firm in Germany) and found out that there is reuse of solvents in the production process mainly for economic reasons although environmental concerns play a role. After use, impure solvents are cleaned in a distillation facility then re-used as long as this option is economically attractive. If cleaning is too expensive due to a high degree of pollution, the impure solvents are thermally recycled if possible or disposed of.

2.1.4 Recycle

Is the process of collecting used products, disassembling them (when necessary), separating them into categories of like materials (e.g., specific plastic types, steel, glass, paper, etc.), and processing them into recycled products, components, or materials. In this case, the identity and functionality of the original materials is lost. ((Beamon, 1999; Wells and Seitz, 2005); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011). Recycling behaviors are classified as proactive green approaches, and the most far-reaching approach is value-seeking in which

companies have the strategic initiative to integrate environmental practices into the business strategy and operate the company to reduce impact on the environment ((Kopicki et al., 1993); Ying Xie* and Liz Breen**, 2010)

Recycling involves dismantling the product and removing parts or materials from a returned product, so that they can be utilized as raw materials for a new product or package. The waste is then sent to a landfill or burnt; this reduces consumption of fresh raw materials. This type of reverse logistics was also taking place in Schering (Kleber et al, 2003), the by-products obtained from many stages of the production process contain valuable materials hence reusing them is economically attractive since it reduces the need for virgin materials. They found that in Schering, about 630 tons of active ingredients are produced resulting in 14 tons of by –products and more than 90 percent of the by-products are recycled. (Kleber et al (2003); LilianMoraaMogaki, 2015)

2.1.5. Remanufacture

Is the process of collecting a used product or component from the field, assessing its condition, and replacing worn, broken, or obsolete parts with new or refurbished parts. In this case, the identity and functionality of the original product is retained. ((Beamon, 1999; Wells and Seitz, 2005); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani, 2011).

Remanufacturing is a form of product recovery that involves rebuilding of the product to manufacturers specification using a combination of reused, repaired and new parts. Repair involves the least amount of effort to upgrade the product and remanufacture involves the greatest. (Mogaka, 2015)

2.1.6 Dispose

In today's scenario management of waste become the prime concern for every nation and particularly when we talk about Pharmaceutical industry it is more important to manage the disposal of unused, expired medicines through a proper Reverse Logistics channel. As some of the medicines content hazardous chemical like mercury, radioactive component and somepoisons component the disposal of unused, expired medicines is become a burning issue. (Shaurabh Singh*, SaurabhBharati and Moti Kumar, 2013).

2.1.7. Reverse Logistics implementation and its benefits

Resource recovery, valuable information, satisfaction of supply chain partners, regulatory compliance, reduced total cycle time, and improved company image may be some of the major benefits for companies implementing reverse logistics program. It has been found that for reaping these benefits, simplicity of return process, affordability of return costs, and high responsiveness are the main prerequisites. (Haidar A. & Jamal A., 2013).Typically, competitive, marketing, economic and environmental reasons are all factors that have been identified as relevant for the organizational adoption of RL activities and functions ((Ravi and Shanker, 2005); (Sushmita A. et al, 2014).

For businesses, direct (cost reduction, value added recovery and input material) and indirect gains (anticipating impending legislation, market protection, green image, improved customer/supplier relations) are economic drivers. A second type of drivers is legislation related, as there is an increase in environmentally related legislation. Original supply chain players are more often held responsible for the collection and recovery of their end-of-life products. This end of life take-back responsibility is referred to as Extended Producer Responsibility or EPR ((Lifset, Lombardi, 1997); Gertjan De Boever and Thijs Van de Velde, 2009). Corporate citizen ship or being socially responsible is another driver for implementing reverse logistics with in a company.

2.1.8. Drivers of Reverse Logistic Practices

I. Economic

Economics as a driving force relates to all recovery actions where the company has direct or indirect economic benefits. Even with no clear or immediate expected profit, an organization can get (more) involved with Reverse Logistics because of marketing, competition and/or strategy drivers. Companies may get involved with recovery as a strategic step to get prepared for future legislation. On the other hand, a company may envisage certain conditions in the long-run, e.g. impending legislation. In face of competition, a company may recovery to prevent other companies from getting their technology or from preventing them to enter the market. A company may recovery to get a good (environmental) image with the customer or getting a better relation with the customer (Marisa P. de Brito and Rommert Dekker, 2002). Making profit and financial returns are the most important objectives of business organizations. In this sense, every decision is evaluated based on cost–benefit criteria. (Tarig et al, 2011)

Making profit and financial returns are the most important objectives of business organizations. In this sense, every decision is evaluated based on cost–benefit criteria. Environmental initiatives

are expected to come along with this general rule, i.e., a firm needs to expect business benefits from green initiatives before it engages in these initiatives. Expected business benefits indicate that companies adopt reverse logistics activities, such as recycling and reusing of products and materials, in anticipation of the fact that these activities have the potential to improve profitability of these companies through cost minimization and increased revenues ((Stock et al., 2002); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011). In sum, the economic driver embraces among others, the following direct gains like input materials, cost reduction, value added recovery and indirect gains such as anticipating/impeding legislation, market protection, green image, and improved customer/supplier relations. (Marisa P. de Britoand Rommert Dekker, 2003).

Decreasing the use of raw materials; companies are not able to anticipate the amount and timing of product returns. It can benefit from the usable parts of returned products in the production of new products. Thus, the cost of new raw material supplies decrease. (M. Sukru& Aysen C., 2012).

Marketing objectives; companies are expected to be green in every aspect of their operations by society and government. Thus a 'green' image has become an important element in marketing strategies. A green image is not only producing green goods but also carrying out other activities environmentally responsibly. This objective can be as well part of a customer relationship strategy ((De Brito and Dekker 2004); (M. Sukru, 2012).

In a competitive industry environment, companies may be obliged to explore new options for take-back and recovery products to better meet consumer expectations. Also there is an opportunity to develop relationships in the business environment by expressing the environmentally consciousness image. (ŞükrüAkdoğa and Ayşen Coşkun, 2012)

Customers represent the major financial stakeholders that buy products and services of organizations. As such, customers can exert considerable pressures and may communicate goals of sustainability or environmental performance on these organizations. Previous studies found that customer pressure is one of the major drivers for reverse logistics (Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011).

II. Marketing Performance

Making profit and financial returns are the most important objectives of business organizations. In this sense, every decision is evaluated based on cost-benefit criteria. Environmental initiatives are expected to come along with this general rule, i.e., a firm needs to expect business benefits from green initiatives before it engages in these initiatives. Expected business benefits indicate that companies adopt reverse logistics activities, such as recycling and reusing of products and materials, in anticipation of the fact that these activities have the potential to improve profitability of these companies through cost minimization and increased revenues ((Stock et al., 2002); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011). In sum, the economic driver embraces among others, the following direct gains like input materials, cost reduction, value added recovery and indirect gains such as anticipating/impeding legislation, market protection, green image, and improved customer/supplier relations. (Marisa P. de Brito and Rommert Dekker, 2003).

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III. Social (Corporate Citizenship)/ Enviromental Aspects

“Extended responsibility” and “ Corporate citizenship” concerns a set of values and principles that drive an organization to become responsibly engaged with particular activities, including reverse logistics. An enhanced “green” reputation being seen to be concerned about and proactive towards environmental issues has become an important marketing element and can improve customer relations. Many companies now have extensive programs on responsible corporate citizenship where both social and environmental issues become the priorities (A.J. Hickford and Dr. T.J. Cherrett, 2007).

The environmental aspects focus on resource reduction, materials substitutions and waste reduction, whereby companies become more environmentally efficient and contribute to the solution of environmental problems ((Carter and Ellram, 1998; Mclntyre et al., 1998);Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011) The interest for reverse logistics is expected to emanate not only from the external environment (regulations and customers) but also from the internal sense of responsibility of a firm towards the society in which it exists. For reverse logistics, such sensitivity is intensified by the ever-increasing environmental problems such as global warming and pollution. Such problems are expected to raise the awareness of business firms to behave in a more socially responsible manner and reflect an image of due diligence and commitment to sustainability and social responsibility ((Beamon, 1999; Wells and Seitz, 2005); Tarig Khidir Eltayeb and Suhaiza Hanim Mohamad Zailani*, 2011). Corporate citizenship refers to the set of values or principles that an organization holds to be responsible with RL activities. The motivations behind the implication of RL activities lay on both being legally obliged and trying to establish an image the consumers desires as an environmentally responsible organization. Better customer services such as increasing the level of customer awareness for returning and refunding options, guaranteeing better services would affect company‟s image positively and provide potential benefit (M.Şükrü Akdoğa and Ayşen Coşkun, 2012).

Decreasing waste materials; because of the increase in environmental problems, customers impose strong pressure on companies to take environmental aspects into account. Thus, they will benefit from being environmentally friendly in production and be able to decrease waste materials and cost of waste disposal. (M.Şükrü Akdoğa and Ayşen Coşkun, 2012).

2.1.9. Reverse logistics in pharmaceuticals

Pharmaceutical sector is possibly one of the most important sectors where the high costs of products, low to moderate shelf lives, and potential for unscrupulous intermediaries compromising the integrity of products are major concerns. In addition, infiltration of counterfeit medicine and hazards associated with misuse of many of the products give ability to track, recall, retrieve, salvage, and ensure effective removal when necessary a very high degree of importance for the pharmaceutical industry (Asma K. & Masood S., 2009). Reverse logistics in the pharmaceutical industry is extreme important, not only from the economic point of view, but also from the environment as well as regulatory point of view (Kabir, 2013).

Pharmaceutical producers combine ingredients precisely, under specific conditions, while negotiating a maze of stringent regulations and quality controls. Companies that manufacture, move or store pharmaceutical products must meet similar demands. Many drugs are highly sensitive to temperature; some are extremely valuable; and all are subject to a complex array of government and international regulations. In the pharmaceutical supply chain, every detail counts. Pharmaceutical logistics is such a specialized discipline that drug manufacturer have long been reluctant. But some recent industry trends are making drug manufacturers rethink their strategies. One trend is that some popular drugs are coming off patent. Without popular products to boost their bottom lines, manufacturers try to make up the difference by cutting costs. One way they do this is through cutting cost in logistics operations (Kabir, 2013).

A pharmaceutical supply chain are characterized by the high level of wastage and spillover and also faces the common issues of returns and recall of drugs, companies require a proper system in place to deal with such circumstances (Haidar Abbas and Jamal A Farooquie, 2013).It is characterized by high R&D investment, high quality constraints, long production times, high waste to product ratios and shortening product cycles, all of which can result in high margins for sales along the pharmaceutical supply chain (PSC). The high waste to product ratios also explains the focus of research on environmental issues and waste minimization in the production stages. (Sushmita A et.al, 2014).

As medicines are generally high value chemicals which are critical to the health of consumers, the proper management of product returns, expired stock and product recalls is necessary through the implementation of efficient reverse logistics systems in the pharmaceutical industry (Sushmita A. N., 2012).

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. Given the critical value of drugs, the regulation of safe manufacturing, distribution and sale of medicines is also a priority for government authorities (Sushmita A et.al, 2014).

2.1.10. Challenges of implementing RL

There are quite few studies which analyzed the major barriers in the context of developed countries. Even though enough evidence in terms of regulations, awareness, public participation, resources and government support exist in Europe they found few criticalities in implementing RL (Mohammed et al, 2012).

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.

2.1.10.1 Lack of awareness about RL

The lack of awareness of benefits of reverse logistics is a major barrier for its implementation. Today, the customers have the benefits of greater product variety. It has resulted in an increase in unsold products, rate of returns, packing materials, and also the waste. This has given rise to increase in the volume of product returns in the form of reverse logistics. The reverse logistics can lead to economic benefits by the recovery of the returned products for reuse, remanufacturing, recycling, or a combination of these options for adding value to the product (S. K. Sharma et.al, 2011).

2.1.10.2 Management inattention

The conventional wisdom has been that over the last few years, most companies have practiced reverse logistics primarily because of government regulation or pressure from environmental agencies, and not for economic gain. Thus the management is taking less interest thinking nonprofit issue. Companies are organized around the forward flow of goods. (S. K. Sharma et.al, 2011).

2.1.10.3Financial constraints

Cost considerations are a prime challenge in commercial recycling. Companies require allocation of funds and other resources for the implementation of reverse logistics. Information and technological systems require more funds because without these, the returns product tracking and tracing and product recovery by various processes like reuse, remanufacturing, recycling, etc. is not possible in the present environment. The training of personnel related to the reverse logistics is also very important for efficiently managing and eventually making the reverse logistics.

2.1.10.4 Personnel resources

A significant barrier to good reverse logistics is lack of personnel resources .Lack of training and education is a major challenge to commercial cycling. Education and training are prime requirements for achieving success in any organization (S. K. Sharma et.al, 2011).

2.1.10.5. Inadequate information and technological systems

An efficient information and technological system is very necessary for supporting the reverse logistics during various stages of the product life cycle. Efficient information systems are needed for individually tracking and tracing the returns of the product, linking with the previous sales. Information technology, software and hardware, is essential for end-to-end control and transparency along the reverse chain (S. K. Sharma et.al, 2011).

2.1.10.6. Company policies

It also is related to corporate strategy for handling returns and non-salable items. Because companies do not want to see their “junk” cannibalizing their first quality or “A” channel, they often develop policies that make it very difficult to handle returns efficiently, and to recover much secondary value from those returns (S. K. Sharma et.al, 2011).

(Muhammad D Abdulrahman and Nachiappan Subramanian*, 2012), tried to make a summary of challenges faced when implementing RL as presented on table 1.

Table 2.1: various barriers in RL implementation

Barriers	Type of barriers	Source
Management	Importance of reverse logistics relative to other issues	Rogers and Tibben-Lembke (2001); PWC (2008); Zhou *et al*. (2007); Ravi and Ravishankar (2005); Chung and Zhang (2011)
	Company polices	
	Competitive issues	
	Management commitment / little senior management attention	
	Personnel resources (Training, poor level of technical knowledge)	
	Difficulties in extended producer responsibility across countries	
	lack of appropriate performance management system	
	Lack of shared understanding of best practices	
	Lack of strategic planning and structure for reverse logistics	
Financial	Financial resources / Constraints / funds for training / return monitoring system/ storage and handling	Rogers and Tibben-Lembke (2001); Zhou *et al*. (2007); Lau and Wang (2009); Ravi and Ravishankar (2005)
Policy	Legal issues / lack of supportive policies	Rogers and Tibben-Lembke (2001); Zhou *et al*. (2007) Chung and Zhang (2011) ;Lau and Wang (2009); Ravi and Ravishankar (2005)
	Lack of enforceable law / lack of waste management practices	
	Regulations or directives to motivate manufacturers'	
	Customers not informed of take back channels	
Infrastructure	Lack of systems, Underdevelopment of recycling technologies.	Rogers and Tibben-Lembke (2001); Zhou *et al*. (2007); Chung and Zhang (2011); PWC(2008); Lau and Wang (2009); Ravi and Ravishankar (2005)
	Coordination and support / collaboration / reluctance of support from members	
	Limited forecasting and planning/Lack of In-house facilities	

2.2. Empirical Review

Studies on reverse logistics in the pharmaceutical industry have been discussed at the level of production and at the levels of distribution and sales. Teunter, Inderfurth, Minner&Kleber (2003) studied the recycling activities in the production process of a pharmaceutical company and its implications on the production planning process. At the other level are the reverse logistics activities required in managing finished product returns along the supply chain. Subsequently, product return and recovery activities have been studied for their economic implications in the distribution networks of the pharmaceutical supply chain (Ritchie et al. 2000; Amaro& Barbosa-Povoa 2008, 2009). There has also been an attempt at developing performance measures for the reverse logistics practices in the pharmaceutical industry (Kumar et al. 2009).

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. Obiora Madu (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.

The study was carried out to assess the challenges and prospects of implementing reverse logistics in EPHARM Share Company. From the data collected, the result showed that majority of the respondents indicated that the company implements dispose reverse logistics specially landfill as indicated by a mean score of 4.08 and 4.3 respectively. Taking returned products in to trash also showed a significant mean score of 3.3 and 9of the respondents indicated that returned products with no chance of reuse are buried. Reuse reverse logistics by setting high quality standards was also highly practiced scoring 3.9. Designing products for reuse scored a mean score of 2.9, while majority of the respondents indicated that their firm did not use recycling reverse logistics or have well documented policy for recycling or if they did, it was to a small extent, with a mean score of 1.4. The data collected indicated that the firm does not use incinerator to dispose returned products or it is to a very little extent with a mean score of 1.25 which was the lowest score. The result indicates that EPHARM„s practice of reverse logistics is limited. This is because most of the procedures are done using labor intensive, step by step manual system. Though it is obvious using incineration for disposing of returned products is a better way of handling, the results show that the company uses landfill, throwing to trash and burying of unused medicine (Rediet, 2016).

Ghani Y. &Faraz A. (2019) conducted a study on Sustainable and operational aspects of Reverse logistics: (A Case study of Sandvik Coromant) to explore the impact of reverse logistics on a firm's sustainability operations while focusing simultaneously on economic profits, by conducting a case study. This research will provide an overview of influential drivers and barriers that have the capacity to motivate or discourage the firms to implement the reverse logistics practices and investigate the role of economic, legislation and corporate citizenship on RL. The result indicated that it has been proved that ethical part and profit generation are most important factors for companies. Companies can still care about the planet and people while generating profits and economic values for the shareholders. Companies, who have adopted proactive strategy, are more efficient and exploring new business opportunities by considering economics, society, and environment.

According to Rediet (2016) on her study regarding the challenges on implementing RL practices at EPHARM the result showed that, majority of the respondents cited lack of appropriate technology in implementing reverse logistics practices as the major challenges with a mean score

of 3.9 and a standard deviation of .97.Managing cost of reverse logistics had a mean score of 3.9 as well with a standard deviation of .89 while lack of appropriate infrastructure had a mean score of 3.7 with a standard deviation of 1.09. Lack of definite rules and regulations on handling returned products had the least score with a mean of 3.5 and a standard deviation of 0.93.The findings show that large number of respondents believe lack of appropriate technology is a pull back for reverse logistics practice to take place within the company. EPHARM Share Company being the first and the oldest pharmaceutical company in Ethiopia, and being government owned its technological capacity can be said very low. Especially when it comes to reverse logistics, up to date technology is very low. We can refer to the first section of the study, extent of adoption of reverse logistics to support this fact. The company uses old school return handling because it lacks the technology the system needs. The second indicator, lack of appropriate infrastructure also goes with the lack of technology. Modern technology is not just limited to high tech machineries and equipment but a well-built infrastructure to implement reverse logistics. These could be training of employees, having a reverse logistics system that is easily understood and appropriate equipment needed.

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Many drivers and barriers are presented by the previous researchers through their literature to understand the driving and discouraging factors to perform reverse logistics. The table below presents the overview of all the key barriers and drivers of the four main factors economic, legislation, corporate citizenship and management concerns respectively. The sub-factors of each factor are explained in both the ways as driver and barrier, simultaneously to make it clear and understandable for the reader

2.3. Conceptual framework

Maxwell (1996) stated that a conceptual or theoretical framework is essentially a model that helps researchers to better understand the research problem, to explain what things are happening and why, and allows them to include their own ideas about the phenomenon being studied. For Miles and Huberman (1985) a conceptual framework offered a useful technique for explaining the main research dimensions to be studied, as it allows researchers to present key factors and the presumed relationships among them.

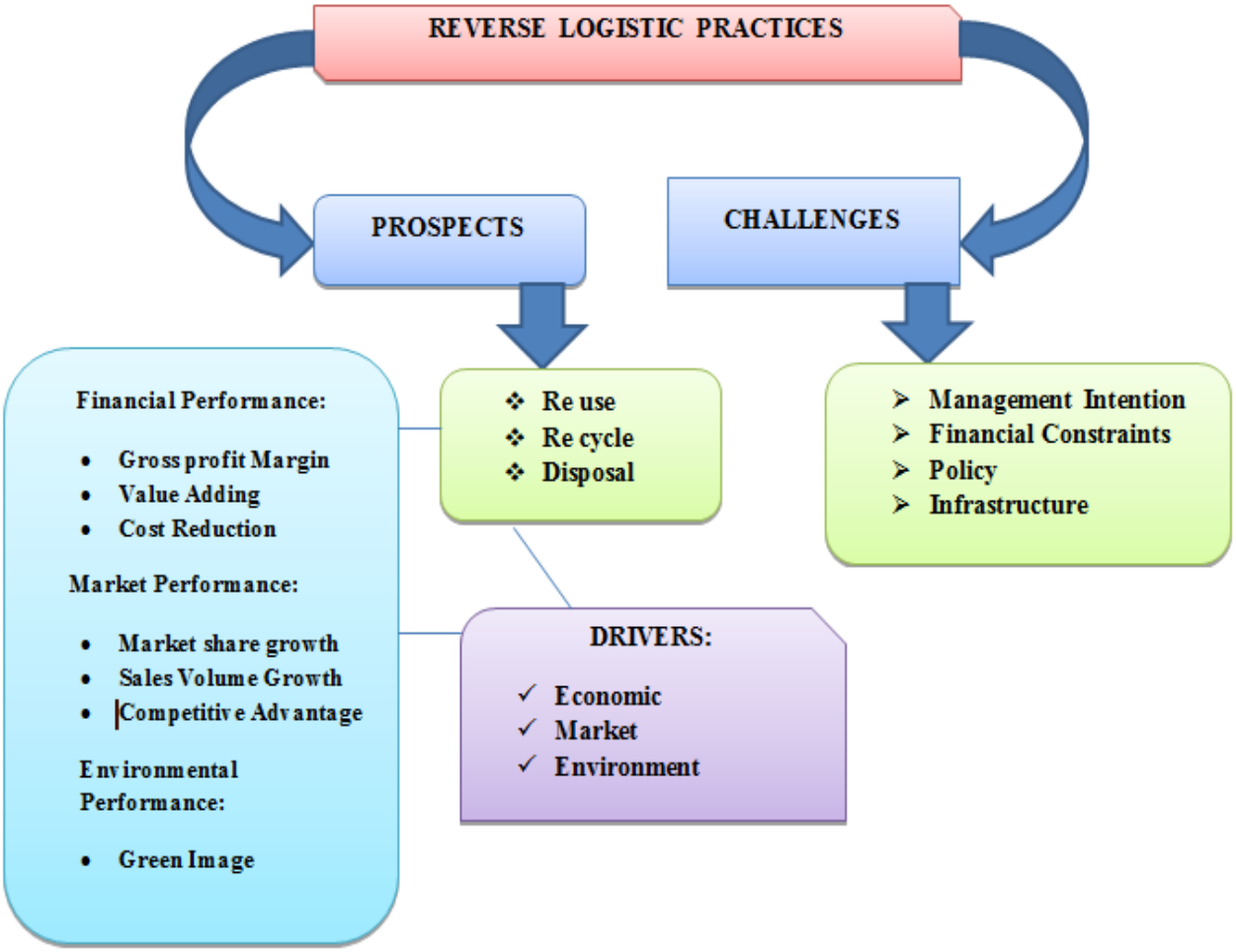

Figure 2.1: Conceptual Framework of the Study Source: Adopted from (Mogaka, 2015)

CHAPTER THREE

RESEARCH METHODOLOGY

Research methodology provides a means to systematically solve a research problem. This chapter explains the methodological approach which 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 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 used to frame the study. Descriptive design or study is a method use to evaluate or survey participants' responses and identify relationships among factors (Kothari, 2004). Mixed research approach which advocates qualitative and quantitative approach was used 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 was from both primary and secondary sources. Primary data are those which the researcher was collected through interviews and direct practical participation from employees of the agency. Secondary data was including the data which was used and 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 datasources this was documentary reviews. The sources of data are documents of the EPSA Jimma branch.

3.4. Sampling Design

3.4.1 Target population

The setting for this study is the EPSA Jimma branch. The EPSA provides different health centers by distribution of pharmaceutical drugs in terms of quality and quantity. Toward meeting this objectives the role of Jimma EPSA are crucial. Therefore, the target population for this study was worker staff of Jimma branch EPSA. There are 129 employees **including** supportive staff workers who are currently working in the EPSA Jimma branch.

3.4.2 Sampling Technique and Sample size

Since the number of population size is fairly low, data was obtaining using census method by targeting all the population. According to Gupta (2007) 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.

3.5 Methods of Data Collection, Design and Administration

3.5.1 Methods of Data Collection

This study was incorporated different methods of the data collection. The method that this study was used questionnaire and interview questions, which were prepared in line to the basic research questions and objectives of the study. A personal delivery and pickup methods was used to improve the return of the questionnaires from study participants. Moreover, covering letter was attached to each questionnaire to introduce the research objectivity and confidentiality to the study participants.

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 designed in both close and open ended questions that were answer by the respondents through scale measurements questions.

The Likert-type scale method was used to from the range of responses: strongly disagree, disagree, Neutral, Agree, and strongly agree, with a numeric value of 1-5, respectively. The usage of this

particular scaling method ensured that the research study illustrated the ability to assess the responses and measure the responses quantifiably. So that a pattern or trend may be produced in order to answer the research questions. As Neuman (2003) explained, it is a process of asking many people the same questions and examining their answers research questions.

3.5.3 Methods of Administration/ Quality Criteria

3.5.3.1 Content Validity

The idea of validity to questionnaire refers to the steps was taken 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. The researcher was 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 was 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). Thus, the instrument and variable measurement this study was approved with professional judgment.

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

S/No	Variables	N of items	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
1	Prospects of Reverse Logistics	6	.813	.825
2	Drivers	4	.877	.879
3	Challenges	9	.854	.859
	Total	19	0.848	0.854

Source; Survey Data, 2021

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. An alpha value of 0.7 or above was considered reliable.

The reliability of the survey variables were initially tested before the hypothesis theory mentioned in previous work was verified. Firstly, in accordance with the work of (Thompson et al, 2017), The Cronbach'sα 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 excellent.

3.6. Methods of Data Analysis

The data that was collected through the state data collection methods were compiling, editing, processing and tabulating to draw information from it prior to analysis. The data analysis is mostly quantitative data .So; descriptive statistical analyzing method was applied. 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 20.0 were utilized to analysis and interpret the data. .

3.7 Ethical Consideration

The information was collected from the agency 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 was 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 EPSA Jimma branch officials including the possible recommendations to improve the reverse logistic practice and challenges with regarding environmental issues. There was consideration to publish the result in international peer-reviewed scientific journals.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

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 age group, education level, job position, working department, branch employer and service years. In the second part the analysis and interpretation of data gathered through questionnaire were discussed descriptions of the variables with different assumption tests, result of goodness of fit test and result of independent variables effect tests.

Response Rate

The study sought to collect data from 129 employees from EPSA Jimma hub but the researcher managed to collect 120 questionnaires. This represents a response rate of 93.02 percent which is very good for analysis. According to Babbie (2004) a response rate of 60 percent is good and that of 93.02 percent is very good.

4.1. Findings of Demographic Analysis

Before going to the main parts of the study it was logical first to present the demographic status of the study participants. Therefore, here in this section the study was presented the demographic characteristics of respondents in terms of age group, education level, job position, working department, branch employer and service years.

Table 4.1. Demographic Analysis of Respondents

Variable	Variable categories	No	Percentage (%)
Gender/Sex	Male	96	80
	Female	24	20
	Total	**120**	**100**
Age (in Years)	18- 25	9	7.50
	26 -30	39	32.50
	31 - 35	48	40
	36 - 40	16	13.33
	>40	8	6.67
	Total	**120**	**100**
Work experience in the agency (in years)	<3	12	10
	3-5	27	22.50
	6-10	64	53.33
	>10	17	14.17
	Total	**120**	**100**
Educational level	Diploma	32	26.67
	1st Degree	61	50.83
	2nd Degree	11	9.17
	Others	16	13.33
	Total	**120**	**100**
Department you work in the agency	Distribution	16	13.33
	Warehouse & Inventory Management	34	28.33
	Quantification & Market Shaping	8	6.67
	Finance	26	21.67
	Human Resource	7	5.83
	General Service	29	24.17
	Total	**120**	**100**
Position in the agency	Officers	47	39.17
	Team leaders	8	6.67
	Managers	2	1.67
	Warehouse Managers and operatives	33	27.50
	Deliverers	8	6.67
	Others	22	18.33
	Total	**120**	**100**

Source: Survey Data, 2021

As it is understandable from the above table 4-1, of the respondents, 96 were male. As the agency renders a 6-days-regular service (except Sundays) to its clients the whole year, along with extra/sporadic OT hours during emergency cases, the less number of female staff may favor it to minimize maternity day-offs impact on the service. 87 were found between 26 and 35 years old which is active working age and mature enough to mitigate performance errors in reverse logistics. And 72 have got first degree and above. This quality capacitated the agency to practice reverse logistics, because the majority workforces can understand and adapt new technology/system easily. Hence their answers for the questionnaire could be responsive, too. Besides, 108 respondents have more than 3-years' experience on the work. This means the majorities knew the implemented/practiced reverse logistic prospects and its challenges well from the scratch, and can evaluate the performance and also could indicate the possible/major practices and challenges in the agency under investigation which had a potential interference of the pharmaceuticals supply chain performance. Further, among the respondents larger groups 50 were from the departments of distribution and WIM which mainly focused on the study subject matter. Thus, they have concerned enough for their work and also responsible enough to provide logical information for this questionnaire with their intensive analysis about the reverse logistic practices of the agency. Regarding the position of respondents for working on the agency, larger proportion 47 were officers from various professional ethics which followed by 33 were warehouse managers and operatives. This implies that the most of the study participants were involved in warehouse operation and stock controlling area. Therefore, they have been provide crucial and valid information as input of this study.

4.2. Descriptive Findings of Challenges & Practices of Reverse Logistics in EPSA Jimma Branch

The descriptive statistics utilized are based on frequency tables to provide information on the challenges and prospects of reverse logistics in EPSA Jimma branch. The findings were presented through tables, summary statistics such as means, standard deviations, minimum and maximum are computed for each prospects and challenges indicated in this study. The findings which identified on this study presented as follows;

4.2.1. Extent of adoption of reverse logistics practice

The implementation of reverse logistics helps a company achieve their economic and social goal. In order to take back returned products, a company should establish handling mechanism of this returned products. The most known reverse logistics procedures are reuse, remanufacture, recycle and dispose. Firms should know and decide which reverse logistics practice to use in a way they can minimize the cost of return handling and maximize the benefit they can get as much as possible. And most of all their concern must be on how to preserve the environment from this unused, unfit or unwanted medicines, because in the case of pharmaceuticals if not handled properly can cause a serious damage on society environment.

Mesfin (2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale for extents (that ranges from not at all to very large extent in the survey questionnaire). A calculated mean value that ranges from 1 to 1.80 implies not at all, 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 small extent, moderate extent, large extent and very large extent respectively. The 0.8 served as a boundary for each elements of the measurement in the questionnaire.

Table 4.2.1: Extent of adoption of reverse logistics practice in EPSA Jimma Hub

	N	Mean	Std. Deviation
Re-Use			
The agency have been Set quality of standard for re-use	120	3.88	1.291
The agency could able to Design products for reuse	120	2.36	1.194
Recycling			
There is a well-documented policy for recycling at the agency	120	2.10	.965
Dispose			
The agency have been practiced a Land fill for its products disposal mechanism	120	3.94	1.225
The agency have been used Throw to trash disposal mechanism for its RL practices	120	3.77	1.273
Incinerate could be applied on the agency RL practices as a disposal mechanism	120	1.99	.930

Source: Survey Data, 2021

Table 4.2.1 indicated above shows the mean analysis for the extent of adoption of reverse logistics practices in the study area. The mean value for The agency have been Set quality of standard for re-use (m=3.88) which is found in the range of 3.41-4.2 which average number of the study participants were state as the agency have been set quality of standards for re-use to the large extents. This implies that currently EPSA has been practiced/set quality of standards for re-use with giving emphasis quality management system as one of the initiative for the agency waste management practices. However, the agency not able to design products for use which indicated with low mean value for the agency could able to Design products for reuse (m=2.36) which exists in the small extents of practices. Furthermore the mean value for there is a well-documented policy for recycling at the agency (m=2.10) which indicated as small extent. The above finding indicated that Reuse reverse logistics by setting high quality standards was also highly practiced scoring 3.88. Designing products for reuse scored a mean score of 2.36, while majority of the respondents indicated that their firm did not use recycling reverse logistics or have well documented policy for recycling or if they did, it was to a small extent, with a mean score of 2.10. Regarding the dispose practice of the agency from the data collected as indicated on the above table, majority of the respondents indicated that the agency implements dispose

reverse logistics specially landfill and throw to trash as indicated by a mean score of 3.94 and 3.77 respectively. The data collected indicated that the firm does not use incinerator to dispose returned products or it is to a very little extent with a mean score of 1.99 which was the lowest score. As a real data the agency will planned to go to practicing incineration as its readiness described with built the modern incineration site in Jimma town but not to be functional yet.

The result indicates that EPSA Jimma branch practice of reverse logistics is limited. This is because most of the procedures are done using labor intensive, step by step manual system. Though it is obvious using incineration for disposing of returned products is a better way of handling, the results show that the company uses landfill, throwing to trash and burying of unused medicine. This is an indicator that the company is not supported with relevant technology that encourages better performance and assures sustainability. From the result we can see that the company's focus on recycling is very low. To reduce the cost from returned products and salvage any raw material from the returned product enough consideration must be given to recycling reverse logistics. Thus, the agency should have to enforce/strengthen its effort which was found on the way and should have to launch and becoming functionalize the new incineration establishment for its cost and time advantages.

4.2.2. Drivers for Adopting Reverse Logistics Practice

In this the driving forces which the agency forced to implement reverse logistic practices were identified. The findings revealed on three aspects to describe about the drivers. These are economic, market share and environmental image. The detail findings were presented under the table below.

Table 4.2.2: Drivers for Adopting Reverse Logistics Practice

	N	Mean	Std. Dev.
Economic			
The agency adopt advanced RL practice for the purpose of Cost reduction	120	4.04	1.191
The agency adopting RL practices through considering its Gross profit margin	120	4.00	1.145
The agency could be adopt RL practices in order to Value adding	120	4.05	1.173
Market			
Market share growth at the agency due to the Agency adoption of RL practices	120	4.00	1.167
Sales volume growth identified at the agency as a result of the agency RL practices implementation	120	4.09	1.100
Competitive advantage could be created at the agency with the agency implementation of RL practices	120	3.95	1.256
Environmental			
Green image considered at the agency on its RL practices adoption	120	3.92	1.313
Environmental Safety considered for hazard products disposal	120	4.02	1.145
Practicing the right disposal methods to protect natural resources	120	3.90	1.293

Source: Survey Data, 2021

According to the information observed above on table 4.2.2; majority of the respondents indicated that the driving forces for the company to implement reverse logistics are Economic with a mean score of 4.03 specially value adding with a mean score of 4.05. Market has a significant role especially sales volume increased as well indicated with a mean score of 4.09 and market share growth 4.00 respectively. Great number of respondents indicated that the major reason for implementing reverse logistics is the environmental safety consideration of the agency with a mean score of 4.02. The above findings implies that economic, market and environmental aspects driving the agency to the great extents in order to implement the reverse logistic practices.

In this study the economic driver considered was the economic benefits. From the collected data respondents with a mean score of 4.03 believe that reverse logistics implementation brings significant economic benefits. To briefly understand this economic benefits, the study tried to rate more elaborate economic benefits. Respondents rated cost reduction economic benefits from implementing reverse logistics with a mean score of 4.04, increase in profit margin was scored with a mean vale of 4.00 and value adding was rated 4.05, from this we can conclude that even though implementing reverse logistics had been achieved cost reduction to great extent according to respondents and also it has a significant role in increasing gross profit margin and mostly from value adding which insures sustainability.

Regarding the market driving force considered in the study was the market benefit of implementing reverse logistics. From the result we can see that reverse logistics has a great impact on the agency's market, which is expressed with a mean score of 4.01. Marketing benefits were further elaborated into market share growth, sales volume growth and competitive advantage. Respondents rated sales volume growth with the highest mean score of 4.09. From this result it can be inferred that though implementing reverse logistics plays a significant role on sales volume growth and market share growth has strongest impact within the market which in another way indicate a market share growth and sales volume growth as well.

Environmental aspects considered in the study were environmental benefits. For any business to stay functional and set a value system within its customers, sense of corporate citizenship or environmental consciousness is without a doubt very significant. Respondents view towards environmental benefits holds the same. Respondents with a mean score of 3.95 agreed that implementing reverse logistics will consider environmental particularly will increase the environmental consideration and green image of the agency within its customers.

These results in another word show that implementation of reverse logistics practice affect all the mentioned driving factors for adopting reverse logistics. Since Ethiopia's pharmaceutical Supply Agency competition is mostly not with each other but with imported products for health program from donors and revolving fund as well, reverse logistics practice gives them a better barraging power to impress local suppliers, distributers and wholesalers. A related investigation was also carried out by (Gunasekaran&Ngai, 2003), in which management of the company is concerned to get the benefits from practices of reverse logistics. A different study has been conducted by Hsu, H.S., Alexander & Zhu (2009) by investigating the business process of reverse logistics in accordance to the activities involved in that specific business and their distribution centers. It has been concluded in

many researches that environmental factor and businesses economic factor are best driving forces of reverse logistics (Meade, Sarkis& Presley, 2007).

4.2.3 Challenges of implementing RL practice at EPSA Jimma Hub

When talking about challenges faced in implementing reverse logistics, a lot can be said especially in developing countries like Ethiopia. Lack of awareness, management inattention, Lack of technology, personnel resource, financial constraints and company policy are some of the many challenges that can be mentioned.

Table 4.2.3: Challenges of implementing RL practice at EPSA Jimma Hub

	N	Mean	Std. Dev.
Lack of appropriate technology identified challenge at the agency for its RL practices	120	3.85	1.207
Lack of appropriate infrastructure tackled the agency For its RL practices advancement	120	3.66	1.312
Lack of definite rules and regulations on handling returned products considered as a challenge at the agency	120	3.69	1.371
Costly to manage reverse logistics challenged the Agency through its RL practices	120	3.43	1.306

Source: Survey Data, 2021

According to the information observed on table 4.2.3, above majority of the respondents stated lack of appropriate technology in implementing reverse logistics practices as the major challenges with a mean score of 3.85 and a standard deviation of 1.207, followed by Lack of definite rules and regulations on handling returned products considered as a challenge at the agency had a mean score of 3.69 as well with a standard deviation of 1.371 while lack of appropriate infrastructure had a mean score of 3.66 with a standard deviation of 1.312. Whereas Costly to manage reverse logistics challenged the Agency through its RL practices had the least score with a mean of 3.43 and a standard deviation of 1.306.

The findings show that large number of respondents believe lack of appropriate technology is a challenge for reverse logistics practice to take place within the agency. EPSA being the first and the oldest governmental pharmaceutical supply chain agency in Ethiopia, and being government owned its technological capacity can be said very low. Especially when it comes to reverse logistics, up to date technology is very low. We can refer to the first section of the study, extent of adoption of reverse logistics to support this fact. The company uses old school return handling

because it lacks the technology the system needs. The second indicator, lack of appropriate Lack of definite rules and regulations on handling returned products considered as a challenge at the agency. This is also supported by the first sections which the agency had not clear policy for recycle as well as for the disposal. These could be challenge on the financial issues of the products to be disposed. All in all it involves creating a system that fosters the implementation of reverse logistics. FMHACA and WHO in collaboration developed a five year road map on GMP compliance since December, 2015. But mostly it is on paper and the specific directives and implementation procedures are on process. This lack of defined rules and legislations gives a chance of negligence towards the handling of retuned products. There needs to be a legislation that encourages and at the same time enforce certain rules and regulations on handling reverse logistics. The other major factor respondents indicated was the Lack of appropriate infrastructure tackled the agency for its RL practices advancement. Modern technology is not just limited to high tech machineries and equipment but a well-built infrastructure to implement reverse logistics. These could be training of employees, having a reverse logistics system that is easily understood and appropriate equipment needed. The last indicated factor was cost management in implementing reverse logistics. It's obvious that implementing reverse logistics involves cost. But what the agency should consider is that it's about choosing the right reverse logistics practice appropriate for the company so that the company manages or reduces the cost to its minimum.

4.3. Opportunities of implementing RL in the Agency

According to the qualitative data which gathered from the interview held it was identified that the future holds for EPSA reverse logistics practice, opportunities there are, in order to forward the agency towards center of excellence in the supply chain many reforms and initiatives have been implemented in the agency. From this advancing disposal mechanism is one of the main issues. This started on the selected branches with construction of incinerator house and auxiliary buildings by JAMBO construction plc. From the selected branches Jimma brach is one of the implementation sites. This project with the owner of Fedral Ministry of Health, EPSA started with the implementing partner United Nation Officer for Project Service (UNOPS). Currently EPSA Jimma branch hand over the constructed site and but not yet start its functions. When starts its function its estimated to income generation site for the agency through disposing waste agency for south west Ethiopia for other health facilities and organization with payment.

The future has a great opportunity to invest in pharmaceuticals distribution since the government is giving emphasis to supply pharmaceuticals to the public health facilities in future to fulfill the

customer pharmaceuticals demand with affordable price the agency aimed to extend its structure to corporate level and involved not only for the public health facilities but to be able to engage in the private market as well.

The agency implemented various initiatives which improves the future reverse logistics. As identified from the interview response, center of excellence, quality management system, kaizen were the reforms which had been implemented on the agency. These reforms could improve the future reverse logistic practices through products/ process flow quality management, making standardize the operations through center of excellence, forward the agency with continoues improvement as a kaizan philosophy.

CHAPTER FIVE

SUMMARY, CONCLUSIONS& RECOMMENDATIONS

5.1. Summary of Major findings

According to the collected data from the study population, after the study was processed and analyzed this raw data in order to present relevant result of the study with full of interpretation and discussion. The findings on the result part of the study were sorted with descriptive and inferential statistics presentation. Therefore, based on the identified result of the study, the researcher could able to summarize the major findings of the study and present as shown below.

The mean analysis for the extent of adoption of reverse logistics practices in the study area. The study identified that currently EPSA has been practiced/set quality of standards for re-use with giving emphasis quality management system as one of the initiative for the agency waste management practices. However, the agency not able to design products for use which indicated with low mean value for the agency could able to Design products for reuse which exists in the small extents of practices. Furthermore the mean value for there is a well-documented policy for recycling at the agency which indicated as small extent.

Regarding the dispose practice of the agency from the data collected as indicated on the above table, majority of the respondents indicated that the agency implements dispose reverse logistics specially landfill and throw to trash respectively. The data collected indicated that the firm does not use incinerator to dispose returned products or it is to a very little extent. As a real data the agency will planned to go to practicing incineration as its readiness described with built the modern incineration site in Jimma town but not to be functional yet.

According to the information observed in this study; majority of the respondents indicated that the driving forces for the company to implement reverse logistics are Economic specially value adding. Market has a significant role especially sales volume increased as well indicated respectively. Great number of respondents indicated that the major reason for implementing reverse logistics is the environmental safety consideration of the agency. The above findings implies that economic, market and environmental aspects driving the agency to the great extents in order to implement the reverse logistic practices.

According to the information in this study majority of the respondents stated lack of appropriate technology in implementing reverse logistics practices as the major challenges, followed by Lack of definite rules and regulations on handling returned products considered as a challenge at the agency while followed lack of appropriate infrastructure. Whereas Costly to manage reverse logistics challenged the Agency through its RL practices had the least score with a mean.

5.2. Conclusion

Supply chain is a contemporary issue that is playing a great role in easing the communication between the branches, distributer and end user. Still the forward communication between the stack holders is not enough because in case of unfit, unused or over stocked product, this forward chain needs to have a system of going back/re-distribution between branches. Based on these facts, for agency to implement reverse logistics practice has come to the point of being critical.

The purpose of this research was to investigate the RL practices of Ethiopian pharmaceuticals supply agency of Jimma branch. Based on the findings the following conclusions are drawn. From the data collected, it was concluded that;

EPSA has adopted reverse logistics practices with reuse and Dispose reverse logistics being predominant. But still we can conclude that the reverse logistics practice is at its lowest stage. This is because of different challenges like low technology, Lack of definite rules and regulations on handling returned products considered as a challenge at the agency, lack of appropriate infrastructure and as well as the fact that management considers reverse logistics as a costly procedure. Pharmaceutical firms can face the challenges of implementing reverse logistics by investing to improve their technology, infrastructure and believe that the cost that will be incurred will bring impressive return for a longer period of time.

It was also concluded that the drivers for implementing reverse logistics practice are mostly value adding, growth of sales volume & market share and environmental safety consideration and green image. As articles from the literature review explained implementing reverse logistics plays a great role on the economic, market and environmental performance of any company. The findings in the study as well show that the driving factors for implementing reverse logistics practice at EPSA are the same as the literatures above mentioned. Especially in the case of EPSA respondents believe that implementing reverse logistics lays a great role in value adding, growth of sales volume & market share and environmental safety consideration and green image. Increase in marginal profit, cost reduction, and competitive advantage also have some extent of contribution.

5.3. Recommendations

Based on the conclusions of the study the following are recommended. As it has been continuously said companies can no longer consider reverse logistics practice as an extra procedure. Especially in the pharmaceutical supply chain there needs to be a greater emphasis. This is because if unfit, expired or unwanted pharmaceutical inters the market in an unlawful way its consequences risk human life.

Considering this facts the study recommends that EPSA should invest in appropriate technology for their reverse logistics processes such as having codes that can be used to track reason for each return, establish a system in which distributes are involved and work towards eliminating the root causes for the returns. Another way to improve its technology is using high tech machineries lick incinerators for disposal of pharmaceuticals that have no chance of recovery.

For Products which have the chance to be recycled or those that have some components that can be salvaged should be handled using the available and up to date technology. This can be achieved by gaining senior management support on reverse logistics practices through raising awareness and trainings of its importance at senior level and to employees to raise awareness of reverse logistics practices across board facilitating its implementation.

EPSA should consider developing detailed disposition strategies for the returned products, handling system and as it has been mentioned above use high technology for disposition of returned products so that costs of returns to be able to manage the cost of returns to bare minimum.

Lastly, EPSA should embrace a continuous improvement policy that will involve putting key performance indicators in place to assess progress in implementing reverse logistics practices and take the benefit of opportunities it has to establish a better reverse logistics practice.

5.4. Suggestion for future work

Studies that are done to assess the practice of reverse logistics within the pharmaceutical supply chain should be done at a branch level should be done throughout the whole branches. Not only within pharmaceutical supply chain but further researches must be done in the practice of reverse logistics in the context of Ethiopia.

Studies that deeply address the financial and social benefits of reverse logistics practice should be done within the context of Ethiopia.

Studies that can assess costumers feeling towards the reverse logistics practice and what effects it will have towards customer satisfaction should be done.

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ANNEXE- I

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT

Dear respondents

My name is **SiudNega** conducting a study on **The prospects and Challenges of Reverse logistics practice incase of Ethiopian pharmaceutical supply agency jimma branch. (EPSA)** for the partialfulfillment of master's degree in logistics and supply chain 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 youhave any question, you can contact me through **0917823340**. 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 (TelephoneNo. 0917823340, E-mail: siudfromi10@gmail.com)

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? _____

Part II: Challenges & Practices of Reverse Logistics

Section A: Extent of adoption of reverse logistics practice

7. Indicate the extent to which your firm has adopted the following reverse logistics practices by ticking the appropriate box using the following scale:

I=Not at all II=Small Extent, III=Moderate extent, IV= large extent, V=Very large extent

Extent of adoption of reverse logistics practice	Rating				
	I	II	III	IV	V
Prospects of Reverse logistics practice					
1. Re use					
The agency have been Set quality of standard for re-use					
The agency could able to Design products for reuse					
2. Recycling					
There is a well-documented policy for recycling at the agency					
3. Dispose					

The agency have been practiced a Land fill for its products disposal mechanism					
The agency have been used Throw to trash disposal mechanism for its RL practices					
Incinerate could be applied on the agency RL practices as a disposal mechanism					
- Others (Specify)					
Drivers for Adopting Reverse Logistics Practice					
1. Economic					
The agency adopt advanced RL practice for the purpose of Cost reduction					
The agency adopting RL practices through considering its Gross profit margin					
The agency could be adopt RL practices in order to Value adding					
2. Market					
Market share growth at the agency due to the Agency adoption of RL practices					
Sales volume growth identified at the agency as a result of the agency RL practices implementation					
Competitive advantage could be created at the agency with the agency implementation of RL practices					
3. Environment					
Green image considered at the agency on its RL practices adoption					
Environmental Safety considered for hazard products disposal					
Practicing the right disposal methods to protect natural resources					
Challenges					
Lack of appropriate technology identified challenge at the agency for its RL practices					
Lack of appropriate infrastructure tackled the agency For its RL practices advancement					
Lack of definite rules and regulations on handling returned products considered as a challenge at the agency					
Costly to manage reverse logistics challenged the Agency through its RL practices					
5. Others (Specify)					

Thank you for your time and Response!!!

Annex-II Interview Guide

INTERVIEW QUESTIONS

FOR MANAGERIAL BODY/HIGHER OFFICIALS OF THE ORGANIZATION

1 What opportunities do you think the future holds to your firm for improving and adopting reverse logistics practice in your firm?

_____

_____

_____

2. Please indicate any other relevant comments

_____

_____

_____

_____-__