



**REVERSE LOGISTICS PRACTICE AND CHALLENGES OF SOFT DRINK
MANUFACTURING FIRMS IN ADDIS ABABA, ETHIOPIA**

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Chain Management**

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**ADDIS ABABA UNIVERISTY SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTIC AND SUPPLY CHAIN
MANAGEMENT**

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STATEMENT OF CERTIFICATIONS

This is to certify that Meseret Berhanu has carried out his thesis work on the topic entitled Reverse Logistics Practices and Challenges of Soft Drink Manufacturing Firms in Addis Ababa, Ethiopia. The work is original in nature and is suitable for submission for the award of Master's Degree in Logistics and Supply Chain Management.

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STATEMENT OF DECLARATION

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

Declared by

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Date: _____

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Abstract

Reverse logistics is a flow of materials from a final consumption in an opposite route in order to regain value or to dispose of wastes. This research examines reverse logistics practice of soft drink manufacturing firm in Addis Ababa, Ethiopia. The motivations to adopt reverse logistics, their extent of implementing and challenges occurred while implementing reverse logistics has been studied. The research used quantitative research approach and descriptive research method. To collect data questionnaire constructed in five point likert scale was used. The study was conducted on MOHA Soft Drinks Industry Share Company And East Africa Bottling Share Company, which are the two giant soft drink companies in Ethiopia. The research used purposive sampling technique because the research requires individuals who are better knowledgeable about the issues. Based on the result of the analysis, soft drink manufacturing firms implement reverse logistics mostly for its economical benefit but somehow also to address their social responsibility and environmental issues but policy is the least of motivation because government involvement is low. The study conclude that there is a high reverse logistics implementation in the companies, except few performances like creating profile for customers and make assessment on optional recovery options. In addition, the research revealed that technology, knowledge and policy are the major challenges. Lack of advanced technologies, low understanding of customers and lack of appropriate policy for reverse logistics have effect on the effectiveness of reverse logistics implementation. Finally, it is concluded that, firms should adapt modern technologies to improve their ability on return tracking, data collection and product handling. Creating awareness for all stakeholders about the advantage of reverse logistics also helps to increase the level of efficiency and government should have appropriate policies to encourage or force companies to perform reverse logistics properly.

Key words: Reverse Logistics, Soft Drink Industry, Refillable Glass Bottles,

Acronyms and Abbreviations

RL: Reverse Logistics

RLEC: Reverse Logistics Executive Council

DAB: Development Research and Training Plc.

GVP: Gross Value of Production

CAGR: Compound Annual Growth Rate

EABSC: East African Bottling Share Company

EPHARM: Ethiopian Pharmaceutical Manufacturing

PET: Poly Ethylene Terephthalate

CLM: Council of Logistics Management

PRM: Product Recovery Management

CLSCM: Closed Loop Supply Chain Management

RGB: Refillable Glass Bottles

EPE: Environmental Policy of Ethiopia

SPSS: Statistical Package for the Social Science

SD: Standard Deviation

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Scholars define reverse logistics as, the process of designing, implementing and controlling backward flows of raw materials, in-process stock, packaging and finished products, from a business enterprise, distribution or consumption point, to a point of recovery or point of correct disposal (De Brito & Dekker, 2003). As Reverse Logistics Executive Council (RLEC) puts it “Reverse logistics is a flow of materials from a final consumption in an opposite route in order to regain value or to dispose of wastes. This reverse activity includes take back of damaged goods, restoration and expansion of inventories through product take back remanufacturing of packaging materials, reuse of containers, and renovation of goods, and managing products which are out of date” (Antonyo, 2016).

Since the 1960s, the interest in reverse logistics has extended because of the cost it presents for recovered materials as a tool which focused on recycling waste and recuperating cost from used substances. Organizations which wanted to enhance economic and environmental overall performance started to consider adopting reverse logistics (Fernandez, 2003). Reverse logistics is important for two primary reasons. First, reverse logistics simply cuts down on the amount of waste generated by the general public. It can be used as a main tool for reducing the growing concern about the environment. Second, a well-managed reverse logistics program can save manufacturers or any other business enterprise a significant cost (Bernon et.al, 2011 & Sabina, 2012).

Manufacturing sector in Ethiopia, according to Development Research and Training PLC (DAB), accounts for 70% of the industrial sector in Ethiopia. Within the manufacturing sector, food and beverage subsector is the largest subsector, accounting for 36% of the total gross value of production (GVP) and 38% of the value added (DAB, 2015). From this sector the carbonated soft drinks market in Ethiopia was equal to 92 million USD in 2015. Until 2025, the drinks market in Ethiopia is forecast to reach 562.53 million USD, thus increasing the compound annual growth rate (CAGR) of 15.98% per annum for the period 2020-2025 (Marketresearch, 2015).

In the Soft drink manufacturing industry, refillable glass bottles are a major part of reverse logistics. The survey in the industry shows that the procurement cost of new refillable glass bottles can be up to 20% of the total production cost, which force the companies to reuse refillable glass bottles (Umer and Afzal, 2012). Study conducted in Sri Lanka shows that the returning volumes are lower or higher than the sales volume of bottles in the previous month. This indicates that there is no direct relationship between the sales and received and those two are independent. The study shows that there is an increasing trend in the gap of bottles between issued and received over the year (Gangani et.al., 2018). In order to mitigate this problem, researches on reverse logistics of refillable glass bottles must be done exhaustively.

This research will aim to study the gap shown in the reverse logistic practice of soft drink manufacturing sector. It is intended to study the practices of refillable glass bottle reverse logistic in Ethiopian soft drink manufacturing firms. The research will particularly try to investigate the motives behind to adopt reverse logistics, to what extent is reverse logistics is implemented and challenges facing in practicing reverse logistics.

1.2. Statement of the Study

Most modern manufacturing sectors employ reverse logistics practices on a significant scale. These practices are said to have a variety of implications for a company's finances, markets, and overall performance (Kathure & Arani, 2020). The impact of reverse logistics on the environmental, financial and operational performance of companies in Mumbai, India shows that the introduction of reverse logistics has improved business performance (Zhang Yu et.al., 2018). Similarly, In Ghana, bottled and sachet manufacturing firms integrate reverse logistics practices (recycling and reuse) into their supply chains have gain a competitive advantage and improve performance in both financial and market performance (Afum, & Zhuo, 2019). As a result, Reverse Logistics concept and activities of should be spread to a large number of companies. Reverse logistics needs to be sold as a business opportunity and needs to be presented to business organizations as a commercial success, not just a moral imperative (Eltayeb and Zailani, 2011). In Ethiopia, the vast majority of companies do not engage in reverse logistics activities. Some companies involved in the practice do not fully implement all the components of reverse logistics (Tsega, 2017). Ethiopian Pharmaceutical Manufacturing Share Company has adopted reverse logistics practices with reuse and Dispose reverse logistics. But the practice of reverse logistics is

at its lowest (Rediet, 2016). According to Solomon G/hiwot (2018) Sur construction plc have been particularly unsuccessful in terms of reverse logistics, which protect the environment from pollution. With respect to the overall understanding of reserves logistics, the findings at East Africa Bottling Share Company (EABSCo.) showed that there is some understanding and application of reverse logistics. They have engaged in reverse logistics because of the activities to return emptied returnable glass bottles (Sirak, 2016).

In soft drink manufacturing industry refillable glass bottle are the main part of reverse logistics. The beverage package return process requires a collaborative effort by all stakeholders and partners in the supply chain (Gangani et al., 2018). The success of reverse logistics in the food and beverage industry not only benefits organizations in terms of cost and profit, but also helps reduce environmental impact (Sbihi and Eglese, 2007). However, due to lack of information and inappropriate frameworks on reverse logistics activities from place of use to place of origin, soft drink manufacturers suffer significant losses (Umer and Afzal 2012). A market without an integrated supply chain is vulnerable to system inefficiencies. Therefore, there is a need for a study on reverse logistics and the supply chain of beverage containers, especially in developing countries (Dudubo, 2017).

In the context of Ethiopia, there are few researches on the subject of reverse logistics. The studies inducted were not able to find significant levels of reverse logistics implementation in the studied area/organizations. However, a survey by Sirak (2016) showed that reverse logistics in soft drink manufacturing firms are being implemented only in relation to refillable glass bottles. Though, studies conducted on reverse logistics of soft drink companies in Ethiopia focus on reverse logistics of PET plastic bottles which they conclude that reverse logistics is not being implemented. The studies address barriers in order to implement reverse logistics not what they face while implementing it.

The researcher has not found any research conducted to investigate the refillable glass bottles reverse logistics practices in the Ethiopian soft drink industry. Therefore, it is clear that there is a knowledge gap that the study needed to fill. This research should help fill this gap by understanding the motivations, implementations, and challenges of reverse logistics for refillable glass bottles.

1.3. Research Questions

1. What are the main motives for the implementation of reverse logistics for refillable glass bottles?
2. What is the extent of reverse logistics implementation on refillable glass bottles in soft drink manufacturing firms?
3. What are the main challenges of refillable glass bottles reverse logistics in soft drink manufacturing firms?

1.4. Objectives of the study

1.4.1. General Objective

The aim of this study will be to examine reverse logistics practice of soft drink manufacturing firm in Ethiopia

1.4.2. Specific Objectives

- To find out the main motives for adopting reverse logistics of refillable glass bottles in soft drinks manufacturing firms in Addis Ababa, Ethiopia.
- To explore the extent of reverse logistics implementation on refillable glass bottles in soft drink manufacturing firms.
- To identify main challenges of refillable glass bottles reverse logistics in soft drink manufacturing firms.

1.5. Significance of the Study

The findings of this research will add to the relevant body of knowledge regarding reverse logistics practices in Ethiopian soft drink manufacturing firms. Specifically it tries to investigate reverse logistics of refillable glass bottles which have not been studied in Ethiopian context. It is significant in showing the gap between theoretical assumption of reverse logistics and the reality in the practice. The study will also be used as an input to revise or maintain some processes of reverse logistics practices in the firms. In addition, the findings will be used as a reference for researchers who are interested in studying refillable glass bottles reverse logistics and readers

will learn more about reverse logistics in soft drinks manufacturing industry in Ethiopia. For the researcher, it will fulfill the requirement for Master's Degree in Logistics and Supply Chain Management.

1.6. Scope of the study

The study will be about reverse logistics practice of soft drink manufacturing firms in Ethiopia, specifically focused on refillable glass bottles. The subject is selected because, though it is very necessary in the operation of manufacturing sector, it is under studied theme in Ethiopia.

This study will be geographically limited to Soft drink manufacturing companies in Ethiopia, specifically on MOHA Soft Drinks Industry Share Company And East Africa Bottling Share Company. MOHA Soft Drinks Industry Share Company and East Africa Bottling Share Company owned eight and three plants all over the country respectively. This area of study is selected because the level of complexity of the sector. In addition, It is more suitable to conduct the research on the subject area of the study because the companies are more engaged in reverse logistics due to refillable glass bottles.

1.7. Limitation of the Study

- This study believes to have certain limitations. First, it is conducted using two soft drink manufacturing companies, which has to be considered generalizing the study will not be applicable for other beverage industries. It is also necessary to consider its geographical inadequacy, since it is done only on Addis Ababa manufacturing companies.
- The samples of the study were top and middle level managers, supervisors and unit leaders of the companies. Including low level workers may give new or additional sights to the study. Shortage of related literature, especially that are done in Ethiopian context was another limitation of the study.
- The paper also has limitation of finding all relevant information because of companies' confidentiality policy.

1.8. Organization of the Study

This paper is divided into five sections. The first chapter provides an overview of the companies as well as an introduction to the topic being studied. The importance of researching this topic is stressed as identifying the main and specific objectives. The chapter concludes with a discussion of the study's purpose and scope. The second chapter focuses into the theoretical background of prior research in the topic. This chapter also identifies the theoretical concepts and procedures. Chapter three presents the research methodologies used to conduct the study. This chapter discusses the methods for gathering data and analyzing the collected data. The fourth chapter provides a thorough analysis of the study's findings and interprets the information gathered. The summary of the findings, conclusions, and recommendations are presented in the Fifth chapter.

1.9. Definition of Key Terms

Soft Drink Manufacturers: are those companies that produce nonalcoholic beverages, usually but not necessarily carbonated, normally containing a natural or artificial sweetening agent.

Reverse Logistics: “Backward flow planning, implementation, and control of raw materials, in-process inventory, packaging, and finished goods to a manufacturing, distribution point from consumption point for recovery or proper disposal” (De Brito & Dekker, 2003).

Refillable Glass Bottles: are bottles (typically made of glass) that can be reused, either by the original bottler or by end-users. Consumers have been more interested in reusable bottles for environmental and health reasons (Singh, 2011).

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Definition of Reverse Logistics

Logistics is an activity wherein companies are constantly seeking out a procedure of change, because of adjustments in numerous monetary sectors and fee chains. Companies frequently are trying to find to introduce new techniques and strategies associated with logistics as a way to enhance their manner of know-how the deliver chain and adopting new enterprise fashions that permit the aggressive gain of organizations (Chopra & Meindl, 2002).

One of the recent logistic and supply chain's new phenomena is Reverse Logistics (RL). Its importance is increasing in the recent years, as there are high returns due to expansion of product choices and shorter product life cycle, which has significant impact on the enterprise net income (Shaik and Abdul-Kader, 2012). Reverse Logistics concerns activities associated with the handling and management of equipment, products, components, materials or even entire technical systems to be recovered (De Brito & Dekker, 2003). Even though the concept of Reverse Logistics dates from long time ago, the exact time of the time period is tough to hint with precision. Terms like Reverse Channels or Reverse Flow already seem within side the literature of the seventies, however always associated with recycling (Antonyo, 2016).

Scholars define reverse logistics in different terms but without referring it as reverse logistics rather as returns or reverse distribution. It is in later 1980's scholars start to use the term reverse logistics. These early scholars define reverse logistics as the movement of goods from a consumer towards a producer in a channel of distribution. Any flow that fulfils this state considered as Reverse logistics flow (Fernandez, 2003).

The Council of Logistics Management (CLM) published the first known definition of Reverse Logistics in the early nineties. It defined reverse logistics as the role of logistics in recycling, waste disposal, and management of hazardous materials; a broader perspective includes all relating to logistics activities carried out in source reduction, recycling, substitution, reuse of materials and disposal (Stock, 1992). This definition indicates the traditional logistic activities of transportation and inventory management, but it's centered to return back products from customers rather than move products to customers. However, other scholars emphasized the environmental aspect of reverse logistics and defined it as "the process whereby companies can

become more environmentally efficient through recycling, reusing, and reducing the amount of materials used". These definitions illustrate that the two maximum common approaches of defining reverse logistics range in a single key aspect. Either reverse logistics is visible as a natural technique of bodily shifting items and merchandise in opposite to the traditional ahead float of substances and merchandise or reverse logistics may be considered as activities normally prompted with the aid of using environmental issues which includes recycling, reuse and reducing source use. The closing aim of those activities is to recapture value from waste and used merchandise and to divert end-of-lifestyles merchandise away from landfill (Eltayeb & Zailani, 2011).

The term "Product Recovery Management" (PRM) used to describe all activities that encompass the management of all used and discarded products, components, and materials that fall under the responsibility of a manufacturing company. The objective of product recovery management is to recover as much of the economic and also environmental value as reasonably possible, thereby reducing the ultimate quantities of waste product (Thierry, 1995).

Reverse logistics is the motion of products shaped via way of means of repairing and returning substandard items in addition to turnover boxes again to manufacturing side from call for users' side. This includes the object entities' opposite go with the drift technique which include reclaiming pallets and boxes used to transport, receiving the purchaser returns, accumulating boxes, raw materials, scrap and spare elements processing defects with inside the product sales (Zhang, 2010).

To clear up any misunderstandings about the concept scholars try to define the term by collaborating different explanations. Such as, Fleischmann (2000) says that, Reverse Logistics is the process of planning, implementing, and controlling the cost-effective, effective inbound flow and holding of secondary goods and associated information in a manner other than the traditional supply chain direction with the goal of recovering value or proper disposal. This definition excludes municipal waste collection from the scope of the reverse logistics definition. Reverse Logistics Executive Council define Reverse Logistics as the activity of moving goods from their final destination to some other location, for the aim of capturing value which are otherwise unattainable, or for the decent disposal of the goods (Antonyo, 2016).

The recent and mostly used definitions are: The European Working Group, in 2012, puts forward the following definition as Reverse Logistics is backward flow planning, implementation, and

control of raw materials, in-process inventory, packaging, and finished goods to a manufacturing, distribution point from consumption point for recovery or proper disposal (Antonyo, 2016). In this study this definition is used as the main definition for Reverse logistics.

2.2. Similar Terms on Reverse Logistics

Because of several descriptions and terminologies, it's difficult to grasp the notion of reverse logistics. Scholars have used a variety of names to explain reverse logistic activities as the field has evolved. There are wide and narrow terms used to describe reverse logistic behaviors. Reverse flow logistics, returns logistics, recovery and reverse logistics, Green Logistics, disposition or recycling, closed loop supply chain, and product return management are examples of these words (Fernandez, 2003).

2.2.1. Logistics of the returns and Logistics of reverse flows

Backwards direction is as the product once neglected the forward supply chain, the direction becomes opposite to the forward logistics which is used to deliver the product to deliver for its final customers. Then the product comes back through the same channel sent by a supply chain partner. However, many authors admit that the returning of these products towards different channels also considered as Reverse Logistics. Reverse logistics can refer to goods flows that travel in the opposite direction through a channel. However, there is another aspect in the literature that refers to return management logistics not only in the backwards direction, but also in the forward path once returns products have been transformed (repaired, remanufactured, etc.) and released to the consumers for the second time, which means any activities involving products that have been returned are included in the scope of Reverse Logistics (Fleischman et al. 2000).

2.2.2. Product Return Management

Product returns are waste that is sent into the reverse supply chain system for more recovery operations using particular reuse, recycling, or reprocessing techniques. Interfacing with customers who want to return a product, then collecting, categorizing, and refilling inventory that has been returned or exchanged, is what returns management entails. It is a component of

customer service, logistics, and inventory control. It includes organizing a return request from the customer, approving or decline these requests, picking up the product if the request is approved, send the product to the warehouse for inspecting its quality and finally exchange for new product or refund the to the customer (Wang et al., 2013). Reverse logistics is defined by the European Working Group on Reverse Logistics (2003) as "any procedures involving the reuse of products and materials". Product Recovery Management is the term for the supervision of these operations. The term "recovery," cannot describe the process properly but "reverse logistics management" would fit and describe the practice more in detail. This may can reduce the ambiguity linked with the term "recovery" (Fernandez, 2003).

2.2.3. Green Logistics and Reverse Logistics

The terms Green Logistics and Reverse Logistics being linked often but, the terms have different meanings. Green logistics refer to those practices within the supply chain that aim at reducing sources of waste and resources of consumption. It can be defined as thinking green and being environmental friendly. It is concerned with producing and distributing goods in a sustainable way, taking account of environmental and social factors. Its efforts are focused on assessing and minimizing the environmental impact of logistics activities, which includes activities such as evaluating the effect of various distribution systems, reducing energy usage in logistics, and reducing waste and monitoring its treatment. As a result, reverse logistics might be considered a component of green logistics (Sbihi and Eglese, 2007).

2.2.4. Closed-Loop Supply Chain Management (CLSCM) and Reverse Logistics

Closed-loop supply chain management is defined as the design, control, and operation of a system that maximizes value creation throughout a product's life cycle, with dynamic value recovery from various types and rate of return (Guide & Daniel, 2000). After research revealed that integrating forward and reverse supply chains is the key to achieving maximum profit, CLSCs were recommended to optimize supply chain profit. Traditional supply chain targets to cut costs and improve efficiency of supply chain companies in order to maximize economic benefits. CLSCM aims to maximize profit while also reducing resource and energy usage, cutting emissions, and creating a socially accountable organization that tries to balance economic benefits, social consequences, and environmental effects (Kumar & Kumar, 2013). CLSCM has a

circular and reversing product flow rather than a one-way flow, and all items should be handled during their full life cycle, and beyond, so that trash can be used as raw material for new production or other purposes (Sina et.al, 2012).

2.3. Motives for Implementation of Reverse Logistics

Repair, refurbishment, repackaging, recycling, and material harvesting are examples of reverse logistics activities that can help a company's environmental, social, and economic effect. It can also improve a company's profitability and asset utilization at the same time. Because the two are interwoven, reverse logistics is critical for organizations looking to enhance their sustainability. Reverse logistics is a key component of a company's sustainability strategies, just as it is for keeping operational expenses low. Because the purpose of reverse logistics is to get the most value out of assets, it prioritizes recycling products and resources. Reverse logistics, as a result, ensures that a company produces less waste (Coskun et al., 2017).

2.3.1. Environmental Motives

An organization's environmental performance is measured by its ability to reduce air and water pollution, solid waste, and the consumption of dangerous, hazardous, and toxic products, as well as the frequency of environmental accidents (Zhu et al., 2008). According to Maxwell and Van der Vorst (2003), an organization's environmental performance can be judged by a variety of indicators, including reduced energy and material consumption, reduced air and water pollution, waste minimization or elimination, and the use of poisonous and harmful products.

Reverse logistics is a powerful weapon in the fight against environmental degradation. The handling of "returns," notably in fields like TV shopping, retail, and mail-order operations, is one aspect of reverse logistics. Certainly, some of these enterprises have a high percentage of returns, and distinct systems are frequently set up to deal with returned merchandise, as well as its reuse and resale. Today, reverse logistics encompasses a broader range of activities. After a product's usable life has expired, it involves recycling and reusing the components contained in the product and its packaging. Reverse logistics is an alternative to land filling or incinerating used materials, both of which are no longer acceptable in many circumstances. Reverse logistics encompasses recycling and material substitution in place of land filling or cremation (Ray, 2006)

Recycling glass saves landfill area that would otherwise be occupied by used bottles and jars. Recycling a glass bottle is unquestionably an environmentally responsible action. However, melting back a bottle that has just been used once at 1500°C represents a substantial amount of energy. Reusing, based on the returnable principle, is thus the most sustainable and ecological solution if the collecting and redistribution cycles are well-organized and short. Glass, the ultimate non-biodegradable material, may be reused several times, between 20 and 50 cycles, for up to nearly 6 years. The carbon footprint of a bottle reused after 20 cycles was substantially lower than that of a single-use container: a returnable glass bottle can emit up to 90% less greenhouse gas (Hawks, 2015).

2.3.2 Economic Motive

In addition to environmental motivations for reverse logistics, economic motivations have played a role in growing the importance of Reverse Logistics issues. Companies can recover either constituent material, which no longer needs to be purchased in the same amounts, or added-value through the use of returned products. Whether the savings come solely from material purchasing expenses or from materials, labor, and overhead costs, corporations are increasingly interested in being involved in an efficient manner as market competition shrinks margins (Fernandez, 2003).

The economic performance of reverse logistics can be evaluated by using indicators such as recapturing value from products, cost containment, reduction in inventory investment, and improved profitability and labor productivity. Reverse logistics can result in significant cost savings when the proper systems are put into place. For example, AT&T Network System Division saved nearly \$100 million in the 19 months it was operating a reverse logistics program for its telephone switching equipment (Carter and Ellram, 1998). Xerox implemented a program to take back-used copiers as a source of material for new machines. Customers like the program because they no longer worry about machine disposal. Xerox estimates “several hundred million” dollar savings annually (Eltayeb and Zailani, 2011).

Effective reverse logistics planning and execution would give businesses a competitive advantage in establishing long-term, profit-generating business strategies. Containers, packaging, and refillable bottles are examples of products that can be reused with little effort. Bottles can be reused multiple times after treatment recovery of empty bottles known as returnable/refillable

glass bottles,' which is a crucial aspect of reverse logistics in the soft drink bottling business. Companies, on the other hand, have long been under the misconception that returns on sales earn little or no money (Umer and Afzal, 2012).

Cost reductions in procuring materials, energy consumption, and waste treatment, as well as a reduction in discharge and environmental mishaps, are all positive economic contributors acquired by reverse logistics techniques. Expenditures associated with the implementation of reverse logistics methods, such as investing and purchasing environmentally friendly materials, as well as operational and training costs, were classified as negative economic outputs. While it may appear that using reverse logistics strategies is costly and has a detrimental influence on short-term economic performance, it can help to improve long-term performance in other areas (Diabat et al., 2013).

2.3.3 Legal Regulation Motives

There is genuine concern about environmental issues and the long-term development of any country. Several legislative restrictions are being passed in this regard in a number of countries. Germany (with its take-back packing and electronic device restrictions) and the Netherlands (with their take-back packaging and electronic device legislation) may be considered pioneers (with its stringent automobile laws). However, the effect swiftly extended across Europe, the United States, and Japan, among other places (Fernandez, 2003).

Green purchasing is expected of business organizations in response to environmental regulations imposed by a variety of regulatory institutions, including government bodies within the country, regulations imposed by other countries (primarily export companies), and regulations imposed by parent companies. Formal rules, legislation, fines, and incentives are examples of such regulations. Firms aim to avoid the expenses, uncertainty, and legal obligations that come with current and future rules. Furthermore, regulatory entities may offer firms incentives to operate in a certain way (Clemens & Douglas, 2006).

In Ethiopia, there are no government regulations that directly require business organizations to undertake reverse logistics activities. However, the Environmental Policy of Ethiopia Statement (the EPE) provides more specific guidelines on environmental governance in Ethiopia. While the overall policy goal of EPE is the improvement and enhancement of the health and quality of life

of Ethiopians and the promotion of sustainable development, there is also a long list of specific objectives. According to the 'key guiding principles' of the EPE the development, use and management of renewable resources needs to be based on sustainability, and the use of non-renewable resources needs to be minimized and where possible their use should be extended through recycling (Fikremarkos, 2014).

2.3.4. Social Responsibility

Social responsibility of a business entity is the extent to which businesses are socially responsible for meeting legal, ethical and economic responsibilities placed on them by government, customers or society. The aim is for businesses to create higher standards of living and quality of life in the communities in which they operate while still remaining profitable for the benefit of their stakeholders (Anthony, 2017)

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 (Geyer and Jackson, 2004).

Customers and the general public now have the power to know organization activities because of Improvements in information and communication technologies and this give them the ability to exert their power on organizations which are nor socially responsible to their communities. Therefore firms are expected to develop stronger cultures of corporate social responsibility and to be proactive in seeking ways to honor their moral obligations to society (Maignan & Ferrell, 2004). Besides being socially responsible business organization helps to be competitive in the market because now a day customers are conscious about environmental pollution so they are willing to pay more for products which are produced by socially responsible companies (Sharma et al., 2018).

2.4. Implementation of Reverse Logistics

Reverse Logistics developed as a result of increasing levels of consumer awareness, the high price of raw materials, legislation, and the rising cost of disposal. Customer pressure on businesses regarding the need to adopt these processes has been triggered by both environmental and financial concerns. Customers have begun to demand that manufacturers reduce the quantities of waste generated by their products or engaging in RL. Since there is a growing sense of urgency for environmental action among consumers and most governments around the world, companies are under increasing pressure to operate in a sustainable manner (Coyle, Thomchick & Ruamsook, 2015).

2.4.1. Reverse Logistics Fundamentals

Literatures bring order with respect to some identified ingredients in reverse logistics, which are mentioned as reverse logistics fundamentals. These reverse logistics fundamentals are the answers to basic question. As De Brito (2008) categorized them these are

- Why-returning: the reasons why products are returned.
- What is being returned: product characteristics and product types.
- How are products recovered: processes and recovery options.
- Who is doing the recovery: the actors and their roles.

2.4.1.1. Why Returning

Products are typically returned or abandoned because they either do not perform properly or their function is no longer required. Manufacturing returns, distribution returns, and customer returns are the three types (U-Dominic et al.,2021).

Manufacturing returns:- returns are those in which the need for component or product recovery is identified during the production stage. It could be due to a surplus of raw materials, intermediate and finished products lacking quality inspections and having to be redone, or products being left over during the manufacturing process (Rubio & Jimenez, 2014).

Distribution returns:- returns that are initiated during the distribution phase. It can happen in four ways

- Recalls: when products recollected because of safety or health problems with the products, and the manufacturer or a supplier is usually the initiator not the customer

- Commercial returns: occurs if buyer has a contractual option to return for damaged or unsold products
- Stock adjustments: involve more than one company alone because occur when actors in the chain re-distributes stocks. Usually it works for seasonal products.
- Functional returns: for products for which their function force them go back and forward in the chain because they can be used several times. This study, since it's is about Refillable glass bottles, it falls under this category of returns (De Brito, 2008).

Customer Returns - those returns initiated once the product has reached the final customer. This occurs when there is:-

- B2C commercial returns: these are reimbursement guarantees which give customers the opportunity to change their minds about purchasing when their needs or expectations are not met because of due to size, color, fabric's properties, and so forth.
- Warranty and service returns: return products that do not meet the promised quality standards. Sometimes, these returns can be repaired. Otherwise, a customer may get a new product or his/her money back. Some companies allow customers to return anything to improved risk sharing between sellers and consumers. The retailers and wholesalers have liberal return arrangements with manufacturers, and manufacturers end up taking responsibility for the entire product life cycle. These liberal return policies occasionally turn into "Return Abuse" (Rogers & Tibben-Lembke, 1998).
- End-of-use returns relate to instances in which the user has the option to return a product at a given point in its life cycle. They are frequently leased items that are later returned to the owner and, if necessary, refurbished and resold on the secondary market. Normally, leasing companies handle the return of these items. This applies to leased items and returnable containers such as bottles and books (De Brito, 2008).
- End-of-life returns: refer to those returns for which the product as such is at the end of its economic or physical life. They are either returned to the manufacturer because of legal product-take-back obligations, usually mandatory and regulated by EU directives or national legislations, or other companies like brokers, collect them for value-added retrieval (Sabina, 2012).

2.4.1.2. What is being Returned

De Brito (2008), identified three product characteristics that seem relevant to the product recovery ability, organization and to the profitability of reverse logistics systems; which includes composition, deterioration and use-pattern.

Composition refers to the number of components and how these components are put together. This will affect the easiness of disassembling, and re-processing them which affect the cost of reverse logistics activities. Deterioration answers the questions like does the product age during use, do all parts age equally, or not? Does the value of the product decline fast? Deterioration eventually causes a non-functioning status of the product, but also determines whether there is enough functionality left to make further use of the product, either as a whole or as portion. The other factor is use pattern, which is connected to location, intensity, and duration of use. It is important as it affects the next steps such as collection phase (De Brito, 2008 and Sabina, 2012).

2.4.1.3. How the products are returned and recovered

In the reverse logistics concept, companies carry out a variety of activities with returned products or materials, and they must identify the potential destination of the returned goods which includes the production line, the distribution and reassembly line. Because of the wide range of products in the reverse flow, there are different reverse logistics activities which including reutilization, repair, renovation, reprocessing, cannibalization, or recycling are available (Thierry, 1995).

Though recovery considered as the main activity in reverse logistics there are also other activities that are also essential for its effectiveness. These are collection, inspection, sorting and storing, gate keeping and transportation (Rubio & Jimenez, 2014).

Collection relates to the procedure of transporting things from a client to a site of restoration. It can be thought of as the system's beginning point, with three possible collecting possibilities depending on whether the manufacturer or remanufacturer collects directly, through a network of distributors and retailers, or through third-party logistics services (Rubio & Jimenez, 2014).

Inspection after the collection products will be inspected to check their quality and to decide which type of recovery they need. Sorted and Stored comes after evaluating the product's quality based on the recovery selection. This refers to deciding what to do with each product by

grouping it into sections that will be remanufactured, redistributed, resold, or discarded (De Brito, 2008).

Gatekeeping is the screening of defective and unwanted returned items at the point of entrance into the reverse logistics process. The first key aspect in providing an integrated reverse flow which is manageable and profitable is an effective gatekeeping. It assists a corporation in controlling the number of products that are permitted to enter the return distribution route. A well-managed gatekeeping approach would lower the percentage of returned items while maintaining a brand's quality of customer service (Roger & Tibben-Lembke, 1998).

Transportation is the actual movement of goods from one point to another within the reverse logistics network. It usually covers the largest reverse logistics cost which is up to 25 % of the total cost of reverse logistics. The final activity is recovery; it differs depending on the condition and type of the product (Rogers & Tibben-Lembke, 1998 and Agrawal & Choudhary, 2014).

The various actions that an organization can take for recovery are:

Direct reuse - most of the product returns can be reused without going through the manufacturing process, with little cleaning and repair. Despite the fact that the product's final worth is lower than its previous value, no more processing is necessary. Pallets, containers, bottles, and boxes, for example, are examples of such products (Diaz, Alvarez & Gonzalez 2004).

Repair - The consumer/user returns the product to have it repaired so that it can be used again. If required, the manufacturer repairs or replaces damaged ones. It doesn't take too much energy or time. Repaired models are commonly considered to have lower quality than new products (Thierry et al., 1995).

Remanufacturing- is a process that involves a series of steps to bring discarded items or decomposed components back to life. Inspection, disassembly, cleaning, examination, refinishing, reinstallation, evaluation, and final testing are performed on these used products to verify that the end product or remanufactured product meets or exceeds the standard and guarantee of a freshly made product (Ostlin et.al. 2009).

Refurbishing - Refurbishment is where parts of the returned products are replaced and fixed with new parts, and then they are reassembled as refurbished products. Examples are refurbishing computers and laptops.

Cannibalization: This stage is an inspection and selection of limited amounts of parts from the collected used products, so as these parts can be reused in remanufacturing, refurbishing or repairing recovery activities (Robio et.al. 2014).

Recycling- is the process of extraction of components from a discarded items or packaging such that they can be used as resources for a new product or package .Based on material type and desired consequence, it can be entire or partial. Some materials can be converted into raw materials that can be utilized in multiple ways, while others require the creation of a new product. A plastic or glass bottle is an example of a previously used item. This bottle can either be thrown away or recycled, giving it a new life cycle. As a result, it can help to minimize waste and the excessive use of natural resources (Agrawal & Choudhary, 2014& Robio et.al. 2014).

2.4.1.4. Who are the actors in Reverse Logistics?

These are stakeholders who are involved in value recovering process of used products. Returners, receivers, and collectors / processors are the three types of actors. Customers, retailers, and anyone else who returns a goods is a returner. Receivers are the people who receive the returned item from the sender. Any supply chain member, such as suppliers, manufacturers, wholesalers, and retailers, might be a receiver. The other groups are independent intermediaries who participate in Reverse logistics related to collecting and processing activities. This comprises recovery firms, reverse logistics service providers, garbage collecting municipalities, public private foundations established to handle recovery, and so on (De Brito & Dekker, 2003).

2.5. Challenges of Reverse Logistics

Reverse Logistics has evolved into one of the most crucial organizational abilities in today's supply chains, and it cannot be regarded as extra activity in the modern business climate. As a result, companies are starting to think about recycled materials as a material option in their manufacturing processes, as well as a long-term disposal strategy for products that can't be recycled or reused (U-Dominic et al., 2021). Various studies on the challenges of implementing reverse logistics have been published in the literature. Researchers identified many barriers like as lack of awareness about RL practice, company policies, lack of information systems and technology, financial constraints, lack of commitment by top management and lack of strategic planning. Some authors consider lack of driving forces as barriers to implementation of reverse

logistics. Researchers take a variety of techniques to investigate the obstacles of implementing reverse logistics effectively, as well as to identify, classify, and prioritize the most significant barriers. The issues they discovered differed based on the type of firm they were investigating (Younas & Ahmed, 2020 and Muhammad et.al., 2018).

Kaviani et al. (2020) made an intensive analysis on barriers of RL and identify the most significant ones. They classify these challenges on four bases which are: economic-related barriers, knowledge-related barriers, technology and infrastructure barrier, policy-related barriers, market-related and management-related barriers.

2.5.1. Economic-related Barriers

Reverse Logistics has a number of advantages for businesses, but it does come at a cost. If RL is to be successful, it must have a well-designed infrastructure (Fleischmann et al., 2004). The cost of the activities, as well as the evaluation of the worth of the returned objects, must be detailed, accurate, and comprehensive. General, administrative, and selling expenditures should all be included in these running costs (Coskun et al., 2017).

One of the inner drivers that push groups to apply and put into effect reverse logistics techniques is the supply of monetary funding within the system. Poor adoption of RL and an ineffective returning control system are the end result of a lack of monetary help and inadequate useful resource availability (Guide & Daniel, 2000). Stakeholder doubt to invest for adoption and implementation of RL practices usually comes from factors like lack of initial capital, higher level of uncertainty of profitability and high cost of skilled experts (Younas & Ahmed, 2020).

2.5.2. Knowledge-related Barriers

Another barrier to building an effective RL system is a lack of understanding of the benefits of RL. Organizations must be aware of the significance of the notion of RL before making decisions about whether or not to adopt it. As a growing number of significant and well-known organizations begin to accept this new approach, as a result levels of knowledge and acceptance across the business community are expected to rise (U-Dominic et al., 2021).

Companies which do not have familiarity with reverse logistic does not know the economic benefit and competitive advantage they can get from adopting RL and effective management of

product recovery management (Thierry et al., 1995). Lack of knowledge on RL channels and practices and the lack of knowledge of RL advantages influence the level of implementing RL (Kaviani et.al, 2020).

Governments should be responsible for not just constructing the necessary infrastructure for RL, but also for creating a national database of waste information, offering education, and raising environmental awareness. Because a lack of official and public awareness about the benefits of Reverse Logistics would hinder proactive participation, education and awareness-raising among government officials and the general public is important. This can help to make a model that tries to minimize the total cost, which consists of transportation, operating, final disposal and landfill costs and fixed costs for new facilities (Rogers & Tibben-Lembke,1998).

2.5.3. Technology related Barriers

There are technological and research and development barrier to RL practices, as well as the complexity of RL adoption in operation, a lack of industrial infrastructure, and a shortage of competent human resources are the main obstacles (Muhammad et.al., 2018). Human resources are regarded as the most significant organizational asset for a company's successful operations. Employees with a high level of training and knowledge are critical to the company's success, and making the most use of their strengths may help the company realize market prospects and implement the RL (Jabbour & Jabbour, 2015).

Latest information system is required to collect the data and process it to yield information that can help companies to manage the PRM more effectively. Lack of IT support for RL results inaccurate forecasting, wrong measurement systems, limiting the RL's forecasts and planning. Because the degree of unpredictability in reverse logistics is larger than in forward logistics, it is vital to plan meticulously for all parts of it. Factors such as demand, sales, and the sort of goods needs to be consider. Customer returns of products or components of products can be quite unpredictable, which can be a huge impediment to maintaining a solid supply chain (Ritchie et al., 2000). Establishing and administering environmentally friendly technologies enable administrators and senior officials to make decisions about the current and future state of tasks, as well as identify the areas that require improvement (Jabbour & Jabbour, 2015).

2.5.4. Policy-related Barriers

A lack of enforceable laws, regulations, or directives can have a negative impact on manufacturer motivation. Collection targets, as well as recycling and recovery targets, must be set, fulfilled, and enforced. Manufacturers are being asked to take greater responsibility for recycling, reusing, or disposing of their products and packaging (Beamon, 1999). It is also critical that governments set a good example by properly disposing of the waste that they generate. Government procurement programs may advocate reusable or re-purposed products. Because the government is a significant driver in implementing RL, a lack of government involvement will have a negative impact on applying RL. It is clear that if the government fails to carry out their responsibilities, this can also act as a barrier to RL progress (Rogers & Tibben-Lembke, 1998).

2.5.5. Market-related Barriers

Purchase intention is primarily influenced by purchase attitude, according to studies on consumer purchasing behavior, and there is a negative relationship between product knowledge and purchase intention, implying that the more consumer know remanufacturing processes, the less likely they are tempted to purchase remanufactured products (Krikke et al., 2013). Studies explain that consumers do not trust the remanufacturing process and thus do not consider the quality of remanufactured products equal to original products. Though this is not always the case, there are markets which are open to remanufactured products. Companies not only try to target these markets but make campaigns to assure their products are quality as new and also it helps on reducing waste (Rubio & Jimenez, 2014).

2.5.6. Management-related Barriers

The advancement of RL is moderate, and it is not widely known in industry. This problem stems from a lack of assistance from top management and other stakeholders, who will not spend incrementally after contributing a significant amount of cash to set up infrastructure for effective RL (Ravi & Shankar, 2005).

The hesitation of top management to assist environmental activities, as well as management's bias toward reverse logistics, is regarded as a barrier to RL. Senior management commitment is one of the most important factors in ensuring success. Managers should focus on the effective management of the product recovery management system to increase profitability; otherwise,

return products lead to higher operating expenses, putting the company at risk of losing money (Younas & Ahmed, 2020). As Ravi and Shankar (2005) highlighted senior management also plays a crucial role in three critical variables includes the necessity for strategic planning, the establishment of business policies regarding RL, and the availability of cash to fund the adoption of RL. Their involvement should starts in planning stage of implementing RL, to identify what stage each product occupies in order to prepare for the challenges and opportunities that will be faced throughout the process (Roger & Tibben-Lembke, 1998 and Ravi & Shankar, 2005).

When it comes to transformation, an organization's mentality is crucial. If RL encounters significant resistance to change from employees or management at any level, as with any innovation, it is likely to be a roadblock to successful implementation of RL programs. In relation to this, several sorts of education and training are required in order to lay a solid foundation for accepting change. In the short run, workers may need to be retrained to operate new machinery that recycles non-avoidable by-products and spent materials (De Brito , 2008).

2.6. Empirical Review of the Study

This topic will try to review the empirical aspect of reverse logistics under the topics of motives for adopting reverse logistics, implementation of reverse logistics and challenges of implementing reverse logistics.

2.6.1. Motives for Adopting Reverse Logistics

There are different motives to adopt reverse logistics. The motives filled into four major categories: namely economic, environmental, social and legal motives.

A. Economic motives for adopting reverse logistics

According to studies, the key motivator for reverse logistics adoption is predicted economic advantages. According to the research conducted, Sur Construction PLC (an Ethiopian company) is driven to reverse logistics to gain economic benefits such as lowering the cost of new input substances such as spare parts, increasing stock availability of components, improve revenue, increasing customer satisfaction, gaining significant returns out of used material selling (second hand market), and increasing the organization's profitability (Solomon, 2018). According to Rediet (2016), the primary motivations for using reverse logistics are value addition and

competitive advantage. Adopting reverse logistics, particularly in the case of EPHARM Share Company, plays a significant role in increase in the relative profit, cost reduction, market share growth, and total sales.

Business benefits of reverse logistics activities, motivated business firms to adopt more of reverse logistics activities. Therefore, the managers of firms need to consider conveying the benefits of reverse logistics to other firms to spread the concepts and activities of reverse logistics among a large number of firms. This result implies that it is important for managers to identify exactly the benefits of each reverse logistics activity, and make proactive efforts to make these activities profitable. The emphasis should be placed on business benefits from green initiatives for effective dissemination of these initiatives (Eltayeb and Zailani, 2011).

B. Environmental motives for adopting reverse logistics

According to Solomon (2018), Sur Construction PLC has not done a good job with reverse logistics, which is preventing the environment from being contaminated by burned oil and garbage such as fuel and oil filters generated by tens of thousands of machines in specific projects. We might conclude that Ethiopia has no social duty or involvement in safeguarding the environment from pollution and sanitation issues created by its packaging materials (Hagos, 2016).

C. Social motives for adopting reverse logistics

Competition between companies these days is not limited to the forward chain but it requires firms to think outside the box in order to gain the heart of their customers. Supply chain is a contemporary issue that is playing a great role in easing the communication between the manufacturer, distributor and end user. Now a days, forward communication between the stack holders is not enough, firms implement reverse logistics practice has come to the point of being critical (Rediet, 2016).

Managers may recognize the societal importance of environmental issues but fail to translate this into particular actions to improve the way their companies run. Based on these findings, it is possible to conclude that proper driver manipulation and utilization can have a major impact on reverse logistics (Eltayeb and Zailani, 2011).

D. Legal motives for adopting reverse logistics

In the case of old beverage containers, there is a link between regulation and reverse logistics adoption. In the case of Lagos and Nigeria, most environmental rules are outdated and are not revised on a regular basis to address current waste management concerns. As a result, government legislation has almost no influence on the beverage and packaging sectors' reverse logistics decisions in Lagos, Nigeria (Dudubo, 2017).

The legal frame works of Addis Ababa solid waste management shows solid waste management standards, policy and manuals but there were no separate policies and standards, which is simply overlooked (Hagos, 2016). Furthermore, the government's participation to recovery and disposal was minor, and corporate guidelines or policies, as well as professional ethics as a legal matter, were only barely reflected (Solomon, 2018).

The Coca-Cola Sustainability Report, which was recently published, revealed that sustainable packaging and recycling is one of the areas of the company's engagement in which the company reaffirms its commitment to support the development of the circular economy by using recycled and renewable materials and recycling more packaging than it uses. However, the survey found no evidence that EABSCo was acting in accordance with its pledges (Sirak, 2016).

2.6.2. Implementation of Reverse Logistics

Most modern manufacturing organizations are implementing reverse logistics strategies to a substantial extent. These techniques are meant to have a variety of effects on a company's financial, market, and overall performance. Ultimately, enhanced organizational overall performance upon adoption and utilization of reverse logistics practices including remanufacture and recycling of products and their byproducts. Many of the research show that there is a link between reverse logistics practice implementation and performance (Kathure and Arani, 2020).

The effects of reverse logistics on environmental, financial and operational performance of Mumbai, India firms shows that; performance of firms increase due to adoption of reverse logistics. In addition, a number of developed and developing countries have already adopted reverse logistics and reverse supply chain ideology in their firms, which enhance their performance on the whole (Ravi, 2015). Therefore, it is suggested that companies should adopt

reverse logistics in their firms to increase the overall performance including, environmental, operational, and financial performance (Zhang et.al., 2018).

Companies that integrate reverse logistics methods (recycling and reuse) into their supply chains have a better chance of having a competitive advantage and enhance their performance (both financial and market performance). As a result, as bottled and sachet manufacturers adopt reverse logistics strategies into their supply chains, their cost of production will decrease as the utilization of fresh raw materials obtained from suppliers decreases. Because of the lower production costs, these companies can offer competitive rates, high-quality, value-added products, and quick responses to their customers. As a result, they will have a significant advantage over their competition and will be able to increase their performance even more (both marketing and financial performance (Afum, & Zhuo, 2019).

In Ethiopia, the majority of businesses do not engage in reverse logistics. Despite the fact that certain organizations involved in the activity do not fully execute all reverse logistics components. In terms of reverse logistics implementation, it can be concluded that it is at a rudimentary stage and is not well received by the industry (Tsega, 2017). EPHARM Share Company has implemented reverse logistics techniques, with reuse and disposal being the most common. However, we may still say that reverse logistics remains in its infancy (Rediet, 2016).

2.6.3. Challenges for Implementation of Reverse Logistics

The study found that, while Malaysian manufacturing enterprises have a strong feeling of social responsibility, they are motivated more by a desire to earn business benefits than by external constraints or a sense of social obligation. This indicates that organizations are influenced by short-term rather than long-term imperatives (Afdimah & Rosnah, 2011). Managers don't believe that the cost that will be incurred will bring impressive return for a longer period of time (Rediet, 2016). The survey shed light that recovering bottle through their functional reverse logistics systems is not a strategic focused area of senior's management. This in turn made the company with no resources and no internal policy (Sirak, 2016).

Several studies conducted in Ethiopia have identified a number of obstacles to the adoption and implementation of reverse logistics. According to Sirak (2016) top management is a chief barrier to the successful management of reverse logistics. In addition, lack of interdepartmental

communication and cooperation, and lack of awareness about economic benefits of reverse logistics are the main challenges. Rediet (2016) also indicted that low technology, lack of appropriate infrastructure as well lack of defined rules and regulations of handling returned products and most of all the fact that management considers reverse logistics as a costly procedure are the main challenges. In similar, Solomon (2018) mentioned that top management commitment and management style, poor communication and cooperation with supply chain partners such as local manufacturer and perception of product Problems with Quality respectively are the main challenges of the company to adopt reverse logistics. According to Tsega (2017) and Betelhem (2016), lack of integrated reverse logistics-related policy conceptual model in to the firm's operations, lack of technology solutions, lack of professional technical capability, miscalculation of the significance of reverse logistics, and its high beginning cost are some of the biggest challenges that adversely affect reverse logistics practice.

Different barriers are known to affect the reverse logistics of refillable glass bottles. The most influential factors that affect the reverse logistics of the company are location facilities (collection center), transportation, product acquisition, product recall and inaccurate forecasting. The issue of collecting and returning the empty bottles from the end users is not an easily activity in the reverse logistic process (Berhe, 2018). According to Amare (2018), Customer service components like product variety and return ability of MOHA products at retailers' stage affect negatively the effectiveness of the distribution channel of MOHA Company. Return ability of some defected product at agents/depots and wholesaler's stage is high but at retailers and outlets stage it is unthinkable (Amare, 2018). In addition, operational issues, like bottle washing machine is the main reason for the huge amount of repair and maintenance cost, high down time and frequent interruption of production (Aregawi, 2006).

2.7. Conceptual Framework

The conceptual framework of this study is based on the interaction of three different concepts and they are as follows:

1. The motives for adopting reverse logistics

As Akdogan and Coskun (2012) identified three main motives for adopting reverse logistics activities which are economics, legislation and corporate citizenship/ social responsibility. Other

researchers include Environmental factors as the main motives for adopting reverse logistics to one organization. Humans consume more natural resources each year than the planet can replace. As a result, deforestation, damaged soils, polluted air and water, and drastic losses in nonrenewable and non replaceable resources are rapidly depleted. Thus, Environmental problems are being considered as main motives for adopting reverse logistics in order to reduce energy consumption, gas emission and waste generation (Miedzinski et al., 2013).

2. Implementation of Reverse Logistics

The majority of modern manufacturing companies use reverse logistics tactics to some level. Studies shows that set up defined strategies of reverse logistics and proper use of it have a wide range of consequences on a company's financial, market, and overall performance. As a result, it is recommended that businesses use reverse logistics to improve their overall performance (Zhang et.al., 2018). The study aims to evaluate the extent of implementation of reverse logistics in the organizations based on a suggested formalization process from Genchev et.al, (2011), which indicates key factors for evaluate companies' RL process. These key factors are categorized in to five groups, which are initiating the return, determining the routing for returned products, receiving returns at the firm's facility, selecting the recovery option, and analyzing and measuring RL program performance.

3. Challenges for implementation of Reverse Logistics

Different studies have identified a number of barriers to reverse logistics acceptance and implementation. The most acknowledged barriers are lack of knowledge of the technique, corporate policy, information systems and technology, financial limits, top management commitment, and strategic planning (Younas & Ahmed, 2020, Muhammad et.al., 2018 and Kaviani et al., 2020). This study aims to investigate how much these acknowledged barriers are affecting the implementation of reverse logistic activities and to prioritize to find out which one affects more than other factors.

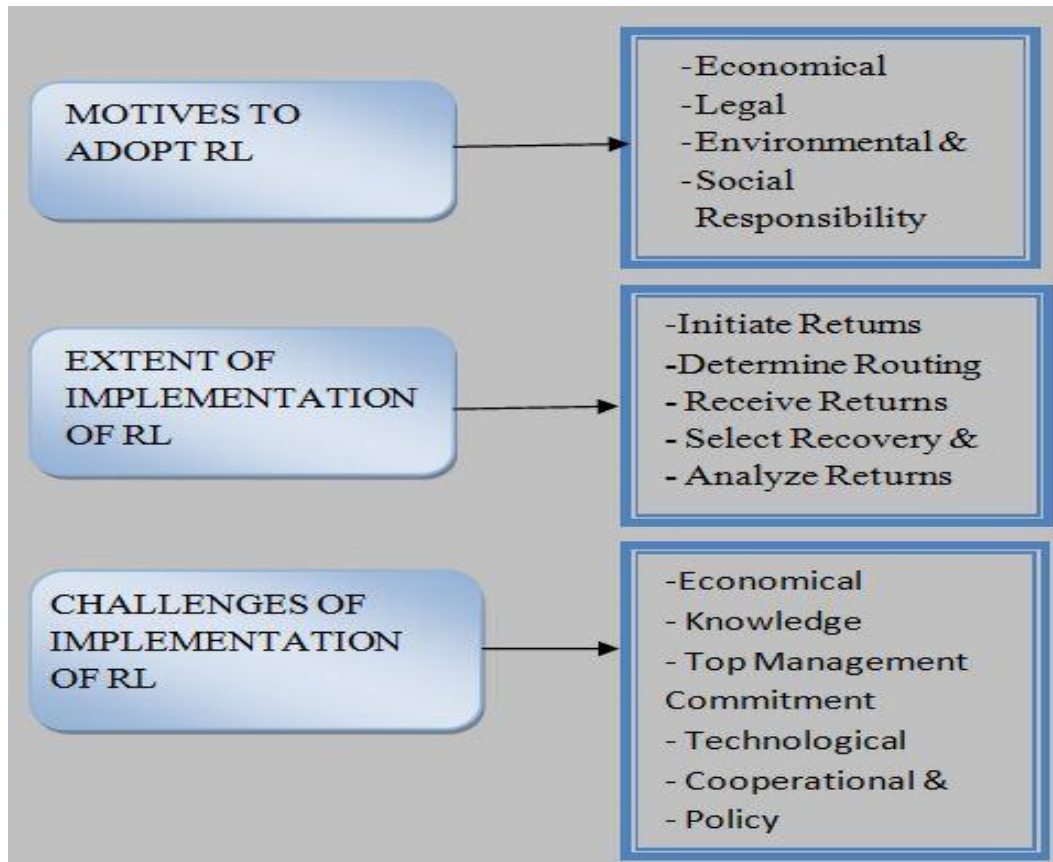


Figure 2. 1Conceptual Frame Work of the Study

Source: Akdogan and Coskun, 2012, Genchev et.al, 2011, Ravi & Shankar, 2005, De Brito, 2008 and Kaviani et al., 2020).

CHAPTER THREE

3. RESERCH DESIGN AND METHODOLOGY

In this part, the research methodology which was employed in the study is briefly discussed. Besides, it describes the study area, the research design, research approaches, study population, data collection and analysis strategies which was employed.

3.1. Description of the Study Organizations

MOHA Soft Drinks Industry S.C was formed on the 15th of May 1996. The company was formed after acquisition of four Pepsi Cola Plants located at Addis Ababa (Nifas silk plant and Teklehaimanot plant,), Gondar and Dessie which were purchased by Sheik Mohammed H. Al-Amoudi in the 18th of January 1996. Currently, with new factory In Mekele, Bure and Hawassa (Hawassa Millenniums Plant) and MOHA is engaged in the production of Pepsi Cola, 7up, Mirinda orange, Mirinda apple, Mirinda pineapple, Mirinda tonic and cool carbonated water. The products are available in 300ml returnable bottle and 1.5litter, 1litter, 500ml PET plastic bottles.

Coca-Cola was first bottled in Ethiopia's capital, Addis Ababa, in 1959 by the Ethiopian Bottling Share Company, which later opened a second branch in Dire Dawa in 1965. The two plants were nationalized in 1975 and ran as public companies until 1996 when they were bought by Ethiopian entrepreneurs through privatization. Just prior to this, in 1995, Coca-Cola Sabco bought shares in the business and, in 1999, signed joint venture agreement with Ethiopian owners. East Africa Bottling Share Company as a Coca-Cola Franchise Bottler in Ethiopia under Coca-Cola Beverages Africa (CCBA) has Four production plants in Addis Ababa, Dire Dawa, Bahir Dar, and Sebeta with an aggressive expansion plan throughout the country, hence bringing the total number of employees to more than 2,200. The company is engaged in the production of coca cola, sprite, Fanta orange, Fanta Pineapple, Fanta Apple, Dansa water and Schweppes tonic in RGB and PET plastic bottles.

3.2 Research Design

A descriptive survey design is employed in this study. Descriptive research is collecting data that describes occurrences, then organizing, tabulating, depicting, and describing the information gathered (Glass & Hopkins, 1984). It frequently employs visual aids like graphs and charts to help the reader comprehend the data distribution. Also because human mind is incapable of extracting the full value of a large amount of raw data, descriptive statistics are essential to minimize the data to a manageable form (Pandey & Pandey, 2015).

This study investigated the practice of reverse logistics of soft drink manufacturing companies in Ethiopia regarding refillable glass bottles , based on fundamental theories, principles and management philosophies that are supposed to be effective parameters just to evaluate the actual implementation of the case company's. The methodology which is carried out in this research is based on the objectives of the paper and the availability of relevant information. To comply with the objective of this research, the study applied Quantitative methods by using questionnaires.

3.3 Source of Data

The data was collected from employees of the company by using questionnaire that consist of closed ended questions which is designed to collect data. The questionnaires used five point likert scales for measuring extent of RL implementation in the companies, the reason to adopt and challenges during the implementation. It is an ideal measurement approach since it helps to ask respondents to rate their opinion for the items of various dimensions.

3.4 Data Gathering Tools

For the data collection purposes, two basic instruments namely, questionnaire and document analysis was used.

Questionnaire: The data was collected by using a questionnaire. It is based on a survey of the existing literatures. The questionnaire was followed from Genchev et.al, (2011) “Evaluating reverse logistics programs: A suggested process formalization” with some adjustments to fit for the study. The research indicates key factors which are important to evaluate companies' RL process. It is undertaken in order to provide a practical and analytical tool for developing a

framework that aid in determining the level of RL process formalization that has been achieved. As a result, it shows how much control a company has over its RL activities. The formal formulation and implementation of an RL program are linked to the question of control. According to the study, the following five processes are critical to the evaluation of RL: initiating the return, determining the routing for returned products, receiving returns at the firm's facility, selecting the recovery option, and analyzing and measuring RL program performance. These processes are made up of multiple related activities. A questionnaire was created to see how well these selected soft drink firms implement these critical activities in their RL operation. Additional questionnaires also made based on literatures. The questionnaire is close ended, such that the respondents required lesser time and efforts in filling it up. The questionnaire is designed on a five-factor Likert scale. Individual responses were coded 1 thru 5 for statistical evaluation purposes. To make questionnaire understandable for the employees, the questionnaire was offered in English and Amharic language. The type of questions, form, wording and sequences will be taken into consideration cautiously at the same time as translating it in to Amharic.

Document Analysis: With this data gathering tools, reports, journals and relevant document were reviewed and gathered from Supply Chain, Human Resource and other departments. This data gathering tool was helpful to enrich the data which is obtained through questionnaire method.

3.5 Sampling Design

3.5.1 Population

Ethiopia has two significant soft drink manufacturing companies. Employees of these two soft drink production firms, MOHA Soft Drinks Industry Share Company and East Africa Bottling Share Company, make up the study's population. Even though studying the practice of RL involves the whole companies' plants, the research will focus on plants which are reside in Addis Ababa. The reasons behind is there is a great geographical distribution among the plants makes it difficult for data gathering regarding the time and financial constraints the research have. Thus, the target populations are permanent employees of both organizations area plants and the head office in Addis Ababa.

Table 3. 1 *Number of Employees at EABSC*

| Departments | EABSC |
|---------------------------------|--------------|
| Administration | 58 |
| Manufacturing | 517 |
| Logistics | 520 |
| Finance | 47 |
| Marketing and sales | 315 |
| Human Resource | 19 |
| Legal Affairs and communication | 6 |
| Total | 1,482 |

Source: EABSC HR report, 2022

Table 3. 2 Number of Employees at MOHA SC

| Departments | Head Office | Teklehaymanot Plant | Nefas Silk Plant | Summit Plant | |
|--------------------------------------|--------------------|--------------------------------|-----------------------------|-------------------------|--------------|
| Administration | 21 | 82 | 112 | 80 | |
| Manufacturing | - | 133 | 254 | 162 | |
| Technique | 8 | 69 | 182 | 107 | |
| Marketing & sales | 9 | 213 | 234 | 140 | |
| Finance & Procurement | 15 | 43 | 39 | 34 | |
| Human Resource | 3 | 9 | 12 | 7 | |
| Legal Affairs | 9 | - | - | - | |
| Total | 65 | 549 | 833 | 530 | 1,977 |

Source: MOHA SC Human Resource Report, 2022

3.5.2 Sampling Technique

The research used non probability sampling, particularly purposive sampling technique. Purposive sampling is a technique in which specific situations, people, or events are purposely chosen in order to offer essential information which cannot be gathered through other means. (Maxwell, 1996). It is chosen for this study since the research requires individuals who are better knowledgeable about the issue. Therefore, employees who works in relation to RL of the organizations were included, which are high level managers, branch managers, supply chain managers, operation managers, distribution and logistics managers and officers.

3.5.3 Sample Size

The population for the study were employees of MOHA Soft Drinks Industry S.C. and East African Bottling S.C. who works in relation to reverse logistics practices. The target respondents were team leaders/officers and managers of marketing, finance, sales, production/ technical departments in the company. The questionnaires were directed to the managers or higher and medium level officers of the company rather than lower level employee; because it was believed that the higher officers specifically in this departments have an aggregated thought of reverse logistics practice, the challenges faced with in the company that may enrich the response to the questionnaire relative to an lower level employee in the company. The departments contain 293 staff members in which it makes the population manageable so there was no sampling needed.

Table 3. 3 Total Sample size of the study

| Departments | EABSC | MOHA | | | | Total |
|-----------------------|-------|-------------|------------------|-----------------|--------------|------------|
| | | Head office | T/haimanot Plant | NefasSilk Plant | Summit Plant | |
| Administration | 4 | 3 | 12 | 10 | 13 | 42 |
| Manufacturing | 37 | | 13 | 16 | 11 | 77 |
| Technique & Logistics | 59 | | 16 | 17 | 12 | 104 |
| Marketing & sales | 36 | 3 | 12 | 11 | 8 | 70 |
| Grand Total | 136 | 6 | 53 | 54 | 44 | 293 |

Source: Survey, 2022

3.5.4 Data Analysis

Data collected through questionnaire were presented in table form and descriptive statistics was employed. After making the necessary coding, to analyze the usable data collected from respondent were analyzed by using Statistics Package for Social Science (SPSS, version 20.0), particularly descriptive statistics like frequency, percentage, mean and standard deviation was used.

3.6 Validity and Reliability

The degree to which a particular process for changing a concept into a variable properly operationalizes the concept that it is intended to operationalize is referred to as validity (Junyong, 2017). To put it another way, validity refers to how well an instrument measures what it is supposed to measure. The validity of the research has been conducted by a wide review of the literature and the input of industry professionals in sales, logistics, and supply chain management.

The researcher went to great lengths to avoid being biased. Several efforts were taken to assure the study's validity: The information was gathered from credible sources; respondents answered the questions clearly by developing clear instructions; and the survey questions were standardized and used by prior researchers. In addition pilot test was conducted to detect possible flaws in measurement procedures including instructions, time limits, etcetera) and in the operationalization of independent variables and to identify unclear or ambiguous items in a questionnaire. Studies say that a pretest sample of between 1% and 10 % is good depending on the sample size. In this study, a total of 10 questionnaires were distributed using systematic random sampling and collected afterwards for analysis. Based on the results of the pilot test, some changes have been made to the questionnaire to improve clarity and response rate (Junyong, 2017).

Reliability refers to the degree to which a measurement of a phenomenon provides stable and consistent results. Reliability testing is very important because it concerns the consistency of the used instruments. Items on the scale are related and are considered to have consistent internal reliability if they are measuring the same configuration. Cronbach's alpha factor is the most widely used internal consistency metric. When using the Likert scale, it is considered the most

acceptable measure of reliability. There is no absolute standard for internal consistency, but most experts agree with a minimum internal consistency factor of 0.70 (Taherdoost, 2016).

Table 3.4 Reliability analysis for the survey questionnaires

| Type Of Questions | | Cronbach's Alpha | No. of Items |
|---------------------------------|---------------------------------------|------------------|--------------|
| Motives | Economical | .705 | 5 |
| | Legal | .774 | 3 |
| | Environmental | .739 | 4 |
| | Social Responsibility | .791 | 4 |
| Extent of Implementation | Initiate Returns | .848 | 4 |
| | Determine Routing | .787 | 4 |
| | Receive Returns | .835 | 4 |
| | Select Recovery | .702 | 4 |
| | Analyze Returns & Measure Performance | .792 | 4 |
| Challenges | Economic | .939 | 4 |
| | Knowledge/Information | .790 | 4 |
| | Top Management Commitment | .823 | 4 |
| | Technological | .880 | 4 |
| | Cooperation | .735 | 4 |
| | Policy | .936 | 3 |

Source: Survey Result, 2022

3.7 Ethical Consideration

The researcher first present a written informed consent form describing the nature of the research project and the purpose of one's participation in it. Further, respondents will be informed that, they had the right to withdraw from the study at any time. Only those who are voluntary to participate in the research were approached and assured their confidentiality. The researcher was committed to report the research findings in a complete and honest fashion, without misleading others about the nature of the findings. Under no circumstance, the researcher fabricated data to support a particular conclusion.

CHAPTER FOUR

4. RESULTS, DATA ANALYSIS AND DISCUSSION

4.1. Introduction

As discussed in previous chapter, this study attempted to examine the motives for the adoption of RL, extent of implementation of RL and challenges to the implementation of RL in the two major soft drink manufacturing companies, which are MOHA Soft Drinks Industry S.C. and East African Bottling S.C. Therefore, the findings of the study is presented and discussed in this chapter. In order to assess the objective of the study a total of 293 questionnaires were distributed to employees and 271 (92.5%) was returned. Off 271 questionnaires 257 (87.71%) were obtained valid and used for analysis. The collected data were presented and analyzed using SPSS (version 20.0) statistical software. In this chapter, general profile of respondent, analysis on the reasons for adopting RL, the extent of implementation of RL and challenges of RL are discussed.

For the sake of interpreting the results of the study, the research adopted the interpretation scores form Bahri et al. (2012) as Scores 1.00-1.80= worst, 1.81-2.60= low, 2.61-3.40= moderate, 3.41-4.20= high and 4.21-5.00= very high.

4.2. General Information of Respondents

Table 4. 1 Demographic Distribution of Respondents

| Demographic Information | Frequency | Percentage |
|--------------------------------|------------------|-------------------|
| Gender | | |
| Male | 188 | 73.2 |
| Female | 69 | 26.8 |
| Total | 257 | 100 |
| Age | | |
| 18-25 | 4 | 1.6 |
| 26-35 | 103 | 40.1 |
| 36-45 | 101 | 39.3 |

| | | |
|-------------------------------|------------|------------|
| 46-55 | 49 | 19.1 |
| Total | 257 | 100 |
| Level of Education | | |
| Certificate | 0 | - |
| Diploma | 40 | 15.6 |
| Degree | 139 | 54.1 |
| Post Graduate | 78 | 30.4 |
| Total | 257 | 100 |
| Duration of Employment | | |
| >2 Years | 0 | - |
| 3-5 Years | 8 | 15.1 |
| 6-10 Years | 122 | 47.5 |
| < 10 Years | 127 | 37.4 |
| Total | 257 | 100 |

Source: Survey Result, 2022

As Table 4.1 shows from the total population 188 (73.2%) are male and the remaining 69 (26.8%) are female. Based on their age most of the employees are found between 26-35 and 36-45 which comprises 40.1% and 39.3%, respectively, of the total population. The remaining employees are between 46-55 which covers 19.1% and employees who found to be between 18-25 covers only 1.6% of the total population.

Based their education level 54.1% of them are degree holders and 30.4% are post graduates. The remaining 15.6% hold diploma. This can indicate that most of the survey is filled by employees who are able to understand the notion of every questions and the study as a whole. In addition, the level of the length of their employment 47.5% of them works between six and ten years, 37.4% works in those companies more than 10 years and 15.1% works between three up to five years. This signify that majority of the respondents have deep knowledge about the company and the processes.

4.3. Motives for Adopting Reverse Logistics

Motives for adopting reverse logistics have been categorized into four groups (economical, legal, environmental and social responsibility). The mean of these groups has been calculated in order to analyze the data which were collected from the respondents.

4.3.1. Economical motives for adopting reverse logistics

Economical motive is one of the motive which the research used to examine the motive of refillable glass bottle companies adopt reverse logistics. Table 4.2 show the mean and standard deviation of the response.

Table 4. 2 Mean and standard deviation of Economical motives

| | Economical | Mean | SD | Description |
|---|--|-------------|-----------|--------------------|
| 1 | To minimizes the cost of raw material purchasing | 4.50 | .510 | Very high |
| 2 | To recapture value of returned product | 4.13 | .801 | High |
| 3 | To increases company's net profit | 4.31 | .788 | Very high |
| 4 | To improve customer satisfaction | 3.85 | .967 | High |
| 5 | to minimize stock outs | 4.16 | .694 | High |

Source: Survey Result, 2022

The data result in Table 4.2 above illustrates majority of the respondents have expressed their agreement that the companies adopt reverse logistics in order to minimizes the cost of raw material purchasing (M=4.50) and increases company's net profit (M=4.31). Similarly, recapture value of returned product (M=4.13) and minimize stock outs (M=4.16) also have high mean. Relatively, improve customer satisfaction (M=3.85) have lower mean comparing to the others however it also fail under high mean value.

4.3.2. Legal Motives for adopting Reverse Logistics

Table 4. 3 Mean and standard deviation of Legal motives

| | Legal | Mean | SD | Description |
|---|--|-------------|-----------|--------------------|
| 1 | Regulatory pressure from legislative bodies to minimize resource wastage | 3.15 | .698 | Moderate |
| 2 | Pressure from environmental law | 2.42 | .209 | Low |
| 3 | Government incentives regarding Reverse Logistics | 1.21 | .167 | Worst |

Source: Survey Result, 2022

According to Table 4.3, the average mean and standard deviation of the respondent on pressure from environmental law is low with the mean of 2.42 and Government incentives regarding Reverse Logistics is worst with the mean of 1.21. In addition the standard deviation is .209 and .167 respectively which indicates that respondents were agreeing to the same idea. This show there is low government intervention regarding environmental policies and laws. However, there is a moderate Regulatory pressure from legislative bodies to minimize resource wastage with the mean of 3.15.

4.3.3. Environmental Motives for adopting Reverse Logistics

Table 4. 4Mean and standard deviation of Environmental motives

| | Environmental | Mean | SD | Description |
|---|---|-------------|-----------|--------------------|
| 1 | to protect the environment from pollution | 4.08 | .744 | High |
| 2 | to reduce the raw material used to produce new bottles | 4.23 | .765 | Very high |
| 3 | Company environmental strategies & objectives are included in its business plan | 3.23 | .925 | Moderate |
| 4 | Company continuously review its environmental performance | 2.52 | .617 | Low |

Source: Survey Result, 2022

The data result in Table 4.4 above illustrates majority of the respondents have expressed their agreement that the companies adopt reverse logistics in order to reduce the raw material used to produce new bottles (M=4.23) and to protect the environment from pollution (M=4.08). However, for the question, company environmental strategies & objectives are included in its business plan mean is moderate (M=3.23) and respondents answer shows company continuously review its environmental performance is low (M=2.52).

4.3.4. Social Responsibility Motives for adopting Reverse Logistics

Table 4. 5 Mean and standard deviation of Social responsibility motives

| | Social responsibility | Mean | SD | Description |
|---|--|-------------|-----------|--------------------|
| 1 | The company is responsible for its products during their life cycle | 4.19 | .895 | High |
| 2 | to create an image that it's environmentally responsible organization | 4.02 | .800 | High |
| 3 | The company chooses to purchase sustainable raw materials | 4.07 | .748 | High |
| 4 | The company strives to create public awareness about environmental protection. | 2.42 | .435 | Low |

Source: Survey Result, 2022

The data result in Table 4.5 above illustrates majority of the respondents have expressed their agreement that there is a high mean for the company is responsible for its products during their life cycle (M=4.19), company create an image that it's environmentally responsible organization (M=4.02), and the company chooses to purchase sustainable raw materials (M=4.07). In the contraire, respondent response show low mean for the company strives to create public awareness about environmental protection (M=2.42).

Table 4. 6 Mean and standard deviation of Motives for adopting reverse logistics

| | Variables (Motives for adopting reverse logistics) | Mean | SD | Description |
|---|---|-------------|-----------|--------------------|
| 1 | Economical | 4.21 | .237 | Very high |
| 2 | Legal | 2.26 | .526 | Low |
| 3 | Environmental | 3.52 | .796 | High |
| 4 | Social responsibility | 3.67 | .839 | High |

Survey Result, 2022

From Table 4.6, the range of the mean value 4.21 indicated that a very high economical motives to adopt reverse logistics. Environmental and social responsibilities are high with 3.52 and 3.67 respectively. On the other hand, the legal motive is low with 2.26. As can be seen, the companies are mostly using reverse logistics for economic reasons. Environmental aspects and social responsibilities duties are also important to the companies. However, government and legal action in reverse logistics is limited.

4.4. Extent of Reverse Logistics Implementation

Initiate returns

Table 4. 7 Mean and standard deviation of Initiate return

| | Initiate returns | Mean | SD | Description |
|---|---|-------------|-----------|--------------------|
| 1 | Create a formal return policy | 3.89 | .954 | High |
| 2 | Communicate the return rules to customers | 3.26 | 1.127 | Moderate |
| 3 | Have pre return requirements | 4.04 | .983 | High |
| 4 | Create customer return related profile | 3.24 | .989 | Moderate |
| | Total Mean | 3.60 | 1.014 | High |

Source: Survey Result, 2022

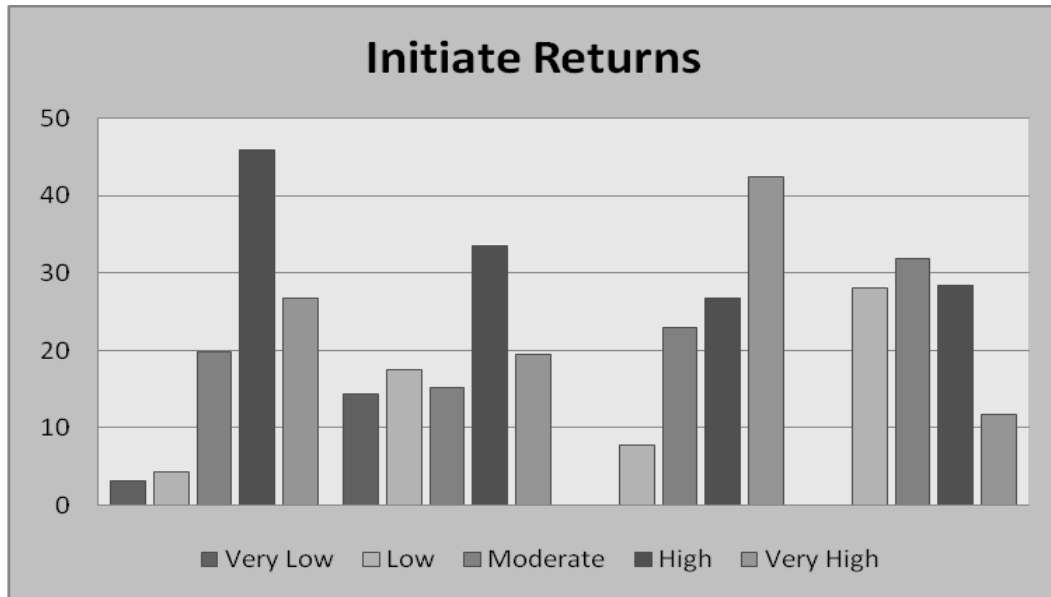


Figure 4- 1: Respondents' response percentage of Initiate returns

Initiate returns1:- create a formal return policy

The findings from the respondents were 3.1% very low, 4.3% low, 19.8% medium, 45.9% high and 26.8% very high. With the mean value of 3.89 it is labeled as high. This shows that soft drink companies give high emphasis for creating a formal return policy for RGB.

Initiate returns2:- Communicate the return rules to customers

The findings from the respondents' response were 7.4% very low, 4.7% low, 18.7% medium, 41.6% high and 27.6% very high with the mean score of 3.77 and standard deviation of 1.127. This indicates that the companies are giving high attention for communicating their return policy of RGB for their customers, retailers and distributors.

Initiate returns3:- Have pre return requirements

From the survey, respondents answer were 7.8% low, 23.0% medium, 26.8% high and 42.4% very high. The mean score is 4.04 and Standard Deviation of 0.983, which shows that companies are concerned on pre return requirements of RGB.

Initiate returns4:- Create customer return related profile

The response from the respondents was 28% Low, 31.9% medium, 28.4% high and 11.7% very high. The mean score is 3.24 and standard deviation of 0.989, which shows that companies are not fully engaged on creating return related profile. The technique of creating customer profiles based on which products are returned from the market enables for faster returns processing.

Determine Routing

Table 4. 8 Mean and standard deviation of Determine Routing

| | Determine Routing | Mean | SD | Description |
|---|--|-------------|-----------|--------------------|
| 1 | Specify routing procedures | 3.81 | .882 | High |
| 2 | Specify the rules for transportation providers | 3.72 | .915 | High |
| 3 | Specify the routing to carriers | 3.93 | .731 | High |
| 4 | Monitor and control volume of returns in warehouse | 4.21 | .995 | Very High |
| | Total Mean | 3.92 | 0.881 | High |

Source: Survey Result, 2022

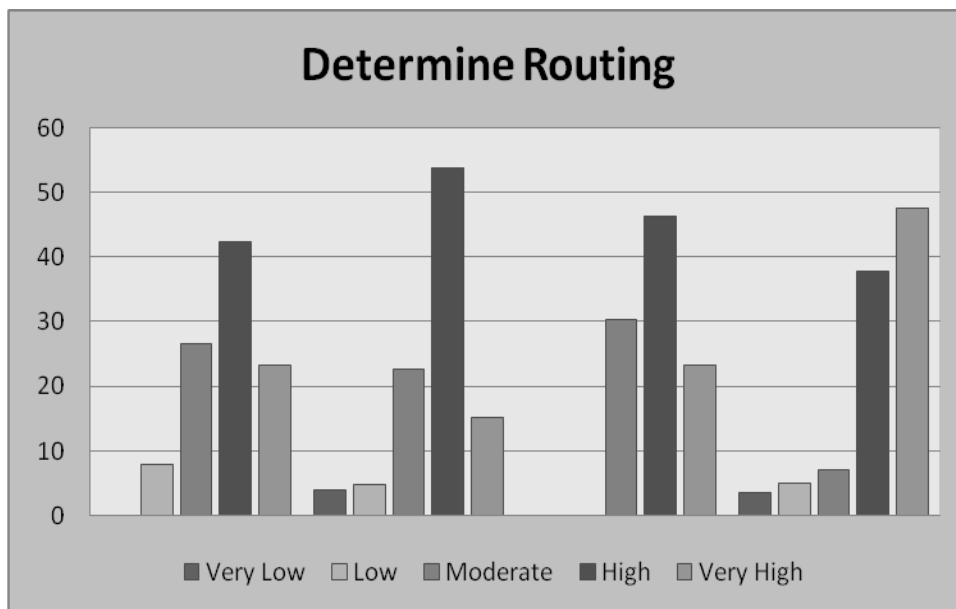


Figure 4- 2: Respondents' response percentage of Determine Routing

Determine Routing1:- Specify routing procedures

The survey on specifying routine procedures for customers shows that 7.8% low, 26.5% medium, 42.4% high and 23.3% very high, with the mean score of 3.81. This indicates that the firms involved in providing clear instructions on determining the mode of transportation and destination of the returned bottles.

Determine Routing2:- Specify the rules for transportation providers

The response from the survey was 3.9% very low, 4.7% low, 22.6% medium, 53.7% high and 15.2% very high. The mean is 3.72 which indicate that firms give clear instructions for transport providers about the rules and procedures on how to return the bottles.

Determine Routing3:- Specify the routing to carriers

The respondents' response was 30.4% medium, 46.3% high and 23.3% very high, with the mean score of 3.93 and standard deviation of 0.731. This can be labeled as high which means firms make proper communication with carriers, drivers and their assistant on distribution schedules and exact receiving locations.

Determine Routing4:- Monitor and control volume of returns in warehouse

The responses of the respondents' were 3.5% very low. 4.9% low, 7% medium, 37.7% high and 47.5% very high, with mean value of 4.21. This can be labeled as very high, which means the companies have enough information about the amount of bottles found in their warehouses. This could help them to determine the highest amount the warehouse can store and also to facilitate the production process.

Receive Returns

Table 4. 9 Mean and standard deviation of Receive Returns

| | Receive Returns | Mean | SD | Description |
|---|--|-------------|-----------|--------------------|
| 1 | Verify the return | 4.30 | .796 | Very High |
| 2 | Inspect returns through manual examination | 4.21 | .827 | Very High |
| 3 | Inspect returns through automated testing | 3.81 | 1.065 | High |
| 4 | Input returning data on electronic files | 2.56 | 1.011 | Low |
| | Total Mean | 3.72 | .924 | High |

Source: Survey Result, 2022

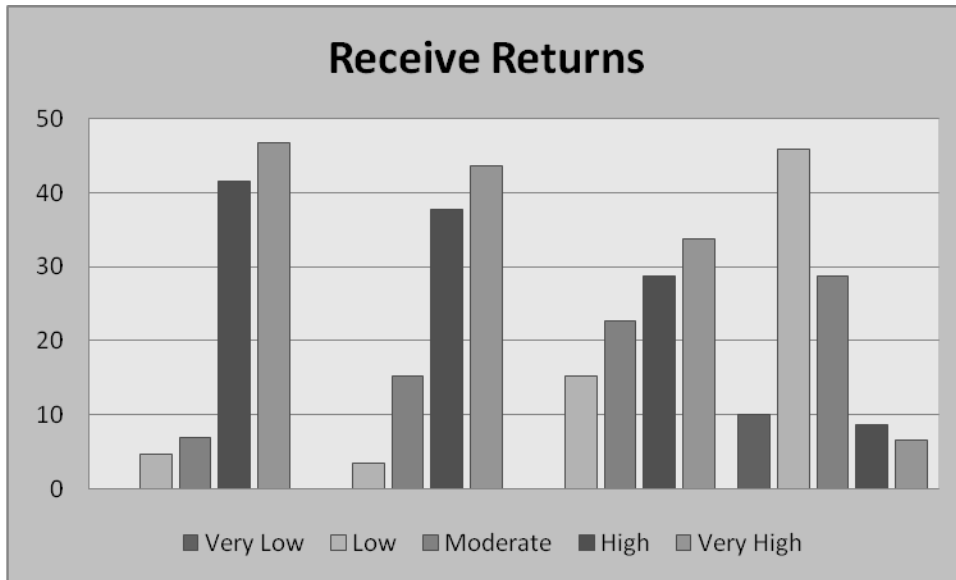


Figure 4- 3: Respondents' response percentage of Receive Returns

Receive Returns1:- Verify the return

The response on to what extent the firms verify the returns were 4.7% low, 7% medium, 41.6% high and 46.7% very high. The mean value is 4.3 which can be labeled as very high, this indicates that confirm the condition and quality of the returned bottles before accepting it. This helps the company to check that if the customer brings bottles according to the specified requirements.

Receive Returns2:- Inspect returns through manual examination

The survey shows that 3.5% low, 15.2% medium, 37.7% high and 43.6% very high with mean value of 4.21 which is very high. This indicates that the bottles are checked through manual examination before proceed in to manufacturing process.

Receive Returns3:- Inspect returns through automated testing

The responses from the respondents' were 15.2% low, 22.6 medium, 28.8% high and 33.5% very high. The mean value is 3.81 which is labeled as high, this shows that the company uses machineries in order to check the condition of the bottles if there is any undetected problems with them in the manual checking process. This helps the return inspectors to assess the returned bottles according to the firms' manuals.

Receive Returns4:- Input returning data on electronic files

The response from the survey was 10.1% very low, 45.9% low, 28.8% medium, 8.6% high and 6.6% very high. The mean value is 2.56 which is labeled as low, which indicates companies practice of registering returning data to electronic file is very low.

Select Recovery

Table 4. 10 Mean and standard deviation of Select Recovery

| | Select Recovery | Mean | SD | Description |
|---|---|------|-------|-------------|
| 1 | Establish formal recovery options | 4.00 | 1.000 | High |
| 2 | Make assessment on impact of different recovery options | 2.72 | 1.223 | Moderate |
| 3 | Assign responsibility for recovery option | 3.92 | .880 | High |
| 4 | Prepare report on used recovery methods | 3.26 | 1.195 | Moderate |
| | Total Mean | 3.47 | 1.074 | High |

Source: Survey Result, 2022

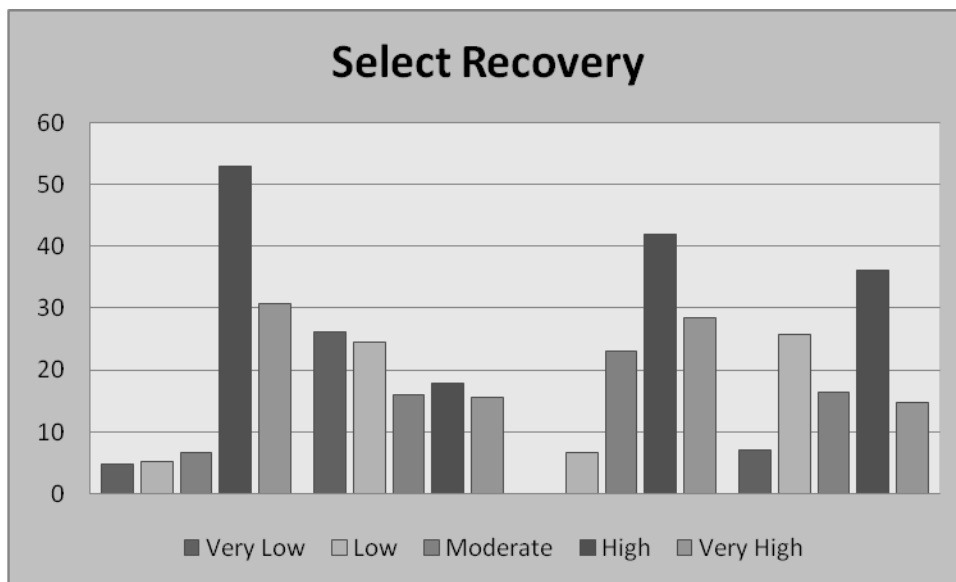


Figure 4- 4: Respondents' response percentage of Select Recovery

Select Recovery1:- Establish formal recovery options

The response from the survey was 4.7% very low, 5.1% low, 6.6% medium, 52.9 high and 30.7% very high. The mean value is 4, which is high. This shows that firms establish a formal recovery option on how to reuse RGB after collecting from customers.

Select Recovery2:- Make assessment on impact of different recovery options

The response on making assessment on impact of different recovery options is 26.1% very low, 24.5% low, 16% medium, 17.9% high and 15.6% very high with the mean of 2.72. This indicates that the companies do not make optional recovery assessments rather than former established recovery option.

Select Recovery3:- Assign responsibility for recovery option

The respondents' responses were 6.6% low, 23% medium, 42% high and 28.4% very high. The mean value is 3.92 which is labeled as high, which specify that firms believed that assigning roles for every recovery process is important.

Select Recovery4:- Prepare report on used recovery methods

The response from the respondents were 7% very low, 25.7% low, 16.3% medium, 36.2% high and 14.8% very high with the mean value of 3.26 which can be labeled as medium. This can be illustrated as preparing full report on used recovery method is at medium stage.

Analyze returns

Table 4. 11 Mean and standard deviation of Analyze Return

| | Analyze Return | Mean | SD | Description |
|---|-------------------------------------|-------------|-----------|--------------------|
| 1 | Report on volume of returns | 3.74 | 1.151 | High |
| 2 | Analysis on sales and return volume | 3.59 | 1.097 | High |
| 3 | Execute cost benefit analysis | 3.33 | 1.033 | Moderate |
| 4 | Find out the cycle time | 3.38 | .993 | Moderate |
| | Total Mean | 3.51 | 1.068 | High |

Source: Survey Result, 2022

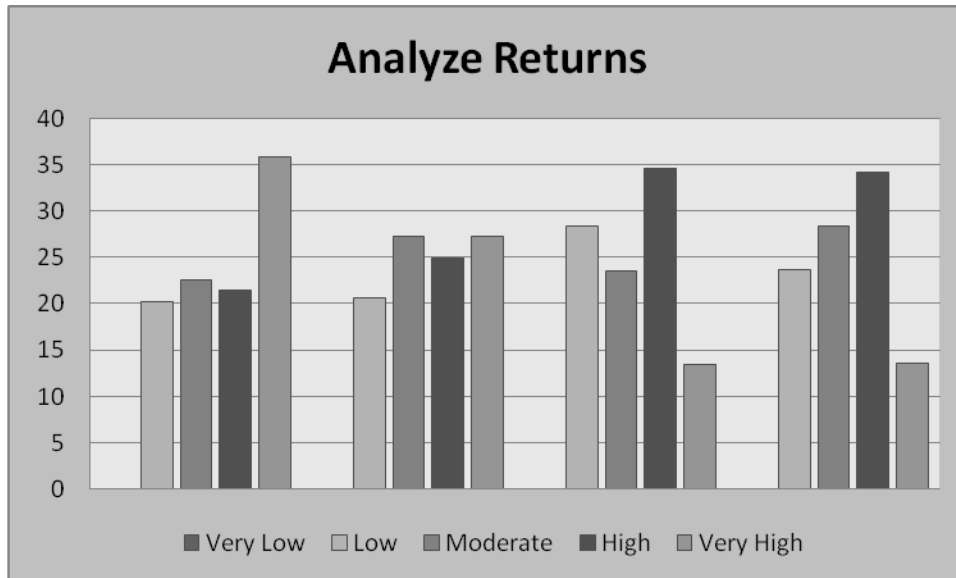


Figure 4- 5: Respondents' response percentage of Analyze Returns

Analyze returns1: Report on volume of returns

The response on prepare report on volume of returned RGB were 20.2% low, 22.6% medium, 21.4% high and 35.8% very high. The mean value is 3.7 which can be labeled as high. This indicates that firms are familiar with the culture of reporting how much RGB are returned over specific period of time.

Analyze returns2:- Analysis on sales and return volume

The responses from the respondents were 20.6% low, 27.2% medium, 24.9% high and 27.2% very high. The mean value is 3.59 which can be labeled as high, which indicates that, the companies actively participate in preparing analysis RGB returns based on their sales volume.

Analyze returns3:- Execute cost benefit analysis

The survey on executing cost benefit analysis of RGB is 28.4% low, 23.5% medium, 34.6% high and 13.4% very high. The mean value is 3.33, which is medium, shows that executing analysis of the cost of returning and producing new RGB is at medium level.

Analyze returns4:- Find out the cycle time

The respondents' response on find out the cycle time is 23.7% low, 28.4% medium, 34.2% high and 13.6% very high, with the mean value of 3.38. This indicates that tracking down the cycle time of RGB is at medium stage.

4.5. Challenges of Implementation of Refillable Glass Bottles Reverse Logistics

Reverse logistics is a relatively new idea; many businesses and organizations may overlook it or handle it as if it were the forward channel, which is ineffective. This section will investigate the main challenges in performing Reverse Logistics of refillable glass bottles.

4.5.1. Economical Challenges

Table 4. 12 Mean and standard deviation of Economical Challenges

| Statement | Mean | SD | Description |
|---|------|-------|-------------|
| Lack of investment to improve organization infrastructure | 3.25 | 1.227 | Moderate |
| Lack of investment to train employees | 3.15 | 1.413 | Moderate |
| Low budget allocation for RL activities | 3.23 | 1.431 | Moderate |
| Financial incapability to improve RL | 2.89 | 1.404 | Moderate |
| Total Mean | 3.13 | 1.368 | Moderate |

Source: Survey Result, 2022

Results in Table 4.12 shows that economic barriers on RL are moderate by its weighted mean of 3.13. The firms are fairly investing on reverse logistics of RGB to improve their performance. The respondents' responses show that lack of investment to improve organizations infrastructure is moderate barrier on their RL process with the mean value of 3.25. Similarly, lack of investment to train employees is moderate barrier on the practice of RL with mean value of 3.15. They also indicate that low budget allocation for RL activities and financial incapability of the companies to improve RL is medium barrier with the mean value of 3.23 and 2.89 respectively.

4.5.2. Knowledge/Information Challenges

Table 4. 13 Mean and standard deviation of Knowledge/Information Challenges

| Statement | Mean | SD | Description |
|--|-------------|-----------|--------------------|
| Lack of awareness about RL significance by employees | 2.80 | 1.208 | Moderate |
| Customers' low understand on product handling | 3.76 | 1.136 | High |
| Customers delayance to return bottles | 3.84 | 1.007 | High |
| Uncertainties on the amount of returned bottles | 3.71 | 1.137 | High |
| Total Mean | 3.52 | 1.122 | High |

Source: Survey Result, 2022

Results in Table 4.13 illustrates that lack of knowledge or not having appropriate information is relatively higher barrier with the mean value of 3.52. The respondents agreed that lack of customer understanding on handling bottles properly and the need to return bottles is higher problem with the mean value of 3.76 and 3.84 respectively. Uncertainty on the amount of returned bottles is another high barrier with the mean value of 3.71. Unlike this lack of employees understanding about the significance of RL is low barrier.

4.5.3. Top Management Commitment Challenges

Table 4. 14 Mean and standard deviation of Top management Commitment Challenges

| Statement | Mean | SD | Description |
|--|-------------|-----------|--------------------|
| Reluctance for decision making | 2.81 | 1.081 | Moderate |
| Resistance to change and adopt innovation | 3.14 | 1.184 | Moderate |
| Unwillingness to support subordinates | 2.50 | 1.125 | Low |
| Not including RL plans in company's long term plan | 2.85 | 1.206 | Moderate |
| Total Mean | 2.82 | 1.149 | Moderate |

Source: Survey Result, 2022

Results in Table 4.14 shows that the respondents agreed that top management commitment is moderate barrier in the practice of RL of RGB given the mean value of 2.82. The companies' managers show moderately reluctance on decision making as the mean value is 2.81. There is also relatively a higher moderate barrier on by resisting change and adopting innovations with the mean value of 3.14. The companies' managers unwillingness to support their subordinates seems low barrier with the mean value of 2.50 and not including reverse logistics plans in company's long term plan is moderate barrier for implementation process of RL by giving the value of 2.85.

4.5.4. Technological Challenges

Table 4. 15 Mean and standard deviation of Top management Commitment Challenges

| Statement | Mean | SD | Description |
|--|-------------|-----------|--------------------|
| Lack of Information system to collect data | 2.99 | 1.245 | Moderate |
| Lack of automated material handling equipment | 3.54 | 1.205 | High |
| Lack of computerized return tracking | 4.56 | 0.779 | Very High |
| Lack of technical know-how to use new technologies | 3.41 | 1.219 | High |
| Total Mean | 3.63 | 1.112 | High |

Source: Survey Result, 2022

Results in Table 4.15 shows that the average mean of challenges in relation with technology is high with 3.63. Lack of automated material handling equipment and lack of technical know-how to use new technologies is high with 3.54 and 3.41 respectively. Lack of computerized return tracking has a very high mean with 4.56. on the other hand, Lack of Information system to collect data has moderate mean with 2.99.

4.5.5. Co operational Challenges

Table 4. 16 Mean and standard deviation of Co operational Challenges

| Statement | Mean | SD | Description |
|--|------|-------|-------------|
| Lack of cooperation within departments | 2.65 | 1.112 | Moderate |
| Lack of cooperation from dealers, distributors and retailers | 3.23 | 1.224 | Moderate |
| Lack of government support | 3.82 | 1.213 | High |
| Unwillingness of customer to cooperate | 3.82 | 1.121 | High |
| Total Mean | 3.38 | 1.167 | Moderate |

Source: Survey Result, 2022

The respondents agreed that cooperation is moderate barrier in the practice of RL of RGB given the mean value of 3.38. Lack of cooperation within departments and Lack of cooperation from dealers, distributors and retailers shows a moderate mean but they have a huge gap with 2.65 and 3.23 respectively. Lack of government support and Unwillingness of customer to cooperate fail under the category of high barriers with similar 3.82 mean value.

4.5.6. Policy related Challenges

Table 4. 17 Mean and standard deviation of policy related Challenges

| Statement | Mean | SD | Description |
|--|------|-------|-------------|
| Lack of strategic planning related to RL | 3.15 | 1.102 | Moderate |
| Lack of appropriate performance metrics | 3.11 | 1.127 | Moderate |
| lack of enforceable laws from government | 4.32 | 0.772 | Very High |
| Total Mean | 3.53 | 1.000 | High |

Source: Survey Result, 2022

Results in Table 4.17 illustrates that lack of strategic planning related to RL and lack of appropriate performance metrics have moderate mean with 3.15 and 3.11 respectively. But lack of enforceable laws from government is very high barrier with 4.32 which also elevate the average mean of policy into 3.53 which is high.

4.6. Discussion

4.6.1. Major reasons for adopting Reverse logistics

The result indicates very high economical motives to adopt reverse logistics. The companies are mostly using reverse logistics for economic reasons as of the questions related to Economical motives minimizes the cost of raw material purchasing and to increase company's net profit got the highest mean value. Improving customer satisfaction got the lowest mean of all economic side. Environmental and social responsibilities are also motives with high mean value. On the otherhand, the legal motive is low, there is no legal pressure from government bodies to force or support companies regarding to reverse logistics.

The economic performance of reverse logistics can be evaluated by using indicators such as recapturing value from products, cost containment, reduction in inventory investment, and improved profitability and labor productivity. Reverse logistics can result in significant cost savings when the proper systems are put into place (Carter and Ellram, 1998). According to Maxwell and Van der Vorst (2003), a company's environmental performance can be measured by a number of factors, including energy and material consumption, air and water pollution, waste minimization or elimination, and the usage of dangerous and harmful products.

Companies employ reverse logistics to reduce the amount of raw material used to make new bottles. They are successful in reverse logistics economic performance because they reduce the cost of procuring raw materials and raise their net profit. Similarly, they reduce stock outs and the value of returned products. Environmental aspects and social responsibilities duties are also important to the companies. They care about preserving the environment from pollution and want to create an image that they are environmentally responsible organizations. On the other hand, do not place a strong priority on environmental policies and objectives in their business plans and do not try to create awareness on the importance on environmental protection. Furthermore, they have a culture of evaluating environmental performance to a minimum.

These indicate that, there is agreement in the companies to systematize their work in according to environmental pollution reduction and being responsible for the society they are working in. However, there are no guidelines that can work on day to day operational activities. Not having regulatory pressure from legislative bodies and lack of government incentives regarding reverse logistics may worsen the situation since the companies are not obliged to do anything about their products after sales.

4.6.2. Extent of Implementation of Reverse Logistics

From the results, there is a high reverse logistics implementation in the companies. From the set of standardized activities, the companies meet the average standard of implementing RL. Companies perform a wide range of actions with returned products or materials, and they must identify the probable destination of the returned goods, which includes the manufacturing line, distribution line, and reassembly line. The soft drink firms place a great value on developing a formal return policy and advertising their RGB return policy to their customers, retailers, and distributors because, they are concerned about pre-return requirements. However, the corporations are not entirely committed to developing return-related profiles. The technique of creating customer profiles based on which products are returned from the market enables for faster returns processing.

Collection refers to the process of moving items from a client to a restoration location. It is the starting point of the system, with three collection options depending on whether the manufacturer or re-manufacturer collects directly, through a network of distributors and retailers, or through third-party logistical services (Rubio & Jimenez, 2014). The companies involved in providing clear instructions on how to determine the mode of transit and destination of returned bottles. The companies provide explicit information to transportation carriers on the rules and processes for returning the bottles. This means that the companies communicate effectively with carriers, drivers, and their assistants on distribution timetables and exact receiving places. And the corporations have sufficient information regarding the number of bottles reaches in their warehouses. This could assist them in determining the maximum amount the warehouse can store as well as facilitating the production process.

Studies on other countries like India, United Arab Emirates shows that outsourcing this operation by engaging the assistance of a third-party provider of RL may be a suitable solution helping to ensure the efficiency of the activity (Efendigil et al., 2008). According to their study

of third-party forward logistics provider in reported very high satisfaction levels with the services rendered by these providers. Because reverse logistics is more unpredictable than forward logistics, it is critical to plan methodically for all aspects of it. Demand, sales, and the type of items must all be taken into account (Ritchie and colleagues, 2000). According to De Borit (2008) there are reverse logistics fundamentals. From the fundamentals, how products are recovered is a basic issue for good reverse logistics implementation. Following client collection, the companies offer a formal recovery option for how to reuse RGB. Companies, on the other hand, do not conduct optional recovery assessments in alternative of the previously established recovery option. It is better to assess different recovery methods in this shifting environment in order to consider changes in the industry or overall settings. Firms need to analyze current product recovery and waste management operations including examining the environmental impact of the entire process.

The companies are accustomed to reporting how much RGB is returned over a given time period. Based on their sales volume, the enterprises actively participate in the preparation of analytical RGB returns. But, firms analyze the cost of returning and making new RGB is at medium level. This might be because as Umer and Afzal, (2012) stated that manufacturing of new glass bottles costs up to 20% of the total production cost. Though, It is preferable to conduct cost-benefit analysis within a specific time frame because it aids in understanding industry changes and identifying potential threats. Because of the lower production costs, they can offer their clients reasonable pricing, high-quality, value-added products, and timely responses.

4.6.3. Challenges of Implementation of Reverse Logistics in Soft Drink Industry

From the results technological problems have the highest effect on the implementation of RL with high mean value. Lack of automated material handling equipment and lack of technical know-how to use new technologies is high. There is also a lack of computerized return tracking system. Policy and Knowledge barriers have high effect. The finding illustrates that there is lack of enforceable laws from government. Companies' lack of employees understanding about the significance of RL is low barrier, lack of comprehension occurs not only on the part of the companies, but also on the part of the customers. Customers low understanding on handling products and high delayance when returning bottles are major challenges which can causes great

uncertainties on the amount of returned bottles. Cooperation problems also have an effect on RL. Most of all there is lack of support and cooperation from government and customers.

In addition, lack of enforceable laws, regulations, or directions might reduce manufacturer motivation. Targets for collection, recycling, and recovery must be established, met, and enforced. Manufacturers are being expected to take on more responsibility for recycling, reusing, and disposing of their products and packaging (Beamon, 1999). However, the studied area has a severe absence of enforced government laws. The findings also shows that the companies do not have financial incapability but shows that there is moderately high lack of investment to improve organization infrastructure and Low budget allocation for RL activities and Top management commitment is the lowest challenge, but slightly have a problem of resistance to change and adopt innovation.

Businesses benefit from reverse logistics in a variety of ways. A well-designed infrastructure is required for RL to be successful. The cost of the activities, as well as the assessment of the value of the returned items, must be specific, accurate, and thorough. These operating costs should include all general, administrative, and selling expenses (Coskun et al., 2017). To increase their performance, the companies are investing fairly in RGB reverse logistics. According to the responses, a moderate obstacle to the practice of RL is a lack of investment in improving organizational infrastructure and a lack of investment in training people. The firms have a solid financial foundation and are pioneers in the soft drink sector. The companies have a good budget allocation and are not financially unable to improve reverse logistics.

Human resources are regarded as the most significant organizational asset for a company's successful operations. Employees with a high level of training and knowledge are critical to the company's success, and making the most use of their strengths may help the company realize market prospects and implement RL (Jabbour and Jabbour, 2015). There is a lack of technical expertise to exploit new technology in the organizations. RL requires methods that incorporate an ongoing information flow among the supply chain participants in order to successfully plan and execute the return process. To accomplish this goal, the organization's staff members must put in a lot of effort and commit to mastering new technology. Companies and upper management should work hard to advance employees' technological knowledge and professional growth. Organizations can benefit from this knowledge in RL processes if they sincerely attempt

technological training and improvement and educate personnel to develop advanced technical talents. As a result, businesses should spend more money on employee training.

The advancement of RL is moderate, and it is not widely known in industry. This problem stems from a lack of assistance from top management and other stakeholders, who will not spend incrementally after contributing a significant amount of cash to set up infrastructure for effective RL (Ravi & Shankar, 2005). In contrary, the research found that there is relatively good top management commitment. Managers have good knowledge of advantages of reverse logistics and they are willing to support their subordinates in relation to reverse logistics implementation.

The beverage package return process requires a collaborative effort by all stakeholders and partners in the supply chain because a market without an integrated supply chain is vulnerable to system inefficiencies (Gangani et al., 2018). The results indicate there is lack of cooperation within departments and lack of cooperation from dealers, distributors and retailers. Also lack of government support and unwillingness of customer to cooperate fall under the category of high barriers. Any successful reverse logistics process management excellence depends heavily on teamwork. Strong ties within the collaborative process improve the possibility that businesses will exchange more crucial information. It is feasible for an organization to improve its operational performance by collaboration with consumers, stakeholders, the government, and outside knowledge sources, leading to greater operating results and success.

CHAPTER FIVE

5. Summary, Conclusion and Recommendation

5.1. Summary

The main purpose of the study was to examine the practice and challenges of reverse logistics practice in soft drink manufacturing firms found in Addis Ababa. In order to achieve this it is done through investigating the manufacturers' motivations to implement RL, measuring extent of implementation of RL in their companies and assessing the main challenges they face while implementing RL. For carrying out these objectives questionnaires adopted from Genchev et.al, (2011) with some modification was used and additional questions derived from literature review. This questionnaire was distributed for 293 company workers who works related to reverse logistics and 257 was returned and the finding was analyzed by using quantitative method through SPSS 20.0 with frequencies, standard deviation, percentage and mean

Motives for adopting reverse logistics have been categorized into four groups (economical, legal, environmental and social responsibility). From the findings respondents shows that Economical motives is the highest drive to implement RL with the mean value of 4.21, as of the questions related to Economical motives minimizes the cost of raw material purchasing got the highest mean value of 4.5. Social responsibility and Environmental motives follows with moderate mean value of 3.67, 3.52 respectively. Finally the lowest motivation is Legal motives with the mean value of 2.26.

The study tried to assess the implementation of RL in soft drink manufacturing firms by following standardized activities of RL. It classifies the implementation process in to five main points which are Initiate returns, Determine Routing, Receive Returns, Select Recovery options and Analyzing and measuring RL program performances. From these collective activities the firms are more engaged in determining routing activities with the mean value of 3.92. Receive Returns has the second highest mean value of 3.72, from its activities verifying the returned bottles has high mean value of 4.30 but finding shows low implementation on Input returning data on electronic files with low mean value of 2.56. Initiate returns follows by high 3.60 mean value, while from all initiate returning activities create customer return related profile has the lowest moderate mean value of 3.24. Analyzing Returns and Select Recovery Options also have high mean value of 3.51 and 3.41 respectively.

In terms of Reverse Logistics challenges, technological problems have the highest effect on the implementation of RL with the mean value of 3.63. Lack of computerized return tracking and Lack of automated material handling equipment aggravated the problem with the mean value of 4.56 and 3.54 respectively. Policy and Knowledge barriers have high effect by having 3.53 and 3.52 mean value. The finding illustrates that there is lack of enforceable laws from government by mean value of 4.32 and Customers low understanding on handling products (M=3.76) and high delayance when returning bottles (M=3.84) are major challenges which can causes great uncertainties on the amount of returned bottles. Cooperation problems also have an effect on RL, having mean score of 3.38. Most of all there is lack of support and cooperation from government and customers with the same high mean value of 3.82. Economical problems affect RL activities moderately (M=3.13). The findings shows that the companies do not have financial incapability but shows that there is moderately high lack of investment to improve organization infrastructure and low budget allocation for RL activities with the mean value of 3.25 and 3.23 respectively. Top management commitment is the lowest challenge in RL (M=2.82), but slightly have a problem of resistance to change and adopt innovation finding mean of 3.14.

5.2. Conclusion

Based on the results of the study which were conducted on Refillable glass bottle reverse logistics in Soft Drink Industry, with the primary objective of examining reverse logistics practice of soft drink manufacturing firm in Addis Ababa, Ethiopia. Based on the respondents' response, number of conclusions has been obtained.

First, the majority of respondents agreed to the fact that the companies adopt reverse logistics because of the economic significance of that reverse logistics bring to the table. From the economic aspect, minimizing the cost of raw material purchasing in order to increases companies net profit is the major reason. For the companies economic aspect is not the only motivator, also they are concerned about environmental problems it might cause if it is not returned and believed that they are responsible for their products throughout its life cycle. However, their performance on reviewing their environmental performance is low and though companies want to create an image that their company is environmentally responsible organization they do not strives to create public awareness about environmental protection. In the other hand, legal issues are not

much of a motive to adopt RL. As far as the result shows, government incentives regarding reverse Logistics has the lowest mean. There is less governmental and legal intervention whether in incentive or punishment form. So the companies majorly recognize the economic relevance of reverse logistics.

Second, the research concluded, there is a high reverse logistics implementation in the companies. From the set of standardized activities, the companies meet the average standard means form 3.47 (Select Recovery) lowest up to 3.92 (Determine Routing) highest. However, there are some activities which fails under relatively weaker performance such as, create customer return related profile, input returning data on electronic files and make assessment on impact of different recovery options. But the majority of activities had shown high implementation and the strength of the companies. Activities such as monitor and control volume of returns in warehouse, verify the return and inspect returns through manual examination are highly performed activities. From this we can concluded that many activities and overall reverse logistics implementation is on the right track.

Third, the research had concluded that there are several challenges which hinder the implementation of reverse logistics. From these challenges respondents responses shows that technology, knowledge and policy are the prominent. Lack of automated material handling equipment and lack of computerized return tracking are the major barriers in relation with technological challenges. Customers' low understands on product handling and customers' delayance to return bottles are the main problems in related with knowledge. Lack of enforceable laws from government is a policy constraint which hinders the development and implementation of reverse logistics practices. Meanwhile, Top management commitment, economy and cooperation are less of a challenge in the companies for reverse logistics practice. However, the degree varies the above variable also have hindered impact on reverse logistics practices.

5.3. Recommendation

Based on the conclusions the following recommendations are proposed as a means of alleviating the problems found.

- Companies use reverse logistics for a variety of reasons, the most important of which being cost savings. The nature of the industry may lead to a focus on its economic benefits, as it reduces the amount of purchased material used in the manufacturing process, but companies can gain other long-term benefits by focusing on their environmental and social areas by setting clear objectives and continuously reviewing their performance. The government should also be involved by enacting rules that mandate and encourage enterprises to use reverse logistics.
- When it comes to reverse logistics implementation, their focus on creating customer returns profiles and registering returned files in electronics is unsatisfactory. These activities may assist businesses in reducing complexity by identifying customers' return ranges of time, as well as forecasting the amount of returns in a given period of time and rearranging stock accordingly. This could be accomplished by increasing investments in skilled human resources and cutting-edge technology.
- The companies need to make assessment on impact of different recovery options and search for any new mechanisms which could work better on this changing environment.
- As findings revealed technology, knowledge and policy are the prominent challenges of RL. Thus, the research would like to recommend that companies should try to reduce these challenges by investing on technological advancements such as tracking each return and have updated machineries to handle products automatically. Moreover, creating awareness for all stakeholders including employees, senior management staffs, distributors, retailers and customers about the advantage of reverse logistics would help increase the level of efficiency.

5.4. Suggestion for Further Study

The present study has found good overall reverse logistics practice within soft drink companies reside in Addis Ababa, Ethiopia. However, the research was limited to assess other industries within beverage like breweries. Therefore, its recommend for future research to study further on the reverse logistic practices of refillable glass bottles in beverage industries.

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APPENDIX

Questionnaire

Addis Ababa University School of Commerce

Master of Art in Logistics and Supply Chain Management

Questionnaires on “Reverse logistics Practice and Challenges in Soft Drink Manufacturing Companies in Addis Ababa, Ethiopia”

Dear respondent, I thank you in advance for your cooperation, and honestly answering the following questions. The aim of collecting information through this questionnaire is to conduct a research on Reverse logistics Practice and Challenges on refillable glass bottles of soft drink companies located in Addis Ababa” for partial fulfillment of my MA degree in Logistics and Supply Chain Management. The data to be collected will help to investigate reverse logistics practice and identify major Challenge Soft drink manufacturing companies.

In order to make the research outcomes complete, your reliable, genuine and accurate response to each item will have significant contribution. Therefore, you are kindly requested to respond to each item honestly and accurately. The researcher will like to assure you that, the information you provide will be kept confidential and shall only be used for the purpose of academics.

Dear respondents! Please note that:

- You do not need to write your name on the questionnaire.
- You need to respond to all of the questions.
- You should not assign other respondents to fill it.

Put “**X**” mark inside the box provided next to each question. In case of any question please contact me via phone: 0967 282028 or brhanumeseret21@gmail.com

Thank you in advance for your cooperation!!!

REVERSE LOGISTICS PRACTICE AND CHALLENGES OF SOFT DRINK MANUFACTURING FIRMS IN ADDIS ABABA, ETHIOPIA

QUESTIONNAIRES

GENERAL INFORMATION

Part One: General information

1 Gender

Male

Female

2 Age

18-25

36-45

56 and above

26-35

46-55

3. Level of Education

Certificate

Diploma

Degree

Post Graduate

4. What is your current position in the company? _____

5. How long have you worked in the company?

Less than 2Years

3-5years

6-10 years

More than 10years

Part Two: Questions from the Research Questions

Research Questions 1: What are the main motives for the adoption of reverse logistics for refillable glass bottles?

In this section you are expected to indicate your organization's motives to adopt reverse logistics for refillable glass bottles. There are five options to answer **1. Strongly Disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly Agree**. Please put "X" mark on the box provided that reflect your idea

| | Strongly Disagree | | Strongly Agree | | |
|--|----------------------|----------|-------------------|----------|----------|
| Economical | 1 | 2 | 3 | 4 | 5 |
| to minimizes the cost of raw material purchasing | | | | | |
| to recapture value of returned product | | | | | |
| to increases company's net profit | | | | | |
| to improve customer satisfaction | | | | | |

| | | | | | |
|---|--|--|--|--|--|
| to minimize stock outs | | | | | |
| Legal | | | | | |
| Regulatory pressure from legislative bodies to minimize resource wastage | | | | | |
| Pressure from environmental law | | | | | |
| Government incentives regarding Reverse Logistics | | | | | |
| Environmental | | | | | |
| to protect the environment from pollution | | | | | |
| to reduce the raw material used to produce new bottles | | | | | |
| Company environmental strategies & objectives are included in its business plan | | | | | |
| Company continuously review its environmental performance | | | | | |
| Social responsibility | | | | | |
| The company is responsible for its products during their life cycle | | | | | |
| to create an image that it's environmentally responsible organization | | | | | |
| The company chooses to purchase sustainable raw materials | | | | | |
| The company strives to create public awareness about environmental protection. | | | | | |

Research Questions 2: What is the extent of reverse logistics implementation on refillable glass bottles in soft drink manufacturing firms?

Please choose at what level your company implements those Reverse Logistics activities. There are five options to answer. **1. Very Low 2. Low 3. Medium 4. High 5. Very High.** Please put “X” mark on the box provided that reflect your idea

| | Very Low | | Very High | | |
|---|----------|---|-----------|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| To Initiate returns | | | | | |
| Create a formal return policy | | | | | |
| Communicate the return rules to customers | | | | | |
| Have pre return requirements | | | | | |
| Create customer return related profile | | | | | |
| Determine Routing | | | | | |
| Specify routing procedures | | | | | |
| Specify the rules for transportation providers | | | | | |
| Specify the routing to carriers | | | | | |
| Monitor and control volume of returns in warehouse | | | | | |
| Receive Returns | | | | | |
| Verify the return | | | | | |
| Inspect returns through manual examination | | | | | |
| Inspect returns through automated testing | | | | | |
| Input returning data on electronic files | | | | | |
| Select Recovery | | | | | |
| Establish formal recovery options | | | | | |
| Make assessment on impact of different recovery options | | | | | |
| Assign responsibility for recovery option | | | | | |
| Prepare report on used recovery methods | | | | | |
| Analyze returns and measure performance | | | | | |
| Report on volume of returns | | | | | |
| Analysis on sales and return volume | | | | | |
| Execute cost benefit analysis | | | | | |
| Find out the cycle time | | | | | |

Research Question 3: What are the main challenges of refillable glass bottles reverse logistics in soft drink manufacturing firms?

Please choose how much those barriers affect the implementation of Reverse Logistics for refillable glass bottles in your company. There are five options to answer, 1. Not a barrier 2. low barriers 3. Moderate barrier 4. High barrier 5. Major barrier

| | Not a barrier | | | Major barrier | |
|---|---------------|---|---|---------------|---|
| | 1 | 2 | 3 | 4 | 5 |
| Economic | | | | | |
| Lack of investment to improve organization infrastructure | | | | | |
| Lack of investment to train employees | | | | | |
| Low budget allocation for Reverse Logistics activities | | | | | |
| Financial incapability to improve Reverse Logistics | | | | | |
| Knowledge/Information | | | | | |
| Lack of awareness about Reverse Logistics significance by employees | | | | | |
| Customers' low understand on product handling | | | | | |
| Customers delayance to return bottles | | | | | |
| Uncertainties on the amount of returned bottles | | | | | |
| Top Management commitment | | | | | |
| Reluctance for decision making | | | | | |
| Resistance to change and adopt innovation | | | | | |
| Unwillingness to support subordinates | | | | | |
| Not including Reverse Logistics plans in company's long term plan | | | | | |
| Technological | | | | | |
| Lack of Information system to collect data | | | | | |
| Lack of automated material handling equipment | | | | | |
| Lack of computerized return tracking | | | | | |

| | | | | | |
|--|--|--|--|--|--|
| Lack of technical know-how to use new technologies | | | | | |
| Cooperation | | | | | |
| Lack of cooperation within departments | | | | | |
| Lack of cooperation from dealers, distributors and retailers | | | | | |
| Lack of government support | | | | | |
| Unwillingness of customer to cooperate | | | | | |
| Policy | | | | | |
| Lack of strategic planning related to Reverse Logistics | | | | | |
| Lack of appropriate performance metrics | | | | | |
| lack of enforceable laws from government | | | | | |