ADDIS ABABA UNIVERSITY

FACULTY OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Assessment on the Effectiveness and Challenges of Reverse Logistics Management Practices of Coca Cola Beverage Africa In the case of Addis Ababa Manufacturing Plant

By: Muluken Alemu

Advisor: Zelalem Bayisa (PhD.)

June 2022

Addis Ababa

ADDIS ABABA UNIVERSITY

FACULTY OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

Department of Logistics and Supply chain Management

Approval sheet

This is to certify that the thesis prepared by Muluken Alemu, entitle "Assessment on the Effectiveness and Challenges of Reverse Logistics Management Practices of Coca Cola Beverage Africa In the case of Addis Ababa Manufacturing Plant" submitted in fulfillment of the requirement of the degree of master of arts in Logistics and Supply chain Management complies with the regulation of the university and meets the accepted standards with respect to originality.

Signed by Board of Examiners:

Name	Signature	Date
Zelalem Bayisa /PhD/ Advisor	_____	_____
Nakachew Bashu /PhD/ External Examiner	_____	_____
Busha Temesgen /PhD/ Internal Examiner	_____	_____

Abstracts

Coca-Cola Beverage Africa is Ethiopia's leading and most socially responsible soft drink manufacturer. The organization has a variety of reverse logistics operations associated with forwarding logistics, thus the goal of the study is to evaluate the effectiveness and challenges of these activities in the company while also pointing out additional related research areas in the field. The research is a hybrid of both quantitative and qualitative techniques based on descriptive research design. The sample size is determined based on Taro Yamane method and selected randomly from the population of sales and marketing staff as well as logistics staff. Data from primary sources was collected and processed in a methodical manner. Based on respondent point of view the researcher conclude that, economic related challenges are more severe than technical challenges, and technical challenges are also more severe than uncommitted top management; besides, the case company reverse logistics is effective in terms of process, Information, and cost respectively according to the given point of percentage value. The negligence of few respondents during filling the questioner was a problem for the study. The researcher recommended the implementation of different factors that could measure/evaluate the case to examine the effectiveness and challenges of reverse logistics. Secondly, if stakeholders are involved in another research project, a more holistic outcome will be obtained.

Key words: Reverse logistics effectiveness, Reverse logistics challenges**,** Assessment on the effectiveness and challenges of Reverse Logistics

Declaration

I hereby declare that this thesis, Assessment on the Effectiveness and Challenges of Coca-Cola Beverage Africa's Reverse Logistics Management Practices in the case of Addis Ababa manufacturing plant, is my original work, that it has never been submitted for a degree at any other university, and that all sources of materials used in this thesis have been properly acknowledged.

Approved by:	Confirmed by:
Candidate _____	Advisor_____
Signature _____	Signature _____
Date _____	Date _____

Acknowledgment

First and foremost, I want to express my heartfelt gratitude to the almighty God, who has given me this opportunity and has strengthened me throughout my entire life, with all of its ups and downs.

Your kind demeanor, all-around real assistance, and patience have had a significant bearing on this paper, Zelalem Bayisa (PhD.).

Let me express my heartfelt gratitude to Mr. Solomon Admasu, CCBA's Logistics Manager, who has supported me without reservation by drawing on his extensive knowledge and experience.

Last but not least, I'd like to express my gratitude to my loving family and those who have helped me by volunteering their time to collect raw data.

Table of Contents

List of Figures

List of Table

Acronyms

3PL: Third Party Logistics Provider

B2B: Business–to–Business

B2C: Business–to–Customer

BD: Bahire Dar

CCBA: Coca-Cola Beverages Africa

CCSABCO: Coca-Cola South Africa Bottling Company

CSCMP: Counsil of Supply Chain Management Profesionals

DD: Dire Dawa

D2C: Direct-to -Customer

e-retail. Electronic retail.

HDV: Heavy Duty Vehicle

LDV: Light Duty Vehicle

LSA: Lifecycle Assessment

MDV: Medium Duty Vehicle

OCCD: Official Coca Cola Distributor

PET: Polyethylene Terephthalate

RDC: Regional Distribution Center

RGB: Returnable Glass Bottle

RL: Reverse Logistics

SKU: Stock Keeping Unit

SPSS: Statistical Package for the Social Science

TCCC: The Coca Cola Company

WH: Warehouse

CHAPTER ONE: INTRODUCTION

1.1 Back ground of the study

In relation to the scope of forwarding logistics reverse logistics also demand its own ways of implementation and evaluation mechanism. The forwarding logistics of CCBA is highly integrated with the reverse logistics of RGB's, empty crates, and pallets for the next round manufacturing and sales practices, so the better quality of returned materials, the implemented cost for the activities, and the allotted retrieval time should be managed in effective ways and the related challenges also minimized through best practices. In the case company during these returning activities there are different existing loopholes which require critical follow-up and amendments for the effectiveness and less challenged management practices. Therefore the research indicates specifically the reverse logistics management practices of Coca Cola Beverage Africa of Addis Ababa manufacturing plant is effective or not in terms of cost, process, Information and also point out the related challenges in terms of techniques, un committed top management, and economic related issues.

1.2 Company background

The coca cola company was originally established as the J.S.Pemberton Mediclal chemical Company, a co partnership between Dr J.S. Pemberton & E.D Holland, later it became a stock company and changed its name to Pemberton Chemical Company On 1891, Asa Chandler completes purchase of Coca Cola 1894-1895 business growth in US. The first syrup manufacturing plant outside Atlanta was opened in Dallas, Texas. Others were opened in Chicago, Illinois and Los Angeles, California, the following year. 1920s expanded internationally outside of Unites states.

Coca Cola beverage Africa was established in 1959 by five Ethiopians with the first plant around Abinet, Addis Ababa, with an initial capital of birr 750,000. The second plant located in Dire Dawa was inaugurated in the year 1965. Feb, 1975 - the two factories were nationalized, re-named as Addis Ababa Soft Drinks and Dire Dawa Soft Drinks - under separate management.

Mar 22, 1996- the two plants were reprivatized by five young local entrepreneurs with a registered capital of Birr 67 million and formed EABSC.

In May 1999, the company made a leap forward by signing a joint venture agreement with South Africa Bottling Company named Coca-Cola South Africa Bottling Company (CCSABCO). In 2001, Coca-Cola Sabco increased its share to 61% and took the lion's share in leading and managing the business. On July 02, 2016, it was declared that Coca-Cola Sabco was merged with The Coca-Cola Company and SABMiller to form Coca-Cola Beverages Africa (CCBA). Their respective share is SABMiller: 57.0%, Coca Cola SABCO (Gutsche Family Investments): 31.7% and The Coca-Cola Company: 11.3%. On June 12, 2013, EABSC established its third plant in Bahir Dar city and started serving the northern Ethiopia Market since November 16, 2016. The

newly established factory at Sebeta and the merged Ambo mineral water factory enhance the SKU's and production volume as well. As a subsidiary company of CCBA, EABSC has a vision of becoming the best coca cola bottler in the world, the best in terms of sales volume and return on capital employed against all Coca-Cola bottlers in the world. EABSC is managed by board of directors which is composed of Ethiopians and foreign nationals. Reporting to the board, is the executive management team headed by the Chief Executive Officer with six competency/department Directors. As of July 2021, Coca Cola beverage Africa has a total of 2180 permanent employees who are working in AA (1,400), DD (350) and BD (430) manufacturing plants and casual workers in range between 450-500 in AA.

1.3 Statement of the problem

The reverse logistics activity of Coca Cola beverage Africa has many dimensions in relation to the forwarding logistics of full goods. The RGB, empty crates, crates with bottles, plastic and wooden pallets, and also in rare cases obsolete PET products are managed under the reverse logistics processes. During these activities there are different gaps which need critical attention and follow-up for the harmonized business flow and customer satisfaction; for instance, during receiving RGB there may be unsorted, broken, chip-necked, and foreign glasses, and also missing; the missing is observed both in pieces of glass or in full-cases. If there is glasses sales plan, the incoming empty crates from OCCD may be shorten due to wrong palletization and also there may be damaged crates, the incoming quantity of plastic pallets also need to be checked, in relation to the amount of truck trips every single missing and unwanted received material crates huge amount of loss; therefore, inconsistent management of the incoming materials of the case company starting from the OCCD to the sorting area require prior strategic plan and organized activities by implementing serious corrective measures.

Hence this research aimed to assess the effectiveness and challenges of reverse logistics of the Coca Cola beverage Africa in the Addis Ababa manufacturing plant by gathering idea from those who have direct operational attachment to the operation and point out the possible recommendations.

1.4 Objectives of the Research

The objectives of the research were grouped in to two sub-sections: general objective and specific objectives.

1.4.1 General Objective

- The general objective of this research was to assess the effectiveness and challenges of reverse logistics activities of CCBA.

1.4.2 Specific Objectives

- To evaluate the effectiveness of the reverse logistics management practices of CCBA.
- To explore the challenges of reverse logistics management practices of CCBA.
- To examine the reverse logistics management practices at CCBA

1.5 Research Questions

The basic research questions were crafted to answer:

1: How effective is the reverse logistics management practices at Coca Cola beverage Africa?

2: What are the challenges of reverse logistics management practices of Coca Cola beverage Africa?

1.6 Significance of the Study

Currently Coca Cola beverage Africa is the leading soft drink manufacturing company in Ethiopia. The company has four plants at Addis Ababa, DD. BD, and the newly established at Sebeta. Since the company is profit oriented company, investigating different opportunities and threats for the better performances and business sustainability, reverse logistics activities should be thought strategically and tactically. The reverse and the forwarding logistics activities should be synchronize highly, otherwise the business will face the deficit of different inputs, like; glasses, crates, and pallets which affect the manufacturing and the sales movement directly. The quality and the quantity of these inputs can be managed strictly by applying different reverse logistics procedures; hence, the research point out the current situation of the case company in terms of effective of RL activities and the existing challenges to avoid the accumulation of unsound glasses so that to run the manufacturing activities without interruption, to minimize unnecessary cost for glass sorting and related operations, for the better inventory and warehouse management through effective reverse logistics activities; moreover, stakeholders could get the better service and satisfaction.

1.7 Scope of the Study

As stated earlier CCBA has different branches, but due to budget related issues this paper focus on Addis Ababa manufacturing plant. The research aimed to analyze the effectiveness of the reverse logistics in terms of cost, process, and information and also the challenge part was evaluated in relation to technical, top management commitment and economic related issues. The research assessed the current situation of the case company RL activities. Reverse logistics is one of a wider and rapidly growing discipline, the discipline has been applied from wide perspective such as product returns, source reduction, recycling, materials substitution, reuse of materials,

waste disposal and refurbishing, repair, and remanufacturing, but the research is focused on reuse perspectives. Therefore the research has geographical, content, and time scopes respectively.

1.8 Limitation of the Study

The research was limited on the reverse logistics activities of some specific inputs for reuse and repair, but reverse logistics for recycle, disposal, and for remanufacturing process was not assessed. There was also a limitation on participating body. For the beater accomplishment of reverse logistics activities the gaps on both service provider and service seeker need to be assessed, but the research was focused only on service provider point of view. There was also budget limitation to assess the gap.

1.9 Organization of the Study

The research is organized under five main chapters: 1) The Introductory, 2) The Literature review, 3) The Methodology, 4) The Results and discussion, 5) The Summary, Conclusion, recommendation parts respectively. Each chapter is composed of different sub-titles. 1) The introductory part contains: background of the study, back ground of the company, statement of the problem, objectives of the study, basic research questions, significance of the study, scope of the study, and limitation of the study. 2) Literature review deal about the literatures relevant to the study. It has an introduction, theoretical review, empirical review and the conceptual framework of the study. 3) Methodology of the paper described the study area; elaborate the type and design of the research; clarify the research approach; the subjects/participant of the study and sampling technique; the sources of data; data collection procedure and instruments employed; and the methods of data analysis used; the validity and reliability; ethical consideration. 4) The Results and discussion part focus on summarizing the results/findings of the study, and interpret

and/or discuss the findings. 5) The Summary, Conclusion, recommendation part include summary of findings, conclusions, limitations of the study and recommendations.

1.10. Definition of Terms

The bellow listed terminologies are listed for the better understanding of this research paper.

Operational Definition of Terms

Challenge: A management tasks that tests ability of managers to deal with a problematic situation in the organization.

Chip Neck: A glass bottle with a fractured or damaged tip.

Crates. A plastic container with 24 plastic-coated compartments.

Effectiveness: the capability of producing a desired result or the ability to produce desired output.

Foreign-glasses: Those glasses do not intend for the packaging of company products.

Full goods: Soft drink packed in glass or plastic container.

Official Coca Cola Distributor: Those entities that gets an offer in order to distribute and sale the case company products by fulfilling minimum requirements of the company.

Palletization: Technique of arranging crates.

Plastic pallets: Plate made up of plastic with 1.20mt by 1.00mt for the stacking of crates.

Stakeholders: The certified official Coca Cola distributors, key accounts, and outlets.

Unsorted: Mixed up glasses with other type and dirty glasses.

Wooden pallets: Plate made up of wood with 1.20mt by 1.00mt for the stacking of crates.

1.11 Variable labeling

$A_{1.1}$. cost notification and prediction

$A_{1.2}$. cost center identification

$A_{1.3}$. organizational role on RL activities

$A_{2.1}$. allocated cycle time

$A_{2.2}$. appropriateness of allocated infrastructure

$A_{2.3}$. transport planning and load management

$A_{2.4}$. customer satisfaction and brand loyalty

$A_{3.1}$. the appropriate information flow between involved bodies

$A_{3.2}$. the presence of updated information technology

$B_{1.1}$. Presence of technology related challenges

$B_{1.2}$. absence of communication platform

$B_{1.3}$. presence of knowledge gap

$B_{1.4}$. Presence of scheduling gap

$B_{1.5}$. presence of inappropriate truck design

$B_{1.6}$. absence of proper and clear procedural

$B_{2.1}$. lower attention given by the managers

$B_{2.2}$. the communication gap between the managers

$B_{3.1}$. the impact of budget scarcity

$B_{3.2}$. challenges related to price inflation in the country

CHAPTER TWO: LITERATURE REVIEW

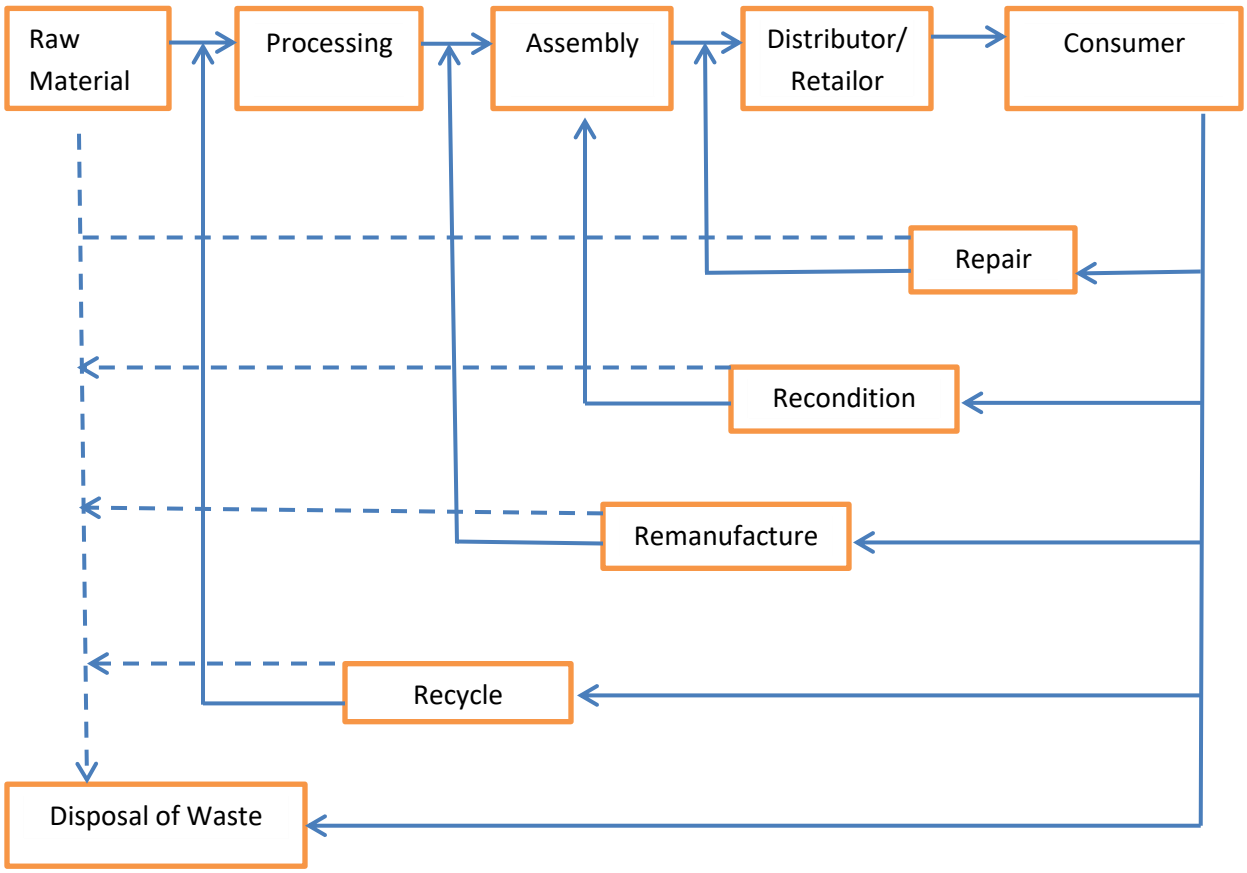
2.1 Theoretical Literature review

2.1.1 Reverse logistics

The idea of reverse logistics has now gained popularity and importance in today's business management. Greater emphasis on environmental protection and sustainable development issues, regulatory constraints, the development of socially responsible policy, and increased rivalry on domestic, international, and global markets all directly influenced the concept's rise in relevance in organizations. By introducing this idea into manufacturing businesses, it is possible to gain a competitive edge, get customers' awareness, and adapt production processes to meet current legal, environmental, social, and economic needs (Starostka-Patyk, et al, 2017). The forward supply chain's work is completed once a product is purchased. Reverse logistics is responsible for everything that happens after that, including after-sales support, warranty management, defective repairs, spare parts management, returns bring-back, and all related transportation, liquidation/disposition, including recycling, and buyback/exchange management (RL). Zegers (2002). According to a Malaysian study, responsible product disposal (RL) refers to the collection of used goods from customers and/or the return of packaging to the provider. Additionally, RL includes the customary logistical functions of transportation and inventory control, but its emphasis is on recovering stuff from clients rather than delivering it to them (Abidin, Bakar & Kumar, 2017).

Figure 1

Product Disposition Options in Closed loop Supply chain Processes



Source: From *'Impact of Reverse Logistics Product Disposition towards Business Performance in Malaysian E&E Companies'* (Khor & Udin, 2012)

Reverse logistics can be employed in practically any business, therefore depending on where it is deployed, it can take many different shapes. Here, the technique depends on correctly implementing one of the reverse logistics principles. "Recognition, Recovery, Review, Renewal, Removal, Reengineering" is the acronym for 6R. (Patyk & Grabara, 2010).

Reverse flow activities typically come from three sources: the consumer, who returns the items; business, which is interested in recycling; and the government, which wants to encourage these kinds of behaviors. Reverse logistics appears to be relevant right now, however there isn't a lot of

literature on the subject. The developed quantitative models within this field may be divided basically into three areas: distribution planning, inventory control, and production planning. According to the reason for the return and the point in the supply chain, returns can be divided into three categories: manufacturing returns (such as excess raw materials, quality-control returns, and production leftovers); distribution returns (such as product recalls, B2B commercial returns, stock adjustments, and distribution items); and market returns (such as B2C commercial/reimbursement returns, end-of-use returns). End-of-use returns, commercial returns, warranty returns, production scrap, and by products and packaging are the five primary categories into which returns flows can be separated (Starostka-Patyk., 2014).

Reverse logistics naturally extends to the transfer of materials back to disposal facilities and treatment facilities. By better integrating waste management procedures into the whole reverse process, it may be possible to lessen the detrimental effects on transportation. The collection, inspection, disposition, and redistribution of returned goods, which may come from a variety of retailers, are all handled by one organization in the centralized reverse supply chain. Multiple companies could be part in the decentralized reverse supply chain, where individual sales outlets operate as their own "gatekeepers," inspecting returned goods and choosing which paths to reuse or dispose of them. Local expertise will be required for product testing and inspection where the gatekeeping role is assumed at the level of the individual store. For managing retail returns, four physical network configurations have been identified: A) network with integrated outbound and returns. Returns are "back hauled" from the retail outlets to a local distribution center using a company's own fleet or the vehicles of its logistics partners (RDC). This approach performs well in a supply chain where there are frequent deliveries to stores and frequent returns. B) A return and outbound network that is not integrated. In this instance, a different network is employed to

manage returns; it is often run by a third-party logistics provider (3PL), who accepts returns on an as-needed basis. The gatekeeper functions are carried out by the retail organization away from the stores and in a separate location. If the amount of returns is variable but normally low, this approach performs effectively. C) Management of third-party returns. The retailer gains since no gatekeeping knowledge is needed at the level of each individual store when the entire management of product returns is outsourced to a third party contractor. Along with a comprehensive returns management process, including supporting technologies, refurbishing, and disposition programs, the 3PL offers this functionality. D) Go back to the vendors. In this scenario, products are exchanged for credit and returned directly to the suppliers (McKinnon et al., 2016).

The management and sale of extra and returned machinery and equipment from the hardware leasing industry is also a part of the reverse logistics process. Logistics typically deals with actions that move a product closer to a customer. Reverse logistics involves moving a resource at least one step backward in the supply chain. Items might travel from the customer to the distributor or the producer, for instance. Reverse logistics refers to any procedure or management that occurs after the product has been sold. The customer would return the merchandise if it was flawed. To reach the distributor or client, a manufacturer's product often travels through the supply chain network. The manufacturing company would then be responsible for planning the transportation of the flawed product, testing it, disassembling it, fixing it, recycling it, or disposing of it. In order to salvage any use from the flawed product, the product would move backward through the supply chain network (GlobalTranz, 2021)

Reverse logistics is described as "a specialized section of logistics focusing on the movement and management of products and resources after the sale and after delivery to the consumer" by the Council of Supply Chain Management Professionals (CSCMP, 2013).

Reverse logistics refers to the movement of goods or materials in the opposite direction of the supply chain for the purpose of value creation, value recapturing, or proper disposal.

Reverse logistics has grown in importance as a result of the pressure that businesses are facing from a variety of stakeholder groups, including shareholders, customers, employees, suppliers, partners in the reverse supply chain, government agencies, non-profit organizations, and the general public due to environmental concerns, legal requirements, and consumer expectations. According to many studies on the motivations that motivate corporations to use reverse logistics, three key elements—economics, legal restrictions, and corporate social responsibility—can be grouped together. Economic factors, which are the driving force behind reverse logistics, as well as legal requirements and corporate social responsibility (social factors), all influence whether or not a company decides to include these practices into its supply chain management system (Irdiana, 2016)

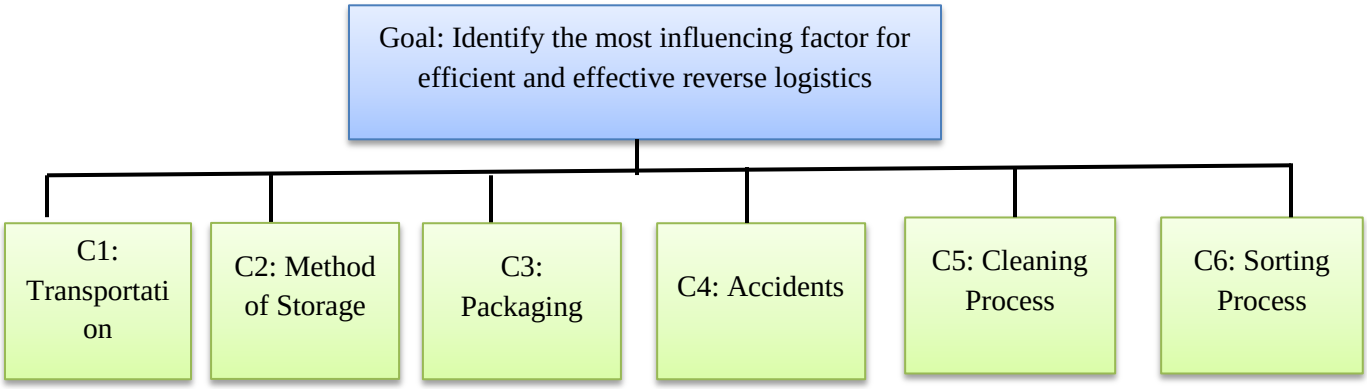
2.1.2 Factors affecting the effectiveness of reverse logistics

The reverse logistics of beverage containers entails collaborative efforts of all stakeholders and supply chain actors. Any market lacking supply chain cooperation will give room for inefficiencies in the system. Therefore “there is a need for a comprehensive study on reverse logistics and the supply chain of beverage containers in developing countries (Dudubo, 2017). In addition, identifying the parameters which can have an impact on the efficiency and effectiveness of the reverse channel is important. The agreement and regulations by the government also influence the success of reverse logistics practices and in addition, internal and

external barriers must be slowly overcome and eliminate it. The successful of reverse logistics in foods and beverage industries not only give benefits to the organization in terms of costs or profits but mainly benefits to environmental impacts (Ngadiman et al. 2016). However, the internal and external barriers are not clearly identified as per their criticalness. (Sureka, Bandara and Wickramarachchi, 2018)

Figure 2

Factor Hierarchy Measuring the Effectiveness of The Reverse logistics Process



Source: From *Factors Affecting the Efficiency and Effectiveness of Reverse Logistics Process. Journal of International Logistics and Trade 16(2):74-87 August 2018*

2.2 Empirical Literature Review

2.2.1 Reverse logistics

Over recent years, research on RL has increased significantly and its definition has changed over time. (Murphy and Poist, 1988) provided the earliest definition of RL by referring to the reverse flow of goods. Later the term "environment" appeared in the definition of RL by (Carter, Ellram and Ready, 1998) and they considered RL to be an environmentally friendly approach. RL has been defined as "The term most often used to refer to the role of logistics in product returns, source reduction, recycling, materials substitution, reuse of materials, waste disposal, and

refurbishing, repair and remanufacturing" (Willoughby, 1998). This definition alludes to several RL process disposal choices. Additional definitions of RL include "the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal" (Rogers & Tibben-Lembke, 1999). By defining RL's goal, they produced the term that is most frequently used. The processes and goals of RL and forward logistics differ significantly (Tibben-Lembke and Rogers, 2002). While forward logistics includes the actions required to deliver products to customers, reverse logistics and sustainability performance involves getting things back from customers for value recovery through reprocessing or correct disposal. In contrast to RL, forward logistics has received the majority of attention in research on supply chain and logistics management. (Banihashemi, Fei, and Chen, cited in Stock et al., 2002; Bernon & Cullen, 2007; 2019).

Local screening, collecting, sorting, and disposition are the four main processes of a returns procedure.

A/Local Screening: Local Screening is performed at the location where the returned goods are picked up, local screening is done. Products that shouldn't have been in the supply chain in the first place frequently do so, adding needless expenditures for handling, administration, and transportation. Products are screened at the point of collection in an ideal reverse supply chain in accordance with manufacturer criteria. However, disposition varies depending on the product (or its variant), the supplier, and the retailer. To enable product disposition based on client consent on a product-by-product basis, complicated decision procedures must be maintained.

B/ Collection: The products that are intended to join the reverse supply chain can be collected in a variety of methods. Retailers frequently have to ship their returned goods back to the many nationwide warehouses of their suppliers. To enable prompt processing of these returns, certain procedures must be set up. Because they are working with numerous parties and many of them are focused on getting things to the customer rather than returning to the source, this can frequently be quite complicated and confusing for both producers and retailers.

C/ Sorting: Centralized return centers (CRCs), which are used by several major merchants, have been around for a while. To manage their complete reverse logistics activities, they have chosen centralized return centers. Utilizing centralized return centers has many benefits. Benefits come from a wide range of sectors when a corporation dedicates an entire location, organization, and system to optimizing the handling of returns. The following are some of the main advantages: efficiency may increase as workers take full-time jobs and concentrate solely on handling returns; knowledge of the sorting process will aid workers in making better and quicker disposition decisions; and cycle times will improve, leading to better asset recovery and greater customer satisfaction.

D/ Disposition: There are three distinct ways to get rid of a product: sell it as-is, fix it up or use it again (in part), and then throw it away. Within each of these areas, some essential activities include:

Sell as-is: Resale (as new), sale through a discount or outlet store, sale through an online auction, and sale to the secondary market. Reuse or repair: Modify, recycle, refurbish, or remanufacture.

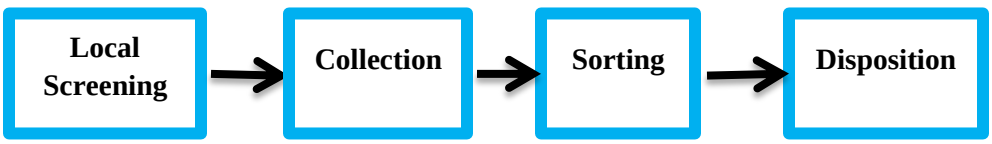
Dispose: Recycle, give (to charity), and do so safely (for example, certain drugs). The goal of disposal should be to get the maximum money out of reclaimed products or to get rid of them as cheaply as possible. There are seven stages in the waste management chain, each of which will

be carried out by a different important player. The storage of wastes is the first step in the waste management process.

The process of temporarily storing waste where it is created until it is collected or moved to the following step in the waste management chain. Primary collection is the second stage along the chain. The gathering, loading, and subsequent movement of items deemed waste by the generator from the point of generation to an intermediate transfer point, where they are either transferred to secondary collection or transferred to another generator. Waste is sorted, loaded, and moved during the secondary collection stages from the primary collection service's end point to a location for recycling, treatment, or disposal. The following process in the chain is transfer. Shifting garbage physically from one subsystem to another with the intention of enhancing transportation effectiveness. Change the character and content, or lessen or eliminate its potential for harm to living things and the environment, through the treatment biological, chemical, or mechanical procedures used to remove pollutants from industrial or municipal wastes. Disposal is the last action in the chain. Sites where waste is dumped and its in situ degradation is either, preferably, managed under a controlled physical, biological, and chemical process until it is rendered safe or, preferably not, thrown in the natural environment with uncontrolled consequences. There are various degrees of control in between these two extremes (Blackburn et al., 2004)

Figure 3

Reverse logistics Functions of CCBA



2.2.2 Reverse Logistics Effectiveness

Due of the higher level of complexity and uncertainty, RL requires a lot of information (Bai and Sarkis, 2013; Madaan and Wadhwa, 2007). In contrast to forward flows, the supply chain is more complex and uncertain due to a variety of factors, including occasionally even players. As a result, through the integration and cooperation processes, information and knowledge should be shared with the external partners. According to (Fugate, Stank, and Mentzer ,2008) RL can play a significant role in integrating supplier and customer knowledge to deliver the appropriate inputs for customers' anticipated value creation, thereby reducing the number of product returns or providing accurate information about the status of returned products. One of the key factors in achieving outstanding effectiveness is providing the consumer with the proper and expected goods (Esper et al., 2010). Many experts argue that as this has also received relatively little attention, it is important to focus on the first-tier supply chain integration in reverse supply chain activities and how it affects effectiveness (Bernon et al., 2013; Mellat-Parast and Spillan, 2014). The case of RL necessitates not just operational or ad hoc decisions, but also strategic planning because to the increased complexity and uncertainty, as well as the need for additional investments and the engagement of additional processes and activities (Jayaraman and Luo, 2007). One of the biggest obstacles to effective RL is the lack of strategic planning and inadequate forecasting (Ravi and Shankar, 2005; Rogers, Melamed and Lembke, 2012; Ye et al., 2013). Key success aspects are considered to include planning and any related managing (De Brito, Dekker and Flapper, 2005). After reviewing the research that is currently available, we can concur with De Brito, Dekker, and Flapper (2005) findings and point out another knowledge gap that offers almost no insight into planning as one of managerial functions associated with RL

having some outcome, despite the fact that their analysis is more than ten years old and was conducted on a small sample of sources. There is also just the very limited number of empirical findings demonstrating the relationship between the involvement of RL planning and company performance, so the relevance of this managerial factor is not clear enough and insufficiently supported.

2.2.2a: Selected Effectiveness Factors

1) Organizational Planning, Knowledge Management and Effectiveness of Reverse Logistics.

Strategic, tactical, and operational planning horizons should all be included in RL planning since they each reflect distinct tasks, resource demands, and anticipated and planned outcomes (De Brito, Dekker and Flapper, 2005). Planning, and strategic planning in particular, may increase effectiveness and competitiveness more so than sustainable methods (Shaik and Abdul-Kadar, 2012). Knowledge with strategic value is the foundation for effective strategic planning (McKeen, Zack and Singh, 2009). Strategic knowledge management supports the development and deployment of core competencies and resources both inside and outside the firm, which is why it is interdependent with strategic planning (Snyman and Kruger, 2004; McKeen, Zack and Singh, 2009). However, experience has shown that decisions in RL prevalently have an operational character, due to the reactive and not proactive character of decision making related to RL (Rogers, Melamed and Lembke, 2012).

2) Knowledge Management, 1st-tier Integration and Effectiveness of Reverse Logistics

RL need adequate knowledge management to help companies to be efficient and effective in their RL processes (Mihi Ramírez, 2012) due to its higher complexity and uncertainty as well as the specificities of many aspects and activities (Wadhwa and Madaan, 2007). When compared to

forward logistics, reverse operations require more information (R. Stock, Speh, and Shear, 2006), particularly when firms are faced with a variety of recovery possibilities and the reverse supply chain is designed more like a network of various actors. As a result, information systems play a critical role in the success of RL because they are often the foundation of knowledge management (Gunasekaran, Ngai, and Cheng, 2007), can track and measure goal attainment (Hazen, Overstreet, and Cegielski, 2012), and can be used to evaluate the efficacy of RL decisions and activities.

3) External Integration and Collaboration and Effectiveness of Reverse Logistics

According to Tibben-Lembke and Rogers (2002), RL, which is a crucial component of supply chain management, necessitates planning, effective execution, and intensive interactions among the enterprises involved in the entire supply chain, frequently extending beyond the purview of a single supply chain. RL has a substantial strategic impact on business performance in terms of economic, social, and environmental challenges, as seen by several successful stories (Dowlatshahi, 2005; Lambert, Riopel and Abdul-Kader, 2011). (Wu, Melnyk, and Flynn, 2010) discuss the advantages of supplier and customer integration, which minimizes product returns and increases customer satisfaction by reducing waste through information exchange, shared planning, and a better understanding of client requirements. Other advantages that could result in higher RL effectiveness in the supply chain include better understanding of supplier capabilities and resources, risk sharing, costs and investments, mutual problem solving, systematic waste reduction and elimination, reducing reverse operations of uncertainty, and overcoming planning complexity (Liu et al., 2013; Mihi Ramrez, 2012, cited in Radoslav and Alena, 2019)

2.2.3 Reverse Logistics Challenges

Reverse logistics and returns management are intricately linked operations that call for collaboration between many businesses through a variety of modalities, such as product inspections, planning, scheduling, and dispatch. These efforts may be made even more difficult in the manufacturing industry, when factors like product value, portability, and size may be constrained logistically. Complex return order flows, return merchandise authorization (RMA), changing customer expectations, customer knowledge gaps, scaling operations to meet the rising demand, waste reduction, and carbon emission reduction are some of the challenges associated with returns management in the manufacturing sector(Vijay, 2022)

A) Complex Return Order Flows

Coordination between numerous business partners and sites of origin is necessary for reverse supply chains. A number of procedures are involved in receiving and handling a return once a product arrives at a Central DC (CDC) or Returns Forwarding Center (RFC), for example: Verifying the product, Inspecting the product, Testing the product, Potentially troubleshooting on-site or sending the product to a different facility for repairs, Whether it would be more cost-effective to scrap or recycle raw materials instead of refurbishing the damaged product. Repackaging the goods so it may be delivered to be put back in inventory or Returned to Vendor (RTV). Because returns management and reverse logistics involve so many variables, it’s a consistent challenge for manufacturers to manage information flow between silos and track orders. In such environments, returns management solutions as part of a multi-enterprise supply chain network platform can easily integrate many processes and systems to provide holistic planning and execution, as well as end-to-end visibility and control.

B) Return Merchandise Authorization (RMA)

Reverse supply chains may have several levels between the provider and the buyer, and the farther apart they are, the more challenging it may be to communicate information between them. A returns management system must be able to accept requests from a range of potential sources since an RMA can occur via phone, email, or another form of contact. This communication requirement necessitates gathering and consolidating information from various sources, which may be done automatically through software integration and assisted further by end-to-end transparency at every transaction point. The installer or field engineer in charge of allowing returns should make an effort to ascertain the reason for the return before making an effort to rule out faults brought on by installation and misapplication mistakes. If the issue can be fixed on-site, the vendor can provide the consumer a quick fix, convince them not to return the item they bought, and avoid revenue loss.

On the other hand, if the return is authorized, specifics regarding the entitlements, service level expectations, and order constraints can be noted and taken into consideration, provided that the information is properly communicated through subsequent events in the returns and reverse logistics channels. This example demonstrates how information flow between enterprises can streamline operations, which gives suppliers more control over preventing returns when possible and improving operational efficiencies.

C) Changing Customer Expectations

Customers in B2C markets and direct-to-consumer (D2C) industries have grown to expect many of the same services that are now standard in B2C markets and e-retail, including, for example, inventory availability, delivery alternatives, and "easy of returns." Manufacturers are now

expected to provide the same level of customer support, even though many of these features were first introduced by online retailers. Therefore, in order to meet demand and maintain market competitiveness, firms are driven to optimize returns management systems. Organizations can increase brand loyalty and customer satisfaction, which can lead to future sales, by meeting or exceeding customer service expectations, including handling returns and remanufacturing orders.

D) Customer Knowledge Gap

Even if the product is perfectly functional, the producer runs the danger of dealing with a lot of returns if they provide unclear information about it (such as the technical specs). To prevent making unneeded purchases and subsequent returns, clients often require assistance with product selection.

Providing thorough inventory catalogs and identification guides is one approach to assist clients in making knowledgeable purchasing decisions. To promote engagement and decrease user-related errors that could lead to an increase in returns, suppliers may also decide to host educational content online or ship their products with "Quick-Start" product inserts.

E) Scaling Operations to Meet the Rising Demand

Since the pandemic began, people all around the world have become more dependent on gadgets in their homes, including workout equipment and appliances. Regular use hastens wear and tear, increasing the need for repair services. Manufacturers are incentivized to reduce downtime and turnover by automating old operations in order to keep up with the rising demand. Reverse logistics, which entails returning a faulty or malfunctioning product for inspection, remanufacturing, or scrapping, is sometimes handled through different routes in reverse supply chains. The common practice of outsourcing inspection, diagnostics, repairs, testing, etc. to outside depots can add new layers of complexity. Segmentation brought on by siloing can be

lessened with the aid of a supply chain control tower that offers complete end-to-end visibility and performance monitoring. Automation can streamline the process further by applying smart business rules to align objectives between returns and reverse logistic channels to optimize resources.

F) Waste and Carbon Emission Reduction

There are more and more alternatives available to businesses looking to cut waste and carbon emissions in their supply chains. These initiatives center on the six pillars of a circular economy: Utilize, Recycle, Remanufacture, Reuse, and Recover

Manufacturers can increase the lifespan of their products and decrease their need for new materials by implementing these tactics into the reverse supply chain. Environmental laws and government obligations are further incentives for businesses to advance in this field. For some market areas, "green" supply chain sourcing, transportation, and packaging can even be positioned as competitive advantages. (Vijay, 2022)

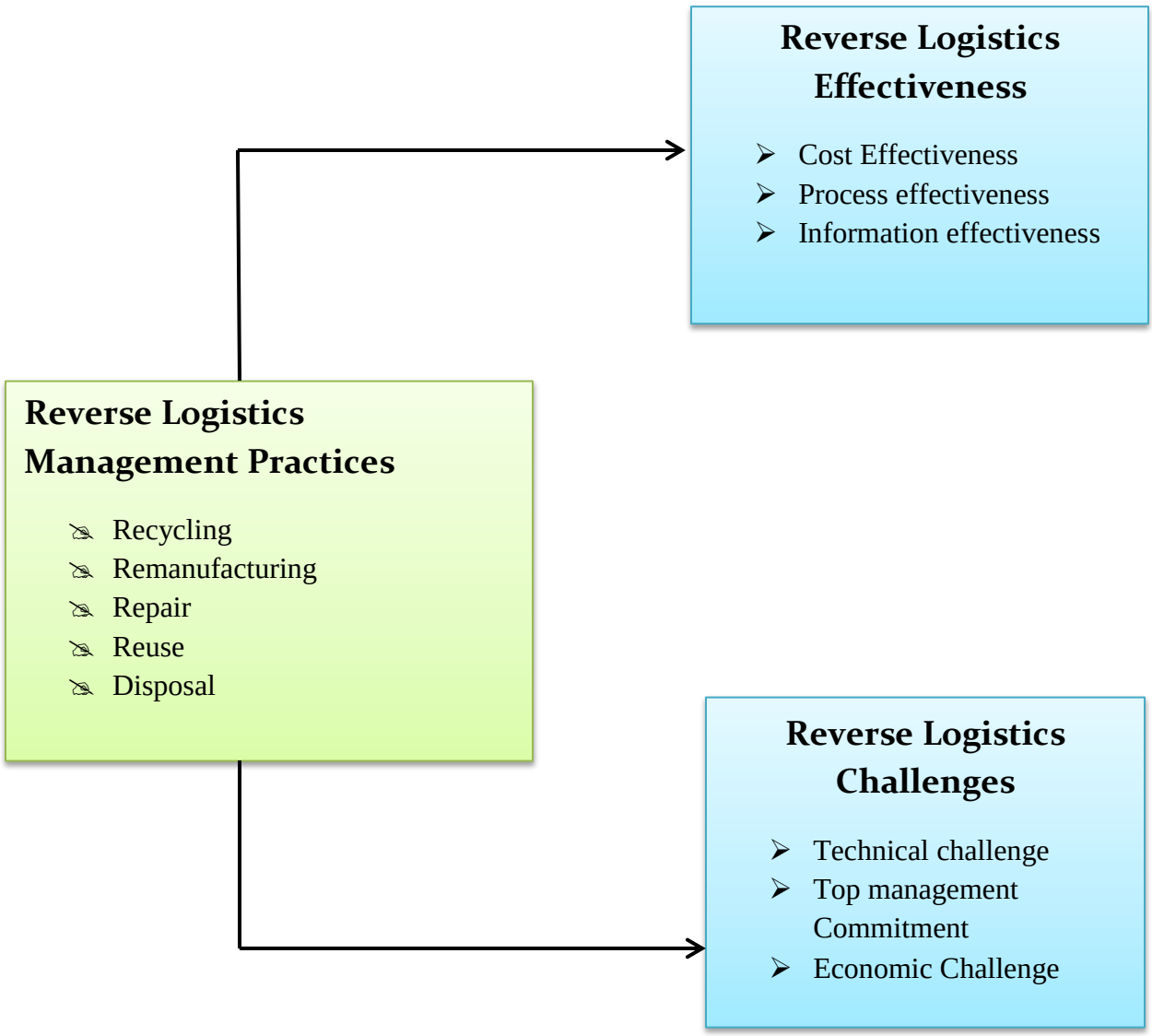
2.3 Conceptual Framework

The organization of important ideas and central concepts from theories, significant research findings, policy recommendations, and other expert knowledge that serve as the project's compass are represented by the conceptual framework. To establish the study's emphasis and direction, the conceptual framework arranges the essential concepts in the investigation. The key ideas are generated from an examination of pertinent themes and expressions found in literature as well as from the results of literary theories. (Elock, 2020).

The effectiveness and constraints of Coca-Cola beverage Africa's reverse logistics are conceptualized in this study.

Figure 4

Conceptual framework of Reverse logistics



Source: 'From 6 Critical Challenges in Returns Management and Reverse Logistics'

(Vijay, 2022)

CHAPTER THREE: RESEARCH METHODOLOGY

Basically the research activity must follow the best research design in order to get reliable and valid outcomes which are linked logically. Under this chapter: description of the study area, research design, research approach, population and sampling, data sources and types, data collection procedures, data analysis, validity and reliability test were discussed.

Research methodology simply refers to the practical “how” of any given piece of research. More specifically, it’s about how a researcher systematically designs a study to ensure valid and reliable results that address the research aims and objectives. In other words, the methodology chapter should justify the design choices, by showing that the chosen methods and techniques are the best fit for the research aims and objectives, and will provide valid and reliable results (Jansen & Warren, 2020).

3.1 Description of the Study Area

The researcher sought to do a descriptive style of research in order to answer the how, what, where, and when questions because the case company uses particular materials regularly in the manufacturing and marketing process through reverse logistics. The focus of the research is on the effectiveness and challenges of Coca-Cola beverage Africa's reverse logistics management methods at Addis Ababa manufacturing plant.

Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables. Unlike in experimental research, the researcher does not control or manipulate any of the variables, but only observes and measures them. (Shona, 2019)

3.2 Research Design

From the very beginning of its nature, reverse logistics activities are highly integrated with other operations and surrounding which require answer the “WH” questions in relation to the existing scenario, so, descriptive research design was implemented to give answer for different related questions. A very significant decision in research design process is the choice to be made regarding research approach since it determines how relevant information for a study will be obtained; however, the research design process involves many interrelated decisions. (Sileyew, 2019).

3.3 Research Approach

The researcher used mixed approach of both quantitative and qualitative techniques to evaluate the effectiveness and challenges of reverse logistics practices.

3.4 Population and Sampling Design

From facts on the ground the RL activities of the case company is performed by the direct involvement of the logistics and sales personals; hence, the study's population was constructed by 110 logistics and 70 sales employees in Addis Ababa, who were chosen randomly. Since the population was divided into logistics and sales personnel, the researcher intends to utilize the cluster sampling approach of probability sampling, specifically two stages sampling, because a random sample of units from inside the clusters was used (Singh, 2018)

In order to determine the sample size the researcher intended to apply Taro Yamane method.

- $n = N/(1+N(e)^2)$

Where:

n: signifies the sample size

N: signifies the population under study

e: signifies the margin error (it could be 0.10, 0.05 or 0.01) (Taro Yamane, 2016). Since the margin of error 0.10(90%) is the least conservative, 0.01(99%) is the most conservative, and 0.05(95%) is the most commonly used (Hayes, 2021).

The researcher applied the most commonly used one. Therefore; from the population of logistics staff, 110 in number we acquired:

$n = 110/ (1+110(0.05)^2)$

$= 110/1.2750$

$= 86.27 \approx 86$ logistics staff as a sample.

And from the population of 70 sales staff we developed:

$n = 70/ (1+70(0.05)^2)$

$= 70/1.1750$

$= 59.57 \approx 60$ as a sample. Hence, 86 logistics staff and 60 sales staff, totally 146 samples were selected randomly.

3.5 Data Sources and Types

The researcher used both primary and secondary data sources collected from logistics and sales team, concerned departments in the company respectively. The primary data was collected through questioners, and physical observation. Secondary data was based on written documents in the case company.

The data collection mechanisms are devised and prepared with their proper procedures. Primary data sources are qualitative and quantitative. The qualitative sources are field observation, interview, and informal discussions, while that of quantitative data sources are survey questionnaires and interview questions (Sileyew, 2019).

3.6 Data Collection Procedures

The primary data collection was executed by physically distributing the questionnaire among staffs of logistics and sales departments. The collected questioner was coded for the analysis purpose.

3.7 Data Analysis

The data analysis was held by using descriptive technique to answer the basic questions raised in the problem statement. The questioners, and observation was used to support the findings. The analysis was incorporated with the quantitative discussion results in the data analysis parts. The quantitative data obtained from primary sources was analyzed using SPSS Version 20, Microsoft Excel and Word 2010.

3.8 Reliability test

The reliability of this study was confirmed using SPSS with Cronbach Alpha (with a coefficient value of $\alpha \geq 0.7$) and a likert-scale data type. Therefore according to the reviled output of both reverse logistics effectiveness and challenges the Cronbach Alpha is .873 and .787 respectively.

Reliability refers to how consistently a method measures something. If the same result can be consistently achieved by using the same methods under the same circumstances, the measurement is considered reliable (Maddelton, 2019).

3.8.1. Reliability test of RL effectiveness

Internal consistency of items used to measure latent constructs is measured by reliability. The reliability analysis technique calculates a variety of regularly used scale reliability measures as well as information on the relationships between specific scale items. Dunn et al. (1994) define reliability as the scale's accuracy or precision. Cronbach's Alpha, Split-half, Guttman, Parallel, and Strict parallel are all methods for determining dependability. Cronbach's Alpha is the most extensively utilized of these measurement models.

The reliability test of the variables which are designed to construct for the evaluation of RL effectiveness and challenges are revealed. Hence, the reliability test for Cost effectiveness, Process effectiveness, and Information effectiveness are evaluated. As discussed earlier, each construct is composed of three, four, and two, totally nine variables respectively.

Table 1

Reliability Test for RL Effectiveness of CCBA

Reliability Statistics	
Cronbach's Alpha	N of Items
.873	9

3.8.2. Reliability test of RL challenges

For reliability test of RL challenges: Technical challenge, Top management commitment, and Economic challenge were evaluated. It was elaborated in the previous section that each construct was composed of six, two, and two variables respectively.

Table 2

Reliability Test for RL Challenges of CCBA.

Reliability Statistics	
Cronbach's Alpha	N of Items
.787	10

Nunnally (1978) offered a rule of thumb of 0.7. More recently, one tends to see 0.8 cited as a minimum alpha. One thing to keep in mind is that alpha is heavily dependent on the number of items composing the scale. Therefore based on the tables above, all of the constructs designed for RL effectiveness and RL challenges have a good Cronbach's Alpha of .873 and .787 respectively which indicates they are reliable and internally consistent.

3.9 Ethical Considerations

Prior to conducting an interview and filling the questioner the respondents were communicated clearly and exhibited their willingness, the respondents were also need not mention their names and other irrelevant information for the research. All primary or secondary data collected from every respondent were kept only for this research purpose only. The collected data was organized, interpreted, and used without any distortion. Research related idea was stated by mentioning the appropriate sources following the given citation and referencing style by the university; the validity and the reliability of the research was tasted through different scientific approaches; hence, ethics of research was strictly maintained.

Any research that involves human participants or identifiable personal data has ethical implications. Considering those implications – and addressing any issues arising – is a key element of good research practice. Research ethics is a vital element of research integrity, together with the scientific rigors of a project and the conduct of the researchers. In particular it concerns the safeguarding of any participants in the research (Robinson and Bawden, 2017).

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

To ensure that the data was representative, the questioner was distributed to logistics and sales personnel who had direct engagement in reverse logistics activities. The researcher aimed to categorize the linked idea into three primary aspects for the purpose of evaluating RL effectiveness: cost effectiveness, process effectiveness, and information effectiveness. Similarly, technical challenges, top management commitment, and economic challenges were highlighted in the assessment of RL challenges, and the success and challenges of RL operations were appraised in terms of each raised point. All questions were designed to be filled out on a likert scale of 1 to 5 / strongly disagree, disagree, neutral, agree, and strongly agree/ respectively; similarly, the evaluation point of RL in terms of its effectiveness and challenge were presented in three stages: 1 for not effective, 3 for neutral, and 5 for effective; and the challenges were evaluated by rating: 1 for strong challenge, 3 for moderate challenge, and 5 for no challenge; and the respondent were agreed to tick based on their level of agreement.

The requisite sample size was selected based on cluster sampling approach, the respondents were participating freely, and a brief talk regarding the notion of RL was given during the distribution of the questioner in order to achieve the desired outcome. Finally, the collected questioners were classified for data entry purposes based on the department and receiving sequence. For the appropriateness of the result the reliability test was evaluated by using Cronbach's Alpha.

4.2 Response rate and demographic data

Taking into account the staff population of logistics and sales persons, the sample size was determined based on Taro Yamane's method; hence, 86 questioners for the logistics staff and 60 questioners for sales departments were prepared and distributed; out of the total 146 questioners: 83 from logistics and 58 from sales department were filled and back to the researcher within a week; which is about 97% out of the total respondent. As shown in the table below 39.7% of them awarded first degree, 51.8% second degree; whereas 7.8% have had college diploma; this implies that the respondents filled the questioner by understanding the points raised and discussed. Besides, 83.1 % of the respondent service year was more than three years.

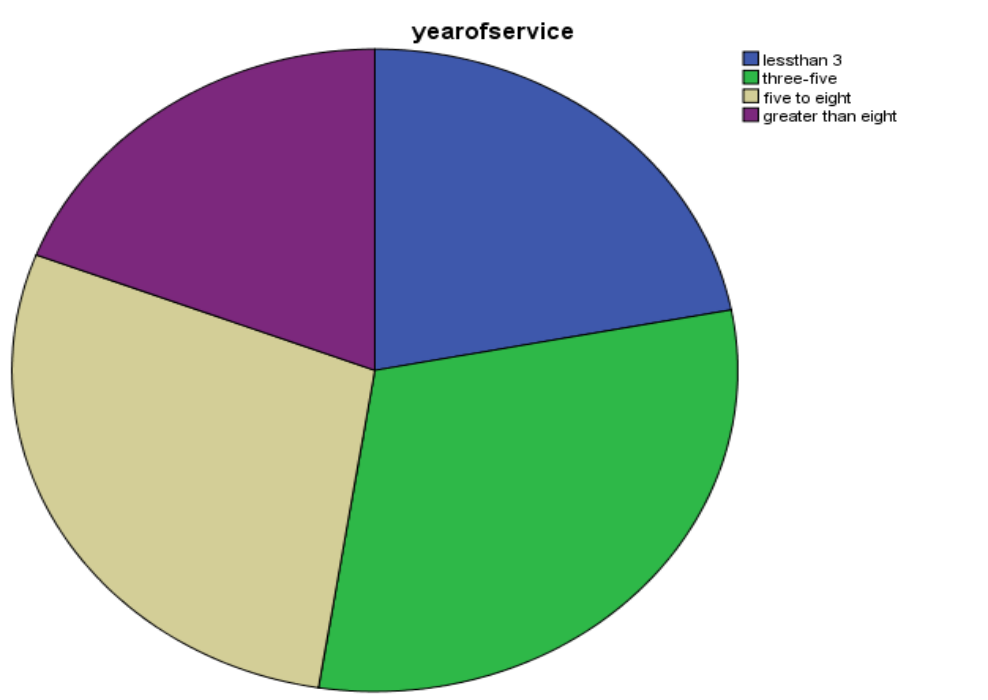
Table 3

Level of Education of the Respondents

Level of education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	literate	1	.7	.7	.7
	college diploma	11	7.8	7.8	8.5
	undergraduate	56	39.7	39.7	48.2
	postgraduate	73	51.8	51.8	100.0
	Total	141	100.0	100.0	

Figure 5

Service years of respondents



4.3 Descriptive Results of Reverse Logistics Effectiveness and Challenges

4.3.1 Reverse logistics Effectiveness

4.3.1.1 Reverse logistics effectiveness in terms of cost

According to the results displayed in table below; among the total respondents almost half, 49.6% agreed on that the RL activities of the case company are effective in terms different cost related points; which are: cost notification and prediction/$\mathbf{A_{1.1}}$/, cost center identification/$\mathbf{A_{1.2}}$/, and organizational role on RL activities/$\mathbf{A_{1.3}}$/

Table 4

Response on RL Activities in terms of Cost Effectiveness

Reverse logistics Cost effectiveness					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not effective	32	22.7	22.7	22.7
	neutral	39	27.7	27.7	50.4
	effective	70	49.6	49.6	100.0
	Total	141	100.0	100.0	

Table 5

Response on RL Effectiveness in terms of Cost Notification and Prediction

A1.1					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	6	4.3	4.3	4.3
	disagree	23	16.3	16.3	20.6
	neutral	53	37.6	37.6	58.2
	agree	45	31.9	31.9	90.1
	strongly agree	14	9.9	9.9	100.0
	Total	141	100.0	100.0	

Table 6

Response on RL Effectiveness in terms of Cost Center Identification

A1.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	7	5.0	5.0	5.0
	disagree	21	14.9	14.9	19.9
	neutral	48	34.0	34.0	53.9
	agree	37	26.2	26.2	80.1
	strongly agree	28	19.9	19.9	100.0
	Total	141	100.0	100.0	

Table 7

Evaluation of Organizational Role on RL practices

A1.3					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	11	7.8	7.8	7.8
	disagree	13	9.2	9.2	17.0
	neutral	54	38.3	38.3	55.3
	agree	44	31.2	31.2	86.5
	strongly agree	19	13.5	13.5	100.0
	Total	141	100.0	100.0	

4.3.1.2 Reverse logistics effectiveness in terms of process

Effective RL process demand harmonized and well integrated process, in this regard the research revealed the following result in terms of: allocated cycle time /$\mathbf{A_{2.1}}$/, appropriateness of allocated infrastructure /$\mathbf{A_{2.2}}$/, transport planning and load management /$\mathbf{A_{2.3}}$/, customer satisfaction and brand loyalty /$\mathbf{A_{2.4}}$/.

Table 8

Response for Process Effectiveness of RL Practices at CCBA

Reverse logistics Process effectiveness					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not effective	18	12.8	12.8	12.8
	neutral	40	28.4	28.4	41.1
	effective	83	58.9	58.9	100.0
	Total	141	100.0	100.0	

According to the respondents evaluation, one hundred forty-one in number; eighty-three ≈ 58.9% agreed on the processes effectiveness and eighteen≈ 12.8% voted for not process effectiveness of RL activities of the case company in terms of the given evaluation points.

Table 9

Result of Allocated Cycle time Effectiveness for RL Activities

A2.1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	3	2.1	2.1	2.1
	disagree	25	17.7	17.7	19.9
	neutral	44	31.2	31.2	51.1
	agree	54	38.3	38.3	89.4
	strongly agree	15	10.6	10.6	100.0
	Total	141	100.0	100.0	

According to the respondent's point of view, the average cycle time allocated for RL activities and its management practices were supported by 48.9%.

Table 10

Evaluation of Appropriate Infrastructure and Allocation of Resources for Effective RL

A2.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	5	3.5	3.5	3.5
	disagree	31	22.0	22.0	25.5
	neutral	41	29.1	29.1	54.6
	agree	49	34.8	34.8	89.4
	strongly agree	15	10.6	10.6	100.0
	Total	141	100.0	100.0	

The presence of appropriate infrastructures and allocation of different resources could play a vital role for effective reverse logistics activities, this also supported by the respondents of this questioner by 45.4%.

Table 11

Response for Transport Planning and Load Management of Vehicles

A2.3					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	2	1.4	1.4	1.4
	disagree	12	8.5	8.6	10.0
	neutral	37	26.2	26.4	36.4
	agree	55	39.0	39.3	75.7
	strongly agree	34	24.1	24.3	100.0
	Total	140	99.3	100.0	
Missing	-1.00	1	.7		
Total		141	100.0		

The above table result revel that, an implementation of transport planning and load management of vehicles of the case company was acknowledged by 63.1% of the respondents for the RL process effectiveness.

Table 12

Response for Brand Loyalty and Customer Satisfaction in relation to RL Process Effectiveness

A2.4					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1.00	1	.7	.7	.7
	strongly disagree	6	4.3	4.3	5.0
	disagree	10	7.1	7.1	12.1
	neutral	32	22.7	22.7	34.8
	agree	55	39.0	39.0	73.8
	strongly agree	37	26.2	26.2	100.0
	Total	141	100.0	100.0	

According to the above displayed result, customer satisfaction and brand loyalty can be considered for the RL process effectiveness significantly by 65.2%

4.3.1.3 Reverse logistics effectiveness in terms of Information

The researcher found the following facts in connection to the information effectiveness of the case company's RL activities, based on the aforementioned facts. For effective reverse logistics activities, the research primarily focused on the appropriate information flow between involved bodies ($\mathbf{A_{3.1}}$) and the presence of updated information technology ($\mathbf{A_{3.2}}$) of RL decisions and actions.

Table 13

Response of RL Information Effectiveness

Reverse logistics Information effectiveness					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not effective	16	11.3	11.3	11.3
	neutral	46	32.6	32.6	44.0
	effective	79	56.0	56.0	100.0
	Total	141	100.0	100.0	

The appropriateness of the flow of the information in between concerned bodies for the effectiveness of reverse logistics activities of the case company ($\mathbf{A_{3.1}}$) is specifically evaluated and rated by the respondents; hence 62 and 20 from the total respondent ≈ 58.2% are agreed and strongly agreed respectively.

Table 14

Response Given for RL Appropriate Information Flow in between Concerned Bodies

A3.1					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	11	7.8	7.8	7.8
	disagree	13	9.2	9.2	17.0
	neutral	35	24.8	24.8	41.8
	agree	62	44.0	44.0	85.8
	strongly agree	20	14.2	14.2	100.0
	Total	141	100.0	100.0	

The second point evaluated in relation to information effectiveness was the implementation of updated information technology in the company for the successful RL activities/$\mathbf{A_{3.2}}$/; therefore, 86 respondents ≈61% were agreed and strongly agreed towards this specific point.

Table 15

Response Given to the Implemented Updated Information Technology for RL Practices

A3.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	3	2.1	2.1	2.1
	disagree	12	8.5	8.5	10.6
	neutral	40	28.4	28.4	39.0
	agree	63	44.7	44.7	83.7
	strongly agree	23	16.3	16.3	100.0
	Total	141	100.0	100.0	

4.3.2 Reverse logistics Challenges

During the implementation of RL activities the case company faced different challenges; hence, the research assessed those challenges under three critical points; technical challenge, top management commitment, and economic challenge respectively.

4.3.2.1 Reverse logistics Technical Challenges

There are different technical challenges during RL activities; hence, the researcher tried to assess those challenges in relation to: technology ($\mathbf{B_{1.1}}$), absence of communication platform ($\mathbf{B_{1.2}}$), presence of knowledge gap ($\mathbf{B_{1.3}}$), scheduling gap ($\mathbf{B_{1.4}}$), inappropriate truck design ($\mathbf{B_{1.5}}$), and

absence of proper and clear procedural (**$B_{1.6}$**). In this regard the research reviled the following output.

Table 16

Response of RL Technical Challenge at CCBA

Reverse logistics Technical challenge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strong challenge	40	28.4	28.8	28.8
	moderate challenge	48	34.0	34.5	63.3
	no challenge	51	36.2	36.7	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

According to the above table, 36.2% out of the 139 respondents agreed that there was no challenge, 34% agreed that there was a moderate challenge, and 28.4% agreed that there was a strong challenge in regard to RL technical implementation.

One of the specific evaluated points was the presence the of technology related challenges for the implementation of reverse logistics activities in the company /**$B_{1.1}$**/, so the respondents gave the following evaluation point for this specific case. Hence, 43 respondents≈ 30.5% were disagreed and strongly disagreed on the presence of technological related challenges for the implemented RL Activities in the case company.

Table 17

RL Technology Related Challenge Evaluation Result.

B1.1					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	13	9.2	9.4	9.4
	disagree	30	21.3	21.6	30.9
	neutral	55	39.0	39.6	70.5
	agree	31	22.0	22.3	92.8
	strongly agree	10	7.1	7.2	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

The second point raised in this category was the presence of communication plat form to overcome the challenges of RL activities of the company, so 53 and 14 respondents≈ 47.5% out of the total respondents were agreed and strongly agreed respectively on its presence.

Table 18

Responses on the Presence of Communication Platform for Effective RL Activities

B1.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	12	8.5	8.7	8.7
	disagree	16	11.3	11.6	20.3
	neutral	43	30.5	31.2	51.4
	agree	53	37.6	38.4	89.9
	strongly agree	14	9.9	10.1	100.0
	Total	138	97.9	100.0	
Missing	-1.00	3	2.1		
Total		141	100.0		

The third case was related with the absence of considerable knowledge gap for the implementation of reverse logistics practices /$\mathbf{B_{1.3}}$/. So, 31 and 9 respondents≈ 28.4% out of the total respondents were agreed and strongly agreed respectively on its absences.

Table 19

Responses on the Absence of Considerable Knowledge Gap for Effective RL Activities

B1.3					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2.00	6	4.3	4.3	4.3
	strongly disagree	4	2.8	2.9	7.2
	disagree	41	29.1	29.5	36.7
	neutral	48	34.0	34.5	71.2
	agree	31	22.0	22.3	93.5
	strongly agree	9	6.4	6.5	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

The fourth case was related with the existence of challenge to schedule the reverse logistics activity of the company /$\mathbf{B_{1.4}}$/. So, 49 respondents≈ 34.7% were agreed and strongly agreed on its existence.

Table 20

Responses on the Existence of Challenge to Schedule RL Activities

B1.4					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	15	10.6	10.8	10.8
	disagree	36	25.5	25.9	36.7
	neutral	39	27.7	28.1	64.7
	agree	37	26.2	26.6	91.4
	strongly agree	12	8.5	8.6	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

The fifth scenario was to evaluate the current truck design and related challenge for RL implementation /$\mathbf{B_{1.5}}$/. In this regard, 43 respondents≈ 30.5% were agreed and strongly agreed on its effect.

Table 21

Responses on the Existence of Challenge in Relation to the Current Design of Trucks

B1.5					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	17	12.1	12.2	12.2
	disagree	34	24.1	24.5	36.7
	neutral	45	31.9	32.4	69.1
	agree	32	22.7	23.0	92.1
	strongly agree	11	7.8	7.9	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

The last evaluated point under this request was considering the absence of a proper and clear procedure /$\mathbf{B_{1.6}}$/ as RL challenge. So, 46 respondents≈ 32.7% were agreed and strongly agreed on RL activities could be affected by the absence of proper and clear procedure.

Table 22

Responses on the Existence of Challenge in relation to Proper and Clear Procedure

B1.6					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	14	9.9	10.1	10.1
	disagree	38	27.0	27.5	37.7
	neutral	40	28.4	29.0	66.7
	agree	29	20.6	21.0	87.7
	strongly agree	17	12.1	12.3	100.0
	Total	138	97.9	100.0	
Missing	-1.00	3	2.1		
Total		141	100.0		

4.3.2.2 Top Management Commitment

For strategic implementation of reverse logistics activities, the role of top management is vital, so evaluating the challenges of RL in terms of the commitment of top management is critical. According to Shaik and Abdul-Kadar (2012), Planning, and strategic planning specifically, lead to potentially higher effectiveness and competitiveness, so to the reverse non-committed management could yield lower effectiveness. Hence, under this sub-topic the research evaluated the challenge of RL activities due to the lower attention given by the managers /$\mathbf{B_{2.1}}$/ and the communication gap between them /$\mathbf{B_{2.2}}$/.

Table 23

Commitment of Top Management for RL Implementation

Top Management Commitment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not committed	27	19.1	19.6	19.6
	neutral	61	43.3	44.2	63.8
	committed	50	35.5	36.2	100.0
	Total	138	97.9	100.0	
Missing	-1.00	3	2.1		
Total		141	100.0		

According to the result displayed above in the table, the commitment of top management towards RL activities is about 35.5%, which is 50 respondents out-of 138; 61 respondents were neutral.

One of the points designed to evaluate the challenge was the lower attention given by the managers for RL implementation /$\mathbf{B_{2.1}}$/

Table 24

Respondent Evaluation of Lower Management Attention towards RL Implementation

B2.1					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	10	7.1	7.3	7.3
	disagree	39	27.7	28.5	35.8
	neutral	30	21.3	21.9	57.7
	agree	47	33.3	34.3	92.0
	strongly agree	11	7.8	8.0	100.0
	Total	137	97.2	100.0	
Missing	-1.00	4	2.8		
Total		141	100.0		

So, 58 of the respondents≈ 41.1% were agreed and strongly greed on the lower attention given to the reverse logistics by the managers could be the challenges for its implementation in the case company.

The second top management commitment was evaluated in terms of communication gap between the managers/ $\mathbf{B_{2.2}}$/, so according to their level of understanding, 57 of the respondent ≈40.4% were agreed and strongly agreed on that due to the communication gap among the managers, RL activities could be in challenge significantly.

Table 25

Respondent Evaluation on Management Communication gap on RL Activities

B2.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	7	5.0	5.1	5.1
	disagree	34	24.1	24.6	29.7
	neutral	40	28.4	29.0	58.7
	agree	36	25.5	26.1	84.8
	strongly agree	21	14.9	15.2	100.0
	Total	138	97.9	100.0	
Missing	-1.00	3	2.1		
Total		141	100.0		

4.3.2.3 Reverse logistics Economic Challenges

According to Irdiana,(2016) economy is stated in different research as one of the driving factor for the implementation of reverse logistics activities which contribute to an organization's decision to adopt reverse logistics activities as part of their supply chain management process. In this regard the researcher tried to assess the economic challenges of the cases company towards RL implementation based on: the impact of budget scarcity ($\mathbf{B_{3.1}}$) and challenges related to price inflation in the country ($\mathbf{B_{3.2}}$). Hence the following results were reviled based on respondent feedback.

Table 26

Respondents Evaluation of RL Economic Related Challenge

Reverse logistics Economic challenge					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strong challenge	13	9.2	9.4	9.4
	moderate challenge	59	41.8	42.4	51.8
	no challenge	67	47.5	48.2	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

Table 27

Response on Budget Scarcity for RL Implementation at CCBA

B3.1					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	12	8.5	8.6	8.6
	disagree	27	19.1	19.4	28.1
	neutral	45	31.9	32.4	60.4
	agree	39	27.7	28.1	88.5
	strongly agree	16	11.3	11.5	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

Based on the above table, budget scarcity can pose a challenge to the implementation of RL practices in the case company; thus, 39 and 16 out of 139 respondents agreed and strongly agreed that budget scarcity can pose a challenge to the implementation of RL practices in the case company; 27 and 12 people were disagreed and strongly disagree; while, 45 people were neutral respectively.

Table 28

Response for Price Inflation on RL Implementation at CCBA

B3.2					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly disagree	4	2.8	2.9	2.9
	disagree	10	7.1	7.2	10.1
	neutral	34	24.1	24.5	34.5
	agree	57	40.4	41.0	75.5
	strongly agree	34	24.1	24.5	100.0
	Total	139	98.6	100.0	
Missing	-1.00	2	1.4		
Total		141	100.0		

The responses to the impact of price inflation in the country on the case company's RL activities have been summarized in the table above; thus, 57 and 34 out of 139 respondents agreed and strongly agreed, 10 and 4 disagreed and strongly disagreed, and 34 respondents were neutral respectively on the impact of price inflation on RL implementation.

4.4 Interpretation and Discussion

4.4.1 RL Effectiveness

4.4.1.1 RL Cost effectiveness of CCBA

According to Iradian(2016), economic factors influence an organization's decision to adopt reverse logistics as part of their supply chain management process. In relation to the above point of view the effectiveness of reverse logistics activities due to cost related points was evaluated in the case company, so as displayed under sub-title 4.3.1.1 RL activities are highly interrelated with cost notification and prediction in CCBA

4.4.1.2 RL Process effectiveness discussion of CCBA

For the better execution of RL process we need to have highly integrated and strategically set plan. According to Ravi and Shankar, (2005); Rogers, Melamed and Lembke, (2012); and Ye et al., (2013) the lack of strategic planning and limited forecasting is one of the greatest barriers to effective RL. De Brito, Dekker and Flapper, (2005) also pointed out that RL planning should cover all planning horizons – strategic, tactical and operational because every level represents specific tasks and demands specific resources and results in specific expected and planned attainments. Jayaraman and Luo, (2007) also explain that higher complexity and uncertainty as well as requirements for additional investments and involvement of further processes and activities in the case of RL demand not only operational or ad hoc decisions but also strategic planning. In relation to the above description the researcher examined RL effectiveness in terms of process, so as displayed under sub-title 4.3.1.2 RL activities are highly interrelated with process effectiveness.

4.4.1.3 RL Information effectiveness discussion of CCBA

In this technological era, information plays a critical role in achieving strategic objectives; in particular, a consistent flow of information is critical for successful reverse logistics operations. R. Stock, Speh, and Shear (2006) say that the nature of reverse logistics has always been very information dependent. Compared to forward logistics, reverse processes are more information intensive, especially in the case when organizations are dealing with multiple recovery options and the design of the reverse supply chain is more in the form of a network with different actors. Information systems, according to Gunasekaran, Ngai, and Cheng (2007), are a critical actor in the success of RL since they constitute the backbone of knowledge management for many, and they can track and measure goal attainment as well as analyze the effectiveness. Based on the above facts the researcher examined the effectiveness of RL of the case company in terms of information; hence, as displayed under 4.3.1.3 it is evaluated by 79 respondents≈ 56% as it is effective.

4.4.2 RL Challenges Interpretation and discussion

4.4.2.1 RL Technical challenge discussion

According to Vijay,(2022), Complex Return Order Flows, Return Merchandise Authorization (RMA), Changing Customer Expectations, Customer Knowledge Gap, Scaling Operations to Meet the Rising Demand, and Waste and Carbon Emission Reduction are among return management challenges in the manufacturing sector. During the implementation of the four basic RL functions of the cases company; local screening, collecting, sorting, and disposition the case company follow different procedures, for instance during the reverse flow the company implement centralized reverse supply chain, which accomplish all RL functions by the company itself, so local screening at the OCCD, collection, sorting out sound glass retrieved from different

outlets, and disposition of expired products to west water treatment plant are accomplished by the company, hence during this all operations different challenges could exist, so those challenges; which are technologically related (**$B_{1.1}$**), absence of communication platform (**$B_{1.2}$**), presence of knowledge gap (**$B_{1.3}$**), scheduling gap (**$B_{1.4}$**), inappropriate truck design (**$B_{1.5}$**), and absence of proper and clear procedural (**$B_{1.6}$**) were evaluated and tested under RL technical challenge. Therefore according to the result displayed on 4.3.2.1: 51 of the 139 respondents agreed that there was no challenge, 48 agreed that there was a moderate challenge, and 40 agreed that there was a strong challenge in regard to RL technical implementation.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter is divided into three sections: a summary, conclusion, and a recommendation for additional research. Different points that are directly related and pertinent to this work have been raised in each distinct section: In the summary section, the most important findings from the study were elaborated and addressed. The conclusion section elaborates on several outputs based on the research flow, whilst the recommendation section aims to highlight various study areas in relation to RL operations in the case company.

5.2 Summary

As stated in the research's results and discussion section, RL operations are based on cost, processes, and information effectiveness. Respondents scored the case company's RL operations in terms of cost, processes, and information in this regard, with 49.6% agreeing that the CCBA's RL system is effective in terms of various cost-related activities. 58.9% of respondents felt that the case firm is effective in terms of the RL system's process effectiveness. In terms of information, 56 percent of respondents believed the case company's RL activities were effective.

The technical, senior management commitment and economic challenges of RL activities were also assessed. As a result, 36.2 percent of respondents rated the case company's RL activities as having no technical obstacles. 35.5 percent of respondents believed that top management is committed to effective RL efforts, while 43.3 percent declined to evaluate. In terms of the economies impact on the case company's RL activities, 47.5 percent felt that there was no challenge, 41.8 percent agreed that there was a moderate challenge, and 9.2 percent thought that there was a strong challenges.

5.3 Conclusions

RL is extremely connected and correlated with many scenarios that are both internally and outside included due to its nature of activities. Organizations must focus on several opportunities that contribute to maximum deliverance in order to perform effective and efficient RL initiatives. Coca-Cola Beverage Africa is Ethiopia's biggest soft drink manufacturer, and its reverse logistics practices necessitate a variety of multi-directional research. As a result, a few issues are addressed in this study in regard to the effectiveness and limitations of RL activities. Respondents also expressed their thoughts on the effectiveness and limitations of the case company's reverse logistics efforts based on their degree of understanding. The result reviled that the case company reverse logistics is effective in terms of process, Information, and cost respectively according to the given point of value.

Technical concerns, top management commitment, and economic situations were all considered while evaluating the challenges of completing RL operations. According to the responses, economic related challenges are more severe than technical challenges, and technical challenges are also more severe than uncommitted top management.

5.4 Recommendations

Because reverse logistics is such a large and complicated part of the supply chain, it necessitates different research in different dimensions. For example, the effectiveness and challenges of RL in the case company cannot be fully measured and assessed using the variables listed in this study, so anyone who gets the chance can conduct research in any other dimension. More over; in order to attain 70% of market share, 80 million unit cases of sales volume with in the current year, Coca Cola beverage Africa utilizing 150 HDV, 90 MDV, and 17 LDV Country-wide, out of these: 90 HDV, 60 MDV, and 15 LDV are found in Addis Ababa. Those trucks assigned for PET sales are face free-raid unless the fright is to company depots; even though, if there is no inbound logistics from depots, there is also free-raid; hence, according to the above mentioned scenario the effectiveness of the reverse logistics activities were expected to diminished, so the effect of free-raid and the benefits which could be gain can assessed

5.5 Limitation and suggestion for further study

According to the scope of reverse logistics, this study may not encompass everything that is required. All of the data used in this study came from firm employees; if other stakeholders were involved, the conclusions of the study might have been different. Because experience from other similar companies is not included, a new study might be conducted by avoiding the aforementioned restrictions.

In most situations, there is free-raid associated with PET sales of the case company, thus there is a chance to conduct study into the incidence of these free-raid and how to transition to a different source of income.

References

Abidin, M., Bakar, A. and Kumar, M. (2017). Impact of Reverse Logistics in the Malaysian Electrical and Electronics Industry.

Adedokun, B. (2011). P-Value and confidence intervals - facts and farces. Annals of Ibadan Postgraduate Medicine, 6(1).

Bai, C. and Sarkis, J. (2013). Flexibility in reverse logistics: a framework and evaluation approach. *Journal of Cleaner Production*, 47, pp.306–318

Banihashemi, T.A., Fei, J. and Chen, P.S.-L. (2019). Exploring the relationship between reverse logistics and sustainability performance. *Modern Supply Chain Research and Applications.*

Bernon, M., Upperton, J., Bastl, M. and Cullen, J. (2013). An exploration of supply chain integration in the retail product returns process. *International Journal of Physical Distribution & Logistics Management*, 43(7), pp.586–608.

Carter, C.R., Ellram, L.M. and Ready, K.J. (1998). Environmental Purchasing: Benchmarking Our German Counterparts. *International Journal of Purchasing and Materials Management*, 34(3), pp.28–38. doi:10.1111/j.1745-493x.1998.tb00299.x.

CSCMP Supply Chain Management Definitions and Glossary. (2013).

Dowlatshahi *, S. (2005). A strategic framework for the design and implementation of remanufacturing operations in reverse logistics. *International Journal of Production Research*, 43(16), pp.3455–3480

Dunn, J., Slomkowski, C. and Beardsall, L. (1994). Sibling relationships from the preschool period through middle childhood and early adolescence. Developmental Psychology, 30(3), pp.315–324.

Elock, E.S. (2020). Defining a Conceptual Framework in Educational Research. p.2.

Esper, T.L., Ellinger, A.E., Stank, T.P., Flint, D.J. and Moon, M. (2009). Demand and supply integration: a conceptual framework of value creation through knowledge management. *Journal of the Academy of Marketing Science*, 38(1), pp.5–18.

Fleischmann, M., Krikke, H.R., Dekker, R. and Flapper, S.D.P. (2000). A characterisation of logistics networks for product recovery. *Omega*, 28(6), pp.653–666.

Fugate, B.S., Stank, T.P. and Mentzer, J.T. (2008). Linking improved knowledge management to operational and organizational performance. Journal of Operations Management, 27(3), pp.247–264.

Genchev, S.E., Glenn Richey, R. and Gabler, C.B. (2011). Evaluating reverse logistics programs: a suggested process formalization. *The International Journal of Logistics Management*, 22(2), pp.242–263.

GlobalTranz (2021). What is Reverse Logistics? *GlobalTranz Resources.*

Gunasekaran, A., Ngai, E.W.T. and Cheng, T.C.E. (2007). Developing an e-logistics system: a case study. *International Journal of Logistics Research and Applications*, 10(4), pp.333–349.

Hazen, B.T., Overstreet, R.E. and Cegielski, C.G. (2012). Supply chain innovation diffusion: going beyond adoption. *The International Journal of Logistics Management*, 23(1), pp.119–134.

International Journal Of Core Engineering & Management. (2014). 1(2).

Irdiana, N. (2016). Reverse Logistics in Food Industries. p. 5.

Jansen, D. and Warren, K. (2020). What (Exactly) Is Research Methodology?.

Jayaraman, V. and Luo, Y. (2007). Creating Competitive Advantages Through New Value Creation: A Reverse Logistics Perspective. *Academy of Management Perspectives*, 21(2), pp.56–73.

Joseph D.Blackburn, V. Daniel R. Guide, Jr., Gilvan C. Souza, Luk N. Van Wassenhove (2004). Reverse Supply Chains for Commercial Returns

Keith A. Willoughby (1998). The Disposal of Excess Stock. P.20

Khor, K. and Udin, Z. (2012). Impact of Reverse Logistics Product Disposition towards Business Performance in Malaysian E&E Companies. *Journal of Supply Chain and Customer Relationship Management*, pp.1–19.

Lambert, S., Riopel, D. and Abdul-Kader, W. (2011). A reverse logistics decisions conceptual framework. *Computers & Industrial Engineering*, 61(3), pp.561–581.

Liu, X., Zhang, Y., Han, W., Tang, A., Shen, J., Cui, Z., Vitousek, P., Erisman, J.W., Goulding, K., Christie, P., Fangmeier, A. and Zhang, F. (2013). Enhanced nitrogen deposition over China. Nature, 494(7438), pp.459–462.

Madaan, J. and Wadhwa, S. (2007). Flexible Process Planning Approaches for Sustainable Decisions in Reverse Logistics System. Global Journal of Flexible Systems Management, 8(4), pp.1–8.

Maddelton, F. (2019). Reliability vs Validity in Research | Differences, Types and Examples.

Marisa P.de Brito and Rommert Dekker(2002). Reverse Logistics- a framework

Mellat-Parast, M. and E. Spillan, J. (2014). Logistics and supply chain process integration as a source of competitive advantage. *The International Journal of Logistics Management*, 25(2), pp.289–314.

Mihi Ramírez, A. (2012). Product return and logistics knowledge: Influence on performance of the firm. *Transportation Research Part E: Logistics and Transportation Review*, 48(6), pp.1137–1151.

Nunnally, J. C. (1978). Psychometric Theory (2nd ed.)

P. de Brito, M., Dekker, R. and P. Flapper, S.D. (2005). Reverse Logistics: *A Review of Case Studies*.

P. Murphy and R. F. Poist (1988). MANAGEMENT OF LOGISTICAL RETROMOVEMENTS: AN EMPIRICAL ANALYSIS OF LITERATURE SUGGESTIONS. *Journal of the Transportation Research Forum*.

Patyk, M.S. and Grabara, J.K. (2010). Reverse Logistics Processes In Industrial Waste management As An Element of Sustainable Development. *Annales Universitatis Apulensis Series Oeconomica*, 2(12), p. 3.

R. Stock, J., Speh, T.S. and Shear, H. (2006). Managing product returns for competitive advantage.

Radoslav, Š. and Alena, K. (2019). The Effectiveness of Reverse Logistics: *The Empirical Test of Its Factors for Product Returns Reduction*. pp.86–104.

Ravi, V. and Shankar, R. (2005). Analysis of interactions among the barriers of reverse logistics. *Technological Forecasting and Social Change*, 72(8), pp.1011–1029.

Robinson, L. and Bawden, D. (2017). 'The story of data'. Library Management, 38(6/7), pp.312–322.

Rogers, D.S. and Tibben- Lembke, R.S. (1999). "Reverse logistics": strategies et techniques. *Logistique & Manaement*, 7(2), pp. 15-25.

Rogers, D.S., Melamed, B. and Lembke, R.S. (2012). Modeling and Analysis of Reverse Logistics. *Journal of Business Logistics*, 33(2), pp.107–117

Saul McLeod (2021). What is a hypothesis?

Shaik, M. and Abdul-Kader, W. (2012). Performance measurement of reverse logistics enterprise: a comprehensive and integrated approach. *Measuring Business Excellence*, 16(2), pp.23–34.

Shona, McCombes. (2019). Descriptive Research Design | Definition, Methods & Examples.

Sileyew, K.J. (2019). Research Design and Methodology.

Singh, S. (2018). Sampling Technique.

Snyman, R. and Kruger, C.J. (2004). The interdependency between strategic management and strategic knowledge management. *Journal of Knowledge Management*, 8(1), pp.5–19

Starostka-Patyk, et al,(2017) Reverse logistics of defective products in management of manufacturing enterprises Katowice, Poland

Starostka-Patyk, M., Bartłomiej Stanirowski and Wydawnictwo Naukowe Sophia (2017). *Reverse logistics of defective products in management of manufacturing enterprises* : monograph. Katowice: Wydawnictwo Naukowe Sophia.

Starostka-Patyk, T.N. (2014). LCA Approach to Management of Defective Products in Reverse Logistics Channels. p. 3.

Sureka, G., Bandara, Y.M. and Wickramarachchi, D. (2018). Factors Affecting the Efficiency and Effectiveness of Reverse Logistics Process. Journal of International Logistics and Trade, 16(2), pp.74–87.

Taro Yamane (Dec 3, 2016). How to Calculate a Reliable Sample size using Taro Yamane Method

Tibben-Lembke, R.S. and Rogers, D.S. (2002), "Differences between forward and reverse logistics in a retail environment", *Supply Chain Management: An International Journal*, Vol. 7 No. 5, pp. 271-282.

Vijay, N. (2022). 6 Critical Challenges in Returns Management and Reverse Logistics.

Wadhwa, S. and Madaan, J. (2007). Conceptual framework for knowledge management in reverse enterprise system.

Wu, S.J., Melnyk, S.A. and Flynn, B.B. (2010). Operational Capabilities: The Secret Ingredient. Decision Sciences, [online] 41(4), pp.721–754.

Ye, F., Zhao, X., Prahinski, C. and Li, Y. (2013). The impact of institutional pressures, top managers' posture and reverse logistics on performance—Evidence from China. *International Journal of Production Economics*, 143(1), pp.132–143.

Zack, M., McKeen, J. and Singh, S. (2009). Knowledge management and organizational performance: an exploratory analysis. *Journal of Knowledge Management*, 13(6), pp.392–409.

Zegers, T. (2021). Reframing Reverse Logistics: Better Business, Better World.

APPENDIX

Data Collection Instruments

Thank you for your time and great assistance, Sir/Madame! I'm Muluken Alemu, and I'm working on this paper as part of my Master of Arts (MA) graduate studies in Logistics and Supply Chain Management. The major goal of the survey is to collect primary data in the soft drink business, with a special focus on Coca-Cola Beverage Africa (CCBA) in Addis Ababa, for the above-mentioned title. The questionnaire is divided into two sections, and you are expected to answer all questions honestly because your accurate and true response is so important. I want to assure you that all information you supply will be kept strictly confidential and used just for this research.

Dear respondent!

- Put "✓'' mark in a box for each respective question.
- You do not need to write your name or personal identifier.

For further information please contact me through 0913168821 or muluak1974@gmail.com

Thank you once again!

Part One: Demographic Information

1/ Gender

- ○ Male
- ○ Female

2/ Level of Education

- ○ Literate
- ○ Certificate
- ○ College Diploma
- ○ Under Graduate
- ○ Post Graduate

3/ Year of service/exposure/ in the business

- ○ < 3 years
- ○ 3-5 year
- ○ 5-8 years
- ○ > 8 years

4/ In which field/ department/ are you operating on?

- ○ Logistics
- ○ Sales and Marketing

5/ Your operational status/ position/ in the company

- ○ Middle level manager
- ○ Area sales manager
- ○ Line manager (Supervisor)
- ○ CSR / Company Sales Representative/
- ○ Inventory Controller
- ○ Store Keeper
- ○ Technician/Operator
- ○ Driver

Part Two: Theme Based Questions

You are kindly requested to read the questions in the following table under column 1 and tick the boxes used to rate or answer your level of agreement. Thus kindly tick in the corresponding box number: 1, 2, 3, 4, and 5 to rate for strongly disagree, disagree, neutral, agree, and strongly agree respectively.

A: Effectiveness related questions

A_1: Cost Effectiveness	**1**	**2**	**3**	**4**	**5**
$A_{1.1}$: The cost effectiveness of reverse logistics is well notified and predicted in the company.					
$A_{1.2}$: There is an identified cost center for the reverse logistics of the company.					
$A_{1.3}$: The cost effectiveness of the reverse logistics of the company is depends on organizational role.					
A_2: Process Effectiveness					
$A_{2.1}$: The average cycle time is well allocated and managed for reverse logistics activities.					
$A_{2.2}$: There is appropriate infrastructure and allocation of resources for effective reverse logistics activities.					
$A_{2.3}$: Transport planning and load management of vehicles is implemented considering reverse logistics.					

$A_{2.4}$: Customer satisfaction and brand loyalty can be considered as process effectiveness of reverse logistics.					
A3: Information Effectiveness					
$A_{3.1}$: There is an appropriate information flow in between concerned bodies for effective reverse logistics activities.					
$A_{3.2}$: There is an updated information technology for effective reverse logistics activities.					

Reverse logistics effectiveness Evaluation

Dear respondent, you have been asked to rate the effectiveness of CCBA's reverse logistics activities in regard to the items listed above. Please check the appropriate box numbers: 1, 3, and 5 based on your level of agreement for not effective, neutral, and effective respectively.

	1	3	5
In relation to question number **$A_{1.1}$**, reverse logistics is effective.			
In relation to question number **$A_{1.2}$**, reverse logistics is effective.			
In relation to question number **$A_{1.3}$**, reverse logistics is effective.			
In relation to question number **$A_{1.4}$**, reverse logistics is effective.			
In relation to question number **$A_{2.1}$**, reverse logistics is effective.			
In relation to question number **$A_{2.2}$**, reverse logistics is effective.			
In relation to question number **$A_{2.3}$**, reverse logistics is effective.			
In relation to question number **$A_{2.4}$**, reverse logistics is effective.			
In relation to question number **$A_{3.1}$**, reverse logistics is effective.			
In relation to question number **$A_{3.2}$**, reverse logistics is effective.			

B: Challenges related questions

B_1: Technical Challenges	1	2	3	4	5
$B_{1.1}$: There is technology related challenges to implement reverse logistics activities in the company.					
$B_{1.2}$: There is communication plat form to overcome the challenges of reverse logistics activities of the company.					
$B_{1.3}$: There is no a considerable knowledge gap for the implementation of reverse logistics practices.					
$B_{1.4}$: There is the challenge to schedule the reverse logistics activity of the company.					
$B_{1.5}$: The current design of the trucks can be the challenge to implement reverse logistics activities.					
$B_{1.6}$: The absence of a proper and clear procedure can be the challenge for reverse logistics activities in the company.					
B_2: Top Management Commitment					
$B_{2.1}$: The lower attention given to the reverse logistics by the managers can be the challenges for its implementation.					

$B_{2.2}$: The communication gap between managers can crates significant challenges during reverse logistics activities.					
B_3: Economic Challenge					
$B_{3.1}$: Budget scarcity can crate challenges on the implementation of reverse logistics practices.					
$B_{3.2}$: The price inflation in the country crates a significant challenge on reverse logistics activity of the company.					

Reverse logistics challenge Evaluation

Dear reply, you are kindly requested to assess the issues of CCBA's reverse logistics in regard to the reasons raised above. Please check the appropriate box numbers: 1,3, and 5 based on your level of agreement for strong challenge, moderate challenge, no challenge; and specifically for B_{21} and B_{22}; not committed, moderately committed, and committed respectively.

	1	3	5
In relation to question **$B_{1.1}$**, reverse logistics activities face challenges.			
In relation to question **$B_{1.2}$**, reverse logistics activities face challenges.			
In relation to question **$B_{1.3}$**, reverse logistics activities face challenges.			
In relation to question **$B_{1.4}$**, reverse logistics activities face challenges			
In relation to question **$B_{1.5}$**, reverse logistics activities face challenges.			
In relation to question **$B_{1.6}$**, reverse logistics activities face challenges.			
In response to issue **$B_{2.1}$**, top level management gives attention to solve the problems.			
In response to issue **$B_{2.2}$**, top level management solves the communication gap.			
In response to issue **$B_{3.1}$**, reverse logistics activities pose problems.			
In response to issue **$B_{3.2}$**, reverse logistics activities pose problems.			

C: Open-ended questions

1: How effective is the reverse logistics management practice of the company?

_____

_____

_____

_____

_____

2: What challenges do you observe on the reverse logistics management practice of the company?

_____

_____

_____

_____

_____

3: Is there any additional issue you would like to bring to the attention of the researcher with respect to reverse logistics management practices of the company?

_____

_____

_____

_____

_____