"A Study on the Management of Reverse Logistics with special reference to Online Platforms"

A dissertation submitted to the School of Maritime Management, Indian Maritime University in the partial fulfillment of

Master of Business Administration
in
International Transportation and Logistics Management

By

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UNDER THE SUPERVISION AND GUIDANCE

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CHENNAI CAMPUS

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Certificate

This is to certify that the project report titled **"A Study on the Management of Reverse Logistics with special reference to Online Platforms"** is a bonafide work done by **Kalidasan V (Reg.No: - 2103305021)** in partial fulfilment of the requirement for the award of the degree of Master of Business Administration in Indian Maritime University, Chennai.

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Place: Chennai

Date: 16/05/2023

DECLARATION

I, **KALIDASAN V,** do hereby declare that the dissertation entitled **"A Study on the Management of Reverse Logistics with special reference to Online Platforms"** is exclusively a bonafide work done by me under the supervision and guidance of **Dr. Emil Mathew,** Assistant Professor, School of Maritime Management and is submitted to Indian Maritime University in partial fulfilment of the requirement for the award of the degree of Master of Business Administration.

I further declare that no part of this report has been previously submitted to any other university or academic body for the award of any degree or diploma.

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Chapter 1

1.1 Introduction

It has quickly evolved into a vital and essential logistical process for a company or organization to be able to manage product and material returns. In the supply chain, product flow in the opposite direction has been and continues to grow in volume and value, especially as market-wide environmental, regulatory, and customer service requirements rise.

Reverse Logistics refers to the process of returning goods back through the supply chain and can include a variety of logistical tasks. Reverse logistics are needed for procedures like returns or recycling after a customer receives a product. Reverse logistics begin at the customer and work their way backward through the supply chain to the producer or the distributor. Depending on the kind of product or material being returned, these processes could involve disposition decision, recycling, remanufacturing, disposal, re-sale, warehousing, or transportation. When items return from their destination back through the supply chain to the seller and maybe back to the suppliers, organizations utilize reverse logistics. The objective is to sell the product or recover some value from it. Returns are worth roughly a trillion dollars globally every year and have increased in frequency with the rise of ecommerce. Reverse logistics involves moving items at least one step backward from the typical terminus of the supply chain. Various plans and controls may be used in this procedure. Some businesses favor outsourcing this work. Purchasing leftover goods and materials as well as managing returns are part of the reverse logistics process. Any leases or renovations must also be handled by the procedure. The management of reverse logistics varies between industries, and there are various financial incentives for doing so. Reverse logistics is significant because it keeps the flow of commodities moving smoothly. The procedure ends the product life cycle, lowers costs, adds value, and lowers risk.

Recovering value and encouraging consumer repurchase are the goals of reverse logistics. At least 30% of things ordered online are returned, compared to less than 10% of in-store transactions. Reverse logistics is a clever strategy used by savvy businesses to increase repeat business and customer loyalty while reducing return-related losses.

As a result, maintaining an efficient and successful reverse logistics process has emerged as a crucial competency for logistics and manufacturing companies. An efficient and

standardized reverse logistics process can provide a company the competitive edge it needs to surpass peers and rivals and perhaps even gain a greater market share within their industry due to their superior process and ability to satisfy client requests. Today's consumer demands and expects to be able to easily and swiftly return an undesired or damaged item and get a refund or a replacement order as soon as feasible. A company that can satisfy these growing client demands will gain customer loyalty, hold onto their current market share, and possibly grow it.

Reverse Logistics (RL) first surfaced a few decades ago as an unnecessary expense. As the competitive advantages, as well as the financial and operational advantages, and in the relationships with the various organizational partners, became apparent, more and more businesses started implementing reverse logistics practices. This issue suggests that businesses are concerned about the complete life cycle of the product. As was previously indicated, enterprises solely saw reverse logistics as an expense. However, due to the economic benefits of recycling used goods or the utilization of recycled materials in the creation of new goods, this perception is rapidly changing. The corporate and academic communities have been researching and expanding this subject due to worries about product returns and proper reverse logistics system implementation. As a result, in recent years, more and more scientific practices and advancements have emerged in this field.

Environmental catastrophes occupied the minds of academics, politicians, the media, and society at large for the following ten years. We all started to become familiar with words like recycling, reuse, resource reduction, environmental manufacturing responsibility, and green products. Since the middle of the 1990s, this has been accompanied by legislative enforcement of product and material recovery or correct disposal.

1.2 Steps for effective reverse logistics:

- **Processing the return**: The return process starts when the consumer signals they want to return a product. This step should include return authorization and identify the product’s condition. This process also involves scheduling return shipments, approving refunds and replacing faulty goods.

- **Manage the returns:** Once a returned item has been delivered to your site or a centralized processing facility, examine it to establish the type of return it falls under. Products should be sorted according to their intended use: repair, resell as new, resell as a return, recycle, scrap, or refurbish.
- **Keep returns moving:** By delivering repairable things to the repair department, you can cut down on your daily trash.
- **Repair and Recycle:** Move the returned item/equipment to the repair area after examining it and determining whether it can be fixed. If possible, sell any pieces that can be sold. Send any products or parts that you can't repair, repurpose, or sell to the local recycling facility.

1.3 Objectives:

- To understand in detail the concept of Reverse Logistics and the various aspects of reverse logistics with related to its use primarily in the e-commerce sector.
- To look deep into the evolution, implementation, and growth of Reverse Logistics especially with growing e-commerce market.
- To analyze the economic and psychological impacts of Reverse Logistics by studying samples and assess the customer satisfaction levels with the reverse logistics process.
- To study in detail how e-commerce giant Amazon carries out its reverse logistics processes.

1.4 Scope of the study:

- To provide insight about the process of Reverse Logistics and its growing importance.
- To analyze and provide significant information regarding e-commerce platforms using Reverse Logistics.
- To provide information on impacts of Reverse Logistics on customers and the trend of responses.
- To create awareness on both environmental and economic impacts of Reverse Logistics.

1.5 Research Methodology:

As already mentioned, the goal of this study is to characterize and assess the present reverse logistic chain in the e-commerce industry. The study is based on Primary Data and the techniques include direct observation, analysis of data and statistics from the

internet and from those provided by e-commerce platforms, and primarily, gathering information on customer responses to reverse logistics by collecting questionnaire responses and using qualitative tools like descriptions and observations.

1.5.1 Data Collection

Primary Data: 100 responses were collected from circulating the questionnaire containing 21 relevant questions and a detailed analysis of the results obtained is included with graphs, pie charts and interpretations.

1.6 Limitations of Study:

Research studies are often challenged by various limitations that affect their applicability and these limitations may be inherent too and could be expected at any part of the study. This study has the following limitations:

- Lack of secondary data as many required statistics and data regarding Reverse Logistics in e-commerce platforms are limited.
- The study was conducted using a limited sample and thus the feasibility of the study in a broader perspective is limited.
- Reverse Logistics in e-commerce industry is a set of process and it include many stakeholders, thus making it challenging to evaluate the entire procedure and spot bottlenecks or potential improvement areas.

CHAPTER 2

2.1 REVIEW OF LITERATURE

Reverse logistics application has forced enterprises to start thinking about environmental operations management as a result of the advent of stronger environmental legislation and the growing environmental consciousness of customers. Examining influencing elements like motivations and impediments is necessary during this process. Stakeholders' various viewpoints on RL implementation and development should also be taken into account. (Govindan & Bouzon, 2018)

All recovery initiatives where the company receives direct or indirect economic rewards are governed by economics. The former refers to profit via recovery measures, such as decreasing expenses, using less materials, or acquiring valuable replacement parts. Marketing, competitiveness, and/or strategy factors can motivate an organisation to engage in reverse logistics even in the absence of a specific or immediate predicted profit. Companies may participate in rehabilitation as a tactical move to get ready for upcoming laws. On the other hand, a business may plan for specific long-term circumstances, such as upcoming legislation. In the face of competition, a business may take steps to stop rival businesses from obtaining its technology or from stopping them from entering the market. A corporation may strive to improve its relationship with its customers or its (environmental) image with them. ((PDF) Reverse Logistics - a Framework, n.d.)

Supply is often regarded as an external element in reverse logistics systems since it may be challenging to regulate the timing, quantity, and quality of the returned goods. As a result, it appears that a key characteristic distinguishing product recovery from conventional production-distribution networks is supply unpredictability in a broad sense. On the other hand, supply in the forward supply chain may typically be managed in accordance with the requirements of the system. Customers solely determine the demand for things. In a traditional supply chain, it is therefore simple to estimate demand and manage the balance between supply and demand. (Bei & Linyan, n.d.)

Reverse logistic inventory models become more realistic as a result of the inclusion of environmental components since they better reflect the complexity and sophistication of the real world. Waste management, GHG emissions, and energy use are three current environmental concerns that have been somewhat modelled. It hasn't been done or looked into (as of August 2014) to combine the three in a more comprehensive context with reverse logistics inventory models. The adoption of learning, leasing policies, quality improvement, design improvements, product disassembly, reusability, recyclability, biodegradability, coordination mechanisms, etc. are just a few managerial choices in inventory models that have an impact on the environment. When considering responsibility towards environment and sustainability of firms and organisations, integrating environmental concerns into reverse logistics modelling is viewed as essential. (Bazan et al., 2016)

When referring to the management of returned goods, the word "reverse logistics" alludes to the ideas of reducing, reusing, remanufacturing, and recycling. It alludes to product packaging and reducing production-related waste. The term "reusability" describes the practise of giving back any unused goods to their creators so they can be reused. The term "remanufacture" refers to the process of preserving an item's usable life through repairs, restorations, or rework. Recycling is the process of returning goods from the consumer to the producer while taking into account the value of the product. Recycling enables businesses to improve their financial performance while protecting the environment. Reverse logistics has evolved into a critical component of any effective and efficient supply chain because it strengthens global value chains for greater supply chain sustainability. This is because governments and customers are becoming more mindful of environmental preservation and sustainability. Reverse logistics assists in recovering value from discarded or returned goods, hence lowering costs and waste. As a result, the customer receives greater value, which boosts their pleasure and loyalty. (Dabees et al., 2023)

Businesses strive to maximise their earnings, especially when it comes to recyclable materials, and develop new tactics in response to a variety of new and evolving situations. The use of logistics management, which acts as a bridge between the market and other organisational divisions, is crucial in attaining these objectives. It is in charge of controlling organisational and physical flows both within and between organisations.

Due to the financial investment required in the separation and management of all trash, as well as the human resources allotted to those operations, reverse logistics management of garbage is one of the most difficult areas in any organisation. The supply chain management paradigm demonstrates that supply networks face significant challenges and expenses when procuring raw materials, namely ferrous and non-ferrous commodities, as a result of the rising conflicts brought on by war's dramatic changes. (Pereira et al., 2023)

A significant strategic issue in the field of reverse logistics is the design of a reverse logistics network. A rising number of manufacturers have started to outsource reverse logistics activities to third-party logistics (3PL) companies as cost pressures in product returns continue to increase. On the other hand, it is inevitable that the reverse logistics network design would take disruption risks brought on by natural or man-made variables into account.(Li & Chen, 2022)

Implementing the proper identification systems and furthering the development of technologies like IoT, Blockchain, and AI are two possible ways to address the issues of reverse logistics. A bigger political and technological contribution is required to persuade enterprises to implement reverse logistics. (Amico, n.d.)

Environmental degradation and sustainable development are now important catalysts for reverse logistics' resource recovery of end-of-life items. Reverse logistics takes into account e-waste. Reverse logistics is crucial to minimising electronic waste's improper disposal because it contains valuable raw materials that may be repurposed or mended and is exclusively responsible for environmental hazards. After the product has reached the end of its useful life, the reverse logistics network gathers the e-waste in return processors, where it is tested, sorted, and disassembled before being transported to the repair and recycling units. Unrepaired or recycled parts are sent to the secondary producer as raw materials. (Kumar Singh et al., 2023)

Reverse logistics is considered to be a part of corporate logistics, which has historically focused on competitiveness-enhancing tactics. Companies today face intense market competition, and in order to succeed, they must adopt an entrepreneurial mindset to effectively manage their technological assets, human capital, and skill sets. They must

also be aware of the entire value chain, from the supplier to the customer. (Manoel et al., n.d.)

The management of service components for vital systems has advanced globally, including high-tech systems, medical equipment, and office equipment. To improve service quality, maintain products, and seize commercial possibilities across multiple industries, it is essential to manage service parts. Today, managing usable goods has become a standard industrial practise. To achieve the desired service level, it is difficult to guarantee that the necessary parts are made available at strategic points in the supply chain due to obstacles like a wide variety of parts, the risk of stock obsolescence, irregular or lumpy demand patterns characteristic of many parts, and high responsiveness. When there is a critical requirement for efficient refurbishing of damaged components in order to enhance company environmental performance, the situation becomes more complicated. Although it is anticipated that the adoption of cutting-edge information and communication technologies and a holistic approach for tying together the forward and reverse logistics of components will sustain operations that cater to more economic as well as environmental benefits. (Mo et al., 2022)

The future of industry can be significantly impacted by logistics if environmental pollution and resource depletion worsen. Reverse Logistics (RL) is a method that preserves existing resources, lowers waste production, and has positive effects on the economy, environment, and society. Studies stress the significance of choosing wisely when it comes to RL activities and not just blindly adhering to industry standard procedures. For instance, one must choose between reuse and recycling, taking into account the resources and market constraints inherent in the company's local environment. The need for businesses to not only embrace RL practises but also to make them efficient and successful is being driven by developments in regulation, corporate image, environmental challenges, economic benefits, and sustainable competitiveness. Therefore, rather than only concentrating on present waste issues, firms must make decisions taking into account the long-term life cycle of their products. (Martins et al., 2022)

The structure of reverse logistics, process models, product life cycles, information system models, and JIT performance have all been found to have significant effects on the integration of JIT and reverse logistics. In summary, a process model that uses JIT can better regulate the cost and efficiency of reverse logistics operations, and product life cycle management that uses JIT aids in the design of products that take into account the reverse activities in various process models. Process model and product life cycle management for JIT reverse logistics can both be supported by an information system. (Chan et al., 2010)

Numerous optimisation issues have been created as a result of reverse flow integration in the supply chain. The majority of these puzzles are proving to be challenging to answer; according to the theory of complexity and knowledge gained from computational experiments, they are categorised as complicated and challenging to solve using precise techniques or simulations. Instead, researchers solved them using a powerful and effective set of techniques known as meta-heuristics. (Rachih et al., 2019)

Numerous decisions pertaining to various hierarchical levels, including strategic, tactical, and operational are necessary for the successful implementation of RL networks. However, it is possible to regard the RL network's architecture as being essential to the decision-making process. RL networks that are dependent on the type of returned item (EoU, end-of-life, etc.), the recovery method (remanufacturing, reuse, recycling), or the forward channel can all be seen in action. (Rubio & Jiménez-Parra, 2014)

Chapter 3

3.1 Reverse Logistics in History

Although reverse logistics seems to be a problem of the late 20th and early 21st centuries, it is by no means a recent issue. Let's take a glance into some examples from history where the concepts of Reverse Logistics were widely used:

- General William Sherman reportedly ran into trouble while travelling north to meet General Ulysses Grant following General Joseph E. Johnston's surrender in North Carolina at the end of the American Civil War in 1865, according to North Carolina folklore. The Neuse River rose far above average levels as a result of the North Carolina spring rains. General Sherman's logisticians chose to dump the supplies on the south side of the Neuse River north of Raleigh rather than transporting all of the now pointless goods over the high river. As a way of "dealing" with surplus or outmoded objects, the concept of disposing of them persisted far into the 20th century.
- Montgomery Ward's began what is currently a key force in reverse logistics operations in 1894. The first retailer to give a 100% guarantee and a complete refund if you weren't happy with the item, was Montgomery Wards. Ironically, the corporation that created the returns issue is no longer in operation.
- Material recycling and the emergence of remanufacturing were born as a result of the severe shortages of resources like metals and rubber that occurred during the 1940s as a result of the need to support the war operations for World War II. This novel commercial technique is still used today. Today's vehicle repair parts industry uses a lot of remanufactured or rebuilt starters, alternators, and generators.
- Reuse and recycling had a different focus in the Pacific Theatre of the war, on the other side of the conflict. Armed Forces units began "recycling" and salvaging garments and shoes of Soldiers and Marines being returned home because of the incredibly long order cycle times to get resupplied in the South Pacific. To combat the lengthy lead periods for resupply, the shoes were resoled and the clothing was fixed and distributed again.
- The European Union passed legislation in 2001 that established objectives for the reduction of packaging materials in response to United Kingdom regulations enacted in 1996 regarding the size and waste of packaging and transportation. The reverse logistics pipeline is impacted by package size and the need to recycle or return packaging materials. The makers and shippers are required by these laws to reduce package sizes, and the shippers are required to return the packaging supplies. Reducing the size of the

box also helps reduce the amount of energy and natural resources used to make the package.

- In the modern world, James R. Stock actually first used the term Reverse Logistics in a white paper with the same name that was released by the Council of Logistics Management in 1992. A "Reverse Logistics Association" was also published in this area by 1999. The production of goods from components and raw materials as well as all the activities that get the product to the client, up until the delivery truck pulls into the driveway, are typically included in logistics. However, reverse logistics refers to any operation that includes moving the "resource" (i.e., item, component, raw material, packaging, etc.). backwards in the supply chain by at least one step (it can be a client going back to the distributor, or it might be a company going back to a supplier with waste product to be turned into new raw materials or parts).

Figure 1: Illustration of Reverse Logistics process (Source: Google)

3.2 Factors behind Reverse Logistics:

Products returning to the supply chain, requesting recovery, or requesting value recapture are the starting points for reverse logistics. The receiving party, who is attempting to resell, redistribute, or recover value from the product, and the returning party, who had the product, are, in principle, the parties involved. When talking about the factors behind reverse logistics, from the receiver's perspective, or the factors that

motivate businesses and other organisations to take an active role in receiving returns or in recovery, we can categorize the motivating factors into three categories:

- Economics (direct and indirect)
- Legislation
- Extended Responsibility

All recovery initiatives where the company receives direct or indirect economic benefits are governed by economics. The former refers to profit via recovery measures, such as decreasing expenses, using less materials, or acquiring valuable replacement parts. Marketing, competitiveness, and/or strategy factors can motivate an organisation to engage in reverse logistics even in the absence of a specific or immediate predicted profit. Companies may participate in rehabilitation as a tactical move to get ready for upcoming laws. On the other hand, a business may plan for specific long-term circumstances, such as upcoming legislation. In the face of competition, a business may take steps to stop rival businesses from obtaining its technology or from stopping them from entering the market.

A corporation may strive to improve its relationship with its customers or its (environmental) image with them. Consider a tyre manufacturer that also provides clients with rethreading choices to help them save money. Due in large part to the rise in environmental consciousness among society as a whole, having a green range of products can also be a part of a customer relationship strategy. Here, "legislation" refers to any rule of law specifying that a business should retrieve its goods or accept their return. Extended responsibility refers to a system of beliefs or principles that, in this context, encourage a business or organisation to engage in reverse logistics in a responsible manner. One should be aware that Reverse Logistics is frequently carried out for a variety of motives, and that what may seem moral in the near term is hopefully practical in the long term.

We have examined the factors behind Reverse Logistics from a receiver’s perspective. Now let’s examine the driving forces behind Reverse Logistics from the returner or initiator perspective:

Generally speaking, products are returned or thrown because they are either faulty or their purpose is no longer required. In order to better understand these causes, they are divided into three categories based on the supply chain level at which they occur. All of these streams have Reverse Logistics components, so this is justified. The standard supply chain hierarchy is followed while listing the return causes, with production stated first, followed by wholesalers and retailers, and finally customers or consumers who will ultimately use the products. So, let's distinguish between returns from manufacturing, returns from distribution, and returns from customers or users. But one should remember that the supply chain also includes manufacturers. Manufacturing returns are those that occur within the production process, while distribution returns cover returns where the manufacturer acts as a chain actor. However, a clear distinction between these stages is difficult to make because final production might take place somewhere along the distribution chain.

3.2.1 Manufacturing Returns:

Manufacturing returns are all situations where products or components need to be retrieved during the production stage. There are several reasons why this happens. During production, products may be left over, intermediate or final products may fail quality checks and need to be reworked, and raw materials may be surplus. The first and last products are in the "faulty" category, whereas the following two are unneeded products. Thus, it includes:

- raw material surplus;
- quality-control returns;
- production leftovers

3.2.2 Distribution Returns:

Distribution returns are all those returns that are started by a supply chain actor (including the manufacturer) during distribution after the product has been created. It covers things like functional returns, stock adjustments, commercial returns, and product recalls. Recalls of items occur when they have safety or health issues, and they are often started by the manufacturer or a supplier. Commercial returns are any returns when the

customer has a legal right to send the goods back to the vendor. This can apply to deliveries that are incorrect or damaged or to unsold goods that merchants or distributors return to a wholesaler or manufacturer. These latter products include those that have passed their prime, or those with an excessively lengthy shelf life (such food and medicine) and cannot be marketed.

When a link in the supply chain redistributes stock, such as among warehouses or stores, stock adjustments occur. Last but not least, functional returns apply to every product that moves back and forth in the supply chain due to its inherent function. One clear illustration is the use of distribution carriers as pallets; these containers are made to transport other products, and they can be used repeatedly for this purpose. Thus, distribution returns consist of:

- Product recalls
- Commercial returns
- Stock adjustments
- Functional returns

3.2.3 Client Returns:

The third category consists of client returns, which are those that were largely the result of usage or consumption and were started by a customer or user. There are numerous reasons to return things, including:

- reimbursement guarantees
- warranty returns;
- service returns (repairs and spare-parts);
- end-of-use; end-of-life

The causes have been roughly organised based on a product's lifecycle. When demands or expectations are not satisfied, reimbursement guarantees provide clients the chance to decide without buying (often soon after receiving or acquiring the product). The list of causes is extensive; for instance, in the case of clothing, dissatisfaction may be brought on by factors like size, colour, fabric composition, and so forth. Regardless of the reason, we are dealing with reimbursement promises when a consumer returns a new

product that comes with a money-back guarantee or an equivalent. The following two reasons concern how the product (in a broad sense) behaves incorrectly when being used.

Customers who are covered by a warranty can initially return items if they don't (appears to) live up to the standards of quality that were guaranteed. Sometimes these returns can be fixed, and the consumer receives a replacement item or their money back; however, the returned item still needs to be recovered. Customers still have access to maintenance and repair services after the warranty period has ended, but they are no longer entitled to a replacement product. Products can be fixed on-site for customers or sent back to be fixed. Given that it can be difficult to predict in advance which specific parts would be required for the repair, returns do happen in the former scenario in the form of spare parts. End-of-use returns are those instances where the customer has a chance to return the product at a specific point in its life. Finally, end-of-life returns are those in which the products have reached the end of their usefulness, either physically or economically. Due to regulatory requirements for product take-back, they are either "returned" to the OEM or another business for value-added recovery.

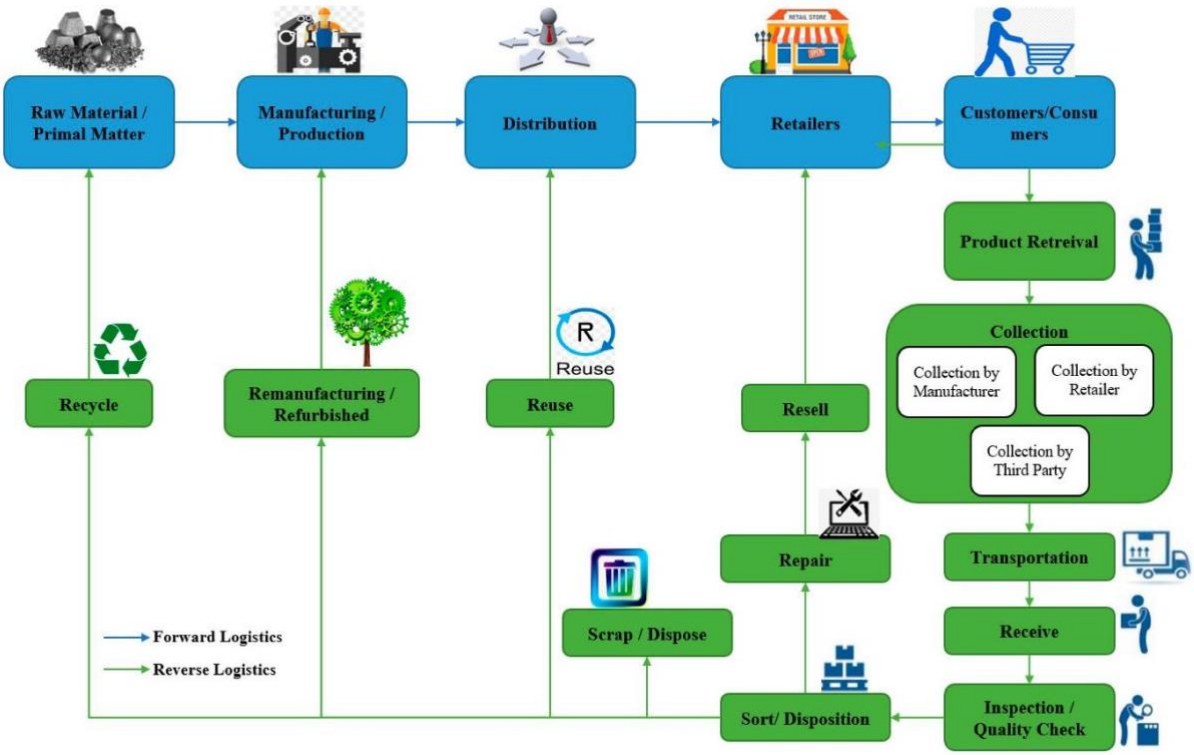

Figure 2: Illustration of components of reverse logistics (Source: Google)

3.3 Components of Reverse Logistics:

Reverse logistics components are another name for the various varieties of reverse logistics. They take into account remanufacturing, packaging, unsold items, and delivery concerns and concentrate on returns management and Return Policies and Procedures (RPP).

3.3.1 Returns management: This procedure deals with consumer product returns or preventing returns from happening in the first place. These actions ought to be quick, manageable, obvious, and simple. Customers evaluate a business based on its return and exchange procedures. A re-return is when you send something back for a second time. These returns frequently result in the extended return policies, such as the provision of store credit. For instance, a client might purchase a returned item on sale, take it home, and find it to be broken. Although the store policy normally prohibits returns, it does permit a store credit for the defective item. Re-returns can also happen when a seller rejects a return and offers the buyer their money back instead. This scenario might occur with customised goods.

- Return policy and procedure (RPP): A company's RPP is the return policies it discloses to customers. These guidelines must to be clear and consistent. Employees should follow them as well.
- Remanufacturing or refurbishment: Remanufacturing, refurbishment, and reconditioning are examples of another sort of reverse logistics management. These processes involve product repair, rebuilding, and reworking. Cannibalization of parts is the practise of businesses recovering interchangeable, reusable components or resources from other goods. It entails disassembling, cleaning, and reassembling things to recondition them.
- Packaging management: Reusing packaging materials helps reduce waste and disposal in this sort of reverse logistics.
- Unsold goods: Returns from retailers to manufacturers or distributors are handled via reverse logistics for unsold goods. These returns may be the result of weak sales, outdated goods, or a delivery rejection.

- End-of-life (EOL): A product is no longer functional or helpful when it is EOL. The item might no longer satisfy a customer's needs or might be changed out with a better, more recent one. End-of-life products are frequently recycled or disposed of by manufacturers. Manufacturers and nations may face environmental difficulties as a result of these products.
- Delivery failure: Drivers return merchandise to sorting centres when deliveries go wrong. The products are then delivered back to the sorting facilities from where they originally came. Although it is uncommon, some sorting facilities may have the personnel on hand to figure out why a delivery failed, fix the issue, and resend.
- Rentals and leasing: When a piece of equipment's lease or rental agreement expires, the business that owns it may resell, recycle, or reassign it.
- Repairs and maintenance: Customers and businesses may maintain equipment or repair it if problems occur under various product agreements. In some circumstances, the business repairs damaged returned goods before selling them to another customer.

3.4 Some strategies to improve Reverse Logistics:

- Review and update the policies governing returns and repairs at business. These guidelines ought to be precise and take the main reasons for returns and repairs into account. A business's return and repair policies may set it apart from rivals.
- Working closely with suppliers may guarantee that clients have a seamless, integrated experience rather than one that is difficult for them to navigate.
- One can discover the potential causes of product returns by gathering data on returns. Following that, they can adjust sales, product design, and forward logistics processes as necessary.
- In the event that we need to execute a recall, being able to link raw materials to completed goods and client orders enables us to trace the ingredients; rather than sending recalls for entire lines, we can locate the problem and issue them only for certain products.
- You can more effectively sort products and determine the appropriate course of action for each one with a centralised return centre. Businesses can more

effectively decide how to recapture product value if they have a centre. Consider allocating a piece of your warehouse or factory to returns if your business lacks the capacity to operate a separate returns centre.

- A centralised return centre allows you to sort products more efficiently and choose the best course of action for each one. If a company has a centre, it can make decisions on how to recoup product value more successfully. If your company doesn't have the resources to run a separate returns centre, think about designating a portion of your warehouse or factory for returns.
- Review the forward and reverse logistics and transportation processes on a regular basis. Analyse the viability of integrating some of these processes with transit. You can save trips, time, and money, for instance, if your delivery drivers can pick up empty pallets as they deliver full pallets.
- Utilise cloud-based logistics applications to assist organise your business. For instance, a software system can manage refurbishment, track asset recovery, and offer business intelligence analyses.

3.5 How Reverse Logistics works in the e-commerce sector?

E-commerce, often known as electronic commerce, is the exchange of goods and services as well as the sending of money and data through an electronic network, most commonly the internet. These business dealings can be either B2B (business-to-business), B2C (business-to-consumer), C2C (consumer-to-consumer), or C2B.

E-business and e-commerce are frequently used interchangeably. The transactional procedures that make up online retail shopping are also occasionally referred to as e-tail. The widespread use of e-commerce sites like Amazon and eBay over the past 20 years has significantly boosted the growth of online retail. The internet is what drives e-commerce. Customers use their own devices to access an online store to browse the selection and place orders for goods or services.

3.6 Different types of e-commerce:

- B2B (business-to-business) is instead of between businesses and customers, e-commerce describes the electronic exchange of goods, services, or information between

enterprises. Online directories and websites that allow businesses to search for products, services, and information as well as start transactions using e-procurement interfaces are two examples.

- Business-to-consumer (B2C) is actually the retail side of e-commerce. It occurs when companies offer goods, services, or information to customers directly. Today, there are countless online malls and stores that sell all kinds of consumer goods. The most recognisable of these websites is Amazon. In the B2C market, Amazon has significant supremacy.
- Consumer-to-Consumer (C2C) - Consumers trade goods, services, and information with one another online in a process known as consumer-to-consumer (C2C) e-commerce. These transactions are often carried out through a third party that offers an internet platform for their execution.
- Consumer-to-Business- Consumers offer their goods and services for sale to businesses online through a sort of e-commerce known as consumer-to-business (C2B).
- Online transactions between businesses and public administration or governmental entities are referred to as business-to-administration (B2A) transactions. Different kinds of e-services or e-products are required by numerous governmental branches. These goods and services frequently deal with legal records, registrations, social security, monetary information, and employment. These can be obtained electronically from businesses. As investments have been made in e-government capabilities, B2A services have increased significantly in recent years.
- Consumer-to-Administration- Online transactions involving consumers and public administration or governmental entities are known as "consumer-to-administration" (C2A) transactions.

Some well-known examples of e-commerce platforms include Amazon, Flipkart, Alibaba etc.

3.7 Mobile e-commerce:

Mobile e-commerce, often known as m-commerce, describes online purchases made using mobile devices such smartphones and tablets. It involves payments, banking, and

shopping on mobile devices. By enabling customers to conduct transactions via voice or text conversations, mobile chatbots facilitate m-commerce.

3.8 History of e-commerce:

When businesses began utilising EDI to exchange business documents with other businesses in the 1960s, e-commerce officially got its start. ASC X12 was created in 1979 by the American National Standards Institute as an international standard for businesses to exchange documents through electronic networks.

The emergence of eBay and Amazon in the 1990s completely transformed the e-commerce sector after an increase in the number of individual users sharing electronic data with one another in the 1980s. Many products are now available for purchase by consumers online from both e-commerce-only vendors, sometimes known as e-tailers, and brick and mortar retailers with e-commerce capabilities. Nearly all retail businesses now incorporate online business strategies into their operational plans.

3.9 What is the Cost of Reverse Logistics in e-commerce industry?

While the cost of returned goods is typically low, the cost of reverse flow is typically high. The returns are incredibly costly and reduce the already thin profit margins. An estimated 8–10% of the product's cost is added by product returns. Over the coming ten years, retailers will notice a significant increase in the cost of reverse logistics.

If a returned item is suitable for resale, it typically takes two weeks to add it to inventory. And the longer a product sits around while being evaluated, repackaged, restocked, etc., the greater the chance that it will become harmed or go bad before the procedure is finished. About five billion pounds of returned goods, not to mention packaging waste, are thrown away, making returns a significant drain on profits as well as a contributor to landfills. Due to this, many brands are devoting funds to the establishment of separate departments that are solely responsible for managing ecommerce reverse logistics.

These departments frequently need more staff members and larger amounts of warehouse space; thus, the investment might be rather high. This indicates how crucial and cost-effective it is to adjust your brand's reverse logistics infrastructure to handle the rise in returns brought on by the growth of ecommerce in the long run.

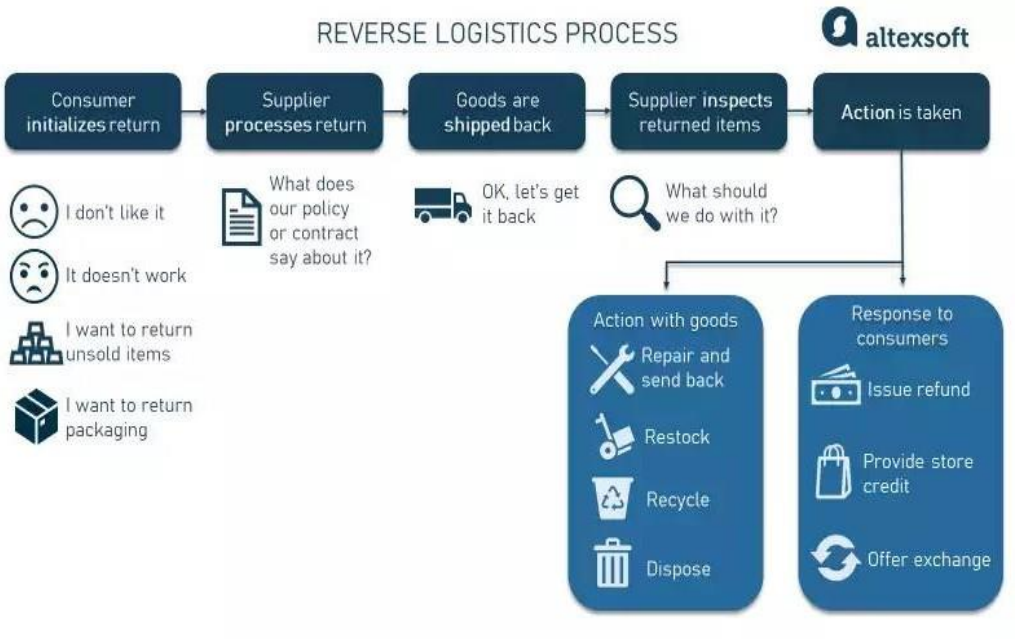

Figure 3: Reverse Logistics steps explained (Source: Google)

3.10 How to better Reverse Logistics Management:

Counting on the return, online businesses must prepare for returns given the 30% return rate if they want to avoid the chaos of manually processing return permission requests. Even though it is not the only solution, online companies need to pay close attention to how top merchants conduct their reverse logistics management. For instance, Amazon gives customers the option to create a return label and includes an online link for each item they order. This takes the reason for the return into account and directs the shipment to the proper location.

Customers may choose to return their purchases by sending them back rather than standing in queue at a store location, regardless of whether the initial purchase was done online or at a physical location. A consumer must determine where to mail the returned goods before doing so. A second batch of processing and shipment to the proper location can be avoided by predefining the destination shipping address. When the manufacturer receives the initial purchase order, this information needs to be specified and noted. Retailers need to make plans for what will happen when the goods are sent back to their authorised landing spots. This final link in the supply chain must be completely operational whether the products are being given, returned to the manufacturer, or

repackaged for resale. Otherwise, returns will continue to build up and become sources of additional expenses. Each online retailer needs to develop an efficient order return procedure that minimises costs and losses while enticing customers with a generous return policy supported by efficient reverse logistics management.

3.10.1 How to manage the returns:

The process of returning a product and restoring it to useable condition is known as return management. Returns Management employs methods and instruments to boost profits throughout the process. The manufacturer has one or more of the aforementioned alternatives for how to dispose of the returned product, depending on the product's state, the vendor's contractual duties, and consumer demand:

- **Returning to the Vendor**: Retailers frequently place big purchases because the provider provides incentives. The retailer returns the goods to the vendor if the product doesn't do well on the market. Similar to this, if a customer returns a product due to a defect or claims that it has a defect, the manufacturer would like to accept it so that they can prevent similar defects in the future and also prevent non-defective defects. To prevent cannibalization of the parts and protect the reputation of the brand, the manufacturer might also want to return the item.
- **Sell as new product:** Depending on the demand for the goods, the manufacturer may choose to repackage and sell these unused or unopened products as new to merchants or an outlet store. However, after a product has been returned, even if it has only been installed temporarily or never at all, some products, such as circuit breakers, cannot legally be sold.
- **Sell through an Outlet or Discounted product:** It may be sold through an outlet store if the item has been returned or if the retailer has an excessive amount of inventory. Selling through outlet stores has a variety of benefits, including keeping track of where the products are being sold and maintaining control over the inventory. This aids businesses in protecting their brand recognition. Because inventory clearance is the main objective, outlet stores frequently offer a higher margin than retailers.
- **Sell through a Secondary Market:** One of a company's last resorts is to sell a product on the secondary market if it has failed to sell, cannot be returned to the

vendor, and cannot be sold at an outlet store. The secondary market is made up of businesses that are experts in purchasing closeouts, surplus, and junk goods for as little as ten cents on the dollar.

- **Donate the product or give away:** Manufacturers may decide to donate goods to a charity when they cannot be sold to retailers or vendors because they require minor maintenance or cosmetic improvements. In this scenario, the manufacturer is not compensated financially, but the company's reputation as a good corporate citizen would benefit.
- **Remanufacture or Refurbish:** Before a product is sent for recycling, the manufacturer has the option to determine whether it can be fixed or reconditioned by replacing damaged components or by performing cosmetic improvements, allowing it to be sold on the secondary market as reconditioned or remanufactured products. However, it is also necessary to confirm that the returning customer has never used the product, as some markets will not allow the product to be sold after refurbishing or reconditioning.
- **Materials Reclamation or Recycling or Landfill**: A product may be disposed of for a number of reasons, such as the fact that it cannot be marketed in any way due to safety requirements. When the maker determines there is no possibility to recover any value from the returned item, that is one more justification. Sending it to material reclamation to remove the bits that can be recycled for material or the part itself is the last resort. The material, such as pieces made of plastic or metal, can also be recycled. Of course, sending it to the landfill is the final resort. Items that are typically disposed of in landfills are regarded as waste since they are useless to anyone. Naturally, the manufacturer must ensure that all necessary safety measures are taken before disposing of the product in a landfill, including refinement, cleaning, and separating hazardous and non-hazardous materials.

3.11 Reverse Logistics in Indian E-Commerce Industry:

Due to the increase in e-commerce transactions and the requirement for effective return handling, reverse logistics has drawn significant attention in the Indian e-commerce sector.

- With the rise in smartphone usage and more inexpensive data plans, the Indian e-commerce market has experienced tremendous growth in recent years. The Indian e-commerce sector is predicted to reach US$ 200 billion by 2026, rising at a CAGR of 19.6% between 2021 and 2027, according to a report by the India Brand Equity Foundation (IBEF). The number of returns, swaps, and refunds has increased as a result of the expansion in e-commerce transactions, making reverse logistics an important component of the Indian e-commerce ecosystem.
- To effectively manage returns, e-commerce businesses in India have built strong reverse logistics networks. These networks include partnerships with logistics firms, return collecting points, and facilities for reconditioning products. To manage the rising number of returns, businesses like Flipkart, Amazon, etc. have extensively invested in developing their reverse logistics networks.
- Since they are in charge of gathering returned goods from customers and transporting them to the designated collection centres, logistics companies are essential to the reverse logistics process. Reverse logistics services are a specialty of many Indian logistics firms that cater to e-commerce businesses. These businesses provide complete solutions for the procurement, classification, and disposal of returned goods.
- E-commerce businesses have set up their own collection centres for returns in addition to logistical firms. These facilities are often found in large cities and have the capacity to process lots of returns. The centres receive the products that customers have returned, inspect them to make sure they're in good shape, and then get them ready for reuse or disposal.
- Refurbishment facilities are a crucial component of the reverse logistics network because they allow online retailers to sell returned goods that are still in good shape. These facilities frequently contain qualified technicians who can fix and refurbish things that can be sold again, including electronics and appliances. To handle returned goods, businesses like Flipkart and Amazon set up refurbishment facilities in India.
- Reverse logistics also includes proper product disposal, which is crucial. According to the government's E-Waste Management Rules, e-commerce businesses in India are expected to collect the e-waste produced by their items and make sure that it is recycled in an eco-friendly way. In order to guarantee that the returned goods are

correctly recycled, several e-commerce businesses establish partnerships with authorised e-waste recyclers.

- E-commerce businesses can cut costs and increase sustainability by utilising reverse logistics. Businesses can cut production costs and waste by refurbishing and reselling returned goods. Additionally, this strategy supports the government's objective of fostering a circular economy in which goods are created with reuse and recycling in mind.

3.12 An introduction to Amazon:

Amazon was primarily an online bookstore when it was established in 1993 by its developer Jeff Bezos. Amazon's growth was initially quite sluggish; it didn't start to make money until more than 7 years after it was founded. This was made possible by the dot-com bubble's powerful momentum. As time went on, Amazon gained a reputation for being the go-to location for book shopping and the self-described "world's largest bookstore." The business plan for Amazon changed over time. With significant success, Amazon changed its corporate-level strategy into a mergers and acquisitions strategy. Today, Amazon wants to be a destination where customers can go to buy anything online. From a little bookseller operating out of a garage, Amazon has grown to have market capitalization of $1.076 trillion as of May 2023. This places Amazon as the fifth most valuable corporation in the world by market cap.

3.12.1 How Amazon manages its operations?

- They became so successful because of the strength of technological advancement. Technologies for computing power, bandwidth, and data storage have all advanced and became comparatively less expensive over time. Amazon currently offers products in over forty different categories. Everything is available there, including groceries, electronics, and literature. In addition to serving as an e-commerce and IT platform, Amazon today serves as a logistics platform, search engine, and Internet advertising platform. Low costs, convenience, choice, and availability are some of Amazon's main priorities.

- The biggest internet-based business in the US is Amazon.com. The corporation is a significant supplier of cloud computing services and also develops consumer products, including the kindle, fire tablets, fire tv, and phone. For the USA, UK, Ireland, Canada, Germany, the Netherlands, France, Australia, Italy, Brazil, Spain, Japan, India, Mexico, and China, Amazon offers separate retail websites. For some of its products, Amazon also provides international shipping to a few more nations. Without any marketing activities, Amazon.com started its Amazon India marketplace at the beginning of June 2013. Following the announcement of its biggest Indian rival Flipkart to invest $1 billion, Amazon announced in July 2013 that it would be investing a whopping $2 billion in India to grow its business.

- For a customer, delivery time is just as crucial as product quality. It wouldn't be inaccurate to state that logistics may be the key to an e-commerce company's ability to keep its customers. Innovations are crucial in this industry since there is constantly a need for greater reach and faster deliveries at more affordable prices. However, businesses will need to spend money on automation while making good use of their current resources.

- The influence on the transactional connection between manufacturer and retailer has been substantial as sales continue to move away from traditional brick and mortar stores and towards online, e-commerce-based transactions. It is important to conduct more research on the precise effects that the rapid expansion of e-commerce sales is already having on the supply chain for returns or the reverse logistics element of that transaction.

- Beyond the news stories about store closings and drone deliveries from today, one will gain knowledge about how independent third-party resellers are putting products on websites like Amazon Marketplace, the risks involved, and what can be done to reduce this risk going forward. Given that it is anticipated that e-commerce sales will continue to grow, manufacturers and retailers should act now by focusing more on their reverse logistics capabilities.

3.13 Amazon and Reverse Logistics:

Customers can easily return goods they are dissatisfied with thanks to Amazon's thorough returns policy. The procedures vary depending on the item being returned and the reason for the return, but in general they go like this:

- Customer support can also be contacted if a return request needs to be made. They will be required to provide details regarding the item they are returning as well as the return's justification.
- Amazon will provide the buyer a shipping label to print and attach to the shipment after the return is accepted.
- Customers can either schedule a pickup or drop off the package at a carrier location. Free pickup or returns may be available for some goods.
- When the item is received and checked out, Amazon will begin processing the refund. Refunds are frequently given within a few days to the original payment method.

Due to a number of variables, including automation, standardisation, scale, data analytics, and a customer-centric strategy, Amazon's reverse logistics system is quite effective. Let's examine each of these elements in more detail:

- Automation is a significant role in Amazon's effective reverse logistics. The business has created a number of automated procedures and technologies that simplify returns handling and cut down on the time and labour needed. For instance, Amazon's return centres quickly handle and sort returned items using conveyors, robotics, and automated sorting systems. As a result, the process moves along more quickly and less manual labour is needed. The high level of automation in Amazon's inventory management system also enables the corporation to swiftly locate returned goods and follow them through the returns process.
- Standardisation is a vital component of Amazon's effective reverse logistics. The business has built standardised processes for dealing with returns, repairs, and item resale. By doing this, you can minimise mistakes and guarantee consistency between teams and locations. For instance, Amazon has devised a set of standards for assessing the quality of returned goods,

enabling staff to rapidly classify products into categories like "like new," "used," or "damaged." This facilitates the correct assessment of the things and speeds up the process of refurbishing and selling them.

- Another element that helps to explain Amazon's effective reverse logistics system is its enormous scale. Due to the company's enormous size, it can take advantage of economies of scale and make investments in infrastructure and technology that smaller businesses cannot. This helps Amazon to rapidly and effectively handle enormous volumes of returns. For instance, Amazon runs a network of more than 100 return centres throughout the world, enabling the corporation to efficiently receive and handle returns from clients in various areas. As a result of its enormous client base, Amazon also receives a steady stream of returned goods, which keeps its operations for refurbishing and reselling goods in good order.
- Amazon tracks returns and looks for patterns and trends using data analytics. In order to increase efficiency, the business can use this to optimise its operations and make data-driven decisions. For instance, Amazon uses data to determine which products are returned the most frequently and why. By addressing the underlying problems, this enables the business to take action to decrease the number of returns. By determining which things are the most profitable to refurbish and resell, Amazon also uses data to optimise its refurbishing and resale operations.
- Last but not least, Amazon's customer-centric strategy is another important element that supports its effective reverse logistics system. The company works hard to make the returns process simple and hassle-free for clients since it places a high priority on customer satisfaction. This contributes to a decrease in the volume of queries and complaints sent to customer service, which in turn decreases the workload and expenses related to processing returns.

Over the past 25 to 30 years, reverse logistics has undergone relatively few changes, but on occasion, forces enter the manufacturer-retailer transaction relationship that have an impact on these processes and costs. A pendulum has been used to symbolize the “swings” that have taken place, as is frequently the case. Return centres appeared

around 1990 as a result of the necessity to relocate return processing from the back room of stores to a centralized location.

Many would argue that the pendulum swung in the retailer's favour in this particular case. Manufacturers like P&G and General Mills were in the forefront of a substitute programme later in the same decade that was created to do away with the requirement for manufacturers to physically and monetarily accept returns at the end of a product's life cycle. These adjustable-rate policies, sometimes known as "ARPs," provided retailers with a payment depending on the performance that product was predicted to have along the supply chain, as measured by the rates of damage and expiration gathered throughout the supply chain auditing process. The perception was that the pendulum had swung back in favour of the maker as adoption increased gradually from the late 1990s into the 2000s.

The processing of returns and the financial reconciliation of the costs related to processing returns remained a consistent source of contention in the industry throughout this evolution in return policy. These two primary causes are at the heart of this conflict:

1) Allowance-based programmes are based on the idea of "shared responsibility"; based on where and when in the supply chain an item is, as well as its state at the time of the audit (i.e., damaged at the shelf, expired in the retailer's DC, or damaged in the manufacturer's DC), a level of responsibility is assigned to the manufacturer, retailer, or both. This affects the number of allowances calculated and given to the retailer in the end.

2) The final disposition of the product – irrespective of the programme (acceptance of returns, not accepting the returns for an allowance), the precisely disposing of the product, who will cover some costs (i.e., handling costs, transportation costs, and definitely disposal). All of these factors have occasionally led to what many in the sector would consider a less than ideal arrangement, benefiting from any regaining of value connected to liquidation.

3.14 What is the cost of Reverse Logistics?

Reverse logistics costs have occasionally been driven up by a variety of variables that have an impact on returns and call for some form of response from the manufacturer, retailer, or both. Costs associated with returns have been impacted in some way by sustainability, store-level hazardous processing, mergers in the manufacturer and retailer sectors, and consolidations with reclaim service providers. Even if these forces are at play, the pendulum's position hasn't really changed all that much recently. Up until now, that is.

Reverse logistics is being impacted by a force unlike anything the industry has seen before as the pendulum has started to swing back in its favour. The "Amazon Effect" or the rise in online sales is that force. As these particular factors influence the process, the impact that Amazon in particular and e-commerce in general are having on reverse logistics is real, complex, and becoming increasingly expensive to deal with:

- Ecommerce continues to overtake brick and mortar stores in terms of sales.
- The blended rate of returns is going up since ecommerce sales have considerably higher return rates.
- The nature of your returns' makeup is evolving.
- Retailers are responding by regulating the cost incurred for Reverse Logistics in order to maintain profit.
- Independent resellers can shift their product online relatively easily thanks to websites like Amazon Marketplace.

As a result, managing the returns and the Reverse Logistics cannot be neglected at this time. In order to effectively protect your company from the escalating expense of returns and Reverse Logistics, it is important to have a deeper grasp of how the Amazon Effect affects reverse logistics.

Returns will still depend on sales, no matter what, it will be there as long as there is sales. Manufacturers with a successful reverse logistics programme have historically been able to keep the cost of returns as a proportion of sales at or below 2%. Some of the top examples in their field can obtain this number close to 1% of revenue. It is not unusual for the expense of reverse logistics to reduce the earnings of the store by 10% or more.

As sales continue to rapidly transition from brick and mortar to ecommerce, as many manufacturers and retailers are beginning to realise, they are no longer controlling these expenses from the historical brick and mortar concept.

Convenience, as is so frequently the case, has a cost, and in this case, that cost manifests in greater return rates. Online returns are typically 2-3 times more common than in-store returns, and they can even be up to 10 times more common in some categories. The field of returns processing is still evolving as retailers look for new strategies to differentiate themselves from their rivals when selling to online customers. For instance, as e-commerce develops and grows, the idea of "buy online, return in store" continues to catch on with consumers.

The mix of the various types of returns that retailers are now forced to handle is another significant development happening in the reverse supply chain, over to an overall rise in the volume of products returned. While compared to those other types of returns traditionally done in the 'brick and mortar space' (recalled products, out of date products, damaged products or end of life returns), "consumer returns" now make up a larger portion of all returns. Consumer returns are more frequently of the "didn't fit," "didn't work," "colour didn't match online photo," etc. variety. The majority of the time, these things are still in good condition and should be returned to stock for full price resale.

The "Amazon Effect" is causing significant changes in the reverse supply chain. Retailers are forced to deal with the realities of processing more returned goods as more products are sold online. Many of these units are in good condition and give the retailer a chance to recoup value through liquidation. They are also a reliable source of income that can definitely put a barrier to the increasing costs connected to the difficulties of becoming more competitively efficient in the omnichannel market. Third-party resellers then purchase these products from retailers that are liquidating their inventory at discounts of 80–90% off list price.

Due to this, the reseller can set the price of your products lower than what they would normally charge in the actual market, including for items that are "sold and shipped by Amazon". As more people use websites like Amazon to study products before making purchases, online consumer behaviours are evolving. They are frequently directed to these independent resellers while they conduct pricing research, which Amazon is OK with as they have made this high margin business unit a major growth focus of theirs.

Manufacturers must therefore improve the security of their reverse logistics supply chains and manage the disposition of their products to keep them out of the hands of these 3rd party resellers if they are to reduce the dangers of their products getting entangled in this predicament. To help you with this, use the checklist below:

- Update your returns policy to include online purchases.
- Make sure you are controlling how your items are handled.
- Recover your returned objects to retake possession where it makes sense to do so.
- Verify the accuracy of assertions about quantity, pricing, fees, etc.
- Verify quantities returned against quantities claimed to make sure your reverse supply chain is secure.

Chapter 4

4.1 Analysis

Managing returns is a critical step in the process of reverse logistics, a procedure that is essential to the e-commerce sector. Returns have increased with the popularity of online shopping, and e-commerce businesses must properly manage these returns to preserve customer happiness and cut expenses. A questionnaire is a helpful tool for compiling information about a certain subject. Reverse logistics and returns in the e-commerce sector are the subject here. The purpose of the questionnaire would have been to gather data on a number of reverse logistics-related topics, such as the frequency of returns, the factors that lead to returns, customer satisfaction with the returns process, the difficulties that e-commerce businesses face in managing returns, and potential solutions to these difficulties. A sample of people who had experience with the reverse logistics procedure, such as clients who had returned goods to online retailers and professionals in this area, were given the questionnaire.

Data would be analysed to find patterns and trends after it was gathered. Following that, conclusions would be drawn about the reverse logistics process in the e-commerce sector, including the difficulties faced by businesses, the degree of customer satisfaction, and potential solutions to these difficulties. Additionally, the chapter would summarise the questionnaire's results in a clear and concise manner, illuminating the information with tables, graphs, and charts.

The chapter would then come to a close with a discussion of the findings' implications for the e-commerce sector, including any possible gains from putting solutions to the problems that e-commerce companies have with managing returns. The chapter would also suggest areas for further study on the subject of returns and reverse logistics in the e-commerce sector. A sample of people were taken and a set of 20 questions were prepared and the questionnaire was circulated to take 100 responses from these samples. The following results were obtained:

- Majority of people who participated in the questionnaire belonged to the age group of 18-25 followed by age group of 25-65. Out of the 100 responses, 74% of responses were from people belonging to 18-25 age group. No responses were obtained from people belonging to age group of 65 and above and below 18. This

indicates that most people who purchases products from e-commerce platforms are youths who belong to the age group of 18-25.

- While 55% men responded to the questionnaire, 45% was the share of women who responded. No transgender responses were obtained and no one preferred not to reveal their gender.
- 64% of the responses comprises of student community or are still studying whereas 26% of responses are employed while 8% of the responses were from unemployed people, 2% of responses responded 'not to say'
- While responding to the question of whether they often buy things online, 92% of respondents responded that they often buy things online and 8 % responded that they don't often buy things online.

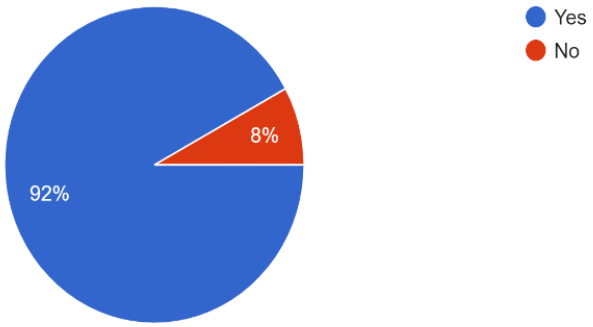

Figure 4: Representing whether respondents often buy things online (Source- Primary Data)

- Regarding how often buying things online, 46% of people responded that 'sometimes' they buy things online and 41% responded that they often buy things online. While 8% of people responded that they rarely buy things online, 5% responded they don't often buy things online.

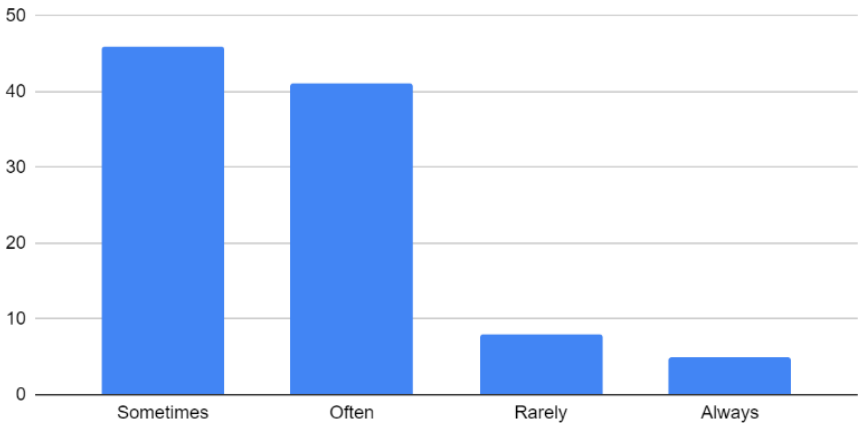

Figure 5: Representing how often respondents buy things online (Source- Primary Data)

- To the question of what kind of products do they purchase the most through online, 69% people responded that they mostly purchase fashion and beauty products, 63% responded that they purchase mobiles and electronics. 52% of respondents often purchase Books and education related products followed by 42% purchasing health and personal care, 26% purchasing Home, furniture and appliances, 21% purchasing Grocery items, 18 % purchasing sports, outdoor and travel, 13% purchasing office and professional items and 11% purchasing Music, video and gaming and 7% purchasing automotive related items.

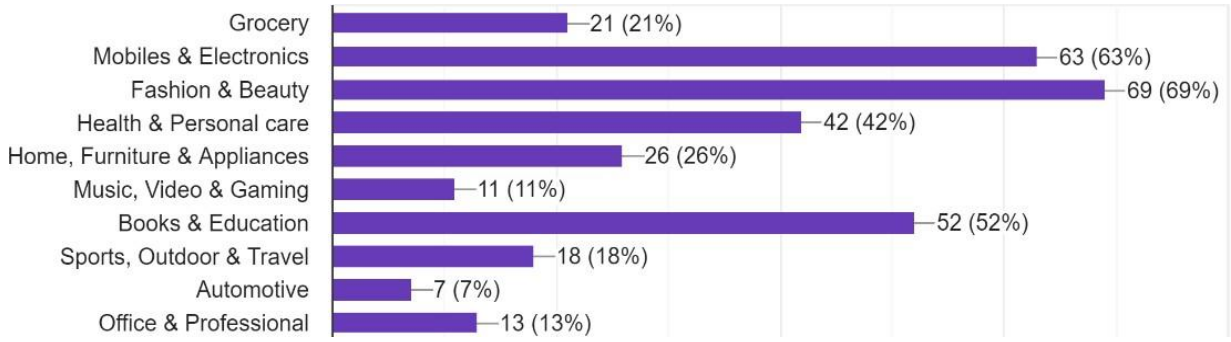

Figure 6: Representing what kind of products are purchased most online (Source: Primary Data)

- While 38% of responses had returned a product 2-3 times in the past year, 33% had returned their product once in the past year whereas 17% had returned their product more than 3 times in the past year and a 12% had never returned any product they purchased in the past year. Asking the same in the case of past 1

month, a majority of 66% had never returned any of the product they purchased in the past one month whereas 28% have returned their product once and 5% had returned their product 2-3 times and 1% had returned their product more than 3 times in the past one month.

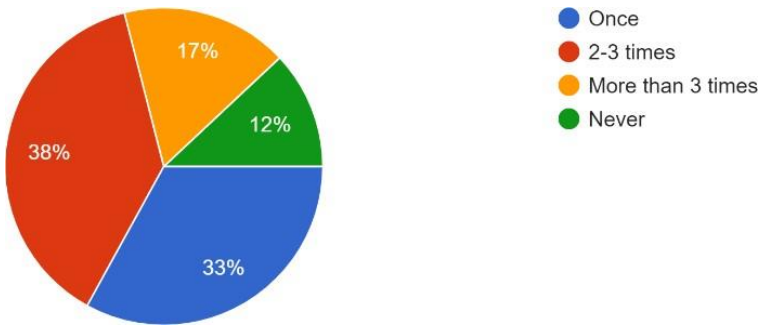

Figure 7: Representing how many times respondents have returned a product they purchased in the past 1 year (Source- Primary Data)

- For the question of reasons for returning the products purchased, responses were scattered and 33% of responses was that the product was defective. 27% of responses returned the product because the product didn't meet their expectations. While 26% responded that product was not as described, 22% responded that the product doesn't suits them, and 19% responded that they received a wrong product, 12% changed their mind and returned the product and 7% responded that the reason was late delivery.

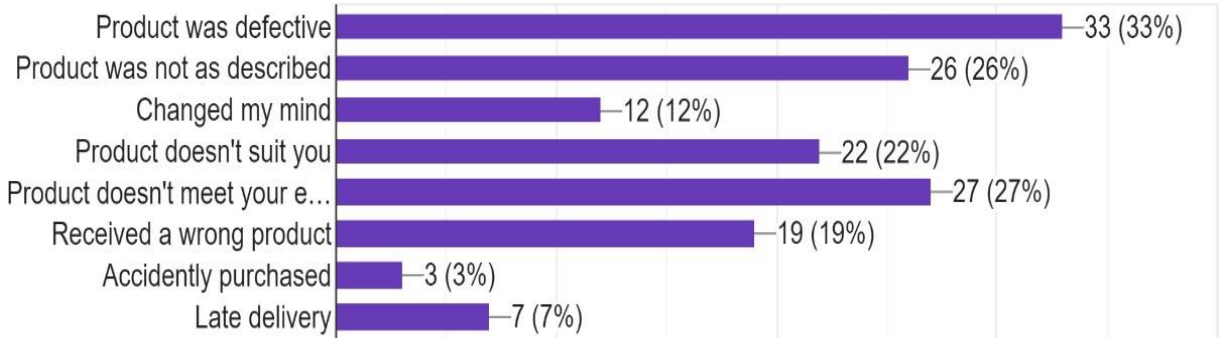

Figure 8: Representing the reasons for returning the products purchased (Source- Primary Data)

- Regarding whether they were satisfied on the return process, 79% responded that they were satisfied with the return process whereas 21% were not satisfied with the return process.
- 44% insisted that it was somewhat easy to initiate the returns and 43% responded that it was very easy to initiate the returns. 7% responded that it was somewhat difficult to initiate the returns while 6% responded that it was very difficult.
- To the question of returns got rejected, 83% had experience of returns got rejected whereas 17% had got their returns never rejected.
- Out of rejected returns, 84% responded that their returns were never rejected because of any policy of e-commerce platform. 14% got their returns rejected because of some policies of the e-commerce platform from where they purchased.
- For 52% of people, it took less than a week to process the return request and for 44% people, it took 1-2 weeks to process the return request. For 3%, it took 2-4 weeks and for 1%, it took more than 4 weeks.

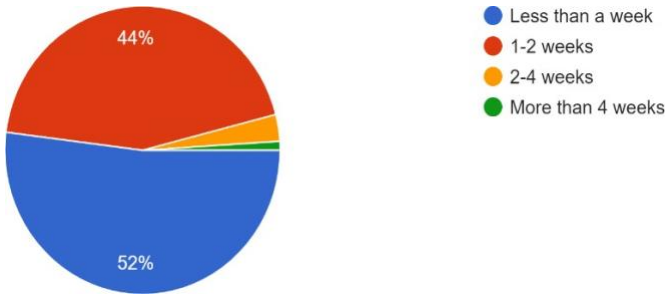

Figure 9: Representing how long it took to process the return request (Source- Primary Data)

- 92% of respondents got clear instructions for returning their product from their e-commerce platform but 8% didn't got clear instructions regarding returning their product.
- 81% of responses were able to track the status of their return online while 19% couldn't.
- 80% people responds that the packaging of the product didn't affect their return but 20% responded that the packaging of the product had affected their return.

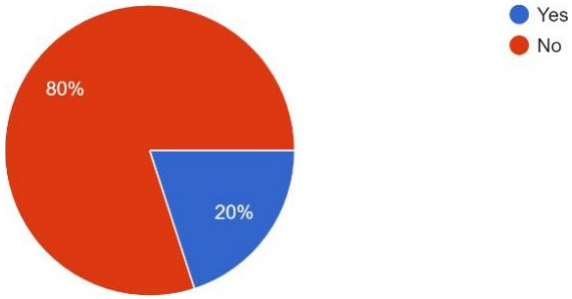

Figure 10: Representing whether packaging of products affected the return process (Source- Primary Data)

- Collecting suggestions regarding what can e-commerce websites do to improve reverse logistics process, responses were mixed including opting multiple suggestions. This includes offering faster processing time for returns, provide clear instructions for returning products, provide better tracking for return shipments, need to clearly specify the terms regarding refund, and making clear instructions and guidelines regarding packaging as there are several cases where packaging and its wear tear affecting the return of the product.

4.2 Findings

- The majority of poll respondents were between the ages of 18 and 25, with no responses coming from those under 18 or beyond 65. This shows that the sample of respondents might not be typical of all people who use e-commerce platforms to make purchases. From this, it’s clear that young people are the ones who make real use of e-commerce platforms. Without more information or analysis, we cannot generalise the conclusion that people in the 18 to 25 age range have a higher propensity to make online purchases. It's also likely that older age groups didn't respond for a variety of reasons, such as a lack of interest in surveys or a lack of technological familiarity. Therefore, it would be necessary to collect a more diverse sample of respondents and carry out a more thorough analysis in order to draw more accurate conclusions about the purchasing behaviour of various age groups.
- We can infer from the facts given that a sizable majority of the respondents, particularly 92%, frequently make purchases online. This suggests that among the demographic studied, online buying has grown in popularity. Only 8% of respondents said they didn't frequently shop online, indicating that the vast majority of the population has made online shopping a regular habit.
- It's crucial to remember that this conclusion is based on respondents' self-reported data, which could not be totally correct. This information also doesn't offer any insights into the reasons why some respondents don't prefer to purchase online, which may include things like privacy issues, security threats, or just a preference for in-person shopping. As a result, although this data gives a general notion of how common online buying is among the population polled, more study is required to provide a more thorough understanding of the elements that affect consumers' online shopping behaviours.
- Online shopping is a common way for the population questioned to make purchases, but it is not the only way. This is clear from the information supplied. In particular, 41% of respondents said they frequently shop online while 46% said they did so occasionally, showing that the majority of respondents use internet shopping to some degree. However, 5% of respondents and 8% of respondents said they don't frequently shop online, indicating that some people still favour more conventional

methods of shopping. This may be due to a variety of factors, including individual preferences, accessibility issues, or a lack of faith in internet retailers.

- According to the statistics given, we may infer that mobile devices and electronics, along with fashion and beauty products, are the items that people buy the most frequently online, with 69% and 63% of respondents, respectively, stating that this is the case. This shows that buying these kinds of things online has become a common practise. In addition, we can see that more than 40% of respondents indicated that they frequently buy books and education-related products, health and personal care items, and house, furniture, and appliances online. This might be explained by how easy and convenient it is to buy these kinds of things online.
- It's also noteworthy to note that while if groceries, sports, outdoor activities, and travel, as well as office and professional products, as well as music, video, and gaming, are not as frequently bought online, a sizeable percentage of respondents said they still do so to some level. Furthermore, no information is offered about certain products that are well-liked for online shopping within each product category. Therefore, additional research would be required to gain a more thorough understanding of the variables that affect consumers' decisions to buy in each product category as well as the precise variables that affect consumers' decisions to buy online as opposed to in-person.
- We may infer from the data that product returns are prevalent among the people who were polled because a sizable percentage of respondents said they had returned products in the previous year. In particular, 38% of respondents said they had returned items between two and three times in the previous year, whereas 33% had only done so once. This shows that some customers might return products more frequently than others, possibly as a result of things like product dissatisfaction, sizing issues, or damage sustained during shipping. We can also notice that a sizable fraction of respondents (12%) never returned any of the goods they bought in the previous year. This shows that some customers may be less prone to return goods, either as a result of the product being more in line with their wants or preferences or because they are generally more satisfied with it. According to the data for the previous month, the majority of respondents (66%) did not return any of the things they had purchased, suggesting that product returns may become less common in the

near future. The fact that 28% of respondents had returned a product once in the previous month shows that product returns do still happen occasionally.

- We can infer from the responses given that there are a variety of reasons why customers decide to return items they have bought online. With 33% of respondents citing this as their reason for returning a product, the most frequent justification was that it was defective. This shows that retailers should take quality control and product inspection into account in order to reduce returns caused by defective products. The fact that the product did not fulfil the customer's expectations was another big cause for returns (27%), demonstrating that customers could have a particular level of expectation or standard for the products they buy.
- The data indicate that there are numerous reasons why people choose to return things they have purchased online. The most common rationale for returning a product was that it was defective, with 33% of respondents claiming this as their reason. This demonstrates that in order to decrease returns brought on by defective products, retailers should consider quality control and product inspection. Another significant reason for returns (27%) was that the item did not meet the customer's expectations, showing that buyers definitely have specific standards or expectations for the goods they purchase and they wouldn’t accept any compromise in it.
- We may infer from the responses given that most consumers (79%) were content with the return procedure. This suggests that the shops may have return policies and procedures in place that are effective and efficient and suit the needs of their customers. The fact that 21% of consumers weren't happy with the return procedure, though, indicates that there might be potential for improvement in how businesses handle returns. Retailers may find it useful to examine the responses made by these consumers in order to pinpoint particular problems or potential areas for improvement. Customers who were dissatisfied with the return procedure, for instance, might have encountered problems like protracted processing periods, imprecise instructions, or trouble getting in touch with customer service. By addressing these issues, merchants may be able to increase customer happiness while lowering the risk of bad reviews or customer attrition.
- With 43% of respondents stating it was very easy and 44% saying it was somewhat easy, it is clear from the replies that customers generally found it simple to initiate returns. This suggests that merchants have made it simple for customers to return

items, perhaps by providing transparent return procedures and user-friendly online interfaces. A small minority of consumers (13%) did, however, report difficulty initiating returns, which may point to some room for improvement. Retailers may want to think about offering extra help or assistance for customers who have trouble starting returns, like by providing online chat support or detailed instructions on their website.

- The high percentage of 83% customers who had returns refused may be a sign that e-commerce platforms have severe return policies in place or that consumers are not completely aware of the rules and regulations governing product returns. Retailers must make sure that customers understand their return policies and the specific parameters for returns that will be accepted. This can lessen the possibility of returns being turned down and raise customer satisfaction.
- We can infer from the facts given that most customers did not have their return requests denied because of the return rules of the e-commerce site. Additionally, the majority of people typically receive their returns within two weeks. The majority of returns were processed within a week or two, which is a good sign that the e-commerce platforms have effective mechanisms in place for managing refunds. However, it might have resulted in inconvenience and dissatisfaction for the 1% of people who had to wait for longer than four weeks.
- To get a more thorough grasp of the factors influencing consumers' shopping behaviours, additional study would be required even though this data gives a basic notion of how frequently online shopping occurs among the population polled.

Chapter 5

5.1 Conclusion

A crucial aspect of the e-commerce industry that has attracted a lot of attention recently is reverse logistics. It entails managing product returns, repairs, and recalls in a way that is affordable, long-lasting, and successful. It is crucial for businesses to have excellent reverse logistics plans because of the enormous expansion in e-commerce and online shopping and the quantity of returned products. This study's main goal was to investigate the function of reverse logistics in the e-commerce industry, with an emphasis on how it can affect consumer pleasure, cost savings, and sustainability**.** This study investigated the advantages and processes of implementing reverse logistics in e-commerce, as well as the best practises for efficiently managing the process, through a detailed sample study. The results of this study demonstrate that reverse logistics can benefit e-commerce businesses significantly, including cost savings, increased consumer satisfaction, and increased sustainability. Better visibility and control over the movement of returned goods is one of the main ways that reverse logistics can cut costs. Businesses may track the journey of returned goods in real-time using technology like blockchain, which lowers the risk of loss or theft and offers useful insights about product returns.

In the e-commerce industry, reverse logistics is essential for improving consumer satisfaction. Businesses may boost customer trust and generate more repeat business by putting in place effective and open return policies. Reduced time and effort required for customers to return products is another benefit of providing clear and concise information about the return process, including return policies, shipping instructions, and refund procedures. This improves customer satisfaction even more.

Over the past several years, the e-commerce industry in India has expanded quickly as more and more people choose to shop online. The number of individuals utilising e-commerce platforms to shop for products and services has grown in tandem with the number of people who have access to smartphones and the internet. Reverse logistics are very crucial in the modern society. Customers worldwide return goods worth $650 billion annually, according to data. All B2C businesses urgently need to have an efficient logistics management system in place given the rising trend of online shopping. 89% of online buyers say that return policies influence their choice of

retailer. Reverse logistics faces particular difficulties because of the rising costs connected with managing business.

Reverse logistics can be extremely useful for sustainability by minimising waste and the negative environmental effects of e-commerce. Businesses can reduce the demand for new product manufacturing and extend the life of existing products by applying tactics like product repair, refurbishment, and recycling. This lowers the carbon footprint of the e-commerce sector. However, there are a number of difficulties in implementing reverse logistics in the e-commerce industry, including controlling the cost of returns, preserving customer confidence, and controlling the complexity of the procedure. Businesses must create solid reverse logistics plans that are in line with their overarching objectives and clientele's needs if they are to overcome these difficulties.

In order to increase the precision and effectiveness of the return process, this may entail making investments in technologies like AI and machine learning or forming partnerships with third-party logistics companies. In summary, the report emphasises the significance of reverse logistics for the e-commerce industry and its impact on customers. Companies who invest in reverse logistics methods are likely to gain a competitive advantage as the e-commerce sector expands by improving consumer experiences and cutting expenses. Businesses can improve their bottom line and contribute to the general sustainability of the e-commerce sector by utilising the most recent technologies and adopting effective and sustainable practises.

5.2 Suggestions

In the e-commerce sector, reverse logistics is a crucial element of customer service and operational effectiveness. Businesses must now efficiently manage their return and refurbishing operations given the rising popularity of internet shopping. In this aspect, reverse logistics is essential since it enables businesses to recoup the value of returned goods, cut waste, and lessen the sector's carbon footprint. Some suggestions to improve reverse logistics include:

- Simplifying the returns procedure is one of the most crucial strategies to enhance reverse logistics in the e-commerce sector. Customers should find the return process simple and convenient to use, with clear directions on how to return items and how refunds will be handled. Businesses should make sure that customers have access to a range of return options, such as in-person returns at a physical store, returns by mail, and returns through third-party services.
- Businesses can better decide whether to refurbish, resell, or recycle products by evaluating the quality and condition of returned goods with the aid of an effective sorting and grading system. Businesses can minimise the need for manual labour, lower errors, and increase process speed and accuracy by employing automated systems to sort and grade returned goods.
- Greater visibility and control over the reverse logistics process may be made possible through the use of technology. Companies may follow the journey of returned goods in real-time using technology like RFID, barcode scanners, and GPS tracking, which lowers the risk of loss or theft and offers useful insights about product returns. Companies will be able to rationally process returns and speed the refurbishment process thanks to this.
- By contracting out some of the most complicated and time-consuming tasks, organisations can streamline their reverse logistics processes by working with third-party logistics providers. From product testing and grading through repackaging, refurbishing, and recycling, third-party companies can do it all. In addition to providing a better degree of competence in managing the reverse logistics process, this can save costs and increase efficiency.

- Companies can trace returned goods, maintain tabs on refurbishment activities, and gain more insight into the entire reverse logistics process with the use of a centralised inventory management system. Companies can decrease the time and effort needed to manage various sites and increase the accuracy of inventory data by utilising a centralised system.
- In the e-commerce sector, sustainability is a topic that is becoming more and more crucial. By offering discounts for returning goods in recyclable packaging, encouraging the use of eco-friendly materials in packaging, and creating incentives for customers to return goods in excellent condition, businesses can enhance their sustainability practises.
- The process of reverse logistics must be continuously monitored and improved. Companies should assess their reverse logistics procedures on a regular basis to find opportunities for enhancement, such as slashing processing times, enhancing grading precision, and boosting refurbishing activity effectiveness. Businesses can streamline processes, cut costs, and raise customer satisfaction by proactively monitoring and optimising the reverse logistics process.

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APPENDIX

Questionnaire on Reverse logistics in e commerce sector.

Q1 Name:

Q2 How old are you

- Under 18 years
- 18-25
- 25-65
- 65 and above

Q3 Gender

- Female
- Male
- Transgender
- Prefer not to say

Q4 Whether you are a

- Student
- Employed
- Unemployed
- Retired
- Prefer not to say

Q5 Do you often buy things online?

- Yes
- No

Q6 How often do you buy things from online?

- Always
- Often
- Sometimes
- Rarely
- Never

Q7 What kind of products do you buy online?

- Grocery
- Mobiles & Electronics
- Fashion & Beauty
- Health & Personal Care
- Home, Furniture & Appliances
- Music, Video & Gaming
- Books & Education
- Sports, Outdoor & Travel
- Automotive
- Office & Professional
- Other

Q8 Have you ever returned a product purchased from an e commerce platform?

- Yes
- No

Q9 How many times have you returned a product in the past year?

- Once
- 2-3 times
- More than 3 times
- Never

Q10 How many times have you returned a product in the past 1 month?

- Once
- 2-3 times
- More than 3 times
- Never

Q11 What was the reason for returning the product?

- Product was defective
- Product was not as described
- Changed my mind
- Product does not suit you
- Product does not meet your expectation
- Received a wrong product
- Accidently purchased

- Late delivery
- Other

Q12 Were you satisfied with the return process?

- Yes, I was satisfied
- No, I was not satisfied

Q13 How easy was it to initiate a return request?

- Very easy
- Somewhat easy
- Somewhat difficult
- Very difficult

Q14 Have your product return request ever rejected?

- Yes
- No

Q15 Whether it was rejected due to any policy of your e commerce platform?

- Yes
- No
- Other

Q16 How long did it take to process your return request

- Less than a week
- 1-2 weeks
- 3-4 weeks
- More than 4 weeks

Q17 Did the e commerce website provided clear instructions for returning the product?

- Yes, instructions were clear
- No, instructions were not clear

Q18 Were you able to track the status of your return online?

- Yes, I was able to track
- No, I was not able to track

Q19 Did the e-commerce website offer a refund or replacement for the returned product?

- Yes, I received a refund/replacement

- No, I didn’t received a refund/replacement

Q20 Did the packaging of the product ever affected your return process?

- Yes
- No

Q21 In your opinion, what can e commerce websites do to improve the reverse logistics process?

- Provide clearer instructions for returning products
- Offer faster processing times for returns
- Provide better tracking for return shipments
- Other