A STUDY OF REVERSE LOGISTICS IN E-COMMERCE BUSINESS

Project report submitted in partial fulfillment of the requirement for the award of the degree of

MASTER OF BUSINESS ADMINISTRATION
In
INTERNATIONAL TRANSPORTATION AND LOGISTICS MANAGEMENT

By

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CERTIFICATE

School of Maritime Management

Indian Maritime University, Chennai.

This is to certify that the project report entitled "**A STUDY OF REVERSE LOGISTICS IN E-COMMERCE BUSINESS**'' submitted to the School of Maritime Management, Indian Maritime University, Chennai Campus., in partial fulfillment for the award of the degree of Master of Business Administration in International Transportation and Logistics Management, is a record of work carried out entirely by **EBEN THOMAS KOSHY**, Reg. No. 2003305014.

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DECLARATION

I EBEN THOMAS KOSHY, Reg. No. 2003305014 student of Indian Maritime University, Chennai, hereby declare that the project report on **"REVERSE LOGISTICS IN E-COMMERCE BUSINESS"** submitted to **Indian Maritime University, School of Maritime Management, Chennai** in partial fulfillment of the requirements for the award of degree **Master of Business Administration** in International Transportation and Logistics Management, under the supervision of **Dr. Lekha Ravi**, Assistant Professor, School of Maritime Management, Indian Maritime University, Chennai.

This submission represents, idea of mind in my own words and where ideas or words of other have been included. I have adequately and accurately cited and referred the original sources.

Signature 

Place: Chennai

Date: 16 - may - 2022

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The completion of this project is not just due to the efforts of one single person; rather it bears the number of persons who directly or indirectly guided me and helped me to complete the internship.

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Eben Thomas Koshy

EXECUTIVE SUMMARY

The overall goal of e-commerce for businesses is to assist them in developing a global sales system and logistics infrastructure to support efficient online purchase orders; to provide enterprises with data and information on business operations, production, and sales information to solve the complex challenge of collection; to reduce market entry links that assist companies in opening up the market to minimize goods circulation, and to reduce business costs. SCM (Supply Chain Management) focuses on customer demand and brings together attention to related commodities or services, as well as company information resources.

The study focuses on the concept of reverse logistics and its significance in e-commerce, Customers opinion towards reverse logistics services provided by E-retailers. It also touches upon an analysis of Costs involved in reverse logistics in E-Commerce business.

New e-commerce techniques have the potential to increase supply chain efficiency and transparency, resulting in new business models, more transparency, and changes in distribution routes, including the addition of new intermediaries. From the standpoint of a distribution property, the evolution of logistics and supply chain has gone through several stages and spans a long period.

The practice of returning items from purchasers to manufacturers or suppliers is known as reverse logistics. In the era of online purchasing, the entire return management procedure is becoming increasingly vital. Returning things to the supply chain and moving them to the appropriate warehouse, fulfillment center, or manufacturing plant is part of this operation. The goods are either collected, processed, and made functional again after a quality check on-site. If a damaged product cannot be fixed, it is disposed of correctly.

The returns process is a time-consuming and labor-intensive procedure that involves several "touches." This leads to expensive return transportation expenses, further reducing your profit margins. It also adds to the workload of customer service and the supply chain.

CHAPTER 1

INTRODUCTION

Recent developments in communication technology

In the 1990s, the rapid growth of computer services and information and communication technologies (ICT) transformed how firms used logistics and supply chain operations to achieve a competitive edge. The e-commerce context has evolved as a result. Businesses must establish a balance between item pricing, customer service, and delivery time in order to obtain a competitive advantage in e-commerce. As a result, e-commerce platforms must be both inventive and scalable. E-commerce has an impact on both business-to-business (B2B) and business-to-consumer (B2C) transactions. E-commerce is the sale of products, services, and other economic activities through the Internet computer network, to put it simply. It also includes all inter-company and intra-company tasks, suggesting that e-commerce has an impact on the supply chain's three flows: physical flow, money flow, and information flow.

About E-commerce and online retailing

As a result of digital revolution, e-commerce has developed. Although early uses date back to the 1960s, e-commerce grew increasingly popular in the 1990s as the Internet became more extensively utilized. E-commerce uses communication systems such as EDI, POS, electronic ordering system, electronic mail, data transfer, video conferencing, workflow, or interaction with a remote computer to improve the efficiency of logistics and supply chain activities, as well as the entire supply chain management decision capacity. Some of the solutions and technologies associated with e-commerce include portals, e-marketplaces, e-auctions, and virtual inventories. The influence of e-commerce solutions on logistics and distribution operations is irreversible. Big changes, on the other hand, may take a long time to manifest.

The overall goal of e-commerce for businesses is to help them develop a worldwide sales network and logistics infrastructure to support efficient online order processing; to provide enterprises with data and information on business operations, production, and sales information to solve the

complex challenge of collection; to reduce market entry links that help companies open up the market to minimize goods circulation; and to lower business costs. SCM (Supply Chain Management) focuses on consumer demand and unifies attention on connected items or services, as well as business information resources.

E-quick commerce's expansion has been associated with the economic development and is frequently touted as a growth driver. E-commerce is also hailed as a powerful tool for developing countries to access into the global market's potential. Today, e-commerce is the latest leader of chance in the physical distribution system and SCM in developed nations, but the e-commerce industry in emerging economies is still in its infancy, but it is increasing and becoming a fundamental element of commercial life. This field has changed dramatically during the last four decades and is still expanding. Low pricing and accessibility were the primary reasons driving e-commerce in the start, but now, e-commerce shops (also called as e-tailers) cater to every type of buying experience, service, and product. As gross revenue from e-commerce grows year over year from nascence to critical mass, most transport service providers (TSPs) or retailers, especially multi- and omni-channel retailers, are only now starting to realize what this means for their retail logistics and physical distribution network infrastructures, and what role they can play within. E-commerce is being used in conjunction with traditional brick-and-mortar retail.

New e-commerce techniques have the ability to improve supply chain efficiencies and transparency, leading to new business models, more transparency, and changes in distribution channels, including the inclusion of new intermediaries. The development of logistics and supply chain has gone through many stages and covers a lengthy timeframe from the perspective of a distribution property.

Having able to deliver items to clients quickly will become a greater competitive advantage as online shopping grows. As a result, certain retailers may be encouraged to set up their own small depot networks, either to cross-dock items sent from bigger e-fulfillment centers or to distribute specific quickly products directly to the customer. E-fulfillment will mix with urban logistics in this evolving model, since these facilities will be predominantly focused around major population centers where online sales volumes are highest. Around order to provide same-day delivery services, Amazon, for example, has built smaller-scale distribution hubs in the United States.

B2B and B2C firms must be as adaptable and omni-present as possible to be competitive in this shop-anytime-anywhere world. This tendency is beginning to supersede parcel operators' traditional role, as can be seen presently. The current e-commerce challenge is to find a way to coordinate and standardize corporate activities such that real-time accessibility and transparency into inventory movement is possible. As predicted, retailers in developed nations are transitioning from multi-channel to omni-channel retail. Omni-channel companies connect their platforms to provide clients a uniform purchasing experience no matter where they buy. A merchant can fulfil orders from local stores rather than warehouses using omni-channel, blurring the boundaries between the two types of e-fulfillment centers. With several sales channels, warehouses, and vendors, the likelihood of orders getting lost has never been higher. To solve this problem, order fulfilment technologies has assisted in the merging of the front-end and back-end of online retail. Automated technologies and real-time fulfilment data are already transforming the back-end process jointly. The synchronization of critical supply chain touchpoints has helped to decrease inefficiencies and identify wasteful procedures. Robotics are even used to choose items and move it throughout the warehouse.

Managing an E-Commerce supply chain

- Diversify and use Flexible Warehouses as well as Suppliers
- Improve your Sales Forecasting
- Leverage and Embrace Supply Chain Software
- Decrease Processing Time by Managing Labor Effectively
- Embrace Drop Shipping for your Ecommerce
- Outsourcing to 3PL and 4PL

- **Diversify and use Flexible Warehouses as well as Suppliers:** It's usually a good idea to have many suppliers and a bigger number of locally managed distribution facilities. If one of your suppliers fails, you may easily obtain goods from a different provider.

Example; Nykaa, an online cosmetics company co-operates with other cosmetic brands and attracts high-quality suppliers to sell their products on their platform. When a customer places an order on Nykaa, it might be picked from Nykaa's warehouse or another supplier's warehouse. Doing this will ensure you don't have to worry about your business and still retain your customers.

- **Improve your Sales Forecasting:** Purchasing too much stock would lead to increased costs, obsolete goods, and storage. Real-time data visibility can help you keep control over distribution networks and respond fast to shifting demand as a retailer.

  By using a competent sales channel and system management, you may improve their supply chains and inventories by getting direct warnings when their supply reaches minimal levels.

- **Leverage and Embrace Supply Chain Software:** It's good to know that there are several technologies available to handle supply chains, but neglecting to use them is like stabbing yourself in the leg.

  To monitor and manage stocks, process orders, manage suppliers, and more, you may utilize a range of supply chain management solutions.

  Alternatively, an ERP system such as SAP, Oracle, Navision, or others can be used to manage most of the duties. This will help you deliver your orders faster and with fewer errors.

- **Decrease Processing Time by Managing Labor Effectively:** Material handling, storage, product movement, and labor productivity will all benefit from the usage of barcode technology in warehouse systems and automation. Picking, packing, receiving, putting away, shipping, refunds, labor tracking, and restocking are all situations where barcode technology should be used. If you don't get a positive result from using technology automation, change your strategy goal to better managing labor.

- **Outsourcing to 3PL and 4PL**: Using 3PL and 4PL businesses such as AMAZON, UPS, DHL, and Deloitte to improve your supply chain management (SCM) is a popular yet

successful eCommerce supply chain management strategy. You can choose to go to a 4PL firm that can offer you the best supply chain management solution for your eCommerce business employing 3PL suppliers, or you can go to a 3PL company that can boost your customer service offerings with its already established distribution network.

Logistics operations that can be outsourced vary each company, but they often include warehousing, distribution, and order fulfilment. Managing these tasks on a continuous basis can be a difficult effort, and it can become unmanageable in increasingly complex and vital supply chains.

FORMULATION:

The primary purpose of supply chain management is to achieve sustainable competitive advantages and long-term profitability for the individual companies within the supply chain. One common way for them to reach the goal is to shorten its costs while generating more revenues. In other words, companies attempt to maximize its efficiency and effectiveness1 concurrently, bringing forward the trade-offs between cost and quality and also between price and customer service. Take the commercial returns of damaged products for instance. If the primary strategy of a company focuses on its customer service level, referring to a quick response to the returns in this case, a low-cost strategy would not be compatible. When the trade-offs ever come into the play, the applicable supply chain strategy ought to be selected in alignment with the corporate strategy which represents the overall objectives of the company. Thus, it is increasingly vital to dedicate more efforts in the research and development of particular business strategies in the reverse supply chain management, in order to realize and maintain the efficiency and effectiveness of the commercial supply chain, and eventually achieve competitive advantages and long-term profitability, concerning not only the forward supply chain, but also in the reverse logistics system.

The research problem emerges when the particular reverse supply chain strategy has been taken into consideration, that which strategies are efficient and effective for the reverse supply chain, and that under which circumstances the companies would apply these strategies to achieve cost-efficient and quick response in the reverse supply chain. Thousands upon thousands of researches and studies have been carried out regarding strategies for the forward supply chain.

However, the **Reverse Logistics Executive Council (RLEC)** claims that forward and reverse supply chains differ significantly in terms of forecasting, distribution points, product quality, packaging, and other factors. RLEC (RLEC, 2005) is a non-profit organization that promotes in practice, reverse supply chains should be managed using different business techniques than forward supply chains.

Previous research in the field of reverse supply chains has focused on the construction of RL (Reverse Logistics) models, but few have looked into specialized tactics for the management and control of reverse supply chains. Johnson (1998) conducted study towards industrial RL (Reverse Logistics) applications in the ferrous scrap recycling system. He looked at the many functions in the system, evaluated their contributions, and came up with six volume-based techniques to administering the RL (Reverse Logistics) system.

(Johnson, 1998; Johnson, 1998; Johnson, 1998; Johnson, 1998; Johnson lvarez-Gil et al. (2007) provided a discussion regarding the motives for enterprises to deploy RL systems, claiming that the likelihood of RL implementation is dependent on stakeholder importance, resource availability, and a willingness to take risks. The manager's strategic position is evolving.

Above these studies, there are still a lot of unexplored areas in the efficient and effective strategies for reverse supply chain management and a lack of analysis in the implementation of forward supply chain strategies into the reverse supply chains.

PURPOSE OF THE STUDY

The goal of this project is to investigate if individual organizations can use lean, agile, and leagile techniques to manage and control their supply networks, including both forward and reverse supply chains, and under what conditions they should be used.

The major focus in this research is about the reverse logistics process in E-Commerce and what are the customers behavior towards it, the cost of reverse logistics in E-Commerce industry.

"How should businesses choose business strategies for reverse supply chains in order to achieve and maintain efficiency and effectiveness?"

One of the most important aspects of e-commerce is effective logistics management, particularly backend supply chain management. Reverse logistics refers to product returns, repairs, maintenance, recycling, dismantling, and other areas of e-commerce logistics management that function as profit centers, such as product returns, repairs, maintenance, recycling, and dismantling. This study paper looked into the business effect of the reverse supply chain in e-commerce in India. The expansion of retail as a large percentage of the sector, the government's commitment to 'Digital India,' and a database of 400 million Internet users are all key factors in India's unprecedented e-commerce boom. The average costs of reverse logistics account for 15% of the total logistics expenditures in the firm, while profitability falls to an average of 8%. The return and face concerns in reverse logistics in E-Commerce are the topic of this research.

OBJECTIVES OF THIS PROJECT

After reviewing the relevant literature as well as the Indian government's latest ecommerce regulation, it discovered that firms who sell products with a longer life cycle, such as clothing and footwear, have the most difficult time handling returns. The convenience of buying from online businesses has increased E-commerce sector sales and rivalry. On the other hand, it has resulted in a massive amount of reverse logistics, particularly during the sales period.

Local manufacturers must become E-commerce retailers' suppliers and agree to return policies that are flexible. We shall look and analyses these particular industries. Amazon, Myntra, Flipkart, and

other E-commerce retailers are the most popular in India. These retailers post sales statistics during the peak holiday season, but there is no reliable information about returns received after these sales or the monetary loss incurred during the return procedure

The above sentences suggest the issues incurred in E-Commerce.

The main objectives of the study are;

- **The concept of reverse logistics and its significant in e-commerce**
- **Customers opinion towards reverse logistics services by E retailers**
- **Costs and issues in reverse logistics in e-commerce business**

RESEARCH METHODLOGY

To achieve the above-mentioned research goal, we created a questionnaire to elicit responses from consumers and suppliers about the losses they face. All of the respondents are customers or suppliers who are supplying items and are well-versed in India's e-commerce rules. These respondents' product range includes clothing for women, children, and men. The other group of respondents is concerned with women's, men's, and children's footwear. The respondents keep inventory for the average number of orders they receive in a week, which varies per product. To satisfy higher demand during the same period, the inventory is doubled.

LIMITATIONS

This project has been done with the adequate help of primary and secondary data but there are always limitations which has some sort of disturbing in the work flow the limitations are the questionnaire review from the supplier side is secondary data and there is no primary data from the E-Commerce side towards reverse logistics. The data about cost incurred in reverse logistics is determined with the help of articles by different authors.

There is adequate primary data from the customers side and their behavior towards Reverse logistics In E-Commerce.

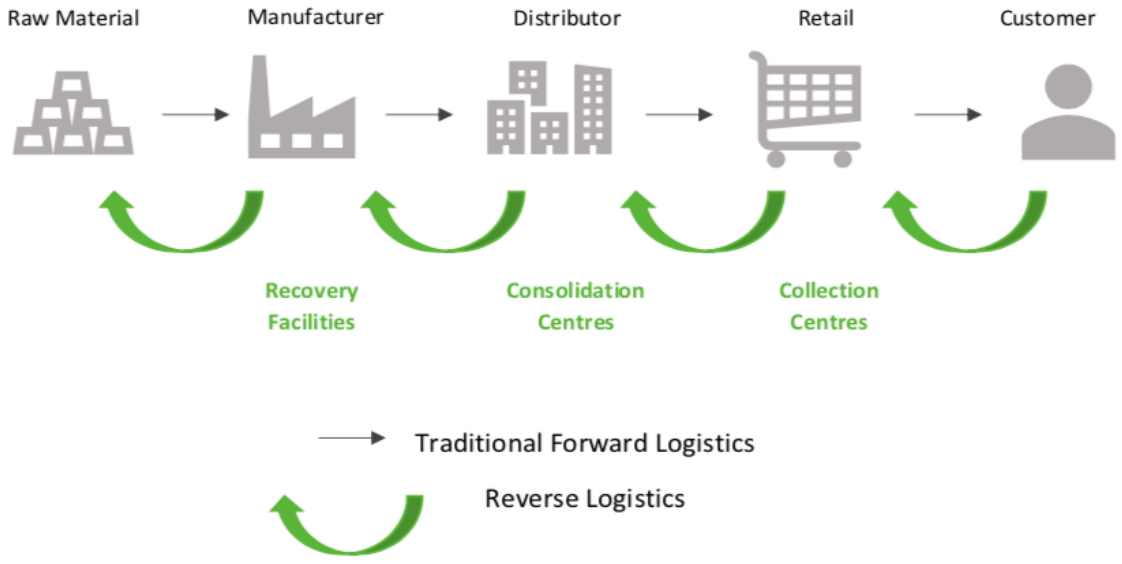
CHAPTER 2

Literature Review

In this chapter we are going to focus on the articles and review by the authors in the field of **Reverse Logistics in E-Commerce** and what are their thoughts and suggestion about the topic which I have taken for my project work.

What is Reverse Logistics?

Reverse logistics is the process of returning things from buyers to the manufacturer or supplier. The entire return management process is becoming increasingly important, especially in the world of online shopping. This procedure includes returning items to the supply chain and transferring them to the right warehouse, fulfilment facility, or production plant. After a quality assessment on-site, the items are either retrieved, processed, and made functional again. If the defective product cannot be repaired, it is properly disposed



Source: Figure from netsuite.com

When it comes to returns management, experts frequently refer to the 5 R's

- Returns
- Recalls
- Repairs
- Repackaging
- Recycling

Source: Figure c3controls.com

The returns process is a relatively time-consuming and labor-intensive process, requiring many "touches". This also results in high return transport costs, which further hinder your profit margins. In addition, it creates more work for customer support and the supply chain.

For example, according to a report by Oporto, a product sold for $50 incurs 59%, or nearly $30, in return shipping costs.

Returns in online shopping are no longer a secret, and they may mean the difference between success and failure for e-commerce businesses. We included some statistics and numbers concerning returns and reverse logistics in online retailing, as well as how consumer behavior has changed in relation to returns, to stress their critical significance in your company's success.

Even before the pandemic, the likelihood of a return after an online purchase was already 3 times higher than for offline purchases. Despite this, 66% of consumers have since preferred returns in brick-and-mortar retail regardless of purchase method.

However, that has changed dramatically. E-commerce has grown at an unimaginable speed. As a result, both fulfillment toward customers and reverse logistics have become critical factors in customer satisfaction. For this reason, 40% of online retailers changed their return policies during the first phase of the COVID pandemic. Another 27% considered adjusting their returns strategy already back in May 2020.

In fact, returns created costs of $642 billion in 2020. Incidentally, that is equivalent to the entire GDP of Austria and Portugal combined.

“The key to reducing returns is to get to the root of the problem”

” As a business practice, returns are expensive; as marketing activities, they are cheap” **– L.L Bean**

ARTICLE 1

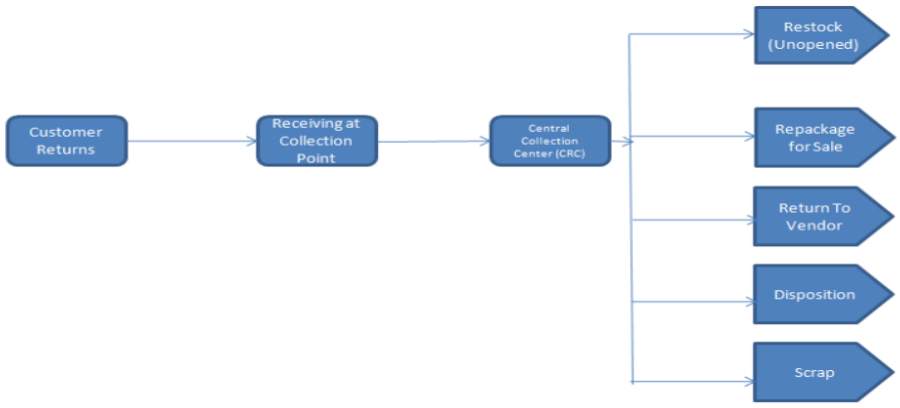
An article written by **“Chia-Nan Wang”** in MDPI publication talks about the **Outsourcing Reverse Logistics for E-Commerce Retailers: A Two-Stage Fuzzy Optimization Approach**[1] says, the electronic commerce (e-commerce) boom has many firms suffering an avalanche of product returns, following the internet purchasing boom during the Covid-19 pandemic. As a result, to represent the rising importance of the skill, relevant companies must establish effective reverse logistics plans. As a process of reusing, remanufacturing, and redistributing items, reverse logistics plays a critical part in any company's long-term sustainability. Outsourcing to a third-party reverse logistics provider (3PRLP) has been identified as one of the most essential management methods for today's firms, particularly e-commerce players, within this framework. The goal of this research is to create a decision support system that uses a hybrid fuzzy multicriteria decision-making (MCDM) method to aid firms in selecting and evaluating different 3PRLPs.

[1] https://www.mdpi.com/2075-1680/10/1/34

The study aims to provide a more complete and robust evaluation process to e-commerce businesses and any organization that deals with supply chain management in determining the optimized reverse logistics partners.

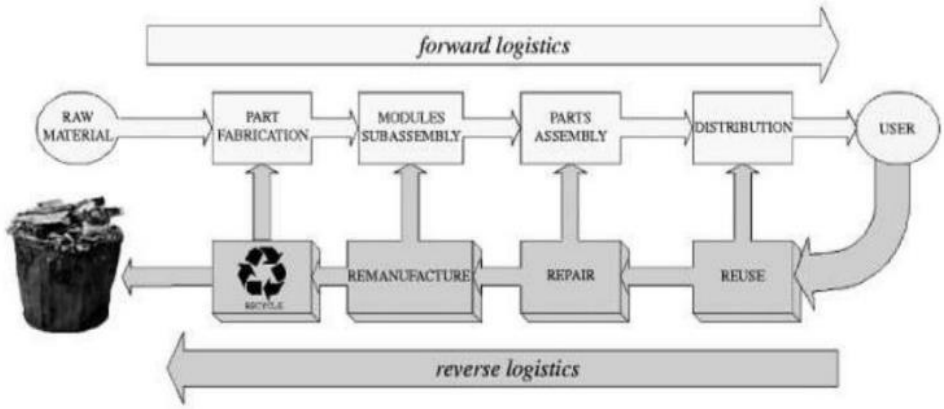
ARTICLE 2

Reverse Logistics Challenges in e-Commerce by **"Chiranjib Biswas and Walid Abdul-Kader"** in **Coursehero**[2] talks about the e-commerce business, the physical commodities can flow only through networks. Therefore, e-commerce business needs strong logistics system. Customers buy products through online. Often there is a dissimilarity found between the images shown on the website of the e-commerce firm and the actual products. And that is one of the reasons for the return of the goods. Also, in recent years, due to the severe competition in the e-commerce industries, many e-retailers have introduced zero return charge, and that gives freedom to customers to buy multiple products, for example dresses; however, after getting delivery of the product, the customer chooses whatever he/she needs out of many and the unselected products are being returned.



Source: Figure from globaltranz.com

[2] https://www.coursehero.com/file/86423676/264pdf/



Source: Figure from globaltranz.com

As compared to forward logistics, reverse logistics is a complex process. RL has got multiple starting points. It works on PUSH system and highly uncertain. At the same time, return is inevitable in e-commerce business as it provides freedom to customers. And appropriate return policy leads to enhanced customer satisfaction and retention. Therefore, itis highly imperative that e-retailer makes this process efficient. This can be achievable with right attitude of the management towards return and implementation of IoT in the process, including development and integration of right stochastic model with ERM for predicting the near perfect return ratio.

ARTICLE 3

"Angelika Kokkinaki, Rommert Dekker" talks about **E-commerce for reverse logistics** in **ResearchGate**[3] The proposed panel would concentrate on e-commerce and reverse logistics issues, which frequently include operations for collecting, choosing, and deciding on the optimum recovery option (reuse, remanufacture, or recycling) for post-retail or surplus commodities approaching obsolescence. Reverse logistics has been a focus in both the social and strategic agendas of Original Equipment Manufacturers (OEMs) in recent years for the following reasons.

Legislative frameworks: A number of EU Directives require OEMs in particular industries (packaging, ITC equipment, white and brown goods, and vehicles) to adopt a programmed for the collection and reuse of their products at the end of their lives.

Environmental impact: post-retail items are recognized as a major environmental problem if handled inappropriately. These guidelines attempt to transfer waste management costs to manufacturers, minimize the volume of created garbage, and increase the usage of recovered materials. End-of-use PCs, for example, are the fastest increasing type of solid trash in the United States, according to the Environmental Protection Agency. In addition to their ever-increasing volume, end-of-use computers should be considered for direct environmental concerns if merely discarded in a landfill, as they contain heavy metals.

Asset Recovery: Annual expenses connected to returns in the United States amount to.5% of GDP. Returns, rather of being a liability, can be utilized to recover value by reusing the return (perhaps in the secondary market), remanufacturing the return's pieces for use as spares, or recycling the remainder to recoup the materials value.

The potential of e-commerce solutions in this area to de-fragment this highly dynamic market and link a huge group of customers and sellers who were previously unaware of each other is investigated. Furthermore, in this industry, e-commerce solutions provide efficient interchange, lower marketing expenses for sellers, and lower procurement prices for buyers.

[3] https://www.researchgate.net/publication/221407482_Panel_E-commerce_for_reverse_logistics

Because of various contributing elements, developing optimal rules to promote cost-effective returns processing becomes extremely complex.

•High uncertainty; the number, quality, origin, and timing of income flows to reverse logistics networks are all connected with high uncertainty.

•High rate of depreciation; this necessitates an efficient and quick re-distribution of returns, either in the original market (consumer returns) or in secondary markets (excess inventories).

•The unwillingness of end users to surrender their equipment; this is a barrier to optimal recovery. As a result, an effective process must be created and executed to quickly remove these devices from end-users.

•Assessment data is captured later; it is not available until the units are actually retrieved. Web technology, on the other hand, can help with the early gathering of this data.

The panel will be chaired by Prof. Rommert Dekker, Erasmus University Rotterdam who is the leader of the TMR Network REVLOG. This network investigates reverse logistics issues and is a cooperation of researchers from Erasmus University Rotterdam (NL), Eindoven University of Technology (NL), INSEAD (F), University of Piraeus (GR), University of Magdeburg (D) and Aristotle University of Thessaloniki (GR). The proposed panel consists of researchers from EU and USA who have studied aspects of this topic.

ARTICLE 4

The Commercial Impacts of Reverse Logistics in E-Commerce in India by **"Jyoti, Neetu Gupta"** published in **ijeat**[4] talks about the entrance and outflow of items from a warehouse, as well as their return policy, are all monitored by logistics. A good logistics system may save a company millions of dollars. "Logistics is meticulous preparation for a difficult operation so that it happens in a successful and effective way," according to the Cambridge English dictionary. This is connected to the delivery of finished items from the manufacturing line to the warehouse and then to the customers in supply chain management. It includes activities that occur after items have been sold. It usually entails returning a goods to the client and shipping it to be refurbished, serviced, or recycled. Returns from e-commerce differ from typical supply chains in reverse logistics. Customers seldom utilize Ecommerce merchandise, and refunds are usually received after 15 days.

Companies develop rules that suit the client to meet their demands, but there is a lot more to this process. For items with a longer life cycle, such as clothing and shoes, online shopping sites provide additional benefits. The consumer has 30-45 days to return the item.

The main goal of this article is to investigate the business impact of reverse supply chains in Indian e-commerce.

Logistics and supply chains have always been eager to adopt new technological advancements, and supply chain management has changed dramatically over the last decade. E-commerce has brought enhanced supply chain approaches.

Kayikci(2019). S.D. Jap (2007) forecasted the impact of closed loop supply chains on both purchasers and sellers of items.

A. Molla (2007) forecast the benefits of e-commerce in developing countries. N. Terzi (2011) investigated the influence of expanding ecommerce trends and forecasted future expansion. Some of the primary causes contributing to India's exceptional rise of e-commerce, according to Biswas (2018), include the emergence of retail as a dominating section of the industry, the government's commitment to 'Digital India,' and an Internet user database of 400 million.

[4] https://www.ijeat.org/wp-content/uploads/papers/v9i3/C6554029320.pdf

According to Wang et al. (2019), India's ecommerce income is predicted to reach 120 billion dollars in 2020, growing at a pace of 51% per year. Replacements, disposal, and recycling, as well as repairs, reselling returned items, swaps, and refunds, are all part of reverse logistics.

The total cost of ownership, energy required in the entire process, distance, percentage of cost recovery, handling cost per item, percentage of recycled material, cycle time disposal, and number of resold and returned items are all included in the reverse logistics flow.

Return policy decisions and price sectors have been proven to have an influence on supply chain reverse logistics in both indirect and direct distribution channels. These effects include the influence of price discounts on inventory levels and ordering decisions.

Furthermore, reverse logistics is gaining a growing amount of interest from both the business and academic worlds (Zhang, Dong, & Sarker, 2018). This is due to a variety of factors. The entire cost of logistics in 1997 was $862 billion (Zhang, Dong, & Sarker, 2018). Furthermore, the system's waste may be reduced by making optimal use of resources and implementing reverse logistics strategies.

This is one of the main reasons why numerous Indian industries are unable to reap the benefits of reverse logistics methods. Before using reverse logistics, it is critical that Indian firms analyse and identify the logistic challenges that may arise in Indian settings.

ARTICLE 5

An article about **The Impact of Reverse Logistics on Customers Satisfaction** by **"Kateryna Lysenko-Ryba"** from **ResearchGate**[5] talks about, Reverse logistics is one of several developing avenues of research in the field of supply chain management. The movement of items and materials from the market to production sites or specialized facilities, where they are transferred to be suitably processed, is known as reverse logistics [Gandolfo, Sbrana 2008].

[5]https://www.researchgate.net/publication/321724743_The_Impact_of_Reverse_Logistics_on_Customers_Satisfaction

The most typical motive for enterprises to reverse their supply chains is to save money by recycling items and components that have been returned to the manufacturer from the ultimate consumption point. The second factor is e-commerce, which has a substantially higher return rate.

The stream of returned products and the garbage stream are the two primary streams of goods in the reverse chain. The stream of returned products travels in the opposite way as the traditional supply chain - from the customer to the intermediaries and then to the producer.

The seller returns the goods to the wholesaler before returning it to the manufacturer, depending on how the return network is set up. Returns to manufacturers are fixed or processed by them before being resold in the traditional supply chain. Products that are no longer usable will be dismantled. Their parts are sent to recyclers, then to product suppliers or manufacturers, depending on their potential for further use. Waste parts and components are sent to a landfill.

In order for this system to work well, it is necessary to try to estimate consumer demand for returned items and to establish strong communication between the stakeholders involved - the customer, the distributor, the producer, and the raw material supplier.

Currently, the market is undergoing ongoing change and is getting increasingly demanding. Managers in a variety of businesses are seeing that the activities of one member of the supply chain have an impact on the profitability of others. Companies must also be aware that reverse logistics can have both environmental and economic benefits. It's cheaper to regenerate or repair a returned item than to start from scratch. This trend should be aided by more permissive consumer rights legislation. Companies must invest in adequate equipment to handle returns and consumer complaints in order to provide effective after-sales care. An effective return and complaint management system helps businesses compete and provides better customer service.

ARTICLE 6

This article by **"Mykhailo Dobroselskyia, Radovan Madleňákb, Dominik Laitkep"** from **Trid trb org**[6] in the field of return logistics talks about the logistics, like e-commerce, is rapidly evolving. Although logistics has grown to be one of the most important and rapidly increasing businesses, the percentage of returned items varies. For example, books will increase by 10-15%, computers and components by 10-18%, apparel by 30–40%, and mass consumption products by 5–15%. Returns and complaints are an inevitable aspect of doing business online. Returns are more common for online shops than for traditional retailers. Returns on online purchases can range from 20 to 80 percent.

According to other research, at least 30% of all e-commerce orders globally end up as return packages, compared to 8.89% of normal shop sales (Mokhirev (2016), Pei et al. (2018), Kvasnicova et al. (2016), Hudák, M., Kianiková, E. & Madleňák, R. (2017), Das et al. (2020)

Most returns are initiated by end users. Delivery risk is related with online purchase. There's also the possibility that purchasers don't correctly assess the goods and their features, such as scent, touch, colour, functionality, performance, and design. This risk is related to buyer information asymmetry. Manufacturers frequently exaggerate their goods, convey information about them wrongly, and customers are unable to properly analyses the true value of things (Hudák et al. (2017)). For example, in around 22% of occasions, goods on websites differ from those in the actual world.

Retailers frequently give consumers with thorough product information, which can help to lessen consumer ambiguity about the goods' perceived worth at the moment of purchase. It can also lower the likelihood of goods being returned to merchants and the expense of doing so. To limit the likelihood of returns, retailers should keep track of all information about the products they sell. (Mokhirev (2016), Guo (2018), Madudova (2017), Safonov (2020)

Large international internet shops usually provide 14-day returns without a justification from the date of delivery. Retailers have built a loss-making business by offering the free return policy, which seems reasonable. A flexible return policy and proper return handling have been found to have a favorable impact on purchasing behavior and the number of purchases (Matková et al. (2017), Mienkovic et al. (2015)). Why are you in a loss-making business? Buyers are progressively

[6] https://trid.trb.org/view/1867805

exercising this privilege, according to studies; for example, the number of returns to the United Kingdom in 2020 was 45 percent, Italy 45 percent, Poland 36 percent, Spain 49 percent, Germany 56 percent, France 46 percent, and Sweden 46 percent. Denmark has 44%, Norway has 36%, and Finland has 36%.

The average percentage of returns in Europe will be 43.5 percent if we use the percentage of items returned above the given countries as a base. Because it is such a costly process, many online businesses are now considering avoiding this high incidence of return. (Safonov (2020), e-commerce in Europe (2020), Westmaas (2018), Strenitzerova et al. (2017), Vaculik et al (2020).

ARTICLE 7

THE CASE OF KLANG VALLEY of CUSTOMER SATISFACTION AND REVERSE LOGISTICS IN E-COMMERCE by**"Emy Ezura A. Jalil"** from **Google Scholar**[7] Malaysia's e-commerce business has experienced rapid expansion. Customer satisfaction has become a critical factor in e-commerce customer experience success. Customer happiness is critical for online retailers since it gives them a gauge to manage and develop their companies. Online buyers in Malaysia are having difficulty returning items, even if the product is defective. As a result, reverse logistics is critical in e-commerce for boosting online shoppers' purchasing confidence and customer happiness. However, there are few research on the influence of reverse logistics on e-commerce customer happiness. As a result, the goal of this study is to establish the relationship between situational elements (advertising and accessibility) and customer satisfaction in reverse logistics in e-commerce in the Klang Valley area. The information was gathered through an online and print poll of 400 people who had done online purchasing.

Reverse logistics is defined as "the process of planning, implementing, and controlling the efficient, cost-effective flow of raw materials, in process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing or creating value or proper disposal," according to Alfonso-Lizarazo et al (2017). The word "reverse logistics" is used in the B2C ecommerce model to describe the process of transporting a product from the consumer to the supplier, as described by the American Reverse Logistics Executive

[7] https://www.journal.oscm-forum.org/journal/proceeding/download_paper/20191207190137_OSCM_2019_paper_102.pdf

Committee, which is to "recover the value of the goods or make it suitably handled" (Li & Li, 2015). The return of products to sellers or manufacturers owing to faults or customer discontent is known as reverse logistics. According to Kok et al (2016), the phrase "reverse logistics" in online buying refers to a return policy that allows online shoppers to return items depending on the return policy's regulations and processes. Reverse logistics has become a critical topic in e-commerce in recent years since it can produce revenue while also satisfying online customers. When a consumer requests a return, online sellers must organize, locate, and evaluate the returned product before shipping the new product to the customer. The huge disparities between the real goods and product descriptions, as well as human mistake on the part of online retailers, might lead to product returns. When online shoppers are dissatisfied with a product, they may desire to return or exchange it, according to Rao, Lee, and Connelly (2018). As a result, a clear return policy is necessary to ensure product quality and give customers peace of mind when they get incorrect items.

Different authors have described the impacts and problems of reverse logistics in E-Commerce in the publications listed above. This secondary data has shown, customers behavior towards reverse logistics and the strategies

CHAPTER 3

REVERSE LOGISTICS

THE CONCEPT OF REVERSE LOGISTICS AND ITS SIGNIFICANCE IN E-COMMERCE

In this E-Commerce Industry Reverse Logistics is so much essential for the industry to keep moving. Reverse logistics is a sort of supply chain management that involves moving items back to sellers or manufacturers from buyers. Processes like returns and recycling need reverse logistics after a client receives a product.

Reverse logistics begins with the end customer and works its way backward through the supply chain to the distributor or from the distributor to the manufacturer. Reverse logistics can also refer to operations in which the end user is in charge of the product's eventual disposal, such as recycling, refurbishing, or reselling.

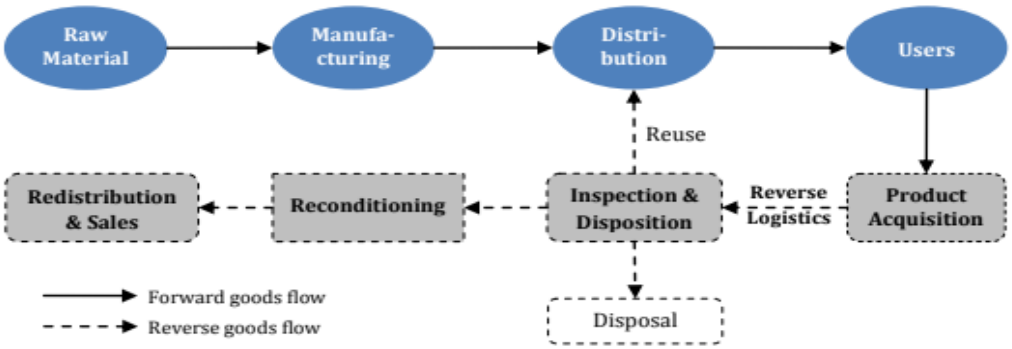
Need of Reverse Logistics

When products travel back through the supply chain to the seller and maybe back to the suppliers, organizations employ reverse logistics. The purpose is to either recover or dispose of the product's value. Returns are worth about a trillion dollars worldwide each year, and they've gotten more prevalent as ecommerce has grown.

Reverse logistics' goals are to recuperate value and secure repeat business. In-store purchases are returned less than 10% of the time, but internet purchases are returned at least 30% of the time. Smart businesses employ reverse logistics to increase client loyalty and repeat business while reducing return losses.

Reverse Logistics process

Managing returns and purchasing surplus products and materials are all part of the reverse logistics process. The procedure is also in charge of dealing with any leases or renovations. Reverse logistics differs by industry, and there are various financial incentives for bettering reverse logistics management.



Source: Figure from pinterest.com

Examples of Reverse Logistics

- In the beverage business, for example, the reverse logistics process makes use of empty tap containers. Companies that make beverages seek to reclaim the value of their containers by recycling them. This necessitates transportation planning, shipping load management, and container cleaning.
- Reverse logistics is used in the building sector to transport and recycle salvaged materials to new locations. As the building sector embraces more sustainable waste-reduction measures, reverse logistics offers a cost-cutting opportunity.
- Reverse logistics is responsible for returning packaging materials and pallets in the food business. Rejected food shipments must also be dealt with by businesses. Rejections can cause logistical problems owing to delays, which can lead to food spoilage and tampering concerns. So reverse logistics is important in this sector.

5 Steps for Good Reverse Logistics.

- Process the Return
- Deal with Returns
- Keep Returns Moving
- Repair
- Recycle

Process the Return: When a customer requests to return a product, the return procedure begins. This stage should entail obtaining return authorization and determining the condition of the

merchandise. Return shipments are scheduled, reimbursements are approved, and faulty products are replaced as part of this procedure.

Deal with Returns: Examine a returned product when it arrives at your site or at a centralized processing facility to establish its return category. (Note: If reverse logistics has been improved, you should already know where the product should go before it arrives.) Sort goods into the following categories: repairing, reselling as new, reselling as a return, recycling, scrapping, or refurbishing

Keep Returns Moving: Send repairable products to the repair department to reduce your daily trash.

Repair: Move the returned item/equipment to the repair area after evaluating it and determining if it can be fixed. If feasible, sell any pieces that can be sold.

Recycle: Any components or items that you are unable to repair, reuse, or resale should be delivered to the recycling center.

Types of Reverse Logistics

Reverse logistics components refer to the many forms of reverse logistics. They are responsible for return handling and return policies and procedures (RPP), as well as remanufacturing, packing, unsold items, and delivery concerns. Leases, repairs, and product retirement are examples of other sorts of reverse logistics.

Reverse Logistics Components:

- Returns management:
- Return policy and procedure (RPP):
- Remanufacturing or refurbishment:
- Packaging management:

- Unsold goods:
- End-of-life (EOL):
- Delivery failure:
- Rentals and leasing:
- Repairs and maintenance:

Returns management: This procedure deals with consumer returns or preventing returns in the first place. These activities should be quick, easy to handle, visible, and simple. Customers evaluate a firm based on its return policy and return flow. A re-return occurs when an item is returned for the second time. Extended return policies, such as granting store credit, are frequently triggered by these returns.

Return policy and procedure (RPP): RPP refers to a company's return policies that it shares with consumers. These policies should be easy to find and follow. Employees must also follow them.

Remanufacturing or refurbishment: Remanufacturing, refurbishment, and reconditioning are examples of reverse logistics management. These tasks include product repair, rebuilding, and reworking. Cannibalization of components is when companies recover interchangeable, reusable parts or resources from other products. Reconditioning entails disassembling, cleaning, and reassembling items.

Packaging management: Reverse logistics focuses on reusing packaging materials to cut down on waste and disposal.

Unsold goods: Returns from retailers to manufacturers or distributors are handled via reverse logistics for unsold goods. Poor sales, inventory obsolescence, or delivery rejection can all cause these types of returns.

End-of-life (EOL): When a product is designated as EOL, it is no longer usable or functional. The product may no longer fulfil the demands of the client or be replaced with a newer, improved

version. End-of-life items are frequently recycled or disposed of by manufacturers. Manufacturers and governments may face environmental issues as a result of these products.

Delivery failure: Drivers return merchandise to sorting centers when deliveries fail. The sorting centers then return the merchandise to their original location. While it's uncommon, certain sorting facilities may include workers who can figure out why a delivery failed, fix the problem, and resend.

Rentals and leasing: When a piece of equipment's lease or rental contract expires, the firm that owns it has the option to remarket, discard, or redeploy it.

Repairs and maintenance: Customers and corporations may maintain or repair equipment under certain product agreements. After repairing damaged returned items, the business occasionally sells them to another customer.

REVERSE LOGISTICS SIGNIFICANT IN E-COMMERCE

Reverse logistics is crucial for maintaining a smooth flow of products. The method lowers costs, adds value, lowers risk, and brings the product life cycle to a close

According to Gartner Research, around 70% of organizations intend to participate in the "circular economy." This circular economy follows traditional logistics and then loops back around through a closed-loop supply chain, according to Gartner.

Source: Figure from netsuite.com

Companies participate in a system that promotes a sustainable economy by following this practice. Companies utilize recovery, repair, and recycling to discover new applications for discarded items. Materials that were previously considered garbage have regained their worth.

In many nations, the circular economy assures compliance by requiring "producers" to create more sustainable methods. Subsidies for waste avoidance, research and development, and recycling are all outlined in the recommendations. Other rules impose landfill restrictions, require collection and recycling programmers, and punish specific waste activities.

Does Reverse Logistics Create Value in E-Commerce

Reverse logistics adds value by converting trash into sales and increasing consumer confidence. Returns are resold, reused, and recycled by businesses. Furthermore, efficient reverse logistics keeps storage and distribution costs low.

According to Gartner Research, less than half of returned goods are resold at full price. Finding the optimal disposal option for returned objects has value. Retailers like B-Stock, for example, resale returned items. In 2019, B-Stock sold 70 million returned or excess items. The company buys returns for a percentage of their original cost and then resells them to consumers at a discount. Everyone gains when traditional supply chains are made more efficient through reverse logistics. Others mix forward and reverse logistics. The degree to which they may be combined depends on the company's experience, product value, and return volume. In either case, they leverage supply chain tactics to increase their profit margins. Take a look at these expert suggestions for increasing business earnings.

Benefits of Reverse Logistics in E-Commerce.

Reverse logistics generates financial gains while also improving the environment and corporate culture. Refining the processes for what happens to items after delivery aids in customer retention and cost savings.

A benefit of well-executed reverse logistics is the product data obtained while communicating with consumers after delivery which is happening I e-commerce. Data gives a business insight into its supply chain and the chance to improve goods and/or the customer experience.

Reverse logistics optimization also improves supply chain visibility, resulting in benefits such as:

- Cost reduction
- Greater customer satisfaction
- Better customer retention
- Faster and better service
- Loss reduction
- Improved brand sentiment
- Waste reduction and greater sustainability

This are the cost which can be improved and are improving in E-Commerce with the help of reverse logistics, knowing the cost and other activities which can help and boost the E-Commerce will improve the flow of the system.

Improvements in Reverse Logistics

The requirement for bi-directional movement is a hurdle in reverse logistics. For it to be effective, managers must build up the appropriate infrastructure. This frequently necessitates the use of reverse logistics software that can automate and track each stage. Furthermore, once that infrastructure is in place, management must constantly monitor and assess the organization's reverse logistics procedures to maintain efficiency.

In order to obtain the whole picture, businesses must track both inbound and outgoing logistics. The receipt of raw materials or commodities from a supplier to a manufacturer is managed by inbound logistics. The procedures of delivering finished items to the ultimate consumer are known as outbound logistics. Inbound and outbound logistics are both measured from the standpoint of the manufacturer, however reverse logistics can occur at any point in the supply chain.

Strategies to Optimize Reverse Logistics in E-Commerce.

Companies require integrated plans that account for speed, efficiency, and cost to maximize reverse logistics. Consider policies, partners, data, capacity, logistics, and transportation before taking action. strategic ways to optimize reverse logistics are:

- Evaluate Relevant Policies and Agreements
- Collaborate with Suppliers
- Use Data to Optimize Processes

- Track products forward and backwards
- Centralize Return Centers
- Examine Logistics and Transportation
- Automate

Evaluate Relevant Policies and Agreements: Review and adjust the processes for returns and repairs at your organization. These rules should be straightforward and take into account the underlying causes of returns and repairs. Return policies and repair procedures can be competitive differentiators.

Collaborate with Suppliers: Close engagement with suppliers may assist guarantee that clients get a seamless, integrated experience rather than one that is disconnected and difficult to traverse.

Use Data to Optimize Processes: By collecting data on product returns You can figure out why customers are returning things by gathering data on returns. After that, you may alter your sales, product design, and forward logistics operations as needed.

Track products forward and backwards: Linking raw materials to completed goods and client orders helps you to track ingredients in the case of a recall—rather than issuing recalls for whole lines, we can pinpoint the problem and issue recalls selectively.

Centralize Return Centers: Reverse logistics better categories items and choose the appropriate next step for each one with a centralized return center. Businesses can more efficiently identify how to reclaim product value with the help of a center. If you don't have the budget for a separate returns center, try dedicating a section of your warehouse or factory to returns.

Examine Logistics and Transportation: Review the forward and reverse logistics and transportation procedures on a regular basis. Determine whether some of these processes and transport can be integrated. organization can save trips, time, and money if your delivery drivers can pick up empty pallets as they drop off full pallets.

Automate: To assist simplify processes, E-Commerce organization uses cloud-based logistics software. A software solution which keeps track of asset recovery, manage refurbishment, and give business intelligence analyses.

Impact Supply Chain Management

Another important possibility for supply chain improvement is reverse logistics. The reverse and forward flow of commodities is managed by supply chain management, and a surge in returns can push up supply chain expenses, reducing profitability.

Reverse Logistics: Everything relating to returns and what happens to such things after the customer returns them is referred to as reverse logistics. This involves developing and executing solutions to decrease return-related expenses and losses while also improving the returns experience.

Reverse Supply Chain: The backward flow of items (such as faulty products) from vendors backs up the supply chain is known as the reverse supply chain. It's the polar opposite of a traditional supply chain, which moves things from producer to retailer to customer.

Reverse Logistics in Supply Chain

Companies track reverse logistics throughout the supply chain to improve goods processing and disposal. The methods through which things travel back and forth via the supply chain generate a large amount of data. This information can assist businesses in meeting their delivery targets.
Some firms strive for basic on-time delivery, while others strive for the "perfect order." The aim for every order is to achieve perfection in terms of location, timing, condition, packaging, quantity, paperwork, client, and invoice. Monitoring data, developing metric objectives, and improving procedures based on your outcomes are the only ways to attain perfect order. In order to provide the correct order, reverse logistics might be crucial.

Reverse Logistics Supply Chain Metrics

There are five crucial reverse logistics-focused supply chain KPIs that can help you recover more assets. At all stages of the supply chain, supply chain analytics may assist management in making data-driven choices.

Key supply chain metrics include,

- Volume:
- Percent of Costs:
- Condition of Returned Products:
- Financial Value:
- Errors:

Volume: One of the most common metrics used to measure reverse logistics is the volume of items returned and then resold, repurposed, or recycled. These metrics should be used by businesses to detect missing opportunities or problems, as well as where process changes might help.

Percent of Costs: Compare the costs of resale, refurbishment, reuse, and recycling to the entire cost of the supply chain. Calculate the price difference between these activities and the cost of returns. Calculate the percentage of expenditures recovered for each item.

Condition of Returned Products: Some things are returned in perfect resale condition, and businesses can resell them for full value. Other items may require considerable work before they can be resold. Companies should investigate different sales channels for such items in this case. Companies may, for example, offer reconditioned gadgets through another channel. To establish the complete worth, add up the costs of supplies and labor. Examine the percentage of things supplied to each sales channel and if the business is making a profit**.**

Financial Value: Each link in the supply chain has monetary worth. Understanding your company's financial stake in each phase may lead to more efficient procedures.

Errors: Unaccepted deliveries or damaged supplies can occur at any point in the supply chain. Examine the cost of errors and the frequency with which they occur to spot areas for improvement. From sourcing materials to distribution and delivery, supply chain analytics should be present across the value chain. Useful indicators contribute to increased revenue, improved margins, and

better capital management. As supply networks become more digitized, data collection becomes easier. Learn how to make the most of supply chain analytics by reading the supply chain analytics guide.

Future of Reverse Logistics

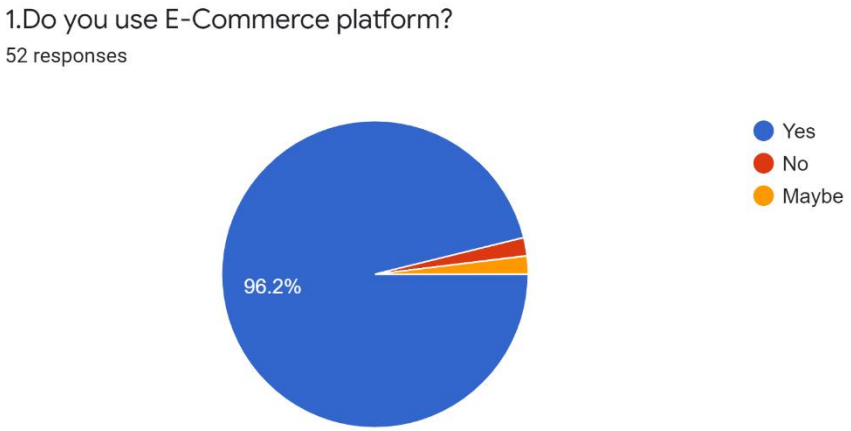
The future of reverse logistics revolves around reducing return disruptions. Returns are on the rise, particularly in ecommerce and, increasingly, in the retail business. Reverse logistics may be used to combine all aspects of the returns process.

Connecting the product's data to how personnel must handle it is one method to integrate returns. The supply chain may assist this integration by documenting what happens to a returned product, such as whether it will be resold, repaired, or recycled for raw materials. Reverse logistics' future includes integrated supply chain management software that aids in these decisions and generates useful information.

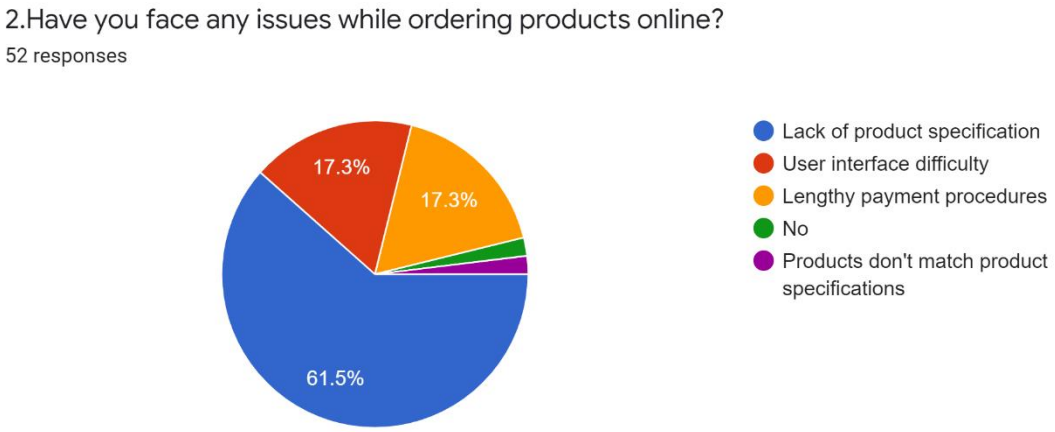
CHAPTER 4

CUSTOMERS OPINION TOWARDS REVERSE LOGISTICS SERVICES BY E-RETAILERS

With the help of the questionnaire (Google Form) there are different review about Reverse Logistics in E-Commerce. Let's see some of the customer's review and the problems about Reverse Logistics in E-Commerce.



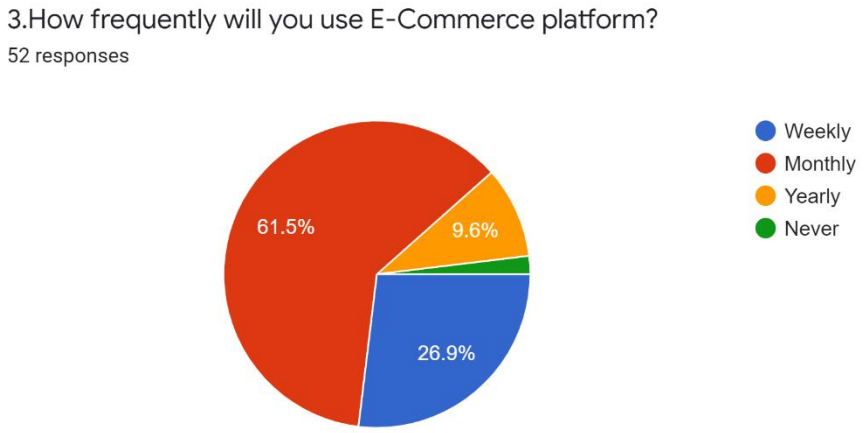
The survey shows us 96.2% people knows how to use E-Commerce platform. In this developing E-Commerce World Reverse Logistics is essential for the flow. This questionnaire is done at the age group from 20-30 the millennial and Z-Gen to know the value of E-Commerce platform.



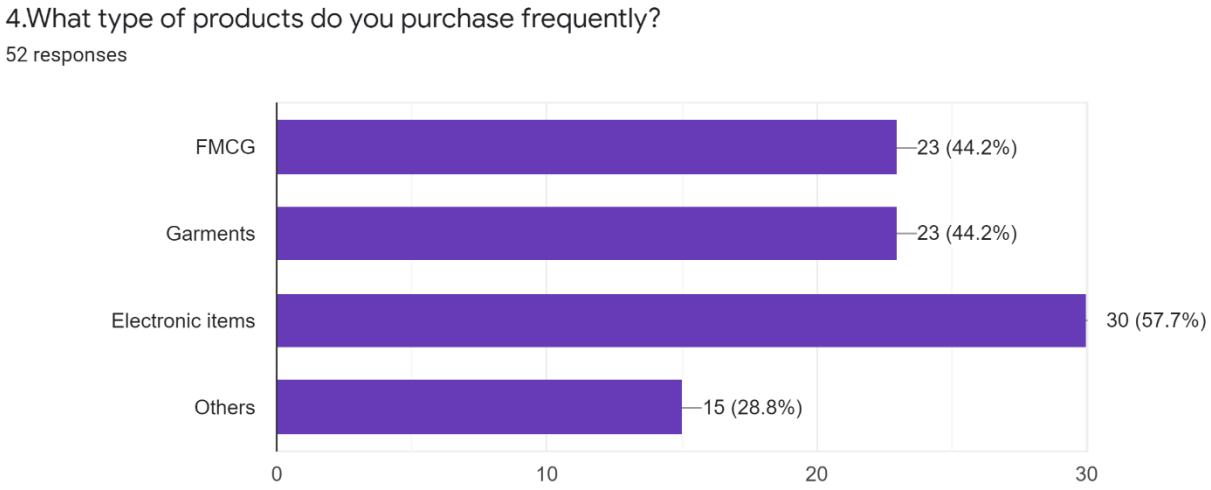
Through this survey we can see that the customers have faced problems during ordering the products. There are around 61.5% finding difficulty in product specification, so they go for alternative products which doesn't match their requirements so then they later refund or return the products, so the main problem is lack of product specification.

The remaining 17.3% millennial have reported that there is user interface difficulty in the E-Commerce platform, so the interface should be developed for smooth flow of process.

Then the remaining 17.3% has problem with lengthy payment process, which later they prefer competitor platform for better experience. This are the problems in the e-commerce platform.

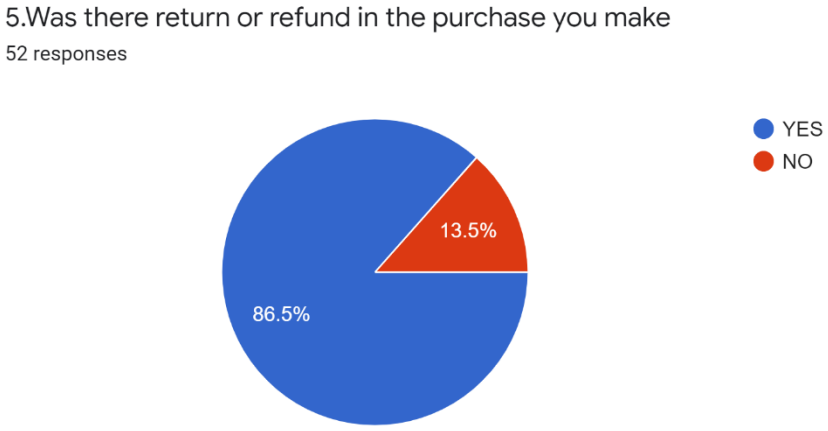


Many responses have said that they monthly use E-Commerce platform due to the requirements they need for the monthly groceries or electronics needed. According to the study and the trend flow there is huge number of purchases during months due to the salary day or increments and others do weekly or yearly.



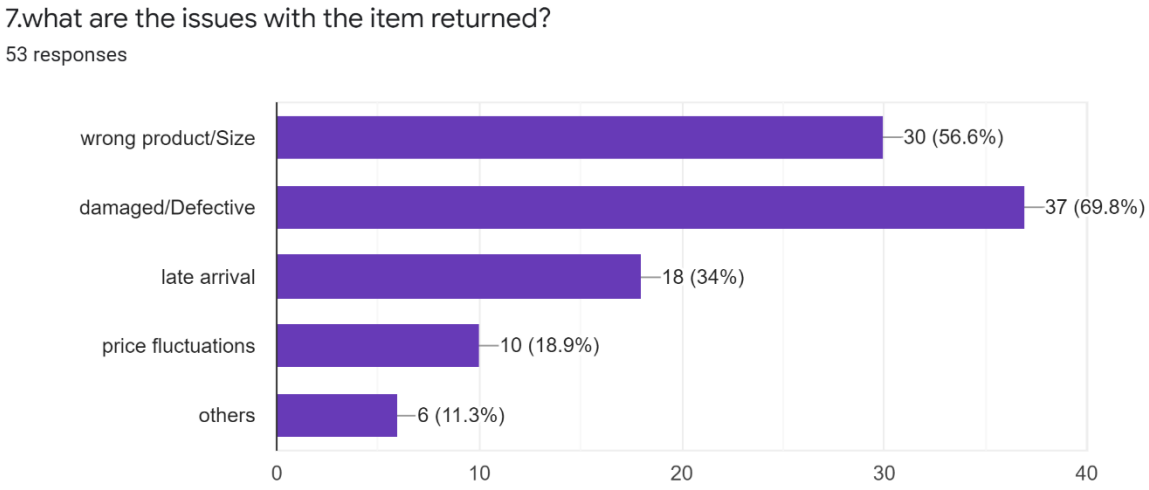
The survey tells us that there are around 57.7% purchasing electronic items which are used for their needs, in this generations people use smart phones and other electronic items for their daily needs and for their work culture etc., remaining 44.2% do buy for their daily need like FMCG (Bread, Water, Milk etc.) and garments.

This are the products which young generations are tend to purchase.



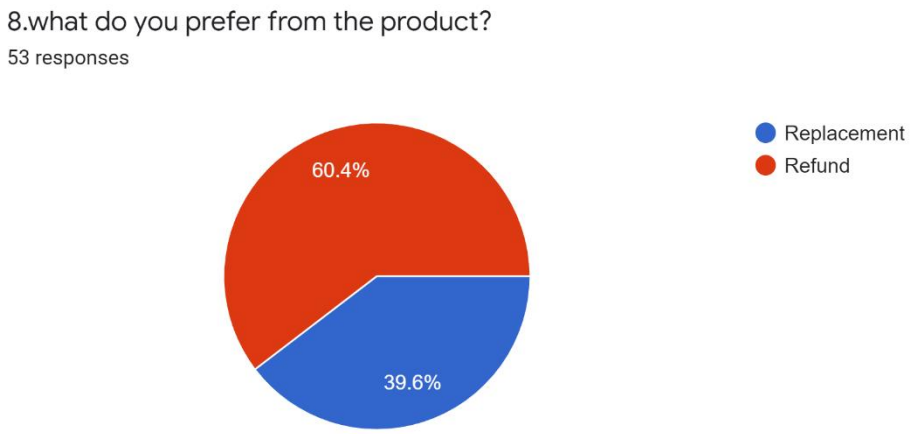
The E-Commerce platform always allows for refund and return but there always some products which cannot be refunded or returned like snacks, tissues etc. which cannot be returned or refurbished to other customer for use so these products doesn't have refund or return.

Yes, off course we have always retuned or refund products which doesn't suit our preferences and it clearly shows us that there are 94.3% people have returned or refunded the product the others who has not returned or refunded may have ordered the right product to their specifications or they would not have the specification to refund or return.

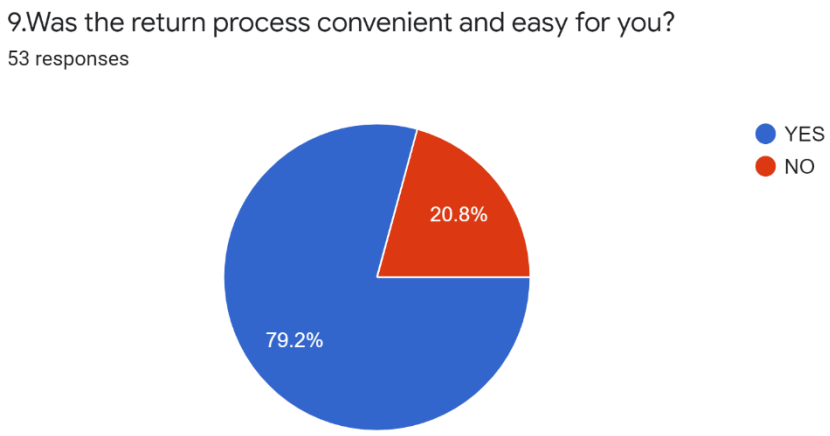


From the above survey we have seen people refunding or returning the products, so this are the reasons why they returned or refunded the product. Majority millennials around 69.8% return the product due to damage in their product which cannot be used. The remaining people return due to wrong products or size which doesn't suit them and some others return products for late arrivals and price fluctuations.

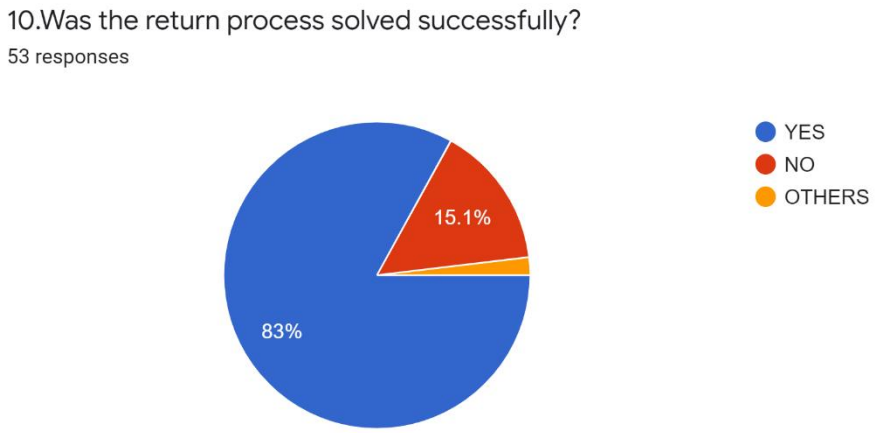
This are the reasons for the return of the products, but for this return or refund of the products the E-Commerce need proper Reverse Logistics process flow, many companies like amazon, flip kart and eBay use the proper Reverse Logistics process which we have discussed in the previous chapters. This is what is known as reverse logistics. During this process there are too many costs incurred and which makes the company or organization hard to sustain. They should face some fraud returns etc.



According to the millennials the survey says that the product they purchased should be replaced rather than refund, this means there is demand in the product and customers are preferring door to door delivery services rather than they going into the market and finding. So around 60.4% customers have preferred replacement instead of refund.

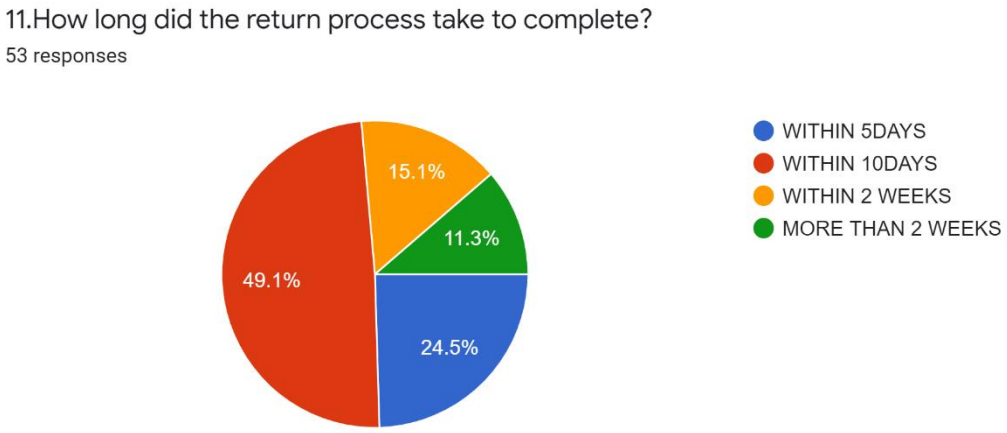


According to this survey there are 79.2% convenient and easy return process, this is where Reverse Logistics takes place. Every return policy should be planned and executed so that there is no loss. In amazon if the customer's account has higher return or refund transactions next time, they would charge delivery fees so that they could compensate the losses which they incur.

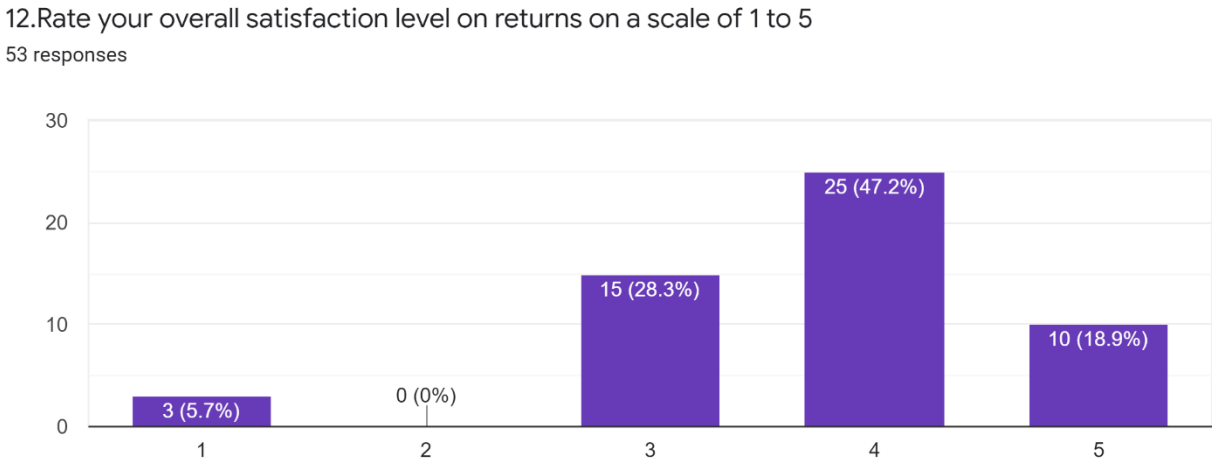


There are around 83% who has successfully returned the product, so that the E-Commerce platform doesn't lose their customers. There are some customers who has not received the refund would have got replacement of bonus. Some don't receive refund nor replacement which later causes impact on the platform and review towards the customer satisfaction.

Companies like Amazon always strive to betterment the customer's satisfaction because customer is good rather than suppliers because when there is demand then there is supply. In some cases, where suppliers become the god is for certain products.



How long it takes for return process is determined by the efficiency of reverse logistics, the return which takes more than 2 weeks are due to the distance from the manufacture to the suppliers or end user so it takes more than 2 weeks for return policies, but normally it takes 5 to 10 days for return policies.



According to this survey we can find out the need of reverse logistics which is essential in this E-Commerce business, with the help of this questionnaire we could get the primary data which could be useful for our overall analysis of this project. The overall satisfaction from the return scale is that the majority voted a satisfactory level which they are happy and satisfied.

In all the E-Commerce business there is need of reverse logistics flow and this flow needs huge cost to maintain because organizations don't gain any profits form reverse or refund or return, they lose their money for the transportation. Which may cost huge freight rates, so companies like Amazon keep track of customers which frequently refund or return the products and later charge a higher for delivery. So that they could compensate for their expenses as well as the customer would reduce the unnecessary product exchange.

COSTS AND ISSUES IN REVERSE LOGISTICS IN E-COMMERCE BUSINESS

Cost of reverse logistics in e-commerce

The cost of reverse flow is normally considerable, whereas the cost of returning items is usually modest. The returns are too costly, eroding already thin corporate margins. Product returns account for about 8% to 10% of the product's total cost. Return rates in the garment business, for example, are generally 40% higher than other industries since we provide different sizes and colors.

Over the next ten years, the cost of reverse logistics will skyrocket for retailers. Reverse Logistics costs about 1.5 times as much as forward logistics. The following are some of the elements that influence shipping costs:

- Country/region/state/city
- Product weight
- Package size
- The price of the product
- Base delivery rate
- Fuel surcharge
- Customer group
- CGST & SGST

The actual cost of product returns is not just the logistical expenses, but also the negative impact on the customer experience as a result of the inconvenience.

When a consumer returns a purchase, the chances are that they will not buy from your shop again. When a client leaves, you lose the customer's lifetime value. You also lose the client acquisition

expense. Furthermore, by providing your consumer with a subpar product and service, you are strengthening your rival.

Both real buyers and sellers are frustrated by the cost of product returns. So, who should bear the responsibility for reverse courier fees?

Buyers' Talk:

We polled a few online buyers, and they agreed that the vendor should cover the price of goods returns. Buyers complained that they couldn't see, touch, or feel the merchandise while buying it online. Product descriptions may not accurately depict the product's quality.

Because we can touch, try, and then make a buying choice, local retailers and malls may enforce a "no refund policy." If I have to pay for reverse logistics, I would rather not buy a damaged or incorrect goods online. - One customer says.

Sellers' Talk:

Many purchasers, according to sellers, place phoney orders, return the product in damaged condition, and replace the original with the imitation. Many such purchasers are encountered by sellers on a daily basis.

As Amazon does a good job of clarifying return shipping prices. It has been stated explicitly that if the seller is at fault, he or she would be responsible for the reverse shipping costs and vice versa. Product returns provide a huge income potential for carriers, while adding shipping and storage expenses for merchants.

According to a survey, return charges are imposed on orders in about 58 percent of cases, and customers must pay them.

What can sellers do to lower reverse logistics costs?

Unfortunately, there is no simple solution to completely eliminate returns. There are, however, measures to decrease returns, which will lower the cost of reverse shipping.

- Sellers should quit selling on marketplaces that are unfavorable to them.
- In product descriptions, sellers should include all relevant information about the items.
- Thoroughly inspect the returned merchandise.
- Save the proof of orders that have been dispatched and received.
- Select merchandise from reputable vendors.
- Remove items with the highest return rates from the market.
- To avoid unfavorable reviews, always react to your consumers.

Challenges for Reverse logistics

According to statistics, one out of every three things sold gets returned. Experts predict that return rates will continue to rise due to changes in customer behavior and demand. Because of their liberal return policies, merchants bear the brunt of product returns.

Reverse logistics face different challenges than forward logistics.

They are

- Reverse logistics are unable to forecast
- The excess time to process the sale again
- Conditioning items for resale
- Lack of optimal policies for e-commerce returns
- Recover the value

Reverse logistics are unable to forecast: Returns, unlike forward logistics, begin in several locations and conclude in one. It's difficult to predict who will return the merchandise or why. This makes budgeting, logistics, and revenue forecasting challenging.

As a result, internet businesses are being hampered by reverse logistics.

The excess time to process the sale again: It takes longer for returned merchandise to be ready for sale again. Especially in the case of defective or damaged goods.

After the consumer submits a return request, the items must be collected, examined, repaired, and restored. This prolongs the selling process. In rare circumstances, the price may vary because the product received is defective or lacking its attachments.

Conditioning items for resale: When a consumer requests a return, it's a good idea to inquire about the reason for the return. Other than "defective" or "I changed my opinion," attempt to be more detailed with your explanations. This aids in the efficient processing of the return.

Customers are frequently genuinely interested in the goods. However, due to a lack of information on how to swap the product for one that is identical, the consumer returns it to the vendor. Rather of just inquiring the explanation on the return page, it is preferable to call your customer. If you have a customer service team, this might be a great way to cut down on returns. A single phone call may save you a lot of time and money when it comes to reverse logistics. Furthermore, this demonstrates that you care about your clients and fosters positive customer relationships.

Lack of optimal policies for e-commerce returns: Some merchants have tightened their return policies in response to increased return rates. Alternatively, as I said above with Amazon, having a clear return policy may alleviate a lot of grief for both the consumer and the seller.

There is a distinction to be made between a rigorous and a clear return policy. Customer loyalty might be harmed by a stringent return policy. Even if customers return some of your items, having a clear and flexible return policy increases customer loyalty and retention. Read these tips to help you establish an efficient return policy for your online shop.

Recover the value: It might be difficult for businesses to recoup the cost of returned merchandise. Returns become outdated, and as a store, you are oblivious to this.

Many times, returns build up and become outdated. For example, if fashion trends change, gadgets and attractive apparel become obsolete. In this situation, recovering the product's value becomes difficult, if not impossible. (I'm referring to the cost pricing here.)

Excellent Reverse Logistics

For businesses to retain customers, efficient reverse logistics is critical. One-time customers are substantially less valuable than loyal consumers. Be kind to customers that visit your store to make a purchase. When a consumer returns a goods, however, go above and above to make their experience pleasant. These are the periods when the client decides whether or not to return.

Customer retention:

It's critical to keep your consumers happy and returning. A simple return procedure is one method to do this. When you make it easier for customers to return things, they are more inclined to prefer your brand over competitors.

Furthermore, a simple return process might attract even more clients. Customers who are satisfied are more inclined to tell others about their experiences, and you already know the rest of the tale.

Additionally, promoting an easy return process might entice first-time shoppers to shop at your online business.

Return on Investment (ROI):

The reverse logistics procedure is time-consuming. You can, however, make a significant profit on your investment. According to statistics, 40% of purchasers purchased something else while processing their return on the website. Your earnings will be enormous if you make your returns smooth and comfortable for your consumers.

Strategic advantage:

The e-commerce industry is quite complicated. Customers can be attracted in one of two ways: through the interface or through the fulfilment procedure. If any of these two are discovered to be absent on your e-commerce website, the buyer may lose trust in purchasing from your shop.

The second side of the fulfilment process is reverse logistics. As a result, a solid return procedure might be a strategic benefit for your company.

Identify problematic products:

Analyzing consumer feedback when processing returns can assist the store in identifying goods that aren't selling and are causing substantial returns.

Identify problematic buyers:

By segmenting your customers and their input, we can do this. By personalizing the comments offered, you may define the character of high-risk consumers.

We may share this information with your marketing team to help them target their campaigns more effectively.

“The shorter and cleaner the process – better the result.”

The following are the primary issues that organizations utilizing reverse logistics and developing reverse supply chains face:

• difficulties in estimating the amount and condition of wrecks that will be returned to the manufacturer,

• lack of research on the impact of reverse logistics on the success of the organization,

• large geographical gap between suppliers of used products and the place where they are recycled,

• increased transport costs of waste products due to the small amounts.

Furthermore, several aspects of the reverse supply chain make it difficult to plan and manage its phases and operations, such as the presence of waste products of different quality in the reverse supply chain, which necessitates precise inspection. There is also a requirement to remove the gathered items, construct transportation networks, and deal with the enormous number of returns and remanufacturing operation time disparities.

CHAPTER 5

SUMMARY OF FINDINGS AND CONCLUSION

According to the findings, design techniques for reverse supply networks are comparatively unknown and undeveloped in compared to forward supply chains. However, because of its increasing importance in modern business, more organizations are focusing on improving their product returns and reverse supply chains. Despite the fact that no two reverse supply chains are same, the majority of them are structured to perform five main functions:

- product acquisition,
- transporting products,
- inspection and disposition,
- remanufacturing,
- sale and distribution.

Managers have challenges in making judgments on reverse supply chain design and maintaining ongoing activities. They are required to make judgments that strengthen the supplier's relationship and reduce the cost of conveying the items.

Companies must understand that refunds are not just the product of incorrect forecasting in B2B transactions or the acquisition of faulty items by a client in B2C transactions. The fundamental reason is that businesses' return policies are becoming more permissive, and consumers are becoming more aware of their rights. One of the major impediments to adopting an effective return management concept. In the corporate environment is a lack of information and awareness among managers about the magnitude of returns and the advantages they might give. A good return policy may help you improve customer service, gain a competitive edge, and modify your company's image. The most crucial reality is that, in addition to financial advantages, return management provides extremely useful information about consumer behavior and expectations.

REFERENCE:

- https://www.researchgate.net/publication/321724743_The_Impact_of_Reverse_Logistics_on_Customers_Satisfaction
- https://blog.getbyrd.com/en/reverse-logistics
- https://ithinklogistics.com/blog/a-complete-guide-on-e-commerce-reverse-logistics/#:~:text=Cost%20of%20reverse%20logistics%20in%20e%2Dcommerce&text=Product%20returns%20add%20an%20estimated,cost%20price%20of%20the%20product.
- https://www.easyecom.io/blog/supply-chain-management-in-ecommerce/#:~:text=Supply%20chain%20management%20brings%20transparency,goods%20to%20the%20end%20consumer
- https://www.researchgate.net/publication/314093962_E-Commerce_in_Logistics_and_Supply_Chain_Management
- https://mail.google.com/mail/u/0/?tab=rm&ogbl#inbox/FMfcgzGpFgtFHhTrLRfPqltLGMfJwKTj?projector=1&messagePartId=0.2
- https://consumerreturns.wbresearch.com/blog/amazon-reverse-logistics-warehouses-strategy
- https://www.clickpost.ai/blog/reverse-logistics-in-ecommerce#title_0