

# A CIRCULAR FOR REVERSE LOGISTICS TO HANDLE E-COMMERCE RETURNS

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#### Abstract

Global e-commerce sales are expanding quickly, placing pressure on supply chains. Reverse logistics management has become crucial as a result of the expansion of international e-commerce platforms and the rising trend of product returns. Due to e-commerce competitiveness and legal pressure, firms are now handling reverse logistics while focusing on sustainability and the circular economy principles. To solve and handle some of the major issues for online returns, this study proposes a circular structure for reverse logistics challenges in e-commerce. This paper will define "e-commerce" and "reverse logistics," explain why it's important to build reverse logistics for e-commerce, analyse the challenges of doing so, then offer some strategies for how firms might utilise reverse logistics to improve their own E-commerce.

Keywords: Circular Structure, Reverse Logistics, E-Commerce, Return Process

#### **1. INTRODUCTION**

The need for efficient supply chain management has only grown in current years. This is essential as the complexity of supply chains and the constraints placed on them by factors like rising levels of customization and competitiveness have made it so that nothing less will do. Consequently, supply chains are under increased pressure to both satisfy customers' demands and keep costs to a minimum (Cohen, 2013). Managing the movement of items from suppliers through retailers to consumers, who in turn spend money, is a common part of supply chain management. Information moves up and down the supply chain in tandem with all these physical flows (McKeller, 2014; Stanton, 2018). Reverse logistics refers to the movement of goods upstream in the supply chain after being returned via customers. Thus, the network via which products are sent back upstream is the reverse supply chain. There's more going on in a reverse supply chain than just customer returns. Effective (to maximise value) and efficient management of the reverse logistics procedure is essential as well (to minimise costs) (Stanton, 2018).

E-commerce has expanded rapidly in recent years alongside the reach of the internet. Ecommerce is well-received by businesses & consumers because of the many benefits it brings by leveraging the Internet. As a new kind of commerce, it is altering not only the means through which businesses are built, run, and managed, but also the very nature of economic activity in society. E-commerce has the potential to provide both benefits and problems for businesses if return products are not handled properly.



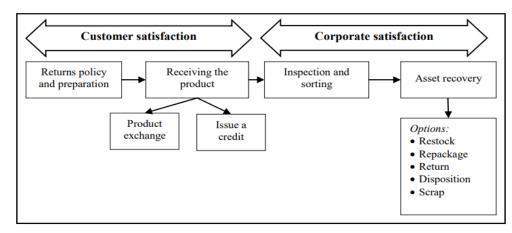


Figure 1: E-commerce reverse logistics key factors

The term "reverse logistics" is commonly used in the electronic commerce to describe the process via which goods purchased online are sent back to the companies from which they were originally purchased (Yan, 2012). Reverse logistics is not just the inverse of advance logistics, as is often assumed. There is a requirement for a unique optimization strategy due to the unique economics of e-commerce reverse logistics. Examples of the benefits that merchants can reap from a downward flow of products towards customers include increased accuracy in demand forecasting, economies of scale, and a wider selection of products. Online returns, however, are notoriously difficult to estimate due to their inherent volatility. Stores will need to improve their systems to handle returns from a variety of sales channels faster. There is no longer any question that ineffective management of retailers' reverse logistics can have a significant impact on their bottom line (Lindsey, 2016).

This paper will first define the terms "e-commerce" & "reverse logistics," then go over the importance of developing reverse logistics for e-commerce, look at the challenges that come with doing so, and then offer some strategies that companies can use to develop reverse logistics for their e-commerce operations.

# **1.1 Statement of Problem**

Even the most conservative estimations indicate that the cost of reverse logistics in an ecommerce setting is substantial. Tracing the expenses associated with reverse logistics is arduous. The fundamental cause is that few businesses account for or even estimate the price of reverse logistics (Smith, 2005). That's an issue because reverse logistics is one of the most underutilised ways for businesses to boost their bottom lines (Lambert, 2011). One of the main problems in the online retail market is that most online stores don't understand the significance of reverse logistics (Wang, 2013).

In light of this, it is imperative that e-commerce businesses find means to enhance their reverse logistics processes by identifying strategies and developing new methods.

# 1.2 Objective of the Study

Retailers need to address the difficulties of online returns in a methodical way because the rise of online returns has a negative effect on their bottom line. This has the potential to improve operational efficiency and help merchants pinpoint issues with customers making online refunds. This study aims to help online merchants by proposing a conceptual framework for reverse logistics in e-commerce to handle customer returns. Following are the objectives of study:

• To assess the challenge consumers, face during online return





- To examine the impact of return processes on customer satisfaction
- To measure the impact of return policies on customer satisfaction
- To identify the impact of customer behaviour on customer satisfaction

# 2. REVIEW OF LITERATURE

## 2.1 Reverse Logistics in E-commerce

When a consumer experiences issues with the quality or functionality of an item they purchased online, the process of sending it back to the retailer is known as "reverse logistics" (Yan, 2012). According to Dutta et al. (2020), the Indian e-commerce business could benefit from a multiobjective logistics network architecture for returned products. Markets for consumers, storage facilities, distribution hubs, transfer stations for waste, incineration facilities, and recycling facilities are all part of this multi-tiered supply chain. The mother warehouse and distribution centres are evaluating new technology that could improve the speed and accuracy of product transfers and handling. Cost, environmental effect, and social responsibility can all be reduced through the application of the weighted goal programming (WGP) technique. In the end, a numerical example is used to verify the - model, and it's applied to an online clothing store. The terms "e-commerce" and "online purchasing" will be used interchangeably throughout this study. Also relevant are the ideas of "reverse logistics" and "online returns" in the context of online shopping. Customers initiate the standard online returns process by notifying (or otherwise asking) the online merchant that they desire to return the merchandise (Harris, 2014). After the online store has given the go-ahead for the return, they will decide how the procedure will work (Harris and Martin, 2014). There are a number of crucial pieces needs for a smooth online returns process. We'll get back to these parts in a bit. Construction costs, running costs, and transportation costs were all factored in. They set out to reduce overall system expenses in the first phase and distribution vehicle transportation costs in the second.

An efficient plan to lessen waste in non-defective reverse logistics was developed (Chang and Zheng, 2014). They claim that the mileage saved by using the delivery address of another client as the return address is significant. Through simulation and computational experiments, they found that the proposed technique can reduce consumers' out-of-pocket costs for return transportation.

## 2.1 Causes of Returned in E-Commerce Purchases

Customers' purchasing habits have shifted due to the rise of online shopping. It has also led to a meteoric rise in product profits (Mahadevan, 2019). In comparison to returns at brick-and-mortar establishments, the rate at which items are returned after being purchased online is extremely high. According to Mahadevan (2019), the ROI for online sales might reach 50%. Retailers' bottom lines will take a serious hit if customers return a lot of items. Returns can cost stores as much as 20% of their profit. Forecasts also indicate that e-commerce will continue to grow, and that as a result, the financial impact of online purchases will grow as well (Lindsey, 2016). Therefore, it is important for retailers to investigate & comprehend the causes of online returns. The literature research found four primary classes of explanations for online refunds.

## 2.2 Product Information

There are instances where consumers lack complete or correct product details or knowledge of how to proceed with an online purchase. Because of this, there is a chance that either the ordering process or the goods ordered will go wrong (Wang, 2013). Here are some frequent issues with the product description to keep in mind:



- The product does not match the description on the website or in the catalogue For instance, there could be a mismatch between the advertised and shipped goods (Wang, 2013).
- Customers have little physical interaction with the merchandise. When shopping online, consumers cannot feel goods before buying. It's not uncommon for products to fall short of consumers' expectations since they leave some aspects of the purchase up to their own imaginations (or guesses) (Pinkman, 2017; Wang, 2013).
- Outdated Information. Many times products with obsolete information are sold to customers. Items sold that are past their expiration dates are only one example.

## 2.3 Consumers' Impulsive and Erroneous Purchasing Habits

A client may request a return of an item after purchase if that item turns out to be unsuitable for his or her purposes. Guaranteed refunds on products allow buyers to alter their minds and try something else (Subhashini, 2016). During the online ordering procedure, customers may make mistakes. The retailer's information could be correct and quite extensive. However, occasionally customers make blunders. As an additional complication, customers' purchasing tendencies may fluctuate at times. The issues associated with customer error are outlined below:

- Customers purchase an excessive number of products. Customers may purchase big quantities of products as a result of discounts. They eventually return some of the things since they realised they had purchased too many.
- Customers make errors when placing online orders. Even though many consumers can now do their shopping online, many still prefer to visit physical stores. As a result, consumers may make clumsy purchases when using the retail interface to do so. The customer may order the incorrect size, the wrong item, or the wrong colour (Pinkman, 2017).
- Buyers often act on impulse. Due of post-purchase angst, consumers frequently request refunds or exchanges. The convenience of internet shopping makes it more likely that customers will make a return due to post-purchase dissatisfaction (Solanki, 2018; Mukherjee, 2017). Making it simple for people to buy online typically results in more sales.

## 2.4 E-commerce Reverse Logistics Challenges

Organizations face substantial difficulties with reverse logistics. The rise in e-commerce transactions is likely to increase the difficulty and expense of product returns at brick-and-mortar retailers (Lindsey, 2016). Here are some of the difficulties faced by online reverse logistics retailers:

• The unpredictability of online returns. In the forward logistics setting, brick-and-mortar supply chains can make more precise demand projections and subsequent plans. Because consumer demands and locations are understood, facility utilisation and inventory management can be meticulously managed. Thus, the idea of focusing on a certain market and developing a product for that market originates in one central location before spreading globally. In essence, reverse logistics is the inverse of conventional logistics and can be quite unpredictable. Many times, the origins of a return are scattered and mysterious, but they all lead back to the same spot. Stores have no way of knowing which customers will return items, how many will return items, or

where those returns will originate. Due to the unpredictability of the situation, it is hard to plan for logistics or revenues (Lindsey, 2016; Wang, 2013). Another cost resulting from the unpredictability of online returns is warehouse space, which may be better utilised as part of expanding e-commerce transactions to ensure stock is constantly ready for distribution to a wide range of customers.

- Unfortunately, online sales aren't being properly monitored due to a lack of funding. One of the biggest challenges to effectively managing and implementing reverse logistics is a lack of resources (Badenhorst, 2012). This disinterest in investing can result from inexperience or neglect on the part of the investor. For the most part, supply chains have underinvested in the data infrastructure necessary to oversee the rapidly expanding online reverse logistics process. Some web-based merchants have taken the initiative to provide in-depth chat features on their sites, bringing customer support agents directly to their online clientele. Using extremely specific inquiries, these technologies assist customers narrow down the vast catalogue of available goods. It's pretty comparable to the service you'd get from a salesperson in a physical store (Lindsey, 2016). Business leaders need to prioritise reverse logistics in their strategic planning if they want to implement a successful approach (Smith, 2005).
- Buying Behaviour of Customers. Customers may be genuinely confused about the product they are purchasing online or with the online purchasing process. However, given how simple it is to initiate a refund, some customers may be abusing the system. Customers frequently make multiple online purchases of different iterations of the same product with the purpose of keeping only one of them. Some customers will only utilise a product briefly before returning it. The order's profitability may be greatly affected by these fees (Lindsey, 2016). Fraud from customers is another issue that must be addressed in the field of e-commerce reverse logistics. Customers that commit order fraud return an entirely different item than the one they originally ordered. Payment fraud is another form of customer fraud (Pinkman, 2017).
- Time consuming. As a result of the many causes for returns, businesses must select alternative processes to deal with various return goods. It necessitates a significant amount of time and effort on the part of businesses to deal with the reverse logistics process.

Difficulties with online refunds are summarised in Table 1. Furthermore, Table 1 proposes a broad method for dealing with these difficulties and illustrates to what extent each challenge is under the firm's internal control.

Challenge in Online Return	The extent to which the challenge can be managed	Objectives
The unpredictability of online returns.	Low	Learn more about some online refunds.
Unfortunately, online sales aren't being properly monitored due to a lack of funding.	High	Invest in technology and personnel training.
Buying Behaviour of Customers.	Low, moderate	Determine which purchasing behaviours should be addressed.
Time consuming	High	Investment in return and handling.

 Table 1: Challenge in Online Return



#### 2.5 Methods: Reverse Logistics Framework for E-Commerce

There is very limited research in terms of online returns (De Leeuw, 2016; Li, 2013; Mahadevan, 2019). Several authors have brought attention to the critical need for studies in this field (Griffis, 2012). Most studies on the subject of product returns have concentrated on the business-to-business (B2B) return policies that exist between the manufacturer and the retailer. Previous research has mainly concentrated on the return policies of traditional stores, rather than the growing online retail industry (Li, 2013). Therefore, it is clear that more study is required in this field. Furthermore, there appears to be a lack of investigation into a framework that links together things like supply chain integration and information exchange as well as individual areas of planning, tools, methodologies, and system strategies (Mahadevan, 2019). Since there is a dearth of previous work on the topic of online refunds, this study can only be described as exploratory. The purpose of this research is to examine the current literature on the subject of online returns in order to draw conclusions about the causes and difficulties of these returns and to provide a conceptual framework to deal with these issues of reverse logistics in e-commerce. Research based on the results of this study will be the foundation for future, more targeted investigations into this area. Remember that in the context of online retail, one goal of reverse logistics network design is to reduce overhead expenses (Yan, 2012). Key elements of the online returns process shown in Figure 1 will serve as the basis for the conceptual framework. The potential instructions to address the causes and difficulties of online returns should be included in the conceptual framework as it is being developed. This conceptual framework for dealing with online returns incorporates the reasons for and difficulties of online returns with the core features of online returns.

The difficulties of accepting returns online that were within the scope of possible human intervention served as a jumping-off point for the creation of the conceptual framework. According to the data in Table 1, this suggests that first and foremost, businesses need to solve the issue of not allocating enough resources to overseeing online profits. It's been hypothesised that stores have the most sway over the hassle of customer returns while shopping online. Investment in technology and in the knowledge and abilities of staff members through techniques such as training can help achieve this goal.

#### **3. METHODOLOGY**

This study employs the research method known as descriptive research. In this study, the primary method of data gathering has been utilised. In order to collect data, a questionnaire will be sent out to the participants. 318 customers who shop online provide information about the challenges they have when returning items purchased online, and the value of reverse logistics is analysed based on this data.

#### 3.1 Variables

In this study four variables are used which are (i) Return policies, (ii) Return process, (iii) Customer behavior, (iv) Customer satisfaction.



## 4. RESULTS AND DISCUSSION

#### 4.1 Demographic Profile of Respondents

#### Table 2: Demographic Profile of Respondents

Demographic	Characteristic	Frequency
Gender	Male	201
	Female	117
Age(years)	19 to 26 years	147
	27-35 years	107
	Above 35	64
Education	Undergraduate	11
	Graduate	142
	Postgraduate	165

The following information is provided in table 4.1: gender, age, and education. 201 responses are male and 117 are female. This survey also provides information regarding the ages of the respondents. 147 participants are between the ages of 19 and 26, 107 respondents are between the ages of 27 and 35, and 64 participants are older than 35. This study demonstrates the educational backgrounds of the respondents. 11 replies are undergraduate, 142 participants are graduate and 165 survey participants are Postgraduate.

#### **Table 3: Descriptive Statistics**

Challenge for customers for online return		Mean	SE	SD
High cost of return	318	3.34	0.0801	1.43
Time consuming	318	3.67	0.0810	1.44
Buying behaviour of customer	318	3.31	0.0822	1.46
Unpredictability of online returns	318	3.61	0.0819	1.46
Poor customer service	318	3.48	0.0841	1.50

Table 3 describes the challenge face by customers for online return. High mean score of time consuming which is 3.34. It states that online return process is time consuming. After that second high mean score of Unpredictability of online returns which is 3.61. Which indicates that online return process is highly unpredictable. Third highest mean score of poor customer service is 3.48 which indicates that while online returns of product website or companies give poor services to customers. Mean score high cost of return and buying behaviour is 3.34 and 3.31.

 Table 4: Mean rank of the variables

Variable	Mean	SD
<b>Return policies (RP1)</b>		
Full refund	3.60	1.61
Product exchange	3.70	1.62
Credit pays	3.58	1.65
Return process (RP2)		
Physical attempts for return	3.64	1.66
Refund speed	3.57	1.44
Easily available Product Details	3.64	1.46

Customer behavior (CB)		
Impulsive purchasing	3.44	1.58
Purchase excess number of items	3.66	1.41
Mistakes when making orders online.	3.59	1.55
Customer satisfaction (CS)		
Customer loyalty	3.90	1.33
Previous satisfactory experiences	3.94	1.28
Online retailer's reliability	4.05	3.12

The following table displays the descriptive statistics for each of the variables. There is also an indication of the mean rank of the variables with respect to every one of the constructs. We are able to see that within the context of customer satisfaction. The variables that have mean ranks that are higher are customer loyalty (M=3.90), Previous satisfactory experiences (M=3.94) and Online retailer's reliability (M= 4.05). The factors that have higher mean rankings in relation to the construct of consumer behaviour are as follows: purchase excess number of items (M=3.66) and the mistakes when making orders online (M=3.59). In the construct customer attitude, the variables having higher mean rankings are cognitive dissonance and higher expectations because of price. Under the construct return policies product exchange (M= 3.70) and credit pays (M=1.65) have higher mean score. Under the construct return process, Physical attempts for return (M= 3.64) and easily available Product details (M= 3.64).

 Table 5: Scale Reliability Statistics

Scale	Cronbach's α
Return policy	0.808
Return process	0.757
Customer behaviour	0.704
Customer satisfaction	0.857

This table is used for reliability. Cronbach's alpha is a statistical coefficient that controls for the cohesiveness of a set of items or the degree to which they are linked together. This factor is considered as a gauge of the scale's dependability. This table demonstrate the range from 0.857 to 0.694. Alpha range of customer satisfaction is 0.857 which highest among group, which is acceptable. Alpha range of return policy is 0.808 which second highest among group and also acceptable. Alpha range of Customer behaviour is 0.704 which is also acceptable.

## CONCLUSION

By making technological investments, potentially fraudulent actions can be uncovered. Reduced fraudulent activity may result, for instance, from investments in security systems (or clearer client identification). However, it comes with a cost. Investment in technology can have an effect on a company's bottom line. One strategy that can be put into action to lower online returns is investing in efficient customer service. On the other hand, it won't be enough to fully stop returns made online. A company's upstream supply chain partners can be a huge asset in the fight against internet refunds. The sales process is something that stores should evaluate. Shopkeepers should have an in-depth understanding of their merchandise.

Online returns could be reduced with more thorough product descriptions (including images, videos, etc.) and clearer instructions on what customers can and cannot do during the purchase process. Customer happiness should increase as a result of this. Retailers may be able to pinpoint issues with forward and downstream product movement in the supply chain by

tracking and analysing returned online purchases. Better quality control is one solution to these issues because it will cut down on product returns.

This paper provided a concise introduction to reverse logistics from an online retail viewpoint. The literature review highlights the significant difficulties stores encounter when trying to manage online returns. To further address these issues, a conceptual framework was developed using an already existing fundamental framework depicting the major components of the online returns process. This framework establishes a connection between the underlying causes of online returns and the core features of a retailer's return policy, and it suggests ways in which online merchants might overcome obstacles associated with returns of this type.

This approach can be used by companies to begin overseeing their internet profits. Despite their convenience, online returns are sometimes overlooked. Businesses can learn a lot about how they can better serve their customers by tracking and analysing their online return processes. This study's conceptual framework is meant to serve as a foundation for businesses in this regard.

This makes the study's limitations quite clear. The first thing you'll notice is how broad and general the conceptual framework is. In the future, studies might go deeper into the factors that contribute to online product returns, for instance. A more precise control may be possible if the number of categories is expanded, for example because of "the uncertain nature of online returns." Each of these advantages and disadvantages of online returns can be discussed in further detail. Second, the framework is highly theoretical, having been developed with a limited sample of available data. Therefore, further study on framework development can be done in the future, and it can be empirically evaluated.

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