

REVERSE SUPPLY CHAINS IN THE NEW ERA OF MARKETING: Special reference to supply chain disruptions during covid-19

***Dr. Vikram Tyagi & ** Prof. Vaishali Dhingra**

*Professor, Logistics and Supply Chain Management , J.K. Business School, Gurugram
vikram.tyagi @jkbschool.org

**Professor, Teerthanker Mahaveer University

ABSTRACT

Issues related to supply chain and reverse logistics based on various volatile environmental factors have drawn the attention of researchers quite often, which is evident in the form of scholarly publications on the topic. This review paper has been conceptualised after doing a thorough review of available published literature in this area. The paper intends to chalk out a framework that can prove useful for carrying out future research in this domain. A total of 150 articles published between the year 1995 and 2020 were reviewed and analysed. Important issues such as e-waste disposal, green logistics, close-loop logistics, application of technology in reverse logistics and strategic options for finding optimal reverse logistics solutions have been examined. The gaps thus identified after this review present the research gaps that can be filled by carrying out research in the near future. Recently, a few pieces of research have been carried out on reverse logistics after the outbreak of COVID-19, which finds a mention in this paper. These studies provide a direction to the e-retailers so that they may gear themselves up for facing any similar situations in times to come.

Keywords: supply chain, reverse logistics, Implications for consumers and e-retailers, COVID-19

INTRODUCTION

Products, thus manufactured need to be delivered to the customers. “A supply chain, in its classical form (forward supply chain), is a combination of processes to fulfil customers’ requests and includes all possible entities like suppliers, manufacturers, transporters, warehouses, retailers, and customers themselves” (Chopra and Meindl, 2010). Sometimes, purchased products have to be collected from the customer; the process is known as reverse logistics. According to the American Reverse Logistics Executive Council, 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 value or proper disposal” (1999). Product returns can be of five different types: customer returns, repair/service returns, end of life returns, reusable container returns, and leased product returns. Every kind of return requires somewhat different types of reverse logistics process. Reverse logistics has significant commercial, social and environmental implications for sellers, customers and society at large.

Types of returns and broad options to extract value are shown in Fig.1

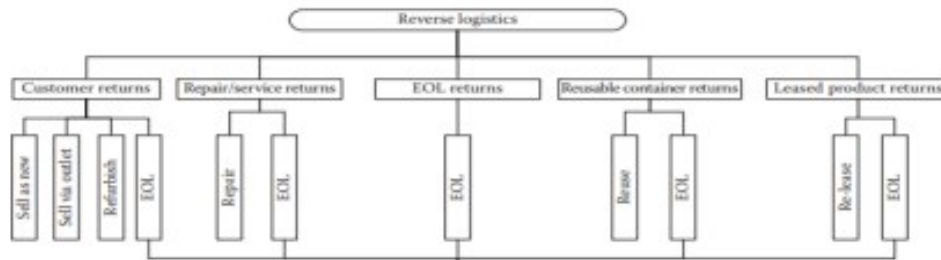


Fig.1: Adopted from the book, Reverse Supply Chains- issues and analysis; Gupta al et. P.6

During the process of using a product by the customer, it may be consumed completely or extract the intended value out of the product. We may call this end of (useful) life of the products. However, by using an appropriate reverse logistics process, the left-over value can be extracted or disposed of in a way and manner to avoid adverse social or environments impact. Therefore, end of life returns needs a different kind of treatment.

Broad options for the disposal of such products are shown in Fig. 2 shows.

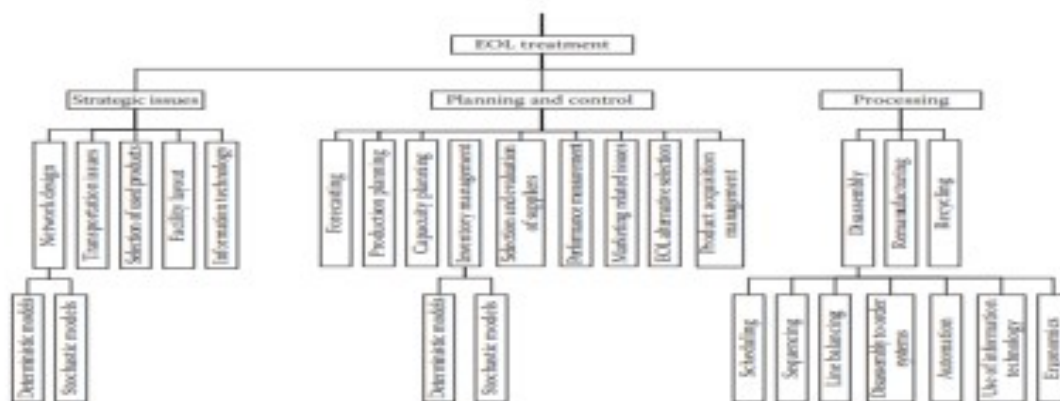


Fig.2: Adapted from the book, Reverse Supply Chains- issues and analysis; Pochampally & Gupta, P.6

In forward logistics, new products produced in a facility are transported to many distributors or customers. In reverse logistics, the returned products collected from many customers or collection centres for transporting to the producer or to a product recovery facility which can involve refurbishing, remanufacturing recycling, or final disposal. It means the transportation flows in the forward supply chain are one-to-many while in reverse logistics; it is re many-to-one.

These well-established models of the supply chain need a relook in the given situation of pandemic COVID-19 as a similar situation may occur in the future also. Moreover, the retail industry has seen a drastic shift of consumers from brick and mortar purchases to online shopping. The trend may continue in the future also. This literature review paper is focussed primarily two types of returns: customer returns and end of life type of returns. We would also analyse research work from the point of view of implications for E-retailers, Consumers, Reverse logistic system design, and recent changes in reverse logistics after the onset of COVID-19.

METHODOLOGY

Mayring (2014) the research methodology of a review paper should ideally be based upon content analysis and description including a four-step process: a collection of papers, descriptive analysis, selection of a category, and material evaluation. This paper is essentially based on these four steps for carrying out the review of literature, analysing and presenting it.

Collecting papers

The process involved going through the research and review papers available by using the search words 'reverse logistics', 'reverse logistics in e-retailing' Covid-19, using the Google search engine and EBSCO database. A total of 150 articles published between the year 1995 and 2020 were reviewed and analysed. Out of these 150 papers, 55 were found to be dealing with either of the three or all of the three variables on which this review paper is based viz: Implications of reverse logistics for retailers; Implications of reverse logistics for consumers and; Implications of reverse logistics during COVID-19. The search was also confined to papers written in the English language. The search involved using the names of these three variables as keywords.

REVIEW OF LITERATURE:

1. Implications for E-retailers:

Reverse logistics is crucial as it directly impacts the bottom line (Stock, 1998). Kumar and Chatterjee (2011) found that during the process of collecting rejected products, about 45% value is lost. Therefore, efficient management of reverse logistics is vital for the profitability of a company. According to (Michael et al., 2011) more liberal return policies result in more customer product return products. Therefore, efficient management of reverse logistics requires an appropriate return policy.

According to (Yabalik, Petruzzi & Chhajed, 2005; Michael et al., 2011), "E-retailing involves a significant level of risks and its reverse logistics need to be properly managed as an integral part of supply chain activity." According to (Richey et al., 2005), "Managerial aspects of reverse logistics are not the same as in forward logistics; therefore, it deserves special attention and firms should focus on innovative ways of handling the reverse issue."

According to (Michael et al., 2011), "Effective reverse supply chain management can enhance customer value and reduce operating cost." Rejected products have to be collected and consolidated efficiently. In the absence of proper functioning of this part of the operation, it may have a severe adverse effect on the entire value chain. According to (Michael et al., 2011), "Proper implementation of return process enables management to identify opportunities of reducing unwanted return and control reusable assets."

According to (Michael et al., 2011; Tibben-Lembke, 2002) with changes on how E-commerce activities are practised, "firms need to prioritise reverse logistics as an effective tool in achieving cost reduction, customer satisfaction and loyalty and competitive advantage." According to (Fang, 2007) "for a long period, the researcher's attention has been on logistics; recently, there has been growing interest in reverse logistics with attention on online-retailing reverse logistics." According to (Harridge- March, 2006), "Despite the increase in E-retailing growth, risk of return handling is a hindrance against customer patronage, and it has an effect on E-retailer and customer satisfaction."

According to (Xu and Jiang, 2009), “rapid growth in internet retailing has brought profound changes to the economy, businesses and society at the large and rapid growth in online business, e-retailer has to cope with an alarming rate of product returns.” High rate of product rejections and returns indicates the possibility of a much bigger problem such as quality of products (Kolsaker and Payne, (2002). According to (Mollenkopf et al., 2007) “reverse logistics constitute greatest operational challenges to e-retailer because of return volume and processing associated cost.”

Daugherty et al. (2002), reverse logistics can prove to be a useful tool for achieving competitive advantage in the market.

Schatteman (2001) emphasised that product returns require the participation of customers, third-party logistics service providers and sellers, and, size of returns cannot be predicted, E-retailers have to evolve a particular system for this purpose. According to (Prahinski and Kocabasoglu, 2005), “Through the implementation of efficient reverse logistics, E-retailer can commendably manage after-sales service, supply chain design, product life cycle design, and entire supply chain efficiency.”

According to (Schatteman, 2001), one of E-retail business’s most vital aspects is to design a return policy that is considered reasonable and acceptable by the customers and develop an effective system of collecting rejected products. According to (Rogers and Tibben -Lembke,1999), “Significant proportion of managers do not attach importance to reverse logistics.” (Tibben-Lembke, 2002) stated that “Reverse logistics is a vital facet of the supply chain that is growing and could help firms in achieving competitive advantage over others.”

Many firms discovered that improving their reverse logistics process is an additional value-adding activity (Subramaniam et al., 2004).

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Implementation of reverse logistics procedure not only helps in reduction of cost reduction but it also helps in generating revenue and increasing customer goodwill, regulating the environment by reducing the cost of disposal of the product (Yoo et al., (2010); Prahinski &Kocabasoglu, 2005).

Effective management of reverse logistics has numerous benefits. It leads to the generation of opportunity for value reclamation, which is comparatively a newer method for generating revenues and contributing positively to the environment and ecology, thereby promoting sustainable relationship, leading to the attainment of competitive advantage Carter and Ellram (1998). The success of e-retailer’s business operation is directly related to how efficiently it handles its product returns (Mollenkopf et al., 2007).

The increase in the number of online shoppers has also lead to a proportionate increase in the incidence of product returns (Nasir, 2004). Implementation of reverse logistics policy could be a potential area for gaining strategic competitive advantage (Elmas and Erdogmu, 2011). If the products are returned efficiently, and there is a robust policy of return in place, it can help in reducing the costs, increasing the profits, increasing the market advantage and also building up customer trust; it can also help in capturing value by way of recycling the products, reusing them and refurbishing them for further usage (Kokkinaki et al., 1999).

Amazon has been successful in reducing response time and build customer loyalty by intensive use of technology such as Kiva Systems, AWS, Amazon Web Services. By effective return handling, e-retailer can develop strategies that could position them in the market better than the competitor. Efficient products return handling is a powerful policy measure which can help in attaining competitive advantage and influence the re-purchasing decisions of customers (Smith, 2005). Effective and efficient return policy helps in improving the efficiency of the e-retailer and builds strong customer relationship. Efficient product return handling

procedure allows the e-retailers to consider the reasons for return to take corrective measures for the future. When the customer failed to follow stipulated return instructions, it could cause a delay payment refund (Stock et al. 2002).

Products return policy of e-retailers points out towards the prospect to gain sufficient value from the product, while refund policies serve as a guarantee for customer repeated purchases. The return process handling has an impact on company turn-around time, credit issuance, refund issuance, customer satisfaction and as well reflect on customer service programs. Effective return handling could enhance e-retailer and customer relationship (Mollenkopf et al. (2007).

Table 1: Implications of reverse logistics for e-retailers

Author	Year	Findings
Stock	1998	Reverse logistics impacts the bottom line
Kumar and Chatterjee	2011	During the process of collecting rejected products, about 45% value is lost.
Michael et al	2011	Liberal return policies result in a higher rate of returns.
Yabalik et al	2005	E-retailing involves a significant level of risks regarding the impact on consumers if returns are not appropriately managed.
Richey et al	2005	Managerial aspects of reverse logistics must be focused to achieve better consumer satisfaction.
Tibben-Lembke	2002	Reverse logistics as a useful tool in achieving cost reduction, customer satisfaction, loyalty and competitive advantage.
Fang	2007	Recently, there has been growing interest in online-retailing reverse logistics.
Harridge-March	2006	Return handling has an impact on customer patronage, customer satisfaction and E-retailers.
Xu and Jiang	2009	Because of the rapid growth in internet retailing, e-retailers have to cope with high product returns.
Daugherty	2002	Reverse logistics can be used as a tool for achieving a competitive edge.
Schatteman	2001	Effective product returns management requires the collaboration of customers, logistics service providers and sellers.
Prahinski and Kocabasoglu	2005	Effective reverse logistics can manage after-sales service and entire supply chain efficiency.
Subramaniam	2004	Emphasised that improving reverse logistics process is an additional value-

		creating activity.
Yoo et al.	2010	Reverse logistics can achieve cost reduction as well as create revenue.
Prahinski and Kocabasoglu	2005	Reverse logistics can create additional revenue, expand customer goodwill and reduce the cost of product disposal.
Carter and Ellram	1998	Effective reverse logistics provides an opportunity for a new method of revenue, promote long-term relationships and differentiation.
Mollenkopf et al	2007	The success of E-retailer operation can be directly linked to return handling.
Nasir	2004	Increased online sales have resulted in growth in customer complaint and product return.
Elmas and Erdogmu,	2011	Highlighted that reverse logistics can become an innovative service of a company portfolio in an era of a competitive market.
Kokkinaki et al.	1999	Efficient reverse logistics can capture value from products re-usage or recycling.
Smith	2005	Efficient reverse logistics is a powerful tool for getting a competitive edge in the market
Stock	2002	Emphasised efficient return handling can improve e-retailer and customer relationship.

2. Implications for Consumers

In case of inappropriate handling of product returns, it can impact the consumer experiences negatively and shatter the image of the e-retailer (Permenter, 2012). Shoppers have a significant influence on peers; therefore, E-retailer should focus on them as a critical link in the reverse logistics chain.

According to (Naumann, 1995), “E-retailer offering efficient reverse logistics has the potential to grow and become a successful business enterprise.” As per the study by (Li and Wang, Fang (2007) “Customer satisfaction has a significant impact on customer loyalty; therefore, E-retailers must implement programs that offer desired satisfaction. There is the increasing belief, that, E-retailer with effective and efficient customer service program tends to gain customer commitment and loyalty as a reward.”

According to (Elmas and Erdogmu, 2011), “Providing quality products to the customer is not sufficient in differentiating an E-retailer from others, but is achievable through the provision of a well design and successfully after purchase customers’ services that can become an integral part of the corporate organisation strategy.”

According to (Kolsaker and Payne, 2002), “Reverse logistics has demonstrated that the field is specialised enough to have its department with specialised skills. Reverse logistics department must continuously gather feedback from customers to improve their overall experience.”

According to (Fang, 2007), “Customer satisfaction has a significant impact on customer loyalty; therefore, E-retailer must implement a customer program that offers desired satisfaction. There is the increasing belief, that, E-retailer with effective and efficient customer service program tends to gain customer commitment and loyalty as a reward.” Therefore, to become a growth-oriented and successful E-business enterprise, they have to offer effective reverse logistics services. (Boyer, 2005; Rabinovich, (2004); and Xu et al., (2009) pointed out that “perceived quality of reverse logistics influences customer satisfaction.” Francis (1994) expressed that “Due to the importance of reverse logistics that return management should be given top priority.”

Reverse logistics involves four key interrelated activities: Cancellation, Refund, Product exchange and Return collection. These have significant implications for E-retailers as well as customers. Customers expect quick return collection and refund of the amount paid within a short period. Any delay in this causes customer dissatisfaction resulting in customer switching to alternative E-retailer.

Brito & Dekker, (2003) identified three driving forces of reverse logistics; legislation, economics and corporate citizenship. The three drivers are also interlinked, and boundaries are sometimes blurred, and reverse logistics is often carried out for a mix of motives. [Dowlatsahi, (2010); Brito & Dekker, (2003)] in their study found that a wide range of benefits accrue to the organisation that practice reverse logistics. (Dowlatsahi, 2005; Autry, 2005) found that Reverse logistics strategy is of critical importance in managing the reverse direction in supply chains—from consumer to producer— which counts for 1/5 in some industries. Logistics strategy should be so formulated that it helps in reducing the costs (Wong & Karia, 2010).

A firm should develop logistics strategy on its core competencies to reduce costs and maximise their value offer [(Olavarrieta & Ellinger, 1997; Dowlatsahi, 2000; Ramírez et al. 2011)] Reverse logistics in e-retailing is multi-faceted and should be managed as an integrated supply chain activity involving the consumers (Michael et al., 2011). “Bi-directionality is a key interactivity feature for consumers hedonic value creation in e-tailing service settings while synchronicity is a key for utilitarian value” (Weon-Sang, 2010).

Hazen et al. (2012) suggested that consumers’ satisfaction with green reverse logistics leads to increased loyalty levels to the firm. Consumer loyalty may improve profits through reduced consumer acquisition costs and lower price sensitivity and higher price tolerance (Reichheld and Teal, 1996). Ramanathan (2011) examined the relationships between the performance of companies in handling product returns and customer loyalty and found that handling product returns play a significant role in shaping customer loyalty for low-risk products.

Table 2: Implications of reverse logistics for consumers

Author	Year	Findings
Permenter	2012	E-retailer,s corporate image is affected by customer experience on return handling.
Naumann	1995	Efficient reverse logistics can lead to sales growth and a result in a successful business enterprise.
Li and Wang, Fang	2007	Effective customer service program results in customer satisfaction and loyalty as a reward to E-retailer.
Elmas and Erdogmu	2011	The excellent quality of products and success after purchasing customers’ services are necessary and differentiate E-retailers in the market.
Kolsaker and Payne	2002	Reverse logistics department should possess unique skills and continuously gather feedback from customers to improve their overall experience.
Fang	2007	E-retailer must implement a customer satisfaction program as it had a substantial impact on customer loyalty
Boyer	2005	Emphasised that the quality of reverse logistics impacts customer satisfaction.

Rabinovich	2004	Customers perception of the quality of reverse logistics influenced their satisfaction.
Xu et al.	2009	By effective management of reverse logistics, Eiretailers can improve customer satisfaction and loyalty.
Francis	1994	Emphasised that return management should be given top priority because of the importance of reverse logistics.
Brito & Dekker	2003	Recognised three interlinked factors impacting reverse logistics: legislation, economics and corporate citizenship.
Dowlatsahi	2010	Pointed out that several customer benefits accrue by E-retailers that practice effective reverse logistics.
Ramírez et al.	2011	Effective logistics management can reduce cost and create better customer value.
Wong and Karia	2010	Logistics strategy should be made as area competencies of an enterprise to reduce costs and maximise customer value.
Olavarrieta & Ellinger,	1997	Reduced costs and better customer value can be achieved by making superior logistics as the corporate strategy.
Hazen et al.	2012	Pointed out that green logistics can result in increased customer loyalty and higher profits.
Reichheld and Teal	1996	Found that there were significant relationships between companies handling product returns and customer loyalty.
Ramanathan	2011	Emphasised that companies' in handling product returns impacted and customer loyalty, particularly in case low-risk products.

Implications of reverse logistics during COVID-19

DeAngelis, S. (2020) e-commerce boomed during the gloomy period of the pandemic COVID-19 as the brick and mortar stores were closed down, and the consumers were mostly dependent on online shopping for fulfilling their daily requirements. This immediate shift in the purchase habits of the consumers demanded a resilient supply chain of online stores. Hitendra Chaturvedi a professor at the Supply Chain Department of W.P. Carey School of Business at Arizona State University, writes, “The corona virus has disrupted US companies in many ways, and nearly three-fourths of them have seen their supply chain significantly affected.”

According to the SRS Media analysts, “there will be an inevitable increase in returned items with the significant growth in e-commerce purchases”. Average return rates of online orders are 30 per cent, compared to 8.89 per cent in brick-and-mortar stores.

Therefore, reverse logistics companies are preparing for managing the influx of returned or replaced items during this time.” The returns are costing the e-commerce companies a fortune. Now, with the advent of newer strategies like “buy now pay later” or zero EMI options, or easy returns, the consumers are very much comfortable to buy a product and return it as per their whims and fancies. Another great challenge that came the way of e-commerce companies is to protect their employees from Corona virus which is said to stay on cardboard surfaces for approximately 24 hours and on plastic and steel surfaces for 2-3 days. In the case of

managing reverse logistics these issues become very crucial. The companies have to spend additionally on the generous supply of hand sanitizers, gloves and masks for the safety of their workforce, as of now managing the safety of the products (SRS Media, 2020).

This shift in purchase habits of the consumers reflects that they will continue to buy online even after the passage of this pandemic. Hence the e-retailers need to manage the reverse logistics very efficiently now onwards. Four aspects need to be strengthened by the e-retailers: First, as to how the returns are transported, secondly, how they are processed safely, which includes safety measures against the virus in addition to inspection for any damage or theft by the consumer, thirdly it is the reintegration of the returned item back in the supply chain after refurbishing and repackaging it, and lastly, it is tracking everything. The e-retailers can also partner with each other for optimising their shipping costs.

Deloitte (2020) the pandemic has added to the woes of COVID-19. The entire chain of reverse logistics was almost disrupted for quite some time. The e-retailers having sound and efficient reverse logistics management mechanism will only survive in the e-retail market in times to come.

Singh et al. (2020) the pandemic has badly affected the world economy. Due to lockdown, manufacturing was adversely affected. The logistics and supply chain also faced the brunt. It influenced the demand and supply scenario, thus affecting the retailers and shopkeepers of different sectors.

Archana et al. (2020) During the pandemic COVID-19, almost all the industries across the world are facing a financial crisis, especially the retailers. There have been major disruptions in the supply chain.

Table 3: Reverse supply chain during COVID-19

Author	Year	Findings
DeAngelis, S.	2020	During pandemic COVID-19, brick and mortar stores were closed; therefore, consumers were mostly dependent on online shopping for fulfilling their daily needs resulting in an e-commerce boom.
Hitendra Chaturvedi	2020	The coronavirus has disrupted significantly supply chain of most of US companies.
SRS Media	2020	During COVID era, there is significant growth in e-commerce purchases that will result in increased product returns.
SRS Media	2020	Managing reverse logistics issues would become very crucial. The companies have to spend additionally on the generous supply of hand sanitisers, gloves and masks for their workforce's safety.
Deloitte	2020	The COVID-19 pandemic has added to difficulties of the entire reverse logistics system. A very sound and efficient reverse logistics management will be essential for the very survival in the e-retail market.
Singh et al.	2020	The pandemic has badly impacted the world economy; it has influenced the demand and supply scenario, affecting the retailers and shopkeepers of different sectors.
Archana et al.	2020	The COVID-19 pandemic has created financial difficulties for all industries worldwide due to significant disruptions in the supply chain, especially retailers, had a more substantial impact.

DISCUSSIONS

The findings of the previous studies support the implications derived after a review of several studies in this paper. The reviews of the previous studies conducted for this paper suggest that the e-retailers must have a sound return policy in place as it enhances customer loyalty. Also, during COVID-19 majority of the supply chains world across were disrupted. The entire e-retailing industry must be ready and upgraded to face any such situation in the future so that the trust of the customers remains intact. A firm should build a sound logistics strategy based on its core competencies to reduce costs and maximise the value offer for their customers [(Olavarrieta & Ellinger, 1997; Dowlatshahi, 2000; Wong and Karia, 2010; Ramírez et al. 2011)]. COVID-19 affected the demand and supply scenario, affecting the retailers and shopkeepers of different sectors (Singh et al., 2020; Archana et al., 2020).

RESEARCH GAPS

Since the pandemic COVID-19 is an unprecedented situation that occurred suddenly and took the entire retail industry by stride, not much research has been conducted in this area as of now. Whatsoever studies have been carried out since March 2020 till date have been meticulously gone through and included in this paper? The retail industry should be prepared well in advance, if similar pandemic outbreaks in the future, This review paper will provide essential details that should be looked into by the e-retailers.

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