

STUDY ON REVERSE SUPPLY CHAIN MANAGEMENT IN E-COMMERCE
INDUSTRIES AND COMPETITIVE ADVANTAGES OF REVERSE SUPPLY CHAIN

A PROJECT REPORT

Submitted by

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P.M.Adhiyaman

CERTIFICATE

This is to certify that the project work titled

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INTRODUCTION

In the era of next day delivery and 1 hour delivery, the Supply chain of any organization is evolving daily. This disruption in the Supply Chain process caused lot of organizational restructuring and strategic compliances. With evolving digital transactions, e-commerce purchase behaviour, quick delivery and other consumer choices of getting to a market place, there is also another dark side to these advancements. The volume of returns of products that reached end of its life, products that completed their purpose and cannot add any value to the customers stay stagnant in the market without going anywhere and without making any value to both consumer and producer. This non value adding materials can be seen as opportunity to make some value out of it. In this context comes the need of Reverse Supply Chain (RSC). The RSC can help the producers in getting back the produces from the market and replacing them in inventory or converting it into some value adding products and resale again in the forward supply chain. The government regulations are also getting stringent in this regard and every organization is advised to move towards sustainability in everything they do. The issue with RSC is the uncertainty in everything and the absence of Standard Operation Procedures (SOP) in this field. This results in huge cost to the organization and there is no huge monetary benefit as return to the organization. But the brand name and goodwill they receive for doing it will add huge business value in the near future. This is the time to focus on developing the RSC in order to leverage the opportunities in the future. This paper suggests the possibilities of constructing an efficient reverse supply chain and discusses the ways in which Strategic competitiveness can be achieved.

Supply chain management, according to IBM¹, is the handling of the entire production flow of a good or service — starting from the raw components all the way to delivering the final product to the consumer. To accomplish this task, a company will create a network of suppliers that move the product along from the suppliers of raw materials to the organizations who deal directly with users. For years, Supply Chain process efficiency and effectiveness has been on research and multiple iterations and models have been developed and deployed in real time practices.

¹ <https://www.ibm.com/topics/supply-chain-management>

Reverse Supply Chain is in place when there is a presence of returns of produces due to End of life cycle of the product, obsolete produces or the produces which anymore does not add value to the customer. These produces can be retrieved by the organization with the help of Reverse Supply Chain and can be enriched and again added to the forward supply chain.

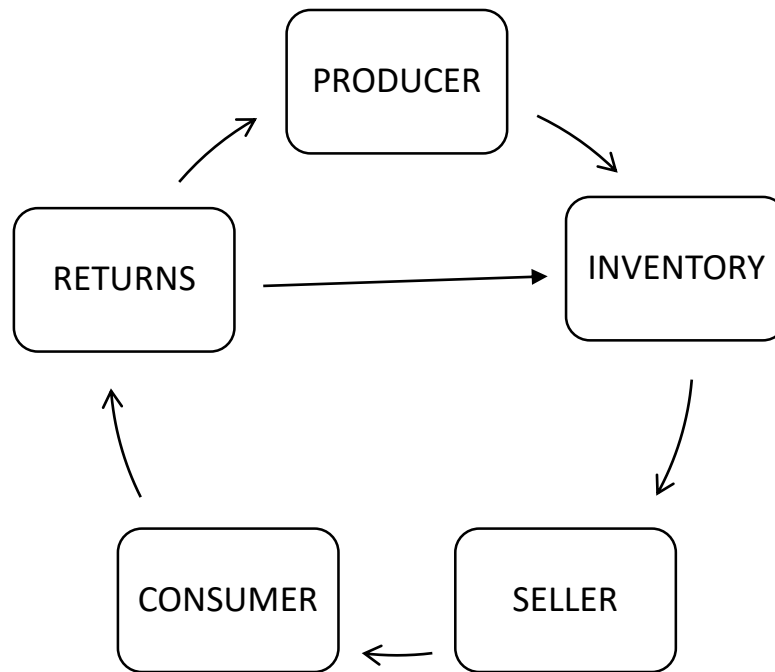


Figure 1 Reverse Supply Chain flow

Importance of Logistics in India

In the recent rankings on Ease of Doing Business, India moved up to 63rd place from its previous year position of 76th. This owes to the fact of new business policies in country and state level and the persistent efforts made to drive the business reforms agenda. In the list of improving nations India is ranked in top 10 for the third consecutive year.

As per the Economic Survey presented by finance minister Arun Jaitley in February 2018, the country's 160 billion USD logistic industry is expected to grow at a CAGR of 10.5% to touch 215 billion USD by 2020. This sector also provides employment to over 22 million people, growing at a CAGR of 7.8% in the last five years.

Still in India, cohesion is lacking in Indian logistical growth. Small, unorganised and informal players eat up a large segment of the customer base, setting a lower

operations benchmark while influencing pricing as well. This inefficiency has encouraged ecommerce players such as Amazon to develop their own state of the art logistical fleet, equipped with drones and RFID technologies that optimise the entire process. This trend enhances competition for the dedicated logistics players, and only those who are able to inculcate digitised processes driven by Artificial Intelligence (AI) and Machine Learning (ML) will be able to survive through this onslaught of inefficient practices which in turn curbs the revenue.

In a regular forward supply chain, a significant part of the inefficiency in the logistics segment is due to a faulty last-mile connectivity framework. When it comes to Reverse Supply Chain, the matter is even worse. Here, the certainty of product flow is never known and the channel through which it is coming and the geographical division where it is coming from.

According to a report by Press Information Bureau (PIB), the Government of India is developing a National Logistics Portal that acts as marketplace for ministries, government departments and the private sector. Stakeholders such as the traders, manufacturers, logistic service providers, infrastructure providers, financial services and many others involved in the logistics sector. This focus is because of the futuristic possibilities present in the market.

In the development of Draft National Logistics Policy, 2019 by the Department of Commerce, under Policy thrust areas, (No. 3.3.1) Reverse supply chain and reverse logistics has been given special importance to reduce inefficiency in logistics of key commodities.

Statement of the problem

As explained in the Fig 1, the producer has the Buying power in the presence of Reverse Supply Chain in the organization. The Raw materials purchase can be made from the own recycled produces instead of relying on another supplier. This increases the image of the organization in the market as a sustainable producer and this image can be used for branding the organization in a large manner.

This Reverse Supply Chain concept is slowly getting to headlines in the past decade which is mostly associated with sustainable practices of an organization. In this way, the producers are able to formulate the strategic policies based on the efficient Reverse Supply chain practices. Also considering the governmental policies on Take Back actions and

environmental regulations², the Government of India proposed the Extended Producer Responsibility (EPR) for E-waste management and other wastes generated in India which focuses on sustainable practices by the producer itself.

Each time a product is returned by the buyer, the chances are less likely that the buyer will buy again from the same seller. This might be because of the customer dissatisfaction about the supplier, or the product quality or the hassle return process. This also indirectly leads to loss of customers which always goes unnoticed. This also forces the buyer to move to your competitor and you are to lose the customer lifetime value and also the cost of acquiring the customer.

The problem statement is that how reverse supply chain can be used as competitive advantage and how real time players are using it as a profit making strategy rather than focusing on operational losses. Reverse Supply Chain in India is always considered unwanted expenses and organizations do not focus much on developing

Scope of the study

The study is limited to the E-commerce industry standard and is not applicable for other industries. This study does not involve any data collection from primary e-commerce sellers or buyers. The data is derived completely from the secondary sources such as news articles, journals, publications, press releases and company reports.

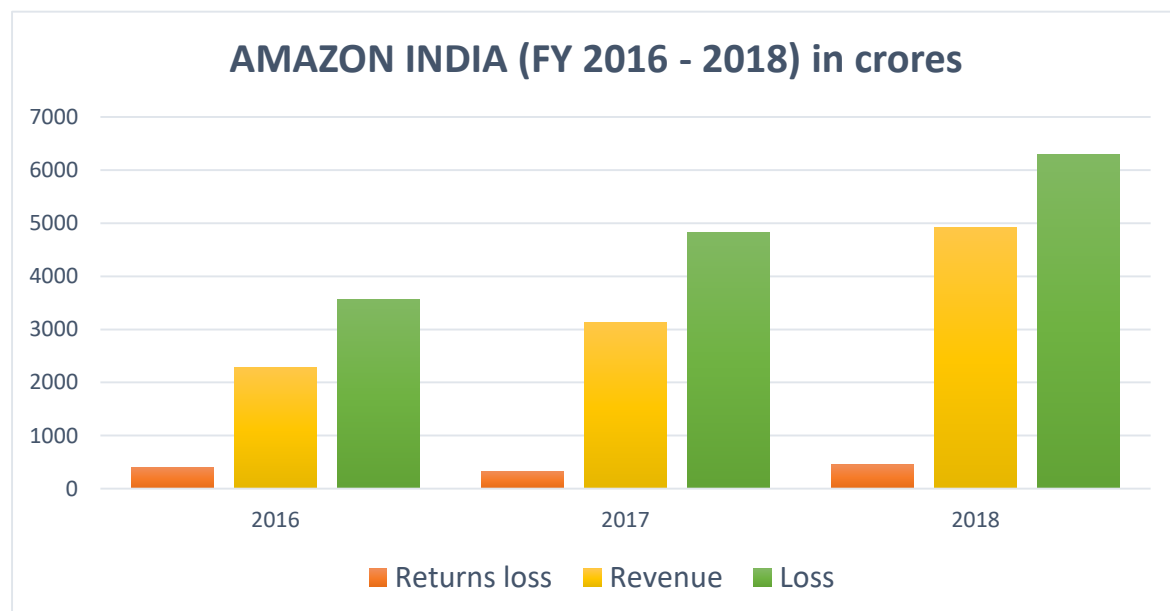


Figure 2 Amazon India (2016-2018)

² <https://www.downtoearth.org.in/news/waste/solid-waste-management-rules-2016-53443>

Research gap identification

Though, there are load and loads of papers and research on forward supply chain and ways to improves the efficiency of the chain is discussed, it is identified the Reverse Supply Chain is least focused or even left out sometimes. This calls for the wider focus into the reverse supply chain concept and the ways to handle the returns efficiently. (Srivastava, 2017) explains the ways in which return products can be collected and aggregated and also the ways in which the value can be obtained from the return products.

Costs incurred in Reverse Logistics is always higher than the regular supply chain, which is around 10-15 % of product cost. When it comes to apparel industry, which is the highest contributor to e-commerce, the cost of returns is around 40-45 % which reduces the revenue which already works on a very thin profit margin.

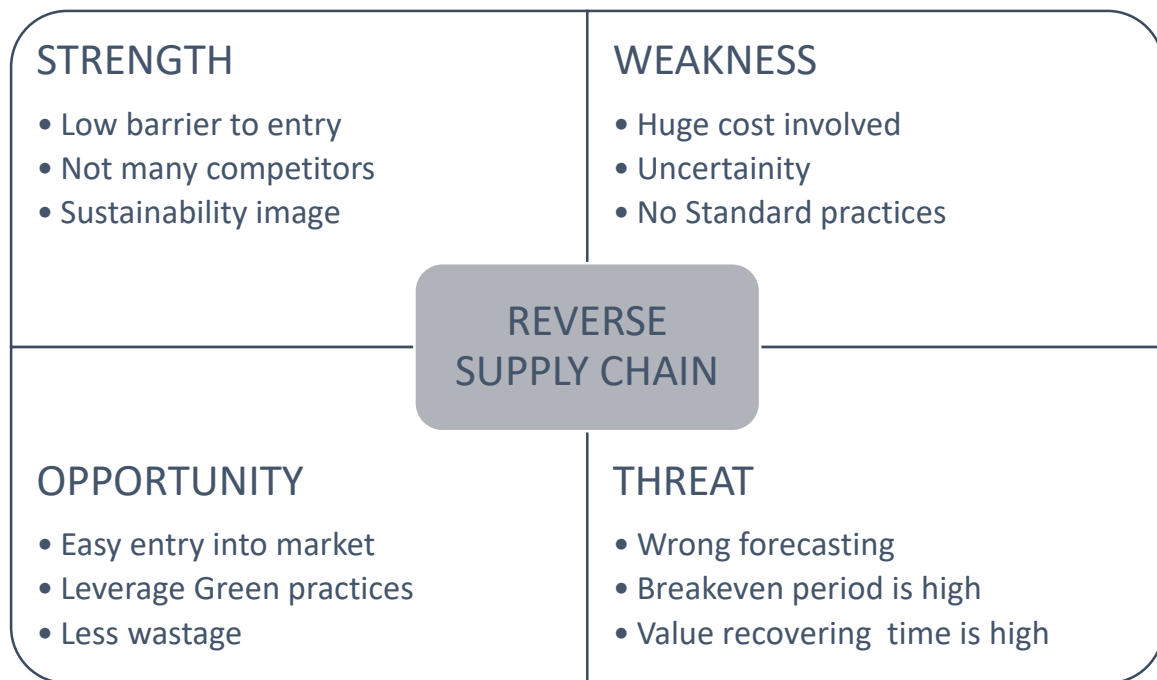


Figure 3 SWOT Analysis of Reverse Supply Chain

Objectives

The objective of this study is to study the reverse supply chain practices, reason for having an efficient reverse supply chain and to compare the reverse supply chain practices in India and other developed and developing nations who perform the process effectively and efficiently. It is also to bring out how Indian retailers can make use of the Reverse supply chain process to add revenue to the organization in all aspects. For this study, some data points of Indian e-commerce players and US e-commerce player Walmart have been used in the study.

REVIEW OF LITERATURE

Theoretical Framework

(Srivastava, 2017) in their paper “*Reverse Supply Chain Management. Research Gate*” explains the different methods of extracting the value from the products that are returned or reached the end of life cycle and the different ways in which the recycled/refurbished products can be injected into the forward supply chain.

(Kumar, 2011) point out that reverse supply chains are increasingly recognised as important, especially in a service market, where the physical flow of products may occur both in direction (forward and reverse), including the delivery and returns of products from customers.

(Peter Wells, 2006) in their paper, “*Business models and closed-loop supply chains: a typology. Supply Chain Management: An International Journal*” explains the importance of closed-loop supply chains, that add more value to the organization in the context of sustainability. The closed supply chain practices help the companies in empowering as the competitive advantage in employing reverse supply chain practices.

(Ismail Erol and Meltem Nurtanıs, Veliog˘lu, 2007) in their research “*Exploring reverse supply chain management practices in Turkey*” published in *Supply Chain Management: An International Journal* explains the exploratory research conducted in Turkey companies on different verticals such as Automotive, White goods, Furniture brought out the value additions in employing Reverse Supply Chain practices in the organization. The constraints such as Internal and external factors are common to all industries.

(Wassenhove, 2005) in the article *The Reverse Supply Chain* published in *Harvard Business Review* states the importance of having a coordinated forward supply chain that leads to having a well established reverse supply chain. The RSC is divided into five key components such as Product Acquisition, Reverse Logistics, Inspection and Disposition, Reconditioning, Distribution and Sales and analysed the impact on every factor.

(Satya Shah 1, 2019) In their paper “*The Global Perception of Industry 4.0 for Reverse Logistics*” explains that Industry 4.0 encompasses improvements throughout the reverse supply chain such as reduced time of transactions, improved quality of products, security of information, transparency of the movement of goods allowing customers an opportunity to trace orders with ease. Dealing with returns will be dealt with faster as there will

be more effective communication within the supply chain. With use of Industry 4.0 reverse logistics will bring increased revenue for business and maximized satisfaction and cost saving to the customer because the 4th revolution technology unlike previous inventions, encompasses more software such as I-cloud and many others to connect cyber and physical.

(Ramanathan, 2011) in his paper “*An empirical analysis on the influence of risk on relationships between handling of product returns and customer loyalty in E-commerce*” explains the significance of performance in terms of product returns on customer loyalty is higher for low-risk products, and also the significance of performance in terms of product returns vary depending on risk characteristics of products (significant for low-risk and high-risk products and not-significant for medium- risk products)

RESEARCH METHODOLOGY

Research Design

Exploratory Design

From the early days of Forward Supply Chain studies on efficient and effectiveness, Reverse Supply Chain is given very little focus pertaining to the complications involved within the concept and the real time practise of the concept is less or nowhere present. Hence, this results in very less availability of data and insights and so this study has to be an exploratory research design to know more about the concept in details. This can at most answer basic questions such as “What, Who, Where, Why, When, How”.

This study tries to focus on the concept in a broad manner as if, how the organizations can leverage on the concept of reverse supply chain in their day to day activities.

ANALYSIS

When it comes to E-commerce in India, the industry is still unpenetrated with only 50 million online shoppers, of whom only 20 million are active monthly purchasers. Along with this, there are many government interventions needed in order to regulate the E-commerce payment gateways and other security issues before people begin to have belief in E-commerce.

Figure 4 explains the number of internet users in India from 2015 – 2021 which is estimated. The sudden rise in 2017 is fairly because of the introduction of reliance Jio in India, which provided free internet services for its customers. This in turn increases the usage of internet by middle class working people which is the highest in the pyramid of Indian

population. This in turn opened ways to social media access, YouTube streaming and then the e-commerce. Only after 2016, Indian e-commerce users of different organisations such as Flipkart, Amazon, Snapdeal and others grown rapidly. As of July 2018, the number of transactions in e-commerce retail was around 1.2 million per day and on e-commerce platforms was 55-60 million per month.

In India, the major E-commerce giants Flipkart and Amazon files their annual reports with more loss percentage. Since inception of these 2 brands, the annual revenue, the registered customers, number of orders increase, but the profit is never achieved. This is influenced by many unknown and hidden factors that are not visible to the naked eye to the organisation or even the people working in the department.

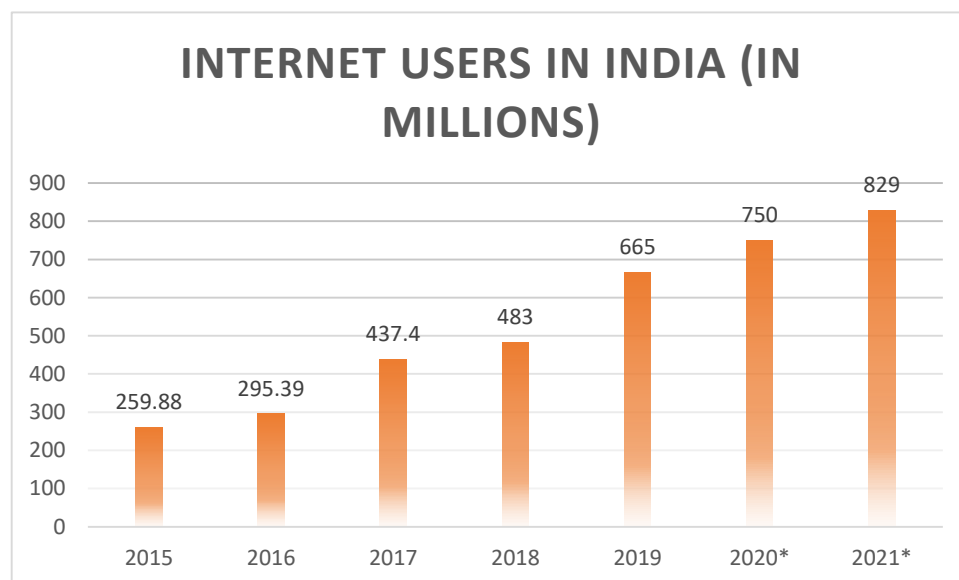


Figure 4 Internet users in India (2015-2021*)

Reverse Supply Chain as Competitive Advantage:

Competitive advantages³ are conditions that allow a company or country to produce a good or service of equal value at a lower price or in a more desirable fashion. These conditions allow the productive entity to generate more sales or superior margins compared to its market rivals. Competitive advantages are attributed to a variety of factors

³ https://www.investopedia.com/terms/c/competitive_advantage.asp

*estimated number of internet users in India for the period 2020 and 2021

including cost structure, branding, and the quality of product offerings, the distribution network, intellectual property, and customer service.

In business, a competitive advantage is the tool that allows an organization to outperform its competitors. In days when there is a cut throat competition in everything an organization do, holding a competitive advantage is not an easy thing. With the help of Reverse Supply Chain, this competitive advantage can be explained for the company.

Addition to this, with the focus on Climate change problems and other catastrophic events occurring then and there across the world, a company that can boast on its sustainable practices is always a Competitive advantage. Given the Paris Agreement 2015⁴ and many other Agreements between nations and super powers, the unsustainable practise are questioned these days.

Reverse logistics networks often have many suppliers in the form of owners/users of products from whom products are collected for recycling, far more than in many forward supply networks. In addition to that, the condition and configuration of the returned products is often uncertain, the packaging of the returned products is generally more problematic, the cooperation of the suppliers is much more essential and often the collected products have a comparatively low value. In case a new network for reverse logistics has to be setup, decisions have to be made with respect to the number of players in the network, the number and locations of intermediate depot spots, the use of drop points for collecting the products, the integration with the forward network of new products, and the financing of the network.

In a research case⁵ a few years ago, the McNeil Laboratories, division of Johnson & Johnson experienced a serious threat when someone poisoned several people by placing cyanide inside bottles of Tylenol, a Johnson & Johnson flagship product. This disastrous act happened twice in the gap of a few years. The second time, Johnson & Johnson was prepared with a fine-tuned reverse supply chain system and immediately cleansed the channel of any possibly tainted product. Because Johnson & Johnson acted so quickly and competently, a mere three days after the crisis, McNeil Laboratories experienced an all-time record sales day. Without a doubt, the public would not have responded so positively if Johnson

⁴ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

⁵ <https://www.nytimes.com/2002/03/23/your-money/IHT-tylenol-made-a-hero-of-johnson-johnson-the-recall-that-started.html>

& Johnson not been able to quickly and efficiently handle its recalled product through its existing system in reverse. Clearly, the Tylenol incident is an extreme example, but it illustrates how reverse supply chain capabilities can be strategic, and how they can impact the firm dramatically.

Reverse Supply Chain in E- Commerce:

In India, E-commerce is a disruption compared to the traditional practices of visiting the store physically and deciding on purchases. The country's e-commerce revenue is expected to jump from US\$ 39 billion in 2017 to US\$ 120 billion in 2020, growing at an annual rate of 51%, the highest in the world market. This sector is mostly dominated by Flipkart India followed by Amazon India and small players like Paytm, Snapdeal and Myntra. This industry is valued at a very high price, but the profit making is very dipped from the day of starting the operations. In Figure2, the returns⁶ in Amazon India purchases has been included compared with the Revenue and the Loss figures. The World leader in E-commerce, WalMart acquired more than 50% stakes in Flipkart, showing their interest and footprint in Indian E-commerce market.

With the introduction of subscription based Internet services by Tele operators, India stands at 665.31 million subscribers in June 2019. With the recent visit by Jeff Bezos to India, it seems that Amazon is going to invest in Indian MSME's for their digitization process. Hence the road ahead for all the players is going digital. This undoubtedly, increases the sales and so the return rates by the customers and there have to be an efficient Reverse Supply Chain practices to handle the returns and gain value from it.

Product acquisition

The task of retrieving the used product is key to creating a profitable chain. The quality, quantity, and timing of product returns need to be managed regularly. If not, the companies may find themselves flooded with returned products of variable quality and quantity so that efficient remanufacturing is not possible. Companies will need to work closely with retailers and other distributors to coordinate collection in reverse supply chain.

Transportation

Once collected, products need to be transported to manufacturing facilities for inspection, sorting, and disposition. There is no one "correct" design for a reverse logistics network; each

⁶ http://www.annualreports.com/HostedData/AnnualReports/PDF/NASDAQ_AMZN_2018.pdf

has to be tailored to the products involved and the scale of their reuse. Bulky products like tires, for instance, will require different handling than small, fragile products like cameras. Companies should consider not only the costs for transporting and storing the materials but also how quickly the value of the returned products will be declining and the need for control over those products. It always make sense to outsource the logistics to a specialist.

Inspection

The testing, sorting, and grading of returned products are human labour-intensive and time consuming work. But the process can be streamlined if a company subjects the returns to some quality standards and use sensors, bar codes, and other technologies to automate tracking. Generally business should seek to make disposition decisions based on either quality, product configuration, or other variables—at the earliest possible stage in the reverse supply chain. That can eliminate many transportation costs and get remanufactured products to the market faster.

Refurbishing

Companies may capture value from returned products either by extracting and reconditioning components for reuse or by remanufacturing the products for resale. Reconditioning and remanufacturing processes tend to be much less predictable than traditional manufacturing because there can be a large degree of / uncertainty in the timing and quality of returned products. Making smart decisions early in the chain in particular, when you accept and sort returns will help to reduce manufacturing variability and also the costs involved.

Distribution

If a company plans to sell a recycled product, it first needs to determine whether there is demand for it or if a new market must be generated. If it's the latter, the company should expect to make heavy investments in consumer education and other marketing efforts. Potential customers for remanufactured products or components include not just the original purchasers but also new customers in different markets. The company may, for example, want to target customers who cannot afford the new products but who would jump at the chance to buy used versions at lower prices.

In a research conducted by Competition Commission of India (CCI), it is found that people choice of online marketplace also depends on return policy. This makes sure that people are concerned about the hassle free returns process.

Some big players in India like Amazon and Flipkart have their festivals sales, which always see a huge spike in orders and revenue. With the hike in sales orders, there are also more returns which are not focused much. From fig 5, it is seen that Electronics and Apparels lead the list in more purchase categories. This increases the chances of more returns, because of apparels mismatch of size and colour is always prevailing. These returned products have to move back to inventory quick in order to sell the product. But this is not happening in Indian context. The returns are again piled up in the inventory and this keeps up the operational costs. In the context of electronics, product specifications seen in website and real time is always varying and this makes it harder for customers to accept the product.

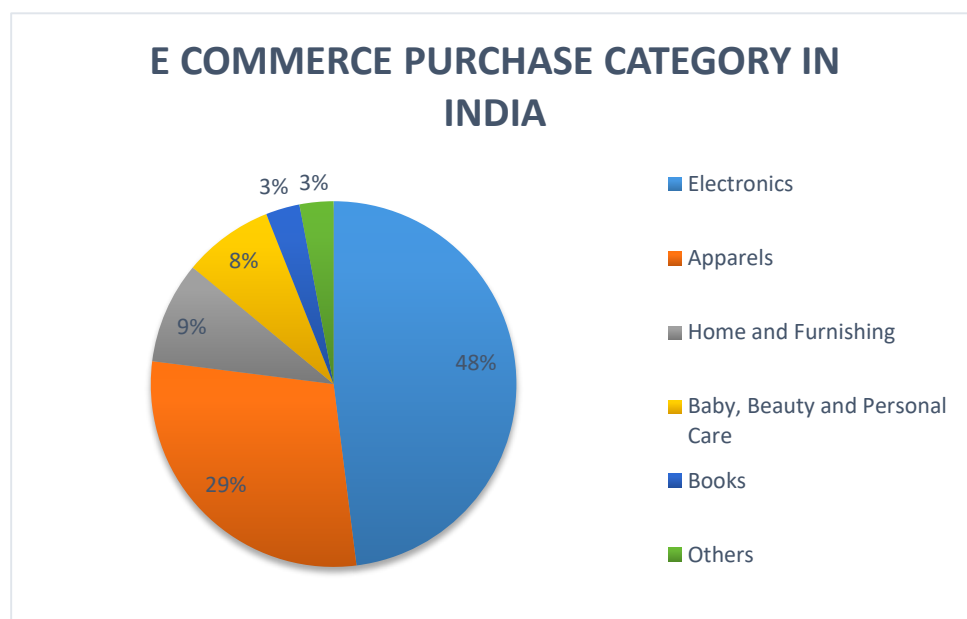


Figure 5 E-Commerce in India

Ways to Measure Reverse Supply Chain Performance

Proportion of Returned or Resold products

The percentage of total returned or resold products to the total sales volume. This gives an outline of how products are generally performing in the market and the most returned product type can be removed from the store in order to reduce return rates.

Percentage of Recycled Materials

The percentage of possibly recycled materials out of all the materials sold gives the rate at which recycling is done to gain some value from the returned products.

Handling cost per item

This metric can be easily calculated by dividing the total facility cost per month by the number of manufactured items. This can give a clear picture of the efficiencies of different facilities.

Energy used in the total process

Often a large number of energies like fuel, electricity, manpower used in the return process. So, this factor in reverse logistics may be used to monitor the costing.

The reverse distance travelled

Track the average distance travelled by the item reaching you. The lesser the time, the better.

Product/material wasted

Measure how many products are moved to repairs and how many are scrapped as a waste. The objective to measure this is to minimise the product wastes.

Percentage of cost recovered

What is the ratio of the actual value of the product and the amount recovered from the return? Is the firm maximising the profitability from the returned item or making a loss out of the same?

To make reverse supply chain efficient and to make revenue from the process the most important factor is to reduce the difficulty in return process. The shorter and cleaner the process – better the result. Longer the return product stays in the chain, less will be its value when reaches the market. The speed defines your strength and commitment towards your customer. 92% customers⁷ will buy again from you if the return process is simple. The process of reverse logistics can be made effective by keeping some critical elements into account while creating a reverse logistics process.

While creating your return policy, one need to consider how it can impact your overall sales, your brand name and reputation in the mind of your audience. The

⁷ <https://ithinklogistics.com/blog/a-complete-guide-on-e-commerce-reverse-logistics/>

policies should encourage your audience to buy from your store without disturbing your overall profitability.

WALMART AND ITS RETURN POLICY

Walmart is an American retail company that has its own online marketplace, local hypermarkets, and departmental stores. Walmart has around 11,438 stores and clubs in more than 25 countries and operating under 55 different names. In 2019 Forbes listed Walmart as the world's largest revenue generating company, estimated about US \$514.50 billion. As of March 2019, Walmart is operating in more than 11,695 retail units in an increasing number of countries and has e-commerce websites in several other countries. To explain their retail presence, it can be said that 90% of American population live within 15 miles of a Walmart store. Using its RFID (Radio-frequency identification) technology at the counter and Electronic product information, it is able to know when, where and how much is needed at a given time and able to maintain an efficient supply chain. Point of sales data of all stores were shared with suppliers in a real time manner and suppliers are always asked to maintain their inventory. This vendor based inventory helps Walmart to receive products at the right time and also the long term relationship with suppliers help them develop their business.

Walmart asks the seller's themselves to define their own return policy, which reduces the cost and also makes it easier for the Suppliers to manage the returns.⁸ One of the important strategy by Walmart in return process is their option to return the products at the physical store even if the product is purchased in online marketplace. This makes the process easier for the customers and they can also purchase some other product for the same price.

To curb the revenue that is lost because of returns, Indian E-commerce giants can focus on efficient Reverse Supply Chain practices that could be applied in a large scale manner. It is the need of the hour since, the number of online purchasers in India is increasing exponentially and this also results in high returns. So developing an efficient reverse supply chain can prepare the company when there is some disruption happening in the E-commerce market.

⁸ <https://www.businessinsider.com/walmart-new-returns-process-2018-8?IR=T>

CONCLUSION

Returns management offers a chance to boost market performance at a time when the marginal cost of improving forward supply chain operations has risen. Also return management provides a variety of revenue sources from auctions, refurbishments, recycling and more. In particular, the reverse supply chain provides a wealth of actionable intelligence that can be used to boost process design and operations. The key is to focus on disposal methods for returned goods and resources, including donation, auction, resale, refurbishment, incineration, and recycling. Selecting one disposal approach over another should be focused on the financial benefits to be achieved as well as non-financial implications, such as brand equity and compliance with regulations.

Reverse supply chain is an important section of any e-commerce business. This period of e-commerce websites and online business has made the implementation of reverse logistics a very necessary thing. There is an alarming need for an efficient strategy regarding **reverse supply chain in India**. This type of supply chain offers sustainable growth and economic advantages.

If there is an online business then it is must for the companies to allow the consumers to return the products. You have to think of an efficient tracking and monitoring system to track the return shipment to make sure of the better service.

Some of the possible ways in which Reverse Supply Chain can be turned into a revenue center are discussed below in the figure 7.

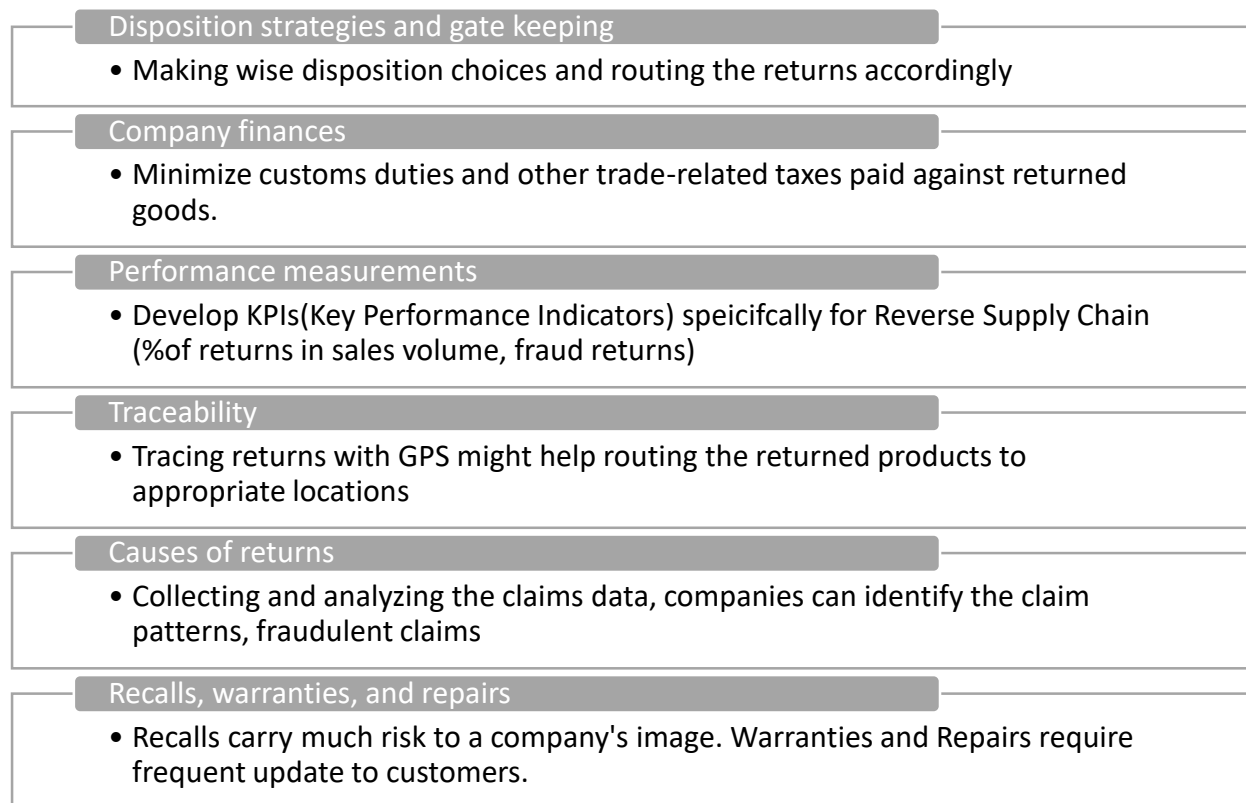


Figure 6 Reverse Supply Chain revenue drivers strategy

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