

A Study on Reverse Logistics Operations In Manufacturing Sector In Tamilnadu

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Abstract- This paper is aimed at presenting the concept of reverse logistics, its activities, functions and challenges in the manufacturing sector in Tamilnadu. Reverse Logistics is a research field focused on the management of the recovery of products once they are no longer craved. In the competitive world of manufacturing, companies are usually searching for unique ways to enhance their process, customer satisfaction and to stay ahead in the game with their competitors. Reverse logistics has been considered as an approach to bring these things to life for the former decade or so. This thesis work tries to drop some light on the fundamentals of reverse logistics and how reverse logistics can be used as a management strategy. This paper points out the basics of reverse logistics and looks into its practical processes and challenges faced by it. This paper explains the actual process and fundamentals and practical challenges faced by the reverse logistics.

Keywords- Reverse logistics, Fundamentals, Practical process, Challenges of reverse logistics activities

I. INTRODUCTION

As a research matter, reverse logistics has grabbed the attention of companies, professionals which has been dealing the problem. This growing interest in reverse logistics in the business community is evinced by an increase in the level of relevant activities in leading sectors such as transshipment, consumer electronics, textiles, and the press and media. In the academic area, most research conducted to date has been focused on tactical and operational aspects rather than on strategic issues. Reverse logistics is a fairly unique concept and not until recently have researchers and logistics companies tried to focus on its effects on the managerial decisions. Also in recent years customer satisfaction has been considered as a very important aspect in the growth of any company and the focus on improving customer satisfaction has increased greatly. And to remain competitive and differentiated the manufacturing organizations are showing speed and reliability in service offering such as

- Replacing defective goods
- Repairing of used products
- Refurbishing the returned products

These services add to the competitiveness of an manufacturing organization operating in a regulatory environment and create customer value by providing a clean environment through reverse logistics services without any extra cost to the customer. Recently researchers have found that reverse logistics can play a vital role in improving customer satisfaction. This section will try to sum up the various definitions of the concept of reverse logistics as given by various companies, logistics experts and researchers. The Tamilnadu companies considered implementing reverse logistics programs in their organization as a strategic-level decision. Volume of products entering the return stream is a key driver of reverse logistics activities. One of the important considerations of this research is that Taminadu companies have primarily adopted reverse logistics due to the economic benefits associated with them. The primary sequences muddled in the reverse logistics process will be defined in this section. This part will also cover the role of reverse logistics and how developing a reverse logistics model for a specific product or group of products will affect the decisions taken by the companies in Tamilnadu. Also how distinct reverse logistics models affect the environmental liability of these companies has been explained in this part of this thesis. To this aim, an overview of the concept of Reverse logistics is given as well as brief reviews of the main contributions in this area are explained.

II. BACKGROUND

According to the concept of reverse logistics which has evolved over the years. Several definitions have been recommended for the concept of reverse logistics however, the proposal of the European Working Group on reverse logistics appears to be the most complete. This research group interpreted reverse logistics as *'the process of planning, implementing and controlling backward flows of raw materials, in process inventory, packing and finished goods,*

from a manufacturing, distribution or use point, to a trace of recovery or point of proper disposal’.

The growing interest in this area can also be observed in the number of reviews published in recent years, which can be checked to obtain a more detailed view of this field.

One of the seminal works on product recovery management is where the authors provide statement of product recovery options, distinguishing between them.

According to the reprocessing process: reconstructing, refurbishing, remanufacturing, cannibalization, reclaiming. It is one of the key papers on this topic by providing a thorough review of the main Operational Research models for reverse logistics focusing on three crucial issues: distribution planning, inventory management, and production planning. It is a clear contribution to this field by providing a characterization of product recovery networks in order to their topology, economics, parties tangled and decision and control issues, and categorizing them in three divisions according to the recovery process: bulk-recycling networks, remanufacturing networks, and reusable item networks.

Reverse logistics has been found to play a vital role in almost any manufacturing firm, regardless of size, product and geographical reach of the firm.

III. FUNDAMENTALS

The fundamentals of Reverse Logistics by analyzing the topic from by following points,

- Why are things returned?
- Why do companies get engaged in reverse logistics?
- How Reverse Logistics works in practice?
- What is being returned?
- Who is executing reverse logistics functions?
- Why do companies get tangled in reverse logistics activities?

In general companies get engaged in reverse logistics because they can get profit from it.

IV. DRIVING FORCES OF REVERSE LOGISTICS

- Economics (direct and indirect)
- Legislation
- Corporate citizenship

Economics Reverse logistics programs bring both direct and indirect gains. Some parts of the returned product maybe recycled to manufacture new products, thus reducing the manufacturing cost, Value added recovery.

Legislation In many countries customers are legally entitled to return the product and legislation states that the companies are responsible for recovery as well. And sometimes companies themselves engage in recovery programs to keep or create a clean and green picture.

Corporate citizenship Many companies take responsibility for the safe disposal or recycling of their products to maintain the environment safe. Often companies get engaged in recovery and recycling programs and generate awareness among their customers as well.

Why are things returned? Customers return the products for several reasons. Products once bought may be returned due to physical damage, some of them are returned because the customers are unhappy with the functionality of the product, sometimes customers return products because they find an alternative product with superior functionality after they have made the purchase, sometimes customers misuse the return policy and return it without any reason. These are only some of the major reasons for the return of a purchased product by majority of the customers.

V. PRACTICAL PROCESS

The process deals that how the value recovered from the products that are returned back to the manufacturer. Recovery is actually only one of the activities involved in the whole reverse logistics process. First there is collection, next there is the combined inspection and selection followed by sorting process then there is recovery and finally there is redistribution. Collection refers to bringing the products from the customer to the point of recovery. At this point the products are tested that is their quality is examined and a decision is made on the type of recovery. Products can then be sorted and routed according to the recovery that follows. If the quality is as good as new products can be fed in the market almost immediately through re-use, re-sale and re-distribution. If not, another type of recovery may be involved but now demanding more action in the form of re-processing. Re-processing can occur at different levels: product level (repair), module level (refurbishing), component level (remanufacturing), selective part level (retrieval), material level (reprocessing) and energy level.

VI. ACTIVITIES

All the activities that a company carries out to collect the used, damaged, unwanted, or obsolete products, as well as packaging and shipping materials from the end-user or reseller can be considered as reverse logistics activities. Once a product has been returned to the company, the firm has various disposal choices from which to choose. Among the many options firms have to do with the products returned, the first choice would be to return it to the supplier for a full refund. Often products that haven't been used can be sold to a different customer, or maybe sold through a different outlet store, if the products are not sufficient quality they may be sent to a salvage company which will export it to a foreign market. And if the product cannot be sold if the firm can significantly increase the selling price by reconditioning, refurbishing or remanufacturing the product, the firm may perform these functions before selling the product. These operations may also be performed by a third party firm that specializes in the field of reconditioning. Finally if none of these operations can be performed, then the manufacturer can pop to find which components of the product can be reused to manufacture new products, and the rest can be sent to recycle or landfill.

VII. PERSONS INVOLVED

The three important participants in the reverse logistics activities are

- Forward supply chain actors
- Specialized reverse chain players (jobbers, recycling specialists etc...)
- Opportunistic players

In any reverse logistics chain two or more of these players are always involved. Often, one or two of these participants play the major role while others act merely as intermediate junctions.

VIII. OVERVIEW

Once a product enters the reverse logistics flow, the logistics manager has to decide where the product has to be sent: either returns to vendor or to the landfill or to the secondary market. There are several reasons why a product enters the reverse logistics flow. The source for the reverse logistics is customer if the Product did not meet customer's needs and if the Customer did not understand how to properly use the product or if the Product was defective or the Customer abuse of liberal return policy. The source for the reverse logistics is retailer because Product packaging is outdated, Seasonal product, Product replaced by new version, Product discontinued., Retailer inventory too high i.e., overstock, marketing returns, or slow-moving, Retailer going

out of business. Often, two identical products will follow different routes to different destinations, depending on where in the distribution channel they enter the reverse logistics flow. One such example, a book that is returned to a store by a customer may not end up at the same place as a book returned by the store to its supplier due to overstocking. Neither of these books may end up in the same place as the books returned by the distributor. When a product has been recouped by a new version, a retailer may remain to sell the old version until it is gone, perchance at a discount. The product may never enter the secondary market. If the product does enter the reverse logistics flow, the firm may sell it to a liquidator for a relatively high price. This may be especially true when the new product represents only a minor, incremental improvement over an already popular product. On the other hand if the changes are significant, then the manufacturer may offer an incentive to sell of the remaining products. Often when this happens the retailer may take down the old product and sell it off to the secondary market. When the product has not met the expected sales, manufacturers often find it difficult to sell them to the secondary market even at a greatly reduced price.

IX. RETURN PERCENTAGES OF PRODUCTS IN MANUFACTURING SECTOR

PRODUCT TYPE	PERCENTAGE
Greeting Cards	20-30%
Electronics	10-12%
Computers	10-12%
Auto Industry parts	4-6%
CD-ROMs	18-25%
Consumer Electronics	4-5%
Household Chemicals	2-3%

X. RETURNED PRODUCT TYPES

1. Close-outs: first quality products that the retailer has decided to no longer carry
2. Buy-outs or "lifts": where one manufacturer buys out retailers' supply of competitor's product
3. Job-outs: first quality seasonal, holiday merchandise
4. Surplus: first quality excess stock, excess run, marketing rebounds, slow-moving merchandise
5. Defective: products discovered to be defective;
6. Non-Defective Defectives: products thought incorrectly to be defective
7. Salvage: damaged items,
8. Returns: products returned by customers.

XI. RETURNS MANAGED

Return management is the process of returning product as well as the transformation of the product back to reusable condition. Returns Management uses tools and systems to maximize profits in the process.

1. Return to Vendor.
2. Sell as new
3. Sell via Outlet or Discount
4. Sell to Secondary Market
5. Donate to Charity
6. Remanufacture/Refurbish
7. Materials Reclamation/Recycling/Landfill

Based on the quality of the returned product, contractual obligations with the vendor, and the demand for the product, the manufacturer has one or more of the above options to dispose the returned product.

Return to vendor

Often the vendor offers incentives for large orders, and retailers buy products in bulk. If the product doesn't do well in the market the retailer returns the products to the vendor.

Similarly if a customer returns a product because of a defect or claiming that it has a defect, the manufacturer would like to take it back so as to avoid such defects in the future, and also this way they can avoid non-defective defectives. Another apprehension the manufacturer would like to take back the product could be to avoid cannibalization of the parts and keep the brand name clean. Because usually what happens is the product is sent to a secondary market where cheap parts are installed on the product and sold at a reduced price at a flea market or dollar store

Sell as New

Some of the returned products are either unused or unopened; in such cases the manufacturer can repackage and sell it as new to the retailers or an outlet store, depending on the demand of the product. On the other hand some products like circuit breakers are not legally allowed to be sold once it has been returned even if it has been installed for a short period or never been installed at all.

Sell via Outlet or Discount

If the product has been returned, or if the retailer has too large an inventory, it can be sold via an outlet store.

Selling through outlet fount has a number of advantages like maintaining control over the products, and the knowledge of where the products are being sold. This helps firms in sustaining their brand name. Often outlet stores offer a large margin than the retailers, because the ultimate goal here is to clear out inventory.

Sell to Secondary Market

When a firm has been unable to sell a product, cannot return it to the vendor, and is unable to sell it at an outlet store, one of its final choices is to sell it through the secondary market. The secondary market consists of firms that specialize in buying close-outs, excess, and salvage things, at prices as low as ten cents on the dollar.

Donate to Charity

The products that cannot be sold to the retailers or vendors, because they need slight repair or cosmetic changes, manufacturers may choose to donate them to a charity. In this point the manufacturer does not get any money, but the image of the company will have a positive effect as a good corporate citizen.

Remanufacture/Refurbish

Before a product is sent to recycling the manufacturer has the option to see if it can be repaired or reconditioned by either replacing parts of the item or by making cosmetic changes, so that it can be sold to the secondary market where they will be sold as reconditioned goods or remanufactured goods. But it is also necessary to make sure the product has never been used by the returning customer, because no matter how well the refurbishing or reconditioning process is it cannot be sold in some markets.

Materials Reclamation/Landfill

There are several reasons for sending an item to the landfill for example some goods cannot be resold in any form due to safety regulations. Another reason is when the manufacturer has found that there is no way to get any value from the returned item. The final option is to send it to material reclamation to take out the parts which can be recycled for material or the part itself. The other option is to recycle the material, like parts made out of plastic, metal etc...The last option is of course to send it to landfill.

The items generally sent to landfill are considered as waste material, and which has no use to anybody. The manufacturer of course has to make sure to take necessary safety precautions before sending it to the landfill like

refining, cleaning, and separating hazardous and non-hazardous material. Making the right choice any of the choices described above can be successfully applied individually or in combinations by the manufacturer. The substitutes range from high cost and high management maintenance to profitable and low management maintenance. Making the correct choice needs the ability to define the expected outcome, use the correct technique or combinations of the techniques and tools for each situation, and then distribute the results as planned using the resources. Often companies use software and web based tools that help locating, tracking, and managing products as they are returned. However these solutions only help to get the product returned efficiently.

Product quality still needs to be ensured to prepare it for the resale options. Outsourcing often generates more value provided a partner who has strategic value and can implement processes that fit the business need for the parent company is selected. The questions that need to be asked by the parent company can be along the lines of “How can you create a comprehensive returns management plan for our products that: helps to reduce the number of returns that must be dealt with from our customers, transforms inherently negative customer experiences into a valuable strategic asset, and generates profits from returns that were previously a loss In summary the critical points for returns management are: Prevent returns from occurring in the first place.

Look beyond the immediate challenge:

Develop a holistic solution that will address returns from multiple angles and will likely provide benefits that extend far beyond the area of reverse logistics. Returns management solutions must account for a variety of factors like business models, product type and market geography. These should minimize or eliminate costs, or generate a profit. The most productive solutions are developed from a grounded approach that is based on business needs that are comprehensive and forward looking.

Reach for profits from product returns; the options for getting real value are available for many product returns. These options should be evaluated by internal and external expertise to rethink the existing process.

XII. CHALLENGES

Ill-defined processes

Too many touch points-A high number of touch points significantly increases the chance that the condition of the product will deteriorate. Long cycle time-A high number

of touch points in turn increases the cycle time which in turn increases the waiting time for the customer’s return order. It also provides little time to recondition, repackage and resell the product. Missing feedback mechanism-Incompetent business intelligence leads to incompetent reverse logistics, and not being able to trace the problems that affect the reverse logistics.

Neglect

Out of focus-Previously management executives believed that making returns easier for the consumer increases the behavior of returning until it was found out to be profitable for the companies recently by researchers. Dispersed view-The existence of multi-channel returns leads to price aberrations, missing item-data or simply an inadequacy of cross-channel visibility of purchases. Limited visibility-Often there is little or no information given to retailers by the firms about the inventory in their returns pipeline which leads to bad planning.

Retailer-Manufacturer conflict

One of the difficulties in managing returns as the difference between manufacturers and retailers. According to them the retailer and manufacturer may disagree on any one of the following: Condition of the item Value of the item Timeliness of response Usually when retailers send back products to the manufacturer, they believe the products to be in pristine condition, and that any losses must have occurred during transit or must be manufacturing defects. On the other hand the manufacturer may suspect the retailer of abusing return privileges because of poor planning, or of returning product damaged by the retailer. Further, the manufacturer and retailer must agree upon the value of the returned item. While the retailer may expect a full credit for the return, the manufacturer may think otherwise. Both retailers and manufacturers want to get rid of the excess inventory because each one has an issue with it. While the retailers would like to return it at the end of a quarter to reduce inventories, the manufacturers can be slow to recognize returns as a subtraction from sales. Sometimes the retailer simply deducts the cost of the items from an invoice. Often, that invoice is not the similar one for the goods being returned. These conflicts have to be resolved by mutual understanding to develop a better partnership, as one cannot exist without the other.

XIII. CONCLUSION

This project has tried to put together the basics concepts of reverse logistics and the activities involved in reverse logistics process. Reverse logistics is not only an

interesting issue for researchers, yet also for companies and professionals who are considering the recovery of end of use products as a business opportunity, who are taking these functions into account in their strategic processes of decision making. It is further recommended for these companies that they pay more attention to the reverse logistics processes as the cost for reverse logistics is around 5 to 10% of the total costs for logistics which is a small percentage but nevertheless an opportunity for improvement. And it is important for any company to try to continue improving their process if it has to survive for a long period in the market.

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