Reverse Logistics- Gaining Traction in India

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Letter of acceptance

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Subject:-Willingness for Guiding Dissertation of Mr. Jairam Gundu- 500063478.

Dear Sir,

Mr. Jairam Gundu is registered for MBA- Logistics and Supply chain management, with the University of Petroleum & Energy Studies, Dehradun in July 2017 batch. I hereby give my acceptance to guide the above student through the Dissertation work in Reverse Logistics in supply and distribution, which is a mandatory requirement for the award of EMBA degree.

Thanking You.

Yours Sincerely,

Mr. Pradhyumansinh Jadeja

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Abstract

In the economical domain of producing, companies are repeatedly looking for new ways to develop their process, customer satisfaction and stay ahead within the game with their competitors. Reverse logistics has been considered an approach to bring this stuff to life for the past decade approximately. This paper work tries to shed some light on the fundamentals of reverse logistics and the way reverse logistics is used as a management strategy in India. This paper points out the essentials of reverse logistics and appears into what quite decisions today's logistics managers need to tackle an each day for the enhancement of their logistics model. A growing distress has been evolving to regulate escalating global pollution, this paper also brings out a number of the results of reverse logistics decisions on the environment and contrariwise. The paper starts out by collecting the works of researchers and logistics experts within the field of logistics within the speculative background section. The response rate was 73.8%. Primary data was collected through questionnaires. The results indicated that, reverse logistics practices would enhance the competitiveness of producing firms. Further this study found that thanks to lack of awareness on the importance of sustainability, there's a coffee level of adoption of reverse logistics practices in India. This study recommends that organization should implement and adopt reverse logistics practices. Because it would decrease the waste, increase cost savings thus improving competitiveness. This study further recommends that the govt. and every one stakeholders within the manufacturing sector should do public awareness campaigns on the importance of environmental conservation because it would motivate the locals to become active participants towards the implementation of reverse logistics practices.

The Study was experimental and was conducted on Pharmaceutical, Automobile and Newspaper industry. The interviews were conducted with the next people:

(a) The employees working in respective organization(s),
(b) The distributors and
(c) The retailers.

Reverse logistics may be a newly rising phenomenon, during which limited research has been done thus far. I even have gathered information about the Reverse Logistics from Supply Chain Management course taught at UPES additionally as data available on Internet and from reference books. However, the sensible implementation of Reverse Logistics in Indian market was gained through Interviews from different markets. The first focus of this project is to work out current practices and develop awareness regarding reverse logistics practices within the local Indian market.

We have recognized some variables that are the source to look for the practices on Reverse Logistics, getting employed in Indian market; such as: Roles of Reverse Logistics in company tactic, waves of profitability, option of reuse after usage and the obstacles in implementing RL.

1.Introduction

In India, the logistics industry has seen lots of activity over the previous year, particularly following the implementation of products and Services Tax (GST) and therefore the granting of infrastructure status to the current industry. There have also begun to emerge trends of end-to-end amalgamation of logistics services instead of pure-play transport services. On the opposite hand, increasing transportation-related expenses have resulted in businesses outsourcing logistics-related operations like storage and warehousing, non-manufacturing-related processing to 3PL players within the nation.

1.1Overview

What is reverse logistics? It sounds really interesting, isn't it? Within the easiest words, it's managing the merchandise route back to the producers from its end customers. Below are some ways to define the inverse logistics idea: Dale S. Rogers and Ronald S. Tibben-Lemke use the logistics concept provided by the Council of Logistics Management to explain Reverse Logistics within the article "Going Backwards: Reverse Logistics Trends and Practices," August 1998. The logistics definition provided by the Logistics Management Board is: "Process of coming up with, implementing and managing efficient, cost-effective stuff flow, in-process inventory, completed products and associated data from the purpose of origin to the purpose of consumption for client compliance." Therefore, reverse logistics per Rogers and Tibben-Lembke is: "the process of coming up with, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the purpose of consumption to the purpose of origin for the aim of recapturing value or proper disposal." In fact, recovery is simply one amongst the operations engaged within the entire process of reverse logistics. First there's collection, next there's the strategy of mixed inspection / selection / sorting, third there's recovery, and lastly redistribution is happening. Collection means bringing the products to the purpose of recovery from the client. The products are checked at this stage, i.e. their quality is evaluated and therefore the variety of regeneration is set. Reckoning on the retrieval that follows, products can then be sorted and routed. If the standard is (near) "as good as fresh," products are often supplied on the market by re-use, re-sale and re-distribution before long. If not, there could also be another sort of recovery that needs more intervention, i.e. a type of re-processing. Re-processing can happen at various levels: product level (repair), module level (refurbishing), component level (remanufacturing), selective part level (retrieval), material level (recycling), energy state (incineration).

Fig. 1The reverse logistics processes.

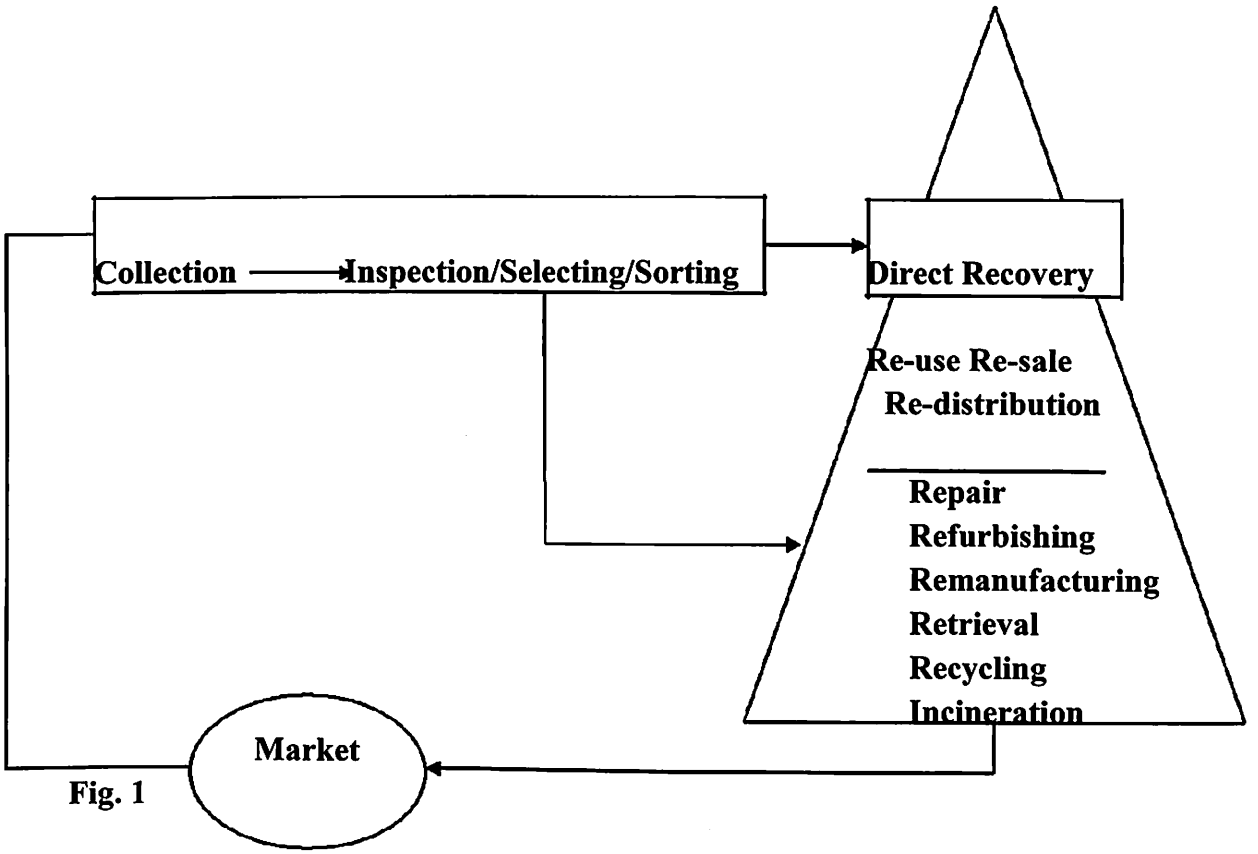


Fig. 1

Once a product enters the reverse logistics flow, it is up to the logistics manager to decide where to send the item: either return to the seller, landfill, or secondary market.

When a product is substituted by a fresh version, a retailer may continue to sell the old version, perhaps at a discount, until it is gone. The item is never allowed to enter the secondary market. If the item enters the reverse logistics flow, the company may sell it at a comparatively high price to a liquidator. This can be particularly true if the fresh product represents only a small, incremental enhancement over an already famous product.If the modifications are important, on the other side, the company can give an incentive to sell the remaining products. Often the retailer can bring the ancient item down and sell it to the secondary market when this occurs.

When the item has not met the anticipated revenues, it is often hard for companies to sell them to the secondary market, even at a much lower cost.

In the reverse logistics stream, Rogers and Tibben-Lembke (1998) classify retail goods as follows:

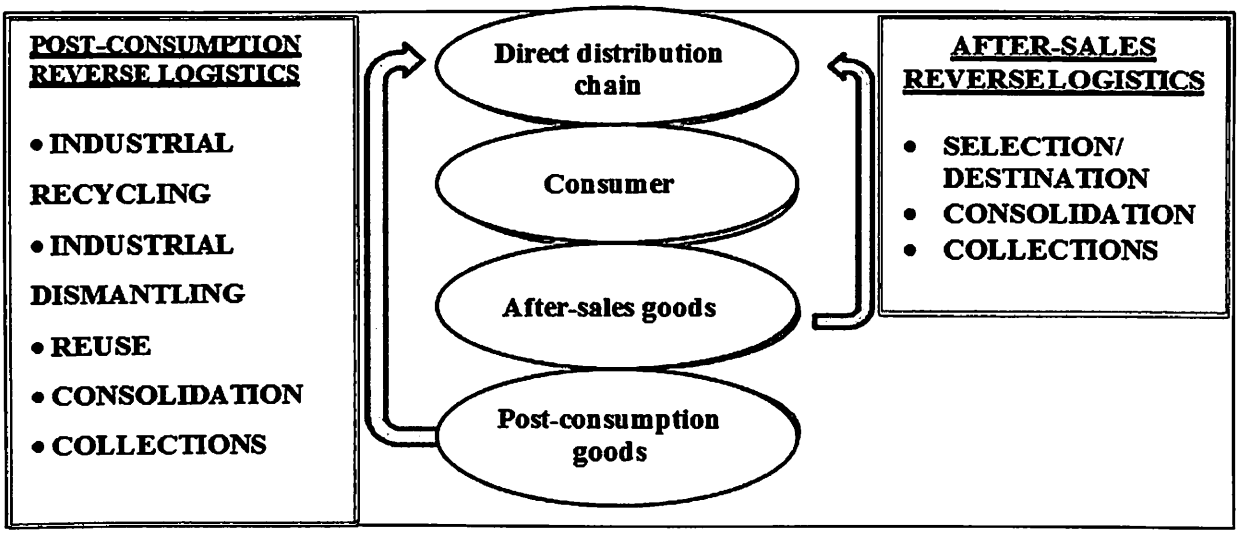
1. Close-outs: first quality products that the retailer has decided to no longer carry.
2. Buy-outs or "lifts": where one manufacturer buys out retailer's supply of competitor's product.
3. Job-outs: first quality seasonal, holiday merchandise.
4. Surplus: first quality overstock, overrun, marketing returns, 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.

The **Table.1** below as given by Rogers and Tibben-Lembke (1998)

Source	Reasons
Customer	1. Manufactured goods did not meet customer's needs. 2. Customer did not understand how to properly use the Item for consumption. 3. Product was substandard. 4. Customer taking advantage of liberal return policy.
Retailer	1. Product packaging out-of-date. 2. Cyclical product. 3. Product substituted by new version. 4. Product superseded. 5. Retailer not performing well.

Often, two identical products will follow different routes to different destinations, looking on where within the channel they enter the reverse logistics flow. One such example as mentioned by Rogers and Tibben-Lembke (1998), a book that's returned to a store by a customer might not find yourself at the identical place as a book returned by the shop to its supplier because of overstocking. Neither of those books may find yourself within the same place because the books returned by the distributor..

The **Fig. 2** Below gives Post consumption and after sales reverse logistics



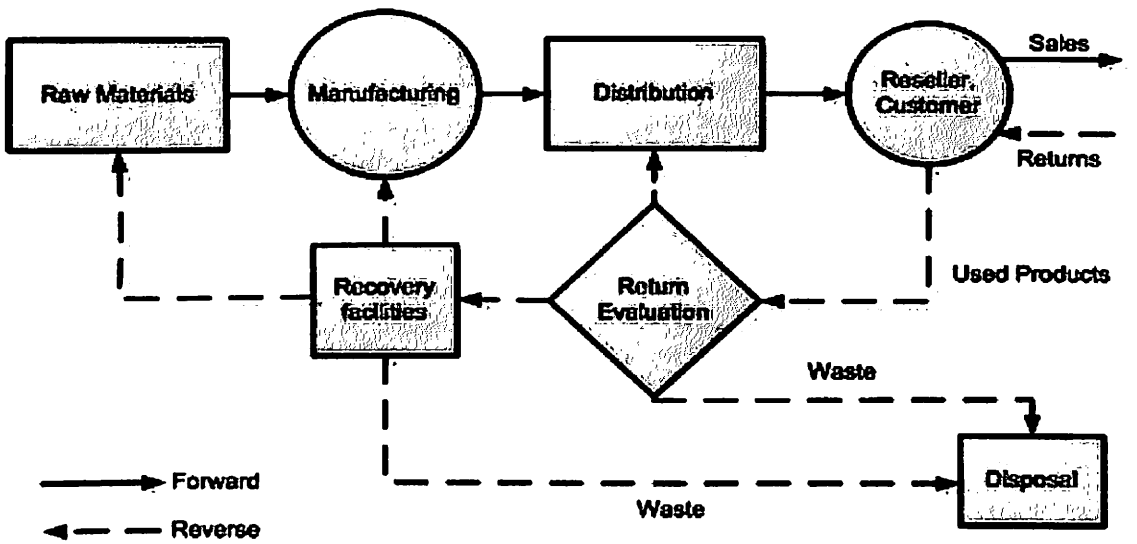
1.2 Background

Competition may be seen in every field nowadays. Companies are always trying to find newer and newer opportunities and defects within the system in order that they may be tackled. Logistics plays a crucial role in any manufacturing firm, because it involves the optimal use of man, machine and material. Reverse logistics could be a small a part of the whole logistics of an organization. Reverse logistics deals with the handling of the products that are being returned to the manufacturer by the customer. It covers all the activities that determine the fate of those returned goods.

This study tries to grasp the essential concepts of reverse logistics. It tries to relinquish a concept of how various researchers and logistics experts have defined reverse logistics. It also covers some basic reverse logistics activities and the way these activities affect the choices that managers should make on an everyday basis in their company. The ever growing manufacturing industries and also the advent of automation has resulted in production and increased the quantity of products released into the market. This exponential growth has resulted within the overuse of the natural resources thus increasing the quantity of commercial waste. This study also sheds some light on what activities within the reverse logistics help companies to figure towards green production and green logistics.

The purpose of study of this project is to grasp the concept of Reverse Logistics and its role within the manufacturing industry in India. It also focuses on learning different aspects of the reverse logistics and the way these aspects affect the choices made by manufacturing firms. The study also tries to appear at the environmental aspects of reverse logistics.

The **Fig. 3** Below gives the reverse and forward logistics processes.



1.3 Purpose of the study

The aim of this project is to know the concept of Reverse Logistics and its role within the manufacturing industry in India. It also focuses on learning different aspects of the reverse logistics and the way these aspects affect the selections made by manufacturing firms. The study also tries to appear at the environmental aspects of reverse logistics.

1.4 Problem Definition

Reverse logistics may well be a reasonably new 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 an extremely important aspect within the expansion of any company and so the focus on improving customer satisfaction has increased greatly. Recently researchers have found that reverse logistics can play a vital role in improving customer satisfaction.

The main focus of this paper would be to answer the following questions:

- What is that the definition of reverse logistics?
- What are the primary stages involved in reverse logistics?
- How do companies fixthe returned products?
- How do the returns affect the alternatives made in manufacturing firms?

• How do environmental problems affect the reverse logistics decisions?

The literature review during this paper gives a transparent picture about the concept of reverse logistics. The paper makes a shot to cover the works of various leading researchers and logistics experts the most amount as possible. Further the questionnaire also has been formulated so on get clear and well defined answers. Through the literature study, interview and survey conducted with logistics and provide chain personnel at some companies, this paper tries to know and analyze the concept of reverse logistics.

1.5 Researchhypothesis.

The stepwise regression method was wont to investigate the connection between firm competitiveness and reverse logistics attributes. Reverse logistics has been found to play a crucial role in almost any manufacturing firm, no matter size, product and geographical reach of the firm. The main target initially was to conduct the survey and interviews in manufacturing firms within India specializing in firms that manufacture FMCG and electronic goods. The explanation for selecting FMCG and electronic goods was because FMCGs are consumed more frequently which increases the importance of logistics decisions to deliver them to consumers. And therefore the reason for selecting electronic goods is thanks to the expansion of electronic products within the market over past 20 years, and therefore the frequency with which newer products reach the market nowadays.
As mentioned within the problem definition this paper will target understanding the knowledge of the participants with relation to reverse logistics, and to what extent they need implemented reverse logistics concepts within their companies and the way this affects their decisions. This paper won't target performance measurement of reverse logistics models followed by the participant companies since it requires lots of knowledge analysis to generalize the concept.

2. Literature Review

A thorough literature study on the subject of this project: Reverse Logistics gaining traction in India was conducted for a brief period. Several articles were found on the subject over the web. After getting somewhat of a good idea about reverse logistics in India, a preliminary set of questions were formulated for the survey. Most of the questions were either taken directly or inspired by the questionnaire developed by Rogers and Tibben-Lembke (1998), for his or her paper "Going Backwards: Reverse Logistics Trends and Practices".

The questionnaire was formulated to attain the subsequent objective:

• Understanding the amount of data of the respondents about the concept of reverse logistics

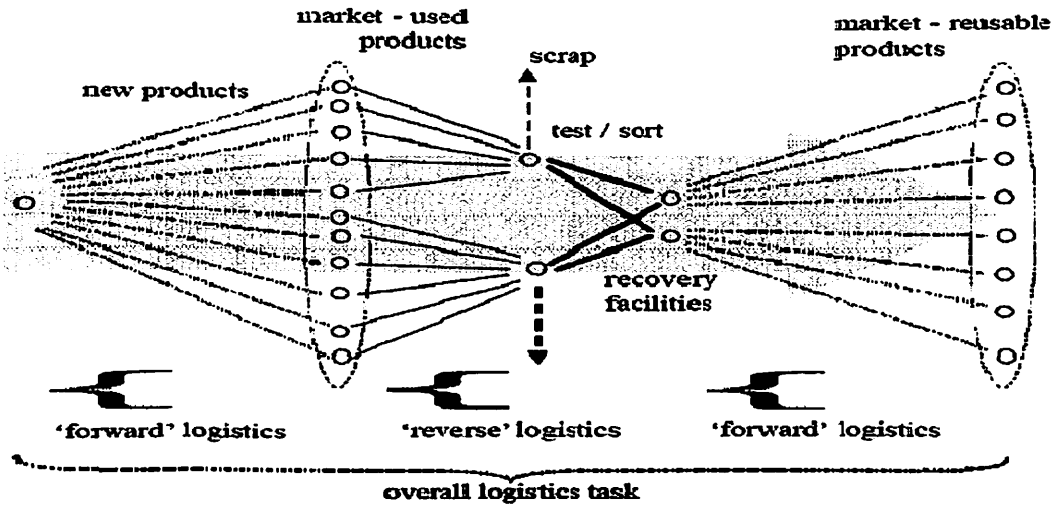
• The economical and customer satisfaction impact of returns within the past year.

• Return policies, if any.

• Decisions made to keep up the corporate environmental friendly.

In this paper a literature review of varied problems concerned with the world of reverse logistics has been allotted. Reverse logistics forms a very important domain in supply chain management. Thanks to growing global competition, increased concern towards green environment and strict legislations, business organizations of the many countries are compelled to use reverse logistics as part of their logistics support in bringing back the products which are supplied to customers after sometime. Reverse logistics briefly is all about recycle, reduce and reuse of products. Within the literature review, the issues are classified into facility location problem, logistics network problem, vehicle routing problem and other problems. Under each problem type, discussions are allotted supported variety of models/algorithms accustomed solve that problem. The project makes an effort to hide the works of varied leading researchers and logistics experts the maximum amount as possible. Further the questionnaire also has been formulated so on get clear and well defined answers. Through the literature study, interview and survey conducted with logistics and provide chain personnel at some companies, this project tries to know and analyze the concept of reverse logistics.

Fig.4 Over all logistics task



2.1Factors critical for success of the study

Based on the review of literature, following variables were identified to be key in finding the practices on Reverse Logistics in various industries in India.

2.1.1 Variables:

- Factors of Reverse Logistics.
- Fail Reasons.
- Role of Returns in Company Strategy.
- Life Span of a typical product (Product Life Cycle).
- Impact on Profitability.
- Reversed Products as share in Sales.
- Possibility of Reuse after Treatment.
- Impact of recycling (if possible) on Quality grade of Final Products.
- Impact of Recycling on Profitability.
- Development of Reverse Logistics Policies and their link with its Performance.
- Formalization of Reverse Logistics Systems as enabler to Performance Improvement.
- Influence of Liberalization of Reverse Logistics Policies on its Capabilities.
- Barriers in Implementing Reverse Logistics systems.

Table-02: Variables in Consideration

Cost Based	Performance Based
Life Span of a typical product.	Factors of Reverse Logistics.
Impact on Profitability.	Fail Reasons.
Reversed Products as share in Sales.	Role of Return in Company Strategy.
Possibility of Reuse after Treatment.	Effect of Recycling on Quality grade of FinalProducts.
Impact of Recycling on Profitability.	Development of Reverse Logistics Policies and their link withits Performance.
	Enactment of Reverse Logistics Systems as enabler toPerformance Upgrading.
	Obstacles in Executing Reverse Logistics systems.

2.1.2 Relationship of the Variables:

Table-03: Variables and their Relationship

Variable	Relationship
Features of Reverse Logistics.	Cost & Efficiency.
Fail Whys and wherefores.	Customer Relationship, Efficiency.
Role of Return in Company Policy.	Customer Relationship, Penetration.
Life Span of a usual product.	Cost, Complexity, Customer Retention, Profitability
Influence on Profitability.	Cost.
Reversed Products as share in Sales	Cost, Complexity.
Possibility of Reuse after Handling.	Cost Benefit, Quality.
Impact of Recycling on Quality grade ofFinal Products.	Quality, Customer Satisfaction.
Impact of Recycling on Profitability.	Cost.
Expansion of Reverse Logistics Policies and theirlink with its Performance.	Policies, Cost, Complexity in Operations.
Ratification of Reverse Logistics Systems as Enabler to Performance Improvement.	Policies, Cost Benefit, Competitiveness.
Effect of Liberalization of Reverse Logistics Policies on its Abilities.	Policies, Cost Benefit, Competitiveness.
Obstacles in Executing Reverse Logistics systems.	Policies, Cost Benefit, Culture, Internal &External Resistance..

2.2 Summary of literature

After having gone through the literature and discussing thereverse logistics implementation issues with the industrial personal, it has been observed that RL philosophy has many benefits to offer for the Indian industry, but present status of reverse logistics practices are not up to the mark in the Indian industry and needs attention of researchers and managers for improvements. Secondly, a very few research have been made on reverse logistics implementation in Indian conditions, this fact is well-disclosed by a cursory search on the internet using a versatile search engine, i.e., http://www.google.com with keywords such as RL, recycling, remanufacturing.

3. Research Methodology

The research was Qualitative in nature. Purposive sampling was made to conduct the research. Questionnaire was used as main data collection tool. Sample of Questionnaire is attached as Annexure.

This is an Exploratory-Research during which survey was conducted supported the perception of respondents with regard to Reverse Logistics, its practices and impact on the companies. The people who targeted were

a) The employees working in respective organization,

b) The distributors and

c) The retailers.

Convenience sampling method was used and a sample of eighteen respondents was chosen. Three industries included Pharmaceutical industry, Automobile industry and Newspaper industry. the rationale of picking these industries was the life-span of their products – Newspaper has the shortest life of 1 day, pharmaceuticals has medium life-span of months and some years, whereas Automobiles have longer life-spans of years and should be decades. In every industry 3 levels of participants were chosen to denote Manufacturer, Distributors and Retailers. For every level three respondents were picked for interviews.

3.1 Data sources

The postal, email and private visit to industry method was used for the administration of the survey. The Indian experience of mailed surveys using random sample from an industrial data base has not been encouraging. Therefore, to get a high response rate, convenience-randomized sampling was employed in this survey. The questionnaire administered contained Likert type questions moreover as both open and closed ended questions so on provide enough and accurate information in line with the target of the study. They also gave the respondents an opportunity to administer their views freely with none limitations. The study used primary data. Sample was selected from Directory of ISO 9000/14000 and QS 9000 Certified companies in India (India Product Promotion Centre, 2006, 2008), Exhibitor Catalogue (9th Auto Expo, 2009) and list of Industries collected from training & placement cell of SLIET, the questionnaire, including missive were mailed to the executives.

3.2 Survey questions

It contained many other reverse supply chain issues. Respondents were asked to indicate the level of involvement in reverse logistics activities during their business performance and its impact on their financial health. On the likert scale, or 1 stand for very low and 9 for very high or 1stand for very conservative and 9 for very liberal to return policies. Few close-ended questions related to the company profiles were also included in the questionnaire.

3.3 Interview procedures

Of the 400 questionnaires, 102 filled up questionnaires were received. Seven of these were incompletely filled and were discarded from further analysis. This gives a response rate of 23.75 percent, which is not very low for such surveys (Malhotra and Grover, 1998).Out of the 95 usable responses, Newspaper related industries comprised 25 percent, Automobile industry 25 percent, Drugs, Health and Pharma Aids 20percent, Automotive sector 20 percent, Paper and Forest products 10 percent, After receiving the responses to the survey for this paper, interviews were conducted with the respondents to better understand their responses and also to get a better idea of their understanding of the concept of reverse logistics. The interviews more like discussions were conducted with the respondents over the phone and through online chats.These discussions were mainly along the lines of the survey questions, since some of them had failed to answer the survey completely. Further the purpose of this thesis was explained to the respondents in brief, so as to give them an idea of the objectives and goals of the paper. This led to open up the discussion, and give the respondents an opportunity to throw light on their thoughts on supply chain and reverse logistics. Thus the results and analysis sections are based on both the survey and interviews or discussions conducted with the respondents

3.4 Previous researches on reverse logistics

Jifan Li, Master of Engineering in Logistics at the Massachusetts Institute of Technology conducted a probe in June, 2004 to look out how a hi-tech company makes a choice on selecting reverse logistics software package or service.

The research concluded that.....the technology for reverse logistics is getting improved. However, thanks to diversified business requirements and reverse logistics system/services. When selecting reverse logistics [software] systems, companies should loll at future business requirements. the companies must consider all the detailed tactical operations and balance the tradeoffs before making the selection.

The research conducted in 2003, by Marisa Paula at Erasmus University Rotterdam on "Managing Reverse Logistics" was conducted to provide an understanding objective of reverse logistics. The research was aimed to Structuring reverse logistics as a probe field, an improved understanding of reverse logistics practices, and structuring and supporting reverse logistics decision-making.

The research concluded that.....reverse logistics is that the part of logistics, we are ready to transfer lessons from traditional logistics management to the reverse logistics. In traditional logistics, managers are mainly focused on moving the products to complete client. But within the longer term companies are willing to feature more value in their current services to serve their customer during a more better way.

3.5Data Analysis procedures

Basically three categories of variables were analyzed in open-interviews conducted at three levels of the three selected industries. The responses gathered from the interviewees are summarized below.
For the factors that become the source of Reverse Logistics; all three industries agreed on 'End of Life' as the main cause of reverse logistics, however in Pharma Industry, 'Product recall' is also one of the key reasons of returns, whereas in Auto Industry Warranties, Manufacturing defects, and Servicing are also identified as the factors behind reverse logistics.

4. Finding and analysis

When asked to the interviewees regarding the fail reasons for reverse logistics, collectively the solution was 'Forecasting Errors & Bias'. Particular to the newspaper industry was the timing effect, because the product delivered late isn't sold, and is mostly of no use to the purchasers. Pharma industry identified some more reasons, including Damages-in-Transit and also the Quality defects. The damages-in-transit usually leaves the merchandise in dented form which isn't saleable and thus returned. Another fail-reason was Expiry of products, which again is a subsequent effect of forecasting errors – any product that has little demand but made available in access to its demand sees its expiry and thus returned back to the previous level of intermediaries, up to the manufacturer. Additionally to the explanations noted in Pharma industry, missing-parts is one more reason for reverse logistics in Auto industry.

Return of the products effects on the customer retention, competition and Penetration generally where as in auto industry clean channel is additionally resulted by coping with return of the products.

When asked about the lifetime of a typical product, the answers of the interviewees from all three Industries were different, per Newspaper Industry the lifetime of the merchandise is sooner or later, in Pharmaceutical the lifespan of the products is 3-5 years where as in Auto Industry the lifespan of the products is 6-12 months. Lifetime of the products is directly concerned with the speed of the Return of the products, lesser is that the product life, the speed of return are going to be higher and larger the merchandise life lower the speed of the return.

According to the 17 to twenty percent interviewees from Newspaper and Pharmaceutical Return of the products have very significant impact on the profit whereas majority from Newspaper and Pharmaceutical considers the there's no significant impact on the profit. In Auto Industry 50 percent considers the numerous impact of profit whereas remainder of the 50 percent consider that there's no significant impact on the profit. That shows the businesses

with efficient processes and proper processing of the returned products are less bother about the impact of Reverse Logistics on profit.

To know the statistics of the Reverse Logistics, we asked from the interviewees of all three Industries about the share of the sales as reverse logistics, 5-10 percent of the sales in Newspaper Industry is reversed, in Pharmaceutical 3-7 percent of the sales is reversed where as in Auto Industry it's very less that's 2-3 percent.

Reusing of the products is a few times very favorable situation to reduce rate of rejections but within the Newspaper and Pharmaceutical Industries there's no reuse of returned products where as in Auto Industry the returned products will be reused after a particular treatment and by all companies 60 percent within the industry believe that returned products can be reused after treatment where as 40 percent within the industry think that the returned products with major damages cannot be reused even after treatment.

To analyze the impact of the recycling on Quality we asked from interviewees about their companies, in Newspaper Industry there's no impact on recycling of the returned products where as in Pharmaceutical Industry there's one hundred pc impact on the standard of the products because Pharmaceutical products are concerned with lifetime of the human and recycling is unfavorable. When asked about the effect of the returned products on the success of the corporate from interviewees, the respondents from Newspaper Industry showed no impact on the profitability.Where as in Auto and Pharma there's minor impact on the profitability.

Link of the event with reverse logistics was mainly concerned in Pharmaceutical and Auto Industry where as in Newspaper Industry the respondents showed no response. Auto Industry considers that the event of reverse logistics mechanism is directly linked with the Reverse logistics. Majority of the firms in Newspaper Industry considers that formalization of the reverse logistics as enabler to Performance improvement where as in Pharmaceutical and Auto Industries, all companies consider the validation of the reverse logistics as enabler to Performance Improvement.

When asked about the barriers in implementing Reverse Logistics, the respondents from all three industries highlighted Company Policies, Importance of Reverse Logistics relative to other issues and Competitive issues as general obstacles for implementing Reverse Logistics in Newspaper, Pharmaceutical and Auto Industries.

We have composed suggestions from company's altogether 3 industries; firms in Newspaper Industry are looking towards Leading Newspapers for developing a reverse logistics system so as to develop strong relationship between distributor and retailer. In Pharmaceutical Industry new recycling and re-manufacturing methods to be flourished. In Auto Industry there's need of customer and employee awareness programs about reverse logistics, timely and frequent response is important to form customers satisfied.

On the subject of sorts of system that are place for Reverse Logistics within the selected industries, respondents from Newspapers Industry said that there are Manual and Computerized tracking systems, while within the Pharmaceutical Industry there have been Computerized Return Tracking systems, Batch numbering and also Manual systems.

When the respondents from Newspaper Industry questioned about the choice center for Reverse Logistics responded that decisions for RL are made on Retailer and Distributor end. In Pharmaceutical Industry decisions are made at Distributor and return processing centers, and in Auto Industry decisions vary case to case and are made at Manufacturer end, Distributor end, returned goods processing centers and retailers.

We have also collected comments on the recent trends of reverse logistics all told three major industries, respondents from newspaper industries have some concerns over the leading Newspapers that don't have any policy for return of the newspapers and therefore the retailer bear loss just in case of unsold newspapers, there's no compensation for the retailers and distributors.

Respondents from Pharmaceutical Industry have focused on the requirement of awareness about reverse logistics process and their impacts on the society, local pharmaceutical companies should adopt strong Reverse logistics system like Multinational Companies. Pharmaceutical Manufacturer should create awareness among customers about storage conditions through campaigns and also monitor it. Respondents from Auto Industry said that the manufacturer's objective is to attenuate the return and reverse logistics plays vital role in auto industry.

4.2 Correlation analysis

Table-04: Variables and their Relationship between Newspaper/Auto/Pharma

Variable	Relationship	Newspaper	Auto	Pharma
Factors of Reverse Logistics.	Cost/ Efficiency.	End of Life	End of Life	End of Life
			Warranties	Prod Recall
			Manufacturing	
Fail Reasons.	Customer Relationship, Efficiency.	Forecast Error	Forecast Error	Forecast Error
			Damage in Transit	Damage in Transit
			Quality	Quality
			Expiry	Expiry

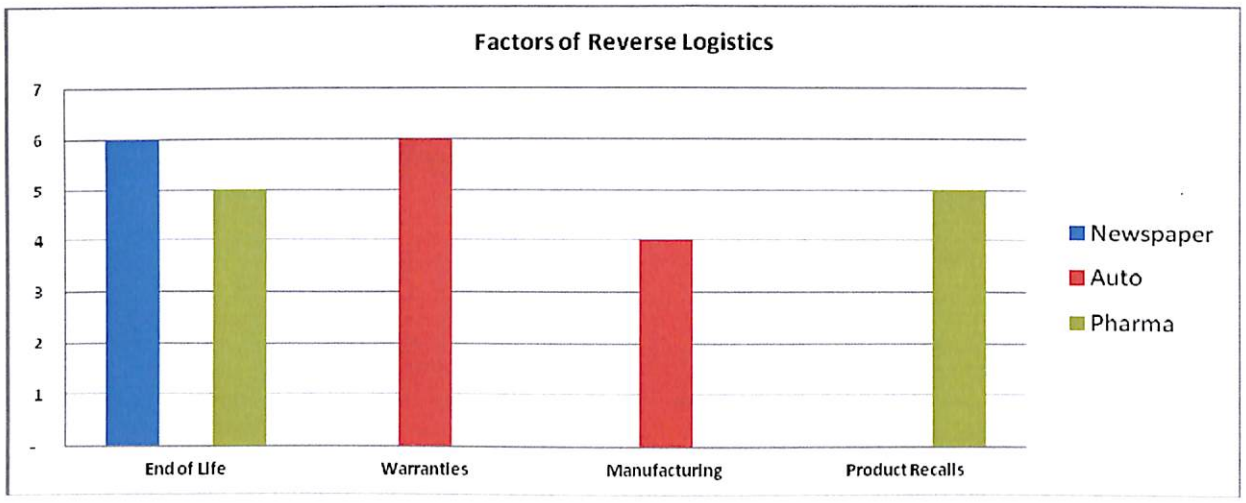
			Missing Parts	
Role of Return in Company	Customer	Customer	Customer	Customer
Strategy.	Relationship, Penetration.	Retention Competition Penetration	Retention Competition Penetration Clean Channel	Retention Competition
Life Span of a typical product.	Cost, Complexity, Customer Retention.	One Day	6~12 Months	3~5 Years
Impact on Profitability.	Cost.	No impact	Minor Impact	Minor Impact
Reversed Products as share in Sales	Cost, Complexity.	5~10 %	2~3 %	3~7 %
Possibility of Reuse after Treatment.	Cost Benefit, Quality.	Reuse not possible	60% Reuse the returned products	Reuse not possible
Impact of Recycling on Quality grade of Final Products.	Quality, Customer Satisfaction.	No impact	N/A	100 percent
Impact of Recycling on Profitability.	Cost.	No Impact	Minor Impact	Minor Impact
Development ofReverse Logistics Policies andtheir link with itsPerformance.	Policies, Cost, Complexity in Operations.	N/A	100 % responded positively	60% believe it is true.
Formalization of Reverse Logistics Systems as enabler to Performance Improvement.	Policies, Cost Benefit, Competitiveness.	67% Responded Positively	100% Responded Positively	100% Responded Positively

Influence of Liberalization of Reverse Logistics Policies on It's Capabilities.	Policies, Cost Benefit, Competitiveness.	80% Responded Positively	40% Responded Positively	33 % Responded Positively
Barriers in Implementing Reverse Logistics systems.	Policies, Cost Benefit, Culture, Internal & External Resistance..	Company Policy	Company Policy	Company Policy
		Financial Resource	Financial Resource	
		Lack of System		
		Importance of RL relative to other issues	Importance of RL relative	Importance of RL relative to other issues

5. Comparative Analysis, Graphical Representation of Responses

5.1 Factors of reverse logistics.

The First and Foremost element wherein RL triggers was the factors.

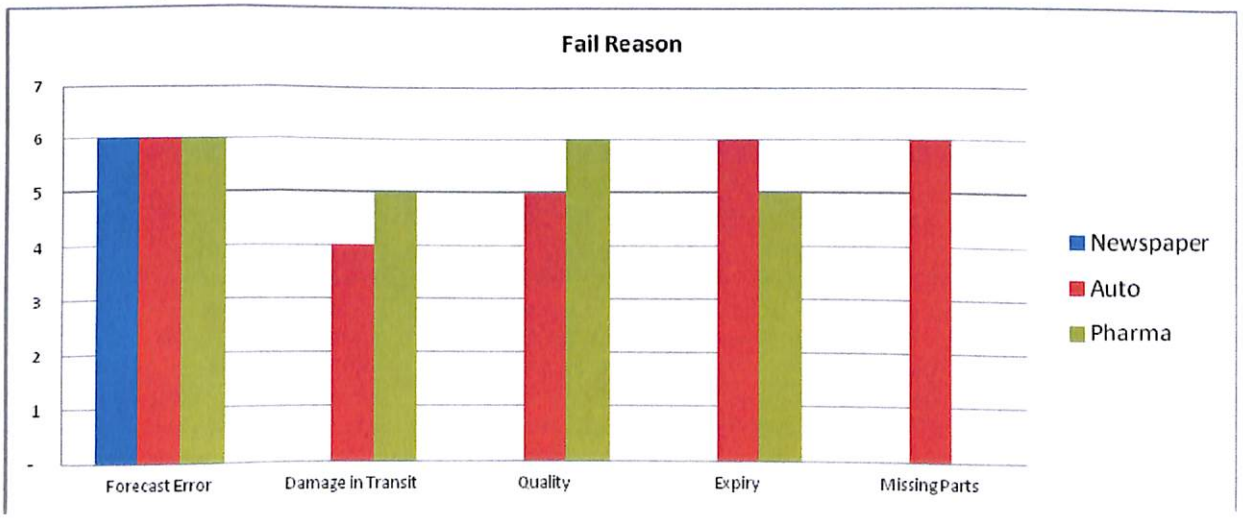


End of Life was the first response of the Respondents from Newspaper and Pharma Industry, likewise as Product recalls from Pharma again.

It is fairly evident that having proper planning in situ can bring Cost Efficiency by minimizing the Reverse Flow of the fabric, hence bringing substantial cost savings to the organization.

5.2 Fail reasons

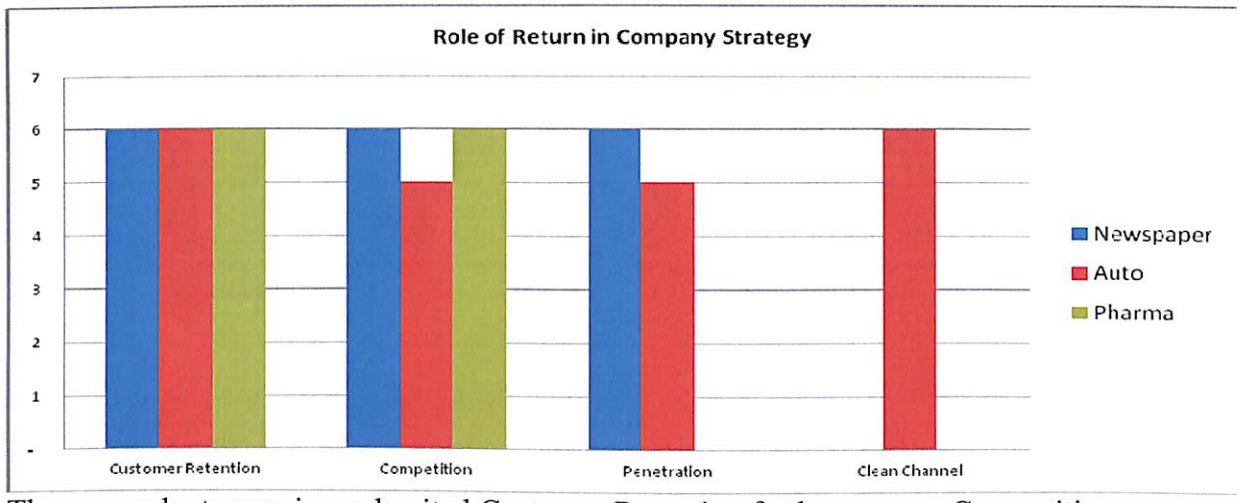
This was the 2nd most relevant question, as why a corporation would wish to send product back from downstream to Upstream, which reduced Efficiency and hampers Customer Relationship.



The immediate response from all the respondents was Forecast Error, apart from the Newspaper Industry, the opposite 2, Automotive and Pharma Industry responded as Damage in Transit, Quality and Expiry as fail reason, moreover as Missing part, specifically advised by Automotive sector. Upon re- confirmation of the EXPIRY in Auto Sector, the respondents stated the Spare Parts.

5.3 Role of return in company strategy

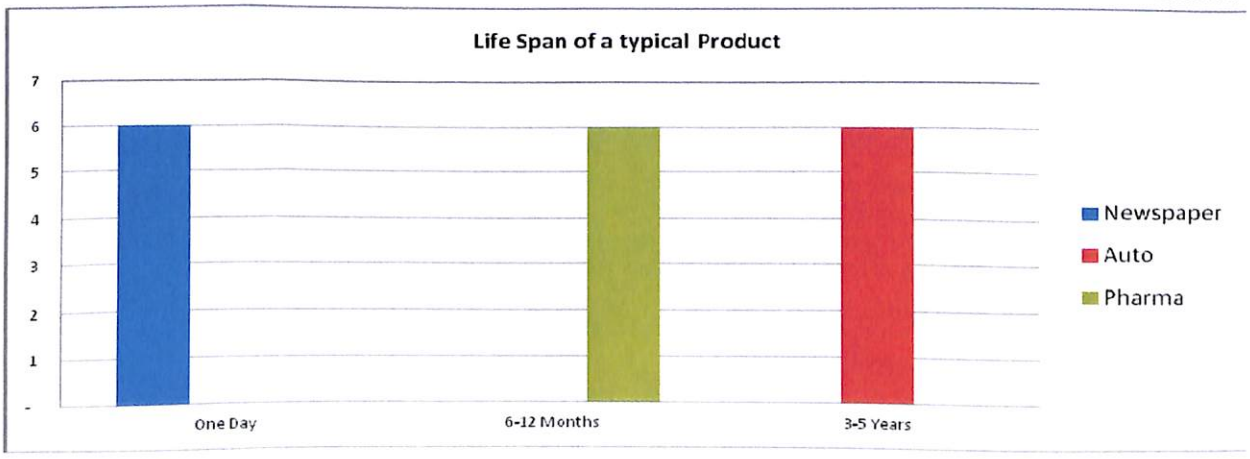
The Role of Return in BusinessTactic was established.



The respondents unanimously cited Customer Retention furthermore as Competitiveness as their Primary motives to remain product returns in their strategy to run business. While Newspaper and Auto sector keeps the Penetration, Automotive alone wants a Clean Channel as a component of their Strategy.

5.4 Life span of a typical product

Predominantly, the very reason to decide on the three different Industries for this research was that they are doing differ from one another and their respective product Life Cycle is different, further as their Strategic Objectives with reference to Cost, Complexity and Customer Retention.

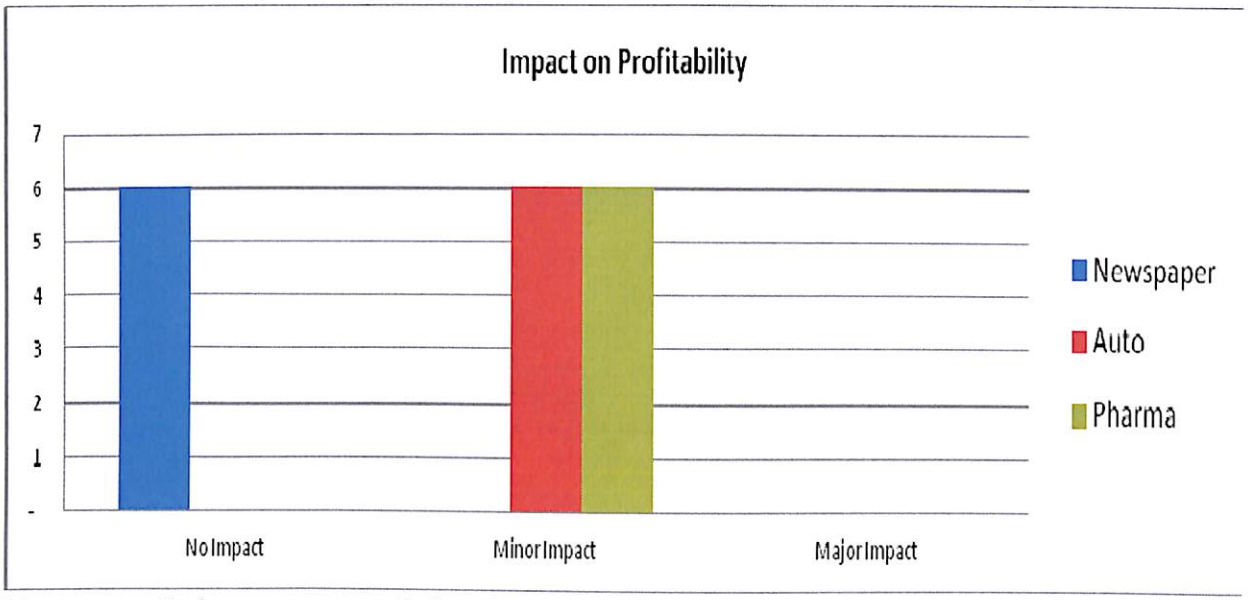


Newspaper has 1 day, Pharma has 6-12 months, whereas Automotive has 3-5 years of

generation.

5.5 Impact on profitability

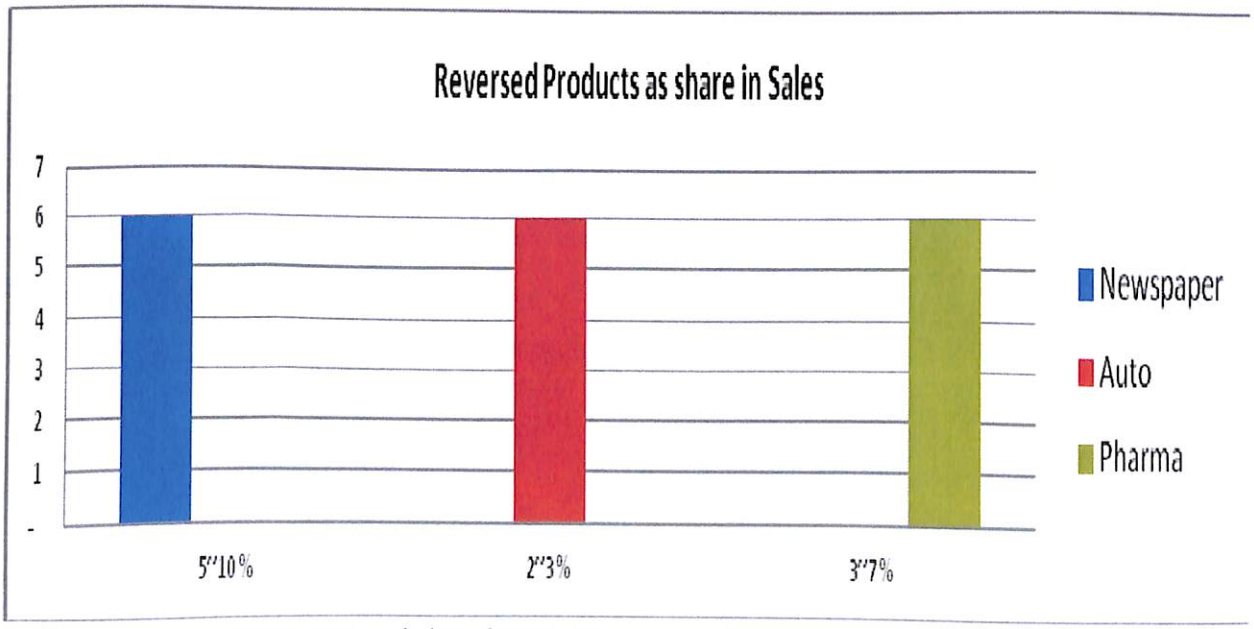
In order to test the price Impact on Logistics, and subsequently, on profitability.



Newspaper Industry suggested that there's No Impact, whereas, both the opposite Industries has Minor Impact on their Profitability. None of them reported any Major Impact.

5.6 Reversed products shares in sales.

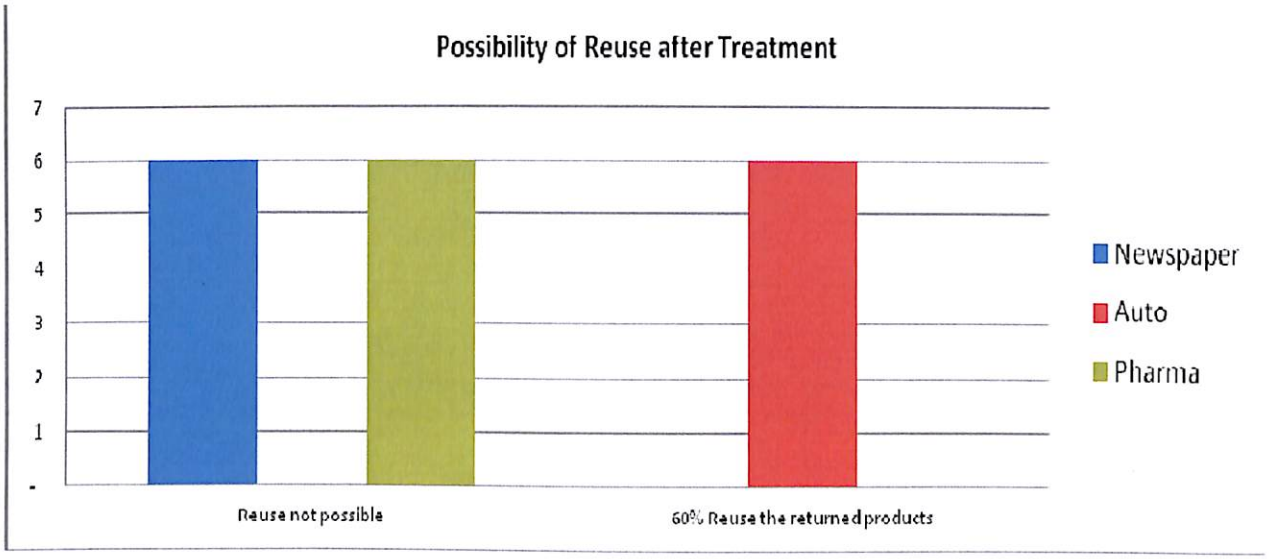
In order to determine the value and Complexity of the Reverse Logistics, we wanted to see the Returned / Reversed Products' Share in Sales.



Newspaper Industry suggested that there's 5-10%, share, 2-3% by Auto and 3-7% by Pharma Industry.

5.7 Possibility of reuse after fixing.

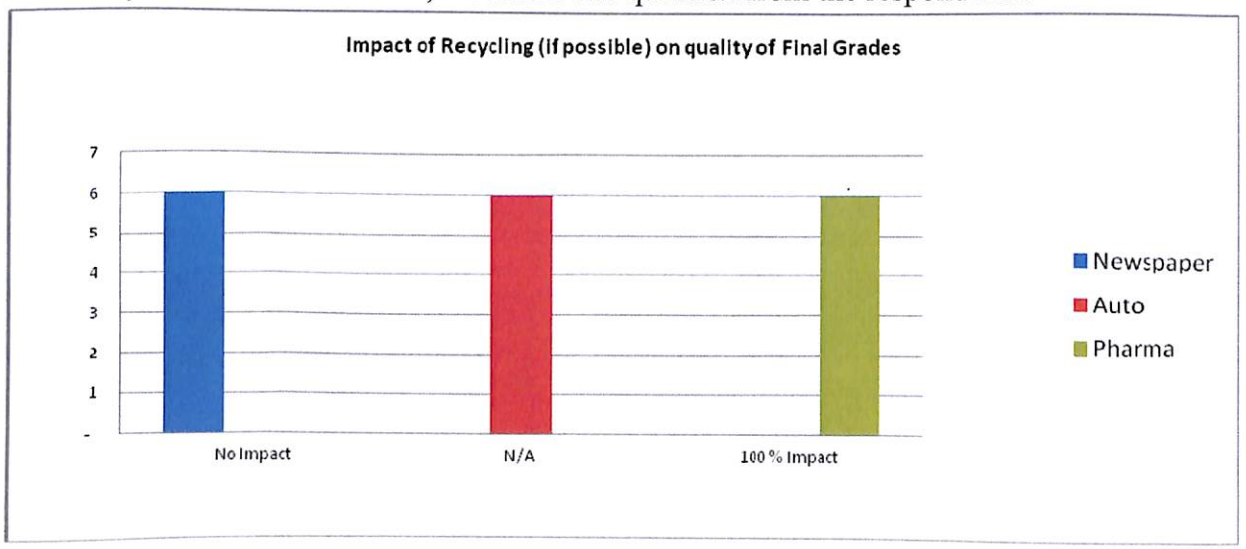
We wanted to ascertain the understanding about the price good thing about product Return, if this may be used. Given the sensitivity of the Industry, Pharma Industry was focussed.



Pharmaceutical and Newspaper Industry responded as Reuse impossible, whereas, 60% of the Auto Sector confirmed that they Reuse the returned products.

5.8 Impact of recycling in quality

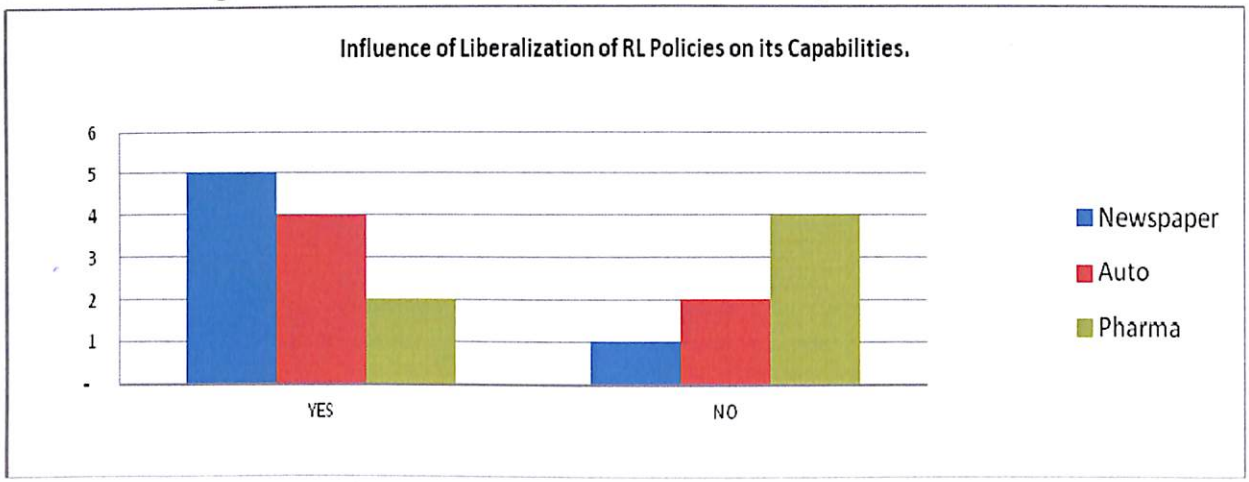
In order to verify the conformance of Quality Management System requirements with relation to recycling of certain product groups, Company's commitment towards Quality and ultimately customer satisfaction, we asked this question from the respondents.



Newspaper Industry responded as No Impact, whereas, Auto Sector suggested that this is often not applicable to them and Pharmaceutical verified that if they discourage recycling of certain product groups, given 100% impact on Final Grades. they are doing not encourage recycling of expired products in the least, as a part of their commitment towards quality and

5.9 Impact of linearization of reverse logistics policies

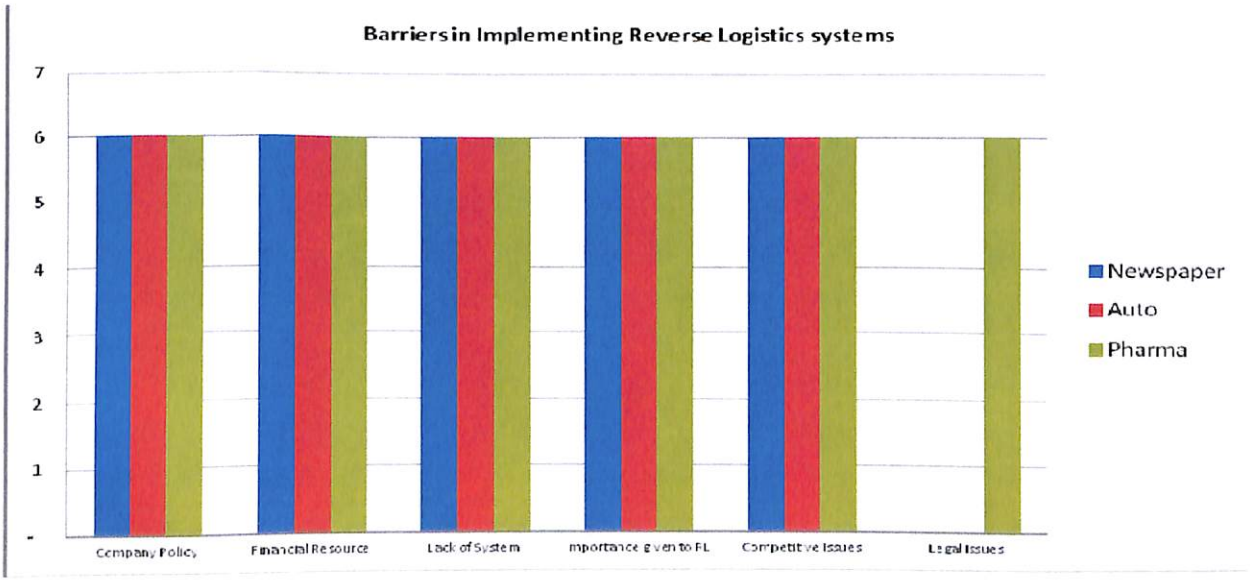
When an organization decides to liberalize its Return Policies, does it Influence the Company's Logistics Capabilities. Does Liberal Policies help gain Cost Benefits and supply an additional edge to the sales team as they become more competitive in market.



The responses were varied. While 80% of the Newspaper, 60% of the Auto and 33% of the Pharma Industry believed that the liberal policies help to spice up sales and it influences positively towards competitiveness of the corporate, whereas, 20% of the Newspaper, 40% of the Auto and 67% of the Pharma Industry believed the other way around.

5.10 Barriers in implementing reverse logistics

Despite all the benefits to the customer and creating the sense of TCO amongst the stakeholders, what are the realities on the ground, which is barring Reverse Logistics to become a real game changer in company's Supply Chains.



6. Conclusion and Scope for future work

'End of life' is that the main explanation for reverse logistics, however in other industries product recall, manufacturing defects and warranties etc. are the idea of reverse logistics. Forecasting error contains a significant role in above problems let alone transit and quality issues. Product expiry or missing components result in initiation of reverse logistics mechanism.

Average age varies by the character of product, but definitely all products have a limited life, thus requiring disposal or reversal. Majority of the respondents see it supportive to the business while very small portion of respondents see reverse logistics as having negative impact on the business. Key concern for the businesses is that the impact on profitability because of reverse logistics.

At a mean, 2 to eight percent of the sold products need reverse logistics, where the range varies from industry to industry. Returned products is reused after a particular treatment but this can be not applicable altogether cases. About 60% of the firms believed that returned products is reused after treatment but remaining 40% have different perception for the identical, it should vary from industry to industry. Quality issues are always be there in recycling no matter the character of the merchandise. Respondents from the various industries agreed that proper formalization of Reverse logistics within the firms ends up in performance improvement.

Liberalization in reverse logistics policies ends up in improvement within the reverse logistics capabilities of the firms. However, it should not be applicable in every industry. But majority of the respondents are within the favor of liberalization. Company policies, financial resources, management inattention & competitive issues are the foremost hurdles within the execution of reverse logistics. in and of itself there's no special tool used for the monitoring of reverse mechanism in industries, however Computerized return tracking systems, batch numbering & manual systems are currently employed in most of the firms. Barcodes are employed in some specific industries like auto industry.

Assessments for the reverse logistics are frequently taken by retailers & distributors end. These decisions are made at manufacturing end in addition, again depending upon the character of the merchandise. Collective suggestions regarding reverse mechanism are that build strong relationship among distributors & retailers for correct implementation of this mechanism. There should be a requirement to create awareness among employees in addition as among customers about positive aspects of reverse logistics on environment & society.

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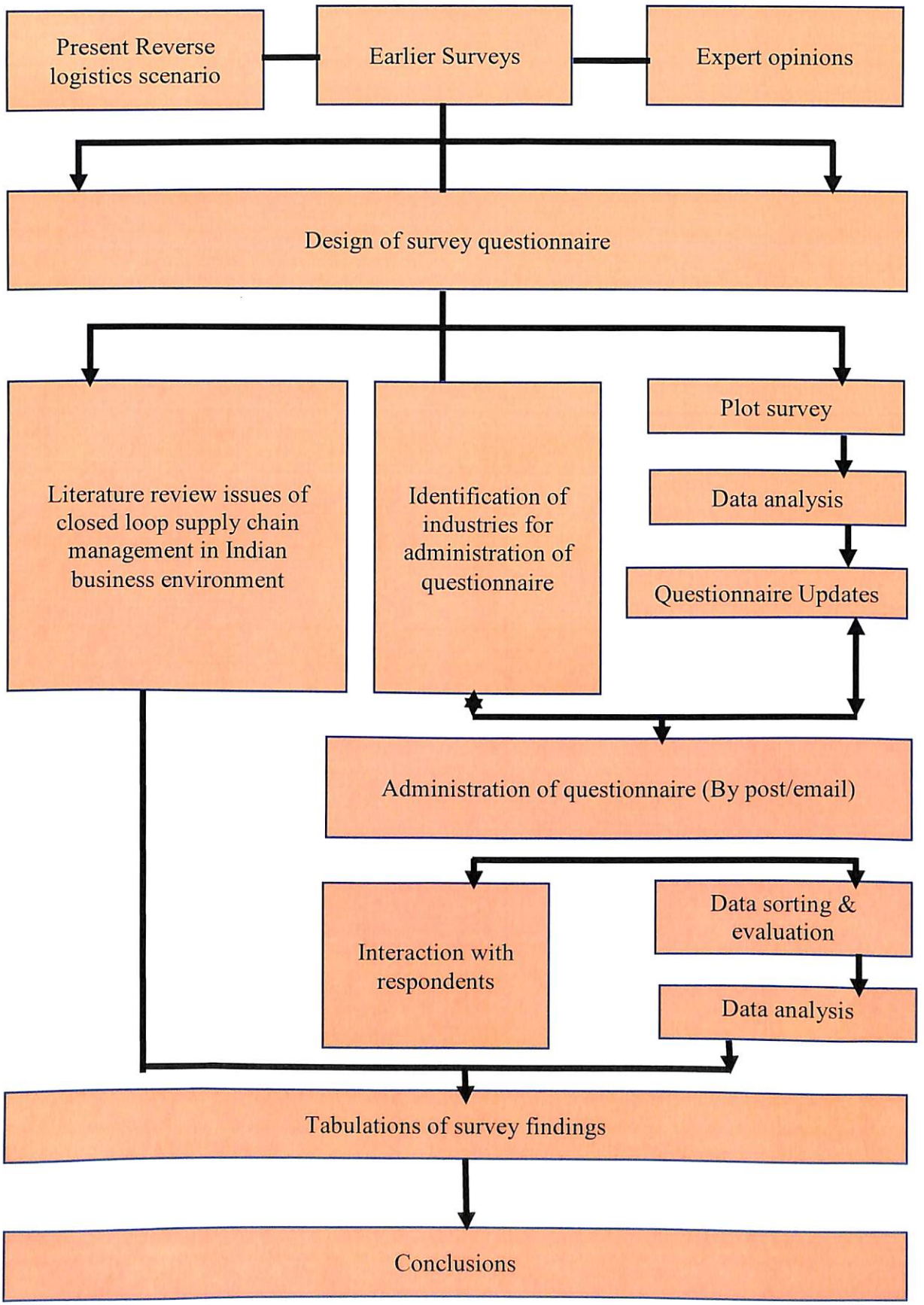
6.2Appendix: Diagram of research methodology

Fig.05



6.3Appendix: Survey questions

A. The survey:

Q.1: Generally, products reverse direction in the supply chain as a result of the following factors:

a) Manufacturingreturns
b) Commercialreturns
c) Productrecalls
d) Warrantyreturns
e) Servicereturns
f) End-of-lifereturns

Q.2: Common return reasons within these categories:

a) Product damaged in transport
b) Product does not meet customer expectations
c) Delivery has missingparts
d) Product has a quality defect
e) Cancellation of sale bycustomer
f) Product delivered toolate
g) Customer found a betteralternative
h) Bad forecast or overstock

Q.3: Does liberalization of returns policies influence the firm's reverse logistics capabilities?

a) Yes
b) No

Q.4: Is the development of reverse logistics capabilities associated with reverse logistics performance improvements?

a) Yes
b) No

Q.5: Does the formalization of the reverse logistics process enhance the development of capabilities or performance improvements?

a) Yes
b) No

Q.6: How long is the life cycle of a typical product?

a) More than 6 months to 12months
b) More than 3 years to 5years
c) More than 5years

Q.7: On a scale of 1 to 7, with 1 representing very conservative return policies, and 7 representing very liberal return policies, how would you rate your policies regarding customer returns?

Q.8: How, if at all, have your return policies changed in the past year?

1 2 3 4 5 6 7

Q.9: What role do returns play in your company's strategy? Check all that apply.

a) Cleanchannel
b) Protectmargin
c) Competitivereasons
d) Recapturevalue
e) Recover assets
f) Legal disposalissues
g) Other, pleasespecify_____

Q.10: By what percentage do returns reduce your profitability?
_____%

Q.11: What, would you estimate is the impact your returns have on your profits? (As a percentage of profits)
_____%

Q.12: What percentage of your total Logistics costs do your Reverse Logistics costs represent?
_____%

Q.13: What barriers to successful Reverse Logistics Activities exist in your firm? Check all that apply.

a) Companypolicies
b) Competitiveissues
c) Financialresources
d) Importance of reverse logistics relative to otherissues
e) Lack ofsystems
f) Legalissues
g) Managementinattention
h) Personnelresources
i) Other, pleasespecify_____

Q.14: What hardware and software technologies do you have installed, or plan to install, to assist your returns handling?

a) Automated material handlingequipment
b) Bar codes
c) Computerized returntracking
d) Computerized returns entry at most downstream point in supplychain
e) Electronic data interchange(EDI)
f) Radio frequency(RF)
g) Other, pleasespecify_____

Q.15: What is your primary business?

a) Building, Materials, Hardware, and GardenSupply
b) GeneralMerchandise
c) Electronics andComputers
d) Food

e) Automotive
f) Chemical
g) Paper and Forestproducts
h) Apparel andAccessory
i) Furniture, Home Furnishings, andEquipment
j) Drugs, Health & BeautyAids
k) Warehousing
l) Trucking
m) International logistics thirdparty
n) Other, pleasespecify_____

Q.16: On a scale of 1 to 7, with1 being very unimportant, and with 7 being very important, rate the importance to your customers (not refer to ultimate customer) of each the following in their decision to use you as their supplier:

a) Cost reduction 1 2 3 4 5 6 7N.A.
b) Price 1 2 3 4 5 6 7 N.A.
c) Quality of service 1 2 3 4 5 6 7N.A
d) Return policies 1 2 3 4 5 6 7N.A
e) Speed of delivery 1 2 3 4 5 6 7N.A.
f) Variety of products 1 2 3 4 5 6 7N.A.

Q.17: In which of the following channel positions do you operate? Check all that apply.

a) Manufacturer
b) Wholesaler
c) Retailer
d) Service Provider (Pleaseexplain:_____

Q.18: How large a Savings in the total cost of your company's entire reverse chain process could potentially be achieved by a standards-based automatedsystem?

Q.19: WHO would be primarily involved in doing the cost/benefit analysis and deciding to build or acquire such a system? Indicate the rank order of importance in making such a decision with 1 being the final decision maker.

Fields	1	2	3	4	5
Finance					
Customer					
Marketing					
Warranty					

Q.20: What changes would have to be made to your company's current processes and systems in order to achieve such cost savings and other benefits?

Fields	Major	Minor
IT Systems		
Customer Support		
Web Portal Services		
Warranty Management		
Product Inspection and Repair		
Manufacturing/Shipping		

Q.21: What could be the barrier in the way of taking action? (Rank each)

Barriers	1st	2nd	3rd	4th
Bureaucratic inertia				
Budget rank				
Reverse Logistics too low a priority to get attention				
No centralized control over corporate stakeholders				

Q.22: Where in the supply chain are decisions made about what is to be done with a returned item? Additionally, is a third party used to perform any of this decision making?

	In-house	Third Party
At retailer		
At regional distribution center		
At national distribution center		
At a returned goods processing center		
Other, please specify		