CHAPTER – I

INTRODUCTION

1.1 INTRODUCTION ABOUT THE TOPIC

The topic of the study is “A STUDY ON REVERSE LOGISTICS SYSTEM IN REFERENCE WITH KERALA ROADWAYS (P) LTD”. As the topic states, this study is based on reverse logistics system of Kerala Roadways. This study is conducted to know about reverse logic system and process. The study describes and concludes the reasons, facts, steps, and settlements about reverse logistics in KRS. Reverse Logistics concerns activities associated with the handling and management of equipment, products, components, materials or even entire technical systems to be recovered (for succinctness we will often use the term products alone). Recovery can simply be just reselling a product. Or, it can be accompanied by a series of processes as collection, inspection, separation, and so on, leading to e.g. remanufacturing or recycling. Material recapture and product or equipment (partial) reuse is a very old practice. In the past, the primary motivation was scarcity of resources. However, the emergence of cheap materials and advanced technology led Western societies into mass consumption and routine throw away.

Today Reverse Logistics (RL) has become a major thrust area especially in the field of aftermarket spare parts as well as electronics and computer hardware markets. RL is a new pattern of enterprise strategy management and green supply chain management. RL is pursued for a coordinated optimization of economic and social efficiency of the product. Reverse logistics is not only the foundation of circular economy, but also had become the synergism with the construction of a healthy environment.

Rogers and Tibben-Lembke, define RL as:

“The process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal”

Bayles describes that RL enables the reuse of discarded products from commercial returns and management of excess inventory of products and materials. It entails

processing merchandise returned due to damage, seasonal inventory, re-stock, and salvage, recalls and excess inventory.

Reverse logistics management also encompasses recycling programs, hazardous material management programs, obsolete equipment disposition and asset recovery. The benefits of reverse logistic are regaining value achieving a competitive advantage.

Reverse logistics stands for all operations related to the reuse of products and materials. It is "the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal. More precisely, reverse logistics is the process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. Remanufacturing and refurbishing activities also may be included in the definition of reverse logistics." The reverse logistics process includes the management and the sale of surplus as well as returned equipment and machines from the hardware leasing business. Normally, logistics deal with events that bring the product towards the customer. In the case of reverse logistics, the resource goes at least

1.2 INDUSTRY PROFILE

Logistics is regarded as the backbone of the economy as it ensures efficient and cost-effective flow of goods and other commercial sectors depend on it. Logistics industry in India is evolving rapidly. It is the interplay of infrastructure, technology and new types of service providers, which defines whether the logistics industry will be able to help its customers reduce their costs and provide effective services. Despite weak response, the logistics industry continues to witness growth owing to the progress in retail, e-commerce and manufacturing sectors. The Global Logistics sector was expected to grow 10 to 15 per cent in 2013-14. Logistics industry is expected to reach over $2 billion by 2019. Rise of e-commerce logistics and increased domestic consumption will pave the way for the industry to grow further in future. With the promise of steady growth and improvement, the service oriented logistics industry is ready to expand beyond the horizons in the latter half of this decade.

Recent Scenario

The recent Indian logistics sector comprises inbound and outbound segments of the manufacturing and services supply chains. Of late, the logistics infrastructure has gained the much needed boost from business houses as well as policy makers. Managing the infrastructure to effectively compete with other industries has not been given its due emphasis. Inadequate logistics infrastructure can create bottlenecks in the growth of an economy. The logistics management regimen has the capability to overcome the disadvantages while providing cutting-edge competitiveness in the long run. There exist several challenges and opportunities for the sector in the Indian economy. The biggest challenge faced by the industry today is poor integration of transport networks, information technology and warehouse & distribution facilities. Regulations existing at different tiers are imposed by national, regional and local authorities. However, the regulations differ from city to city, hindering the creation of national networks. Trained manpower is essential for the third party logistics sector and the manufacturing and retailing sectors. It is lacking at the IT, driving and warehouse as well as at the higher strategic level. The sector is in a disorganized state in India. The general perception of logistics being a manpower-driven industry and lack of adequate training institutions have created crisis of skilled management and client service personnel. Poor facilities and management are reasons behind high levels of loss, damage of stock, mainly in the perishable sector. The problem arises mainly because of the absence of specialist equipment, like proper refrigerators. Lack of quality training is another reason. Though practitioners and academicians are slowly becoming aware of the importance of logistics and supply chain, however, the field is still not adequately explored as far as research is concerned. It is essential to prioritize research and development so that the weaknesses in the industry can be taken care of and improved.

Infrastructure is the backbone of every country's growth and prosperity. The same is true for the logistics industry. Emphasis should be laid on building world-class road networks, integrated rail corridors, modern cargo facilities at airports. Logistics parks should be set up and accorded a status equivalent to Special Economic Zones. It is necessary to realize that the logistics industry can best be benefitted if companies establish training institutions to improve the service quality of the sector. Good

storage and warehouse facilities are important for the growth of the industry. With increase in the transportation of perishable products, the logistics agencies need to give a lot of importance to enhancing the warehouse facilities. Emphasis on research and development is potent because it encourages the use of indigenous technology, which can make the industry cost-effective and can also bring about improvement in services.

CATEGORIES OF LOGISTICS

Integrated logistics support, when properly understood and applied, can provide the means to identify and resolve many logistic problems, frequently before they developed. Logistics, in the broadest sense of the word, can be considered as scope of activity comprised of three major areas or subsets.

(1) Subsistence logistics,
(2) Operation logistics, and
(3) System logistics.

Subsistence logistics is concerned with the basic necessities of food, clothing, and shelter .At any given time, within any given environment, subsistence logistics is relatively stable and predictable. Men and women, as rational begings, know within very narrow limits what is needed, how much is needed, where it is needed, and when it is needed. Subsistence logistics is primary activity of primitive societies and is an essential ingredient of an industrial society. It provides foundation of operations logistics.

Operation logistics extends beyond the bare necessities by incorporating systems that produce the luxuries or niceties of life. By definition, operations logistics incorporates the raw material required by the enterprise in the production. This category of logistics is also relatively constant and predictable. All enterprise, from the automobile manufacturer to the fast food chain store can determine the quality of materials and the resources needed for its production with high degree of accuracy. Operation logistic can not, however, determine when a component of the enterprise is going to break down ,what will be required to repair it ,or the duration activity .Operation logistics, which is

concerned with the movement an storage of material in to ,through ,and out of enterprise ,provide the foundation for system logistics .

System logistics incorporates the resources required in keeping a system in operating condition. These resources, or logistics elements, are spares and repair part, personnel and training, technical publication, test and support equipment, and facilities. A well designed integration of these logistics elements is critical when, for eg; repair instructions describe one methods of repair and tools are developed for another method . Thus repair may be impossible

VALUE-ADDED ROLE OF LOGISTICS

Four principal types of economic utility add value to a product or service. Included are form, time, place, and possession. Generally, we credit manufacturing activities with providing form utility, logistics activities with time and place utility, and marketing activities with possession utility. We discuss each briefly.

- Form Utility: Form utility refers to the value added to goods through a manufacturing, production, or assembly process. For example, form utility results when raw materials are combined in some predetermined manner to make a finished product. This is the case, for example, when a bottling firm adds together syrup, water, and carbonation to make a soft drink. This simple process of adding the raw materials together to produce the soft drink presents a change in production form that adds value to the product.

- Place Utility: Logistics provides place utility by moving goods from production surplus points to points where demand exists. Logistics extends the physical boundaries of the market area, thus adding economic value to the goods. This addition to the economic value of goods or services is known as place utility. Logistics creates place utility primarily through transportation. For example, moving farm produce by rail or truck from farm areas to markets where consumers need this produce creates place utility. The same is also true when steel is moved to a plant where the steel is used to make another product. The market boundary extension added by place utility increases competition, which usually leads to lower prices and increased product availability.

- Time Utility: Not only must goods and services be available where consumers need them, but they must also be at that point when customers demand them. This is called time utility, or the economic value added to a good or service by having it at a demand point at a specific time. Logistics creates time utility through proper inventory maintenance and the strategic location of goods and services. For example, logistics creates time utility by having heavily advertised products.

To some extent, transportation may create time utility by moving something more quickly to a point of demand. Time utility is much more important today because of the emphasis upon reducing lead time and minimizing inventory levels through logistics-related strategies such as JIT inventory control.

- Possession Utility. Possession utility is primarily created through the basic marketing activities related to the promotion of products or services. We may define promotion as the effort, through direct and indirect contact with the customer, to increase the desire to possess a good or to benefit from a service. The role of logistics in the economy depends upon the existence of possession utility, for time or place utility make sense only if demand for the product or service exists. It is also true that marketing depends upon logistics.

IMPORTANCE OF LOGISTICS MANAGEMENT

Logistics management from this total system is the means whereby the needs of customers are satisfied through the coordination of the materials and information flows that extend from the marketplace through the firm and its operations and beyond that to supplies.

Today's organizations worldwide need logistics management more than ever because of following:

1) Competitive pressure 2) information technology 3) channel power and 4) profit leverage.

These are the discussed briefly in the following paragraphs.

1) Competitive pressure: during the 1970s. Logistics received more attention as a major cost driver to offset the effects of rising interest rates and increasing energy costs. In addition the logistics cost became more critical for many multinational companies because of globalization of their business. these developments affected logistics primarily in two ways :

I. The growth of world class competitors which has pressurized organization to differentiate themselves and their product offerings. Logistics enable domestic firms to provide more reliable and responsive services to customers in the local markets than overseas competitors.

II. As firms increasingly buy and sell off-shore, the supply chain between the manufacturing firm and its supplier and customer firms become longer, costlier and more complex. Hence in such situation, excellent logistics is necessary to take advantage of global opportunities.

2) **IINFORMATION TECHNOLOGY:** with the explosion of information technology, organization gained the ability to better monitor transaction intensive activities such as ordering, transportation and storage of goods and materials. Computerized quantitative models along with technology increased the ability to manage material flows and optimize inventory levels and movements. For example, systems such as material requirement planning (MRP 1), distribution resources planning (DRP) and just-in-time (JIT) allowed firms to link many activities such as order processing, inventory management, forecasting and production scheduling.

3) **CHANNEL POWER:** the channel power shifted from manufacturers to wholesalers, distributors and retailers. This has had a great impact on logistics. In major consumer good industries, when competition increases, many suppliers and manufacturers are forced out of competition and a few leading; competitors remain in the market. Those who remain are highly competitive and are able to offer very high quality products. In the views of consumers, all of the leading brands are substitute for each other and lower brand loyalty decreases the manufacturer's power. Ultimately sales of consumer products are determined by what is in stock, and not by what particular brand offered to the customers.

4) **PROFIT LEVERAGE:** Any amount of money saved in logistics costs has greater impact on the organizations profitability than a similar increase in sales revenue considerably because profit earned through sales is only a small

percent of sales revenue. Hence, a rupee saved in logistics is a rupee increase in the company's profit. Therefore, we can infer that logistics cost savings have much more leverage than an increase in sales.

LOGISTIC PLANNING

A corporate mission is a statement setting out long range goals unique to each organization elucidating the business the company wants to be in, who its customers are its basic beliefs about business, and its goals of survival growth and profitability. Objectives and goals sets the targets which are to be achieved in the long term in order to fulfill the mission of the firms in order to achieve the long term objectives and goals, alternatives strategies or actions plans need to be evaluated in the context of the environment faced by the firm from these alternatives, specific strategies must be selected for implementation in order to meet the objectives and goals that will fulfill the mission of the firm hence business strategy is a long range game plan of an organization and provides a road map of how to achieve the corporate mission. The strategic or long term plans for the firm and developed at the highest level of management of the firm.

The strategic planning for each of the functions of the firm, such as marketing, operations, logistics, etc.that are derived from the firms strategic plans, are developed at the highest level of the concerned function. The strategic plan within the function need to be detailed in the form of tactical and operational plans at the tactical and operational levels of management in the respective function. The operational level og management of a function in affirm plans the operational activities in order to meet the tactical and strategic plans of the function and control the activities during implementation on order to meet the operational plans.

According to the planning level illustrates the logical flow of the planning process across the organization. The activity flows in the logistic function bring out the sequence of activities from order receipt to procurement to customer delivery. Strategic plans determine the capacity plans by defining the internal capacity

limitations in manufacturing, warehousing, and transportation as well as human resources.

Future Prospects

The logistics firms are moving from a traditional set-up to the integration of IT and technology to their operations to reduce the costs incurred and to meet the service demands. The growth of the Indian logistics sector depends much upon its soft infrastructure like education, training and policy framework as much as the hard infrastructure. To support India's fast-paced economy growth logistics industry is very essential. It is estimated that the industry will continue to grow at a robust rate of 10-15 per cent annually.

The global economic outlook and that of India is expected to significantly improve as India Inc begins to tackle the economic downturn. With a new government many policies are expected to be implemented, which will give a fresh impetus to India's growth engine, particularly in the corporate and small and medium enterprises (SME) sector, which in turn will expand demand for the logistics sector.

1.3 THEORETICAL BACK GROUND OF THE STUDY

THE CONCEPT OF REVERSE LOGISTICS

Reverse logistics can be explained in various forms. They are discussed as inverse logistics and forward logistics, supply chain management and closed-loop supply chains.

Inverse Logistics

Inverse logistics is concerned with the post-sales service, returns and repairs, and of managing activities. They are a set of activities carried out by organizations aiming at extracting value from products and packaging that have come to the end of their useful life. It is an important organizational capability in the new business era. This is a collective responsibility of organizations. It also encompasses the return of excess inventories, customer returns, obsolete products and seasonal inventories returns as

well as product withdrawal, reclassification, reconditioning and reshipment to the original point of sale or to other secondary markets.

The objectives of inverse logistics include asset recovery and recycling, achieving business advantage, obtaining improvement and benefits in production and market supply processes and the fulfillment of legal obligations Although inverse logistics incurs extra cost to organizations, it opens up new business opportunities and offers scope to secure competitive advantage in business. The barriers in inverse logistics are lack of investment, lack of awareness, interest, government subsidies and legal difficulties in implementing such processes.

The life cycle of products comprises of two aspects viz., forward logistics and reverse logistics. When the stage of forward logistics comes to an end for a product reverse logistics begins. In this section the various aspects of forward logistics are discussed.

Forward Logistics

Forward logistics is the process of supplying finished goods to customers.41. It is that part of the supply chain process that plans, implements, and controls the efficient, effective flow, storage of goods, services and related information from the point-of-origin to -consumption in order to meet the customers' requirements.

Forward logistics comprises inbound logistics, that is, the process of providing raw materials and supplies for finished goods and outbound logistics, which is the process of providing finished goods to the customers.

There are different micro-dimensions of forward logistics which can provide better results and add value to processes. These dimensions include length of production runs, protective packaging, third party involvement, seasonal demand, marketing mix, matching scheduling, carrier pricing, channel competition, volume relationship, push and pull strategies and wholesale and retail strategies.

Differences between Reverse and Forward Logistics

Reverse logistics is perceived to be substantially different from forward logistics. The differences are apparent in seemingly related operations such as forecasting, packing,

distribution, pricing, inventory management, and communication and marketing. Similarly, other differences emerge in features such as origin, destination of products, quality of products, cost of operations and visibility of products.

Supply Chain Management

Supply chain management and materials management are competitive business edges today. A supply chain is a system of organization, people, technologies, activities, information and resources involved in moving a product or service from supplier to customer. In many organizations, materials form the largest single expenditure item, accounting for nearly 50 to 65 % of the total expenditure. With competition growing by the day, cost reduction in business operations and making available various products to customers, as per their requirements, come into sharp focus. Importance of supply chain management is necessary as it has become the cutting edge of business, after the product quality and manufacturing capabilities of any business firm. These activities transform natural resources, raw materials and components into a finished product that is delivered to the end user.

Closed-Loop Supply Chains (CLSC)

CLSC is the taking back of the products, or portions of products from consumers and recovering the added value by reusing the entire product or parts of the product. A classic example is selling of a used computer. If one buys a brand new computer, he can exchange the old one in the process. This allows the dealer to sell the used computer or cannibalize its parts to help repair them. In this way a new industry based around reusing existing products can be created instead of manufacturing brand new products. This can create a better consumption model by allocating resources to recycling current products in lieu of manufacturing new products, in this process prices can be discounted for current products and future products. This method can save money and energy, thus creating a better consumption model for individual consumers. This practice is common in manufacturing industries that produce commercial aircrafts, computers, automobiles and chemicals in Europe.

ADVANTAGE OF REVERSE LOGISTICS

Reverse Logistics offers lot of advantages to the company in terms of both significant and minor benefits. In the first instance, companies are able to salvage defective equipments and parts which are either salvaged or refurbished. The salvage reclaims the value out of the defective parts. Secondly, the packaging and faulty materials are collected and recycled, generating scrap value for the company. Thirdly unsold and obsolete equipments are collected back from point of sale which encourages the distributors and stockists to buy the stocks from the company confidently knowing that they can always return unsold stock. In that case the distributors will not hesitate to stock all fast and slow moving goods as well. In the eyes of the customer and society, the organization stands to gain a good standing and reputation of being a responsible company if it takes care of the e waste and hazardous waste generated.

Reverse Logistics has been successfully modified in the western world as a marketing strategy. Refurbished computers are sold at cheaper prices by all leading brands and the demand for such computers seems to be growing. The spare parts used by the computer manufacturers to service the laptops and computers on warranty or on sale, include refurbished parts. Many electronic and consumer durable manufacturing companies offer to buy back or exchange the old equipments from the customer when he intends to purchase a brand new product. In consumer electronics, the exchange offers for white goods such as washing machines and refrigerators are a big hit during discount sale seasons.

Ere long, RL had not been seriously considered by many organizations which did not have established policies, systems, human or financial resources to deal with this issue. Until now, little work had gone into studying how reverse logistics could have a positive impact on a company’s bottom line.

The focus on RL is being influenced, not only by supply chain improvements, but also, by legislation that puts the onus on manufacturers and retailers to safely dispose of unsold/used goods and be fully responsible for their products even after the useful life.

Managed in the right way there are multiple benefits which the company will accrue, beyond meeting legislation, by tackling reverse logistics. By harnessing and re-engineering existing supply chains, there are opportunities to improve accuracy, reduce costs and track products that will minimize loss of revenue due to faulty, obsolete or missing stock. In some cases, organizations have considered ways to reward employees for their smartness in recapturing the value via the flow of products back though the supply chain.

There are a number of measurable and tangible benefits that can be achieved through the features and functionality found within a state of the art RL solution. These benefits are listed below

Profitability

One of the major aims in implementing a new RLM system is to achieve profitability through cost reduction and RL efficiencies. Profits can be derived beginning from process, people, and inventory by improving labour productivity and process efficiency. This can be achieved by minimizing losses from depreciation and shrinkage. Further, profits can be achieved by improving shop floor velocity, improving returns inventory utilization and improving asset to cash cycle time. By streamlining the collaboration across multiple suppliers and capturing accurate RL strategy and depot operations costs also profits can be accrued. Profits can be further obtained by improving regulatory compliance, customer penalty avoidance, improving component warranty entitlement, processing return-to-vendor warranty and track repair workmanship warranty.

Customer Retention

Another major gain of an advanced RL systems are increased service levels and improved customer satisfaction. RL keeps customers happy and coming back. They implement faster, simpler returns processing and turnaround time for customers. They establish enterprise-wide visibility for customer order and asset tracking. They define, automate, and standardize business processes for a consistent customer experience across product lines.

Revenue Generation

RL helps the manufacturer to establish and enhance revenue generation programs. It is useful to streamline production processes and endto-end visibility. It helps to refurbish and resell. It enables the producer to sell with extended warranty services and extended service contracts. Further it is convenient to sell the product with accessories, upgrading and helps to cross-sell other products.

Brand Equity

Advanced RL systems create “green” PR through recycling and sustainability. In this process they build customer intimacy. They improve relationships with suppliers and channels, effectively manage recalls and protect corporate reputation through proper regulatory compliance. Every stage of RL has a financial impact toward lowering labour and material costs or increasing top line opportunities. The Financial impact of RL helps reduce or eliminate high labour intensive and time consuming tasks. The RL supply chain enables a company to better control, plan, and anticipate service events. In such an atmosphere, the labour force can work more efficiently and obtain a higher level of productivity. RL can also facilitate a considerable reduction in material costs (e.g. inventory) through visibility and planning tools, real-time information tracking, tracing, standardized processes and procedures and the self-monitoring of RL events.

Uniqueness of Reverse Logistics

Reverse Logistics and forward logistics as part of a business value chain have common characteristics. At the same time they have also have separate characteristics.

Distribution

RL has the place, time, quality and quantity which are difficult to foresee. The forward logistics has certainty, of volume, time and the designated delivery point.

Time-Consuming

The generation of waste materials are often does not immediately meet certain needs. It goes thorough processing, and restructuring and the processing time is longer. At the same time, collection and recycling of used materials is a more complex process.

Inconsistency

Majority of the enterprises are having difficulty to control the recovery time and space products, which will lead to the variability mostly in the following aspects:

1.3 NEED OF THE STUDY

RL is an important link of the supply chain management. Many companies that, previously, did not devote much time or funds to the management and understanding of RL had begun to pay attention towards this policy.

One of the important reasons for reverse logistics in KRS is that repairs or re-filling. The empty and reusable containers are return back to the manufacturers and also the failure of products also return back to the manufacturers.

- Damaged goods

One of the main reason for return of goods is its damage. The goods damages are happen at the time of loading and unloading. So the goods are needed to send back the manufacturer.

- Expiry of goods

The expiry of the goods means sometimes the goods are not fully sold

- Reusable containers or packages

The empty reusable containers and packages used for transaction of goods were sent back to the manufacturers for transportation.

- Return of input not used by the manufacturer or goods not sold by distributors.

Another main reason for reverse logistics is that unused goods. They are sending back to the unused goods to the manufacturers that they can make to a reusable product.

- Exchange of new product for the old ones

Another reverse of goods happens in the case of exchange of new product with old ones. It's the kind of replacement of product.

- Goods sent for Up-Gradation or modification

sometimes the good are send back to the manufacturers for up- gradation or modification. Because certain times the goods are needed to better modification so they are send back to the goods so they are send back to the manufacturers.

- Recycling of product

Recycling of product deals with the resending of goods to the manufactures, they use the products for making new products.