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## CHAPTER – III

### THEORETICAL BACKGROUND

#### 3.1 INTRODUCTION

Logistics, in its most basic definition, is the efficient flow and storage of goods from their point of origin to the point of consumption. It is the part of the supply chain process that plans, implements and controls the flow of goods. It can also be seen as the management of inventory, rest or in motion. The word Logistics was first used in the military service to describe the process of supplying a war zone with troops, supplies and equipment. The term is now used more commonly in the field of business.

A recent United States study found that logistics costs account for almost 10% of the gross domestic product. The process itself covers a diverse number of functional areas. Involved in logistics are transportation and traffic, as well as shipping and receiving. It also covers storage and import/export operations.

The concept of logistics can be applied to specific areas of business. Acquisition logistics, for example, covers everything involved in acquiring logistics support equipment and personnel for a new weapons system for the military. This includes identifying, designing, defining, developing, producing, delivering and installing the new weapons system.

Another area is Integrated Logistics Support (ILS). This is a management function that provides funding, planning and controls to assure that the system meets the expected requirements. ILS is

also expected to make sure the price of the goods is reasonable and the product is of the required quality.

Many businesses that deal with supply of goods or services have their own logistics department. For example, a company supplying photocopying paper around the world will have a logistics team. The manager will oversee or delegate to his staff the process from the point of origin. The team will deal with the acquisition of paper from the paper supplier all the way to the customer who requests the paper. The supplier and buyer may be located in different countries.

It is the logistics team who must make sure that products can be obtained at a reasonable price. They then have to make sure the product is shipped on time and will arrive when expected. The logistics team also has to deal with importing and exporting contracts, and possibly also with the customs department. The process at times can be a lengthy one, but once in place should run smoothly.

### **3.2 OBJECTIVES OF LOGISTICS**

The logistics function of a firm is normally guided by a logistics strategy. The logistics strategy sets objectives and develops guidelines for allocating the resources for achieving these objectives. However, the broad objectives of the logistics strategy are drawn from the distribution strategy. These broad objectives generally consist of the service output demands to be delivered to the customers. To achieve these service output demands, the logistics function requires specific objectives with regard to each of the major activities that it carries out. Some of these objectives, for

instance, are concerned with the transportation function, the inventory management function, etc.

The logistics strategy is a key component of the distribution strategy of the firm which in turn forms part of the marketing strategy. Usually, the logistics strategy brings together the components of the manufacturing and marketing strategies of the firm. This is because the concerns of the logistics and the manufacturing function of the firm overlap. The logistics strategy comprises three objectives (i) cost reduction, (ii) capital reduction, and (iii) service improvement.

The cost reduction strategy is aimed at reducing the variable cost related to the movement and storage of goods. The service levels are usually not altered for the sake of cost reduction. The cost reduction is usually achieved by such tactics like altering the number and location of warehouses, altering the mode of transport, route optimization for the transport function, optimizing the quantum of inventory, etc. Technology can also be used to reduce the variable cost of logistics.

Capital reduction is a strategy devoted towards minimizing the investment in the logistical system. The main aim is to minimize the return on investment. A substantial amount of money is spent on creating capital assets for undertaking the logistical function. These assets include warehouses, trucks, material handling equipment, software for order processing, etc. with increased outlay on these accounts, the total cost of logistical operations becomes very substantial. The objective of the logistics strategy, therefore, is to reduce the outlay for capital assets such that only the most critical assets are acquired. Also, substantial capital reduction can be achieved by leasing and renting facilities without affecting the service output to the customers.

Service improvements involves giving better service across the dimension of service without substantially increasing the cost of

logistics. Although the costs increase rapidly with greater service levels, service improvements can also be achieved in the context of greater anticipation of revenue by attracting more customers. The increase in revenue leads to better service facilities to customers.

### **3.3 LOGISTICS PLANNING**

The logistics planning activity is a continuation of the logistics strategy in the sense that the strategy developed is given a more detailed and practical meaning in the planning phase. Logistics planning, as in the case of the planning process in the other functions, can be considered as arranging the flow of activities.

However, since the activities taken up in the logistics functions are all highly inter-dependent, there is a need for balancing the system in terms of the individual goals of the components of the logistics system. For instance, if the warehousing function is given the goal of reducing the inventory and the transportation function is required to reduce the transportation costs, the warehouses would order very small quantities of inventory more frequently, while the transportation department will try to postpone the dispatches as much as possible.

Hence, while each department would try to achieve its costs reduction objectives, the system will become totally paralyzed. In order to avoid such problems, the activity levels of the components of the

logistical system should be so balanced that all the components should not work at cross purpose in the process of achieving their

respective objectives. The importance of detailed planning in logistics is because of this interdependence and the consequent necessity of balancing the goals of the components.

### **3.4 LOGISTICS MANAGEMENT**

In today's global marketplace, selling a product is sometimes easier than getting it to customers. Companies must decide on the best way to store, handle, and move their products and services so that they are available to customers in the right assortment, at the right time, and in the right place. Logistics effectiveness has a major impact on both customer satisfaction and company costs. A poor distribution system can destroy good marketing effort. Here we consider the nature and importance of marketing logistics, goals of the logistics system, major logistics functions and the need for integrated logistics management.

#### **3.4.1 MARKETING LOGISTICS**

To some managers, physical distribution means only trucks and warehouses. But modern logistics is much more than this. Physical distribution (or marketing logistics) involves planning, implementing and controlling the physical flow of materials, final goods, and related information from points of origin to points of consumption to meet customer requirements at a profit. In short, it involves getting the right product to the right customer in the right place at the right time. Traditional physical distribution has typically started with products at the plant and tried to find low-cost solutions to get them to customers. However, today's marketers prefer market logistics thinking, which starts with the marketplace and works backward to the factory. Logistics addresses not only the problem of outbound distribution (moving products from the factory to customers), but also the problem of inbound distribution (moving

products and materials from suppliers to the factory). It involves the management of entire supply chains, value-added flows from suppliers to final users. Thus the logistics manager's task is to coordinate the whole-channel physical distribution system the activities of suppliers, purchasing agents, marketers, channel members, and customers. These activities include forecasting, information systems, purchasing, production planning, order processing, inventory, warehousing and transportation planning.

Companies today are placing greater emphasis on logistics for several reasons. First, customer service and satisfaction have become the cornerstones of marketing strategy in many businesses, and distribution is an important customer service element. More and more, effective logistics is becoming a key to winning and keeping customers. Companies are finding that they can attract more customers by giving better service or lower prices through better physical distribution. On the other hand, companies may lose customers when they fail to supply the right products on time.

Second, logistics is a major cost element for most companies. According to one study, in a recent year, American companies "spent \$670 billion – a gaping 10.5 % of Gross Domestic Product – to wrap, bundle, load, unload, sort, reload, and transport goods." About 15% of an average product's price is accounted for by shipping and transport alone. Poor physical distribution decisions result in high costs. Even large companies sometimes make too little use of modern decision tools for coordinating inventory levels; transportation efficiency can yield tremendous cost savings for both the company and its customers. Third, the explosion in the product variety has created a need for improved logistics management. For example, in 1911, the typical



grocery store carried only 270 items. The store manager could keep track of this inventory on about 10 pages of notebook paper stuffed in a shirt pocket. Today, the average store carries a bewildering stock of more than 16,700 items, some 62 times more than in 1911. Ordering, shipping, stocking, and controlling such a variety of products present a sizable logistics challenge.

Finally, improvements in the information technology have created opportunities for major gains in distribution efficiency. The increased use of computers, point-of-sale scanners, uniform product codes, satellite tracking, electronic data interchange and electronic funds transfer has allowed companies to create advanced systems for order processing, inventory control and handling, and transportation routing and scheduling.

### **3.5 GOALS OF THE LOGISTICS SYSTEMS**

Some companies state their logistics objective as providing maximum customer service at the least cost. Unfortunately, no logistics system can both maximize customer service and minimize distribution costs. Maximum customer service implies rapid delivery, large inventories, flexible assortments, liberal returns policies, and other services – all of which raise distribution costs. In contrast, minimum distribution costs imply slower delivery, smaller inventories, and larger shipping lots- which represent a lower level of overall customers' service.

The goal of the marketing logistics systems should be to provide a targeted level of customer service at the least cost. A company must first research the importance of various distribution services to its customers, and then set desired service levels for each segment. The company normally will want to offer at least the same level of service as its competitors do. But the objective is to

maximize profits, not sales. Therefore, the company must weigh the benefits of providing higher levels of service against the costs. Some companies offer less service than their competitors and charge a lower price. Other companies offer more service and charge higher prices to cover higher costs.

### **3.6 MAJOR LOGISTICS FUNCTIONS**

Given a set of logistics objectives, the company is ready to design a logistics system that will minimize the cost of attaining these objectives; the major logistics functions include order processing, warehousing, inventory management, and transportation

#### **3.6. a ORDER PROCESSING**

Orders can be submitted in many ways – by mail or telephone, through salespersons, or via computer and electronic data interchange. In some cases, the suppliers might actually generate orders for their customers.

Once received, orders must be processed quickly and accurately. The order-processing system prepares invoices and sends order information to those who need it. The appropriate warehouse receives instructions to pack and ship the ordered items. Products out of stock are back-ordered. Shipped items are accompanied by shipping and billing documents, with copies going to various departments.

Both the company and its customers benefit when the orders-processing steps are carried out efficiently. Ideally, salespeople send in their orders daily, often electronically. The order department quickly processes these orders, and the warehouse sends the goods out on time. Bills go out as soon as possible. Most companies now use computerized order-processing systems that speed up the order-shipping-billing cycle.

### **3.6. b WAREHOUSING**

Every company must store its goods while they wait to be sold. A storage function is needed because production and consumption cycles rarely match. For example Snapper, Toro, and other lawn mower manufacturers must produce all year long and store up their product for the heavy spring and summer buying seasons. The storage function overcomes differences in needed quantities and timing.

A company must decide on many and what types of warehouses it needs, and where they will be located. The more warehouses the company uses, the more quickly goods can be delivered to customers. However, more locations mean higher warehousing costs. The company, therefore, must balance the level of customer service against distribution costs.

Some company stock is kept at or near the plant, with the rest located in warehouses around the country. The company might own private warehouses, rent space in public warehouses, or both.

#### **3.6.b(1) Warehouse Ownership**

As regards ownership of warehouses, broadly two options are available to a company, namely, private warehouse(s) or/and public warehouse(s). Private warehouses are those which are owned and operated by the company itself and are often exclusively used by it. Public warehouses are those which are owned and operated by public institutions or other persons and are open for use by anybody at a charge who can conform to certain rules and regulations. These public warehouses may be used exclusive and long-term basis or on a shared basis with others. In India public warehouses are owned and operated by the Central Warehousing Corporation and State Warehousing Corporation(s); bonded warehouses are owned and operated by Port Trusts where

goods are stored by importers till custom dues are paid or goods are reshipped to other destinations without being brought into the country. Many private firms also own and manage cold storages and hire them out for storage of perishable products. Most of the fertilizer manufacturing companies depend on central and state warehousing system for their storage requirements.

### **3.6.b(2) Strengths and Weaknesses**

The decision to own a private warehouse or to hire a public warehouse depends on a variety of factors such as sales volume in specific market segments, preference for fixed or variable warehousing cost, relative warehousing efficiency, marketing channels used, and the degree of flexibility desired in inventory. However, these factors are not mutually exclusive; these are interactive. Both private and public warehouses have their relative strengths and weaknesses. When a company can move a large volume of products in the market, there are no tangible seasonal demand fluctuations when specialized customer servicing and product handling is required then private warehousing may be advantageous. In such a case the possibility of fixed warehouse cost dispersal would be greater leading to a fall in the unit warehousing cost. The level of customer service would also be better. However, private warehousing requires allocation of substantial managerial time and energy and trained personnel to operate them. Besides constructing a private warehouse entails considerable investment "whose pay-off period, according to Fertilizer Association of India studies, is long, ranging from 20 to 25 years and the return on investment is not attractive".

A public warehouse, on the contrary, promises considerable cost economy when the volume to be moved is small, seasonal

and other demand variations are more pronounced, and the product requires specialized handling and treatment, say, cold storing. Since the warehouse cost is variable in terms of time and space, it varies with the volume and inventory turnover. As a result, the cost commitment is not permanent unless the public warehouseman insists on minimum occupation as is, sometimes, being done by central and state warehousing corporations. Studies in the fertilizer industry in India reveal the cost economy of public warehouses. According to these studies the capital cost of a godown with a capacity of 5000 tones is estimated around Rs. 10 lakhs and the operating cost Rs. 20000 per month. The charge per tone/month on private warehouse roughly rate of Rs. 2.80 as against the storage housing corporations. Nevertheless, the experience of some fertilizer companies in the country indicates that for a regular distribution pattern of over 800 to 900 tones per month through a warehouse, the owned facility is more economical. Besides, the warehouse receipt issued by public warehouses serves as a good collateral security for obtaining short-term loans from banks.

Thus, both private and public warehouses have their strengths and weaknesses. The managerial choice would depend on the relative weightage given to different decisions factors. However, there are suggestions to economize on warehousing cost by sharing public warehouse services jointly by two or more companies. The new concept called "the concept of shared services" involves a basic switch from reliance on private distribution system to reliance on comprehensive system of shared facilities and services.

### **3.6.b(3) WAREHOUSE LOCATION**

As regards location of warehouses, usually two options are available to a company: to centralize warehouse facilities at one geographical location or to decentralize them at more than one location. The centralized warehouse is usually built around the manufacturing plant while the decentralized warehouse is built at or in the vicinity of markets. In centralized warehousing products are moved to the warehouse from the plant from where these are distributed to different markets irrespective of the distances. Thus, there is only one dispatch point. In decentralized warehousing, on the other hand, the products are first moved in bulk from the plant to different warehouses called 'distribution centers' where these are assorted, re-grouped, and delivered. The principal purpose of the distribution center is to provide a more economical means of facilitating product flow via transfer point that breaks bulk and improves the assembly of customized orders from various dealer destinations.

The minimum number of distribution points-decentralized warehouses would depend on the geographical distribution of the product, the acceptable time to deliver an order to a customer, the percentage of market to be reached in a given time, and the speed of transportation from the distribution point to a customer. When a company, for example, wishes to acquire a large market share by selling in a widely dispersed market to those customers whose acceptable delivery time is relatively short and the speed of available transport medium/vehicle is relatively slow, then the managerial choice would not only be for a warehouse located near or in the vicinity of the customer-a decentralized warehousing-but also for a relatively larger number of warehouses.

In a situation contrary to the one described above, the warehousing would be centralized.

**3.6.b(4) STRENGTHS AND WEAKNESSES:**

Both centralized and decentralized warehousing options have their strengths and weaknesses which must receive managerial consideration while deciding about the warehouse location. When a company opts for the centralized warehousing, it need not carry a large inventory and also need not face stockout situations because all products are stored at one location enabling the company to meet customer demands at short notices. The company is also better placed to meet demand variations from different market segments at short notices. Owing to inventory centralization the overall warehouse efficiency also goes up and inventory control becomes more effective.

The transport facilities are maximally used and vehicle routing becomes easier. The most tangible advantage of central warehousing is reflected in the low level of investment in the inventory holdings. However, when warehousing is centralized, the transport cost is maximum unless each delivery is bulky and long distance to enable a company to profit by telescopic freight rates. Also there is a certain loss in customer service on account of spatial considerations; there is a distinct delay in product delivery. The market coverage from a central warehousing is also relatively poor, depriving the company of its market share.

On the other hand, in a decentralized warehousing system dispersed over a wider market territory, a company serves its customers in a better way by positioning inventory in their proximity. The time utility thus created is really substantial. The company saves in terms of freight charges on account of bulk handling. Besides, it may be necessary for companies in India to decentralize

warehousing so as to facilitate product movement by block-rakes. This is being increasingly insisted upon by the Indian railways in the matter of quicker turn around of wagons and maximum utilization of the limited wagon availability. However, a company has to keep a relatively large inventory at different locations, thus involving substantial investment. Also, the administrative cost of managing a large number of warehouses at different locations is sometimes really enormous with less than average efficiency level.

The final decision regarding the number and location of warehouses should rest on the balancing of the various decision inputs such as the service level to be offered, locational characteristics of the markets, product-mix and the cost. In order to facilitate decision-making in this area some theories and operations research models have also been developed people like Baumal and Wolfe, Kuehn and Hamburger, and Eilon and Watson-Gandy which may be capitalized upon by executive.

### **3.6. c INVENTORY MANAGEMENT DECISIONS**

Managing the inventory in the distribution system is probably the most critical activity in the logistics management process. Inventory levels directly influence the profitability of a company since building up inventories lead to greater costs. It is estimated that in the US, investment in inventory on an average is about 20% for manufacturing companies and above 40% for wholesalers and retailers. As long as inventories exist in the system, the investment on building up inventory does not give any returns, at least in the short run. Further, inventory pile up could also lead to greater chances of pilferage or damage to the inventory. At the same time, it is also impossible to reduce the inventory levels beyond a point. This is mainly because of the difficulty in forecasting demand



in a precise manner over a short term and hence in the absence of adequate inventory at various levels in the logistics system, a firm may not be able to provide service to the customers even when there is a slight fluctuation in demand. The present strategic orientation is therefore needed to maintain the most optimum level of inventory so that the customers service standards are met with the minimum level of inventory. Modern approaches like JIT (just-in-time) and ECR (efficient customer response) thus try to find out this optimum level of inventory and programme the system in order to achieve it.

Several reasons are responsible for the existence of inventories in a distribution channel. Some of the most important ones are:

**1. Improves Customer Service**

Production facilities, which have to be programmed in advance for producing at specific capacities, cannot respond to fluctuating demands instantaneously. However, demand is normally very stochastic in the short term. Hence, inventory is required to service the possible increase in demand that might occur defying the forecasts. In the absence of inventory many customers order might have to be turned down.

**2. Smoothens the Operations of the Logistics System**

Much of the inventory is actually carried out as a buffer to service unpredictable demand during the lead time after passing the order for replenishment to the production facility. Any logistics system will have a lead time between the order transmission and the order receipt. Highly inefficient system will have a lengthier lead time. Even if the lead time is predictable and does not vary, inventory is needed to service demand during the lead time. This inventory actually enables the smooth functioning of the logistical

system as otherwise there will be immense pressure on the logistics system to cut the lead time, which may lead to uneconomical decisions like using costly transportation alternatives.

### **3. Reduces Costs**

While inventory pile up usually leads to higher costs, some cost-saving is also effected due to inventory management. For instance, the capability to carry inventory in the system enables a production facility to avail of quantity discounts from its raw material suppliers. Also, inventory carrying capacity can reduce transportation costs by reducing the less than truckload shipments. In fact, many transport companies encourage large shipments by offering discounts for large shipments.

#### **3.6.c(1) Costs Associated with Inventory**

The costs associated with inventory can broadly be classified into three: (i) inventory procurement costs, (ii) inventory carrying costs, and (iii) stockout costs. These costs are considered to be in conflict or should be traded off appropriately in the inventory system, this is because a reduction in one type of cost is bound to lead to an increase in another type of cost.

#### **3.6.c(2) Techniques of Material Control**

A number of techniques are used at planning, procuring and holding stage of material which help in exercising and effecting material cost control. Such techniques are as below :

1. Level setting
2. Economic order quantity
3. Just-in-time inventory system
4. ABC analysis
5. VEB analysis
6. Perpetual inventory system
7. Double bin system

8. Input-output ratio
9. Material turnover ratio
10. FNSD analysis
11. Material cost reports

### **3.6. d TRANSPORTATION**

Marketers need to take an interest in their company's transportation decisions. The choice of transportation carriers affects the pricing of products, delivery performance, and condition of the goods when they arrive—all of which will affect customer satisfaction. In shipping goods to its warehouses, dealers, and customers, the company can choose among five transportation modes: rail, water, truck, pipeline, and air.

#### **3.6.d(1) Factors Determining Transport Medium Choice**

As has been referred to earlier, the major managerial task in managing this aspect of physical distribution is to make a choice about the mode(s) of transportation that shall move the company's products. Some of the factors determining this choice include the following:

##### **1. Cost:**

It refers to the cost of moving products from one place to another and is indicated by the freight rate and total freight bill that a company is required to pay on the cargo. Two factors are important in evaluating the alternative modes of transport available from the standpoint of cost, namely, the distance to be traveled and the volume of products to be moved. The distance criterion influences the ratio between the fixed and variable components of the total movement cost. Although all modes of transport exhibit decreasing total cost per kilometer as distance increases, some modes reflect a sharper decrease than others, for example,

railways(in which cost per kilometer tapers very sharply with the distance covered).

## **2. Performance criteria**

Besides cost, the performance characteristics of each mode of transport considerably influence the choice of management. Broadly, six performance criteria may be identified, namely, speed, reliability, frequency, availability, safety, and versatility.

### **(a) Speed:**

It refers to the pace of movement and is usually indicated in kilometers per hour. In terms of speed, different modes of transport may be generally ranked as air, road, railway and waterways. However, while calculating speed from the stand-point of product movement, the time involved in transshipment, handling, stop-pages, loading and unloading and carting from station to customer destination should be taken into account. It is the total time taken from warehouse to customer destination that is relevant.

### **(b) Reliability:**

It refers to the dependability of the transport medium. Dependability is indicated by the number of in-transit interruptions, dislocation owing to inclement weather, accident proneness, etc., in these terms, both railway and roadway rank before airway and waterway.

### **(c) Frequency:**

It refers to repetitive movement of the mode of transport from one place to the other. Rail and roadways both rank pari passu in this test. There are daily rail and road cargo services from practically all business centers in India.

(d) Availability:

It refers to the flexibility and accessibility of the transport medium. The chronic wagon shortage makes railways a poorly available mode; road transport emerges successfully in this test. The availability of air cargo services is restricted by the number of airports and fleet.

(e) Safety:

Safety refers to the chances of safe and secure movement of products. It is indicated by the possibilities of product loss and damage. In India, again road transport ranks first relative to other modes from the safety point of view.

(f) Versatility:

Versatility in a transport medium refers to the ability of a medium to handle cargo of any dimension, nature, and value. Railway and waterway rank before road and airway from the standpoint of versatility.

(g) Product Suitability:

The choice of the transport medium is also determined by its suitability from the viewpoint of product character. Not all media are suitable for the movement of all types of products. For example, perishable products and products having a high replacement rate and time value are best moved by the roadway whereas long haul block traffic of bulky goods like coal, oil, etc, is best moved by rail and waterways. Likewise, products with a high unit value, such as diamond, jewellery, electronic equipment, etc, are best moved by air owing to the low ratio of the transport cost to the product price.

### **3.7 INTEGRATED LOGISTICS MANAGEMENT**

Today, more and more companies are adopting the concept of integrated logistics management. This concept recognizes that providing better customer service and trimming distribution costs

requires teamwork, both inside the company and among all the marketing channel organizations. Inside, the company, the various functional departments must work closely together to maximize the company's own logistics performance. The company must also integrate its logistics system with those of its suppliers and customers to maximize the performance of the entire distribution system.

### **3.8 CROSS-FUNCTIONAL TEAMWORK INSIDE THE COMPANY**

In most companies, responsibility for various logistics activities is assigned to many different functional units – marketing, sales, finance, manufacturing, and purchasing. Too, often, each function tries to optimize its own logistics performance with out regard for the activities of the other functions. However, transportation, inventory, warehousing, and order-processing activities interact, often in an inverse way. For example, lower inventory levels reduce inventory-carrying costs. But they may also reduce customer service and increase costs for stock-outs, back-orders, special production runs, and costly fast-freight shipments. Because distribution activities involve strong trade-offs, decisions by different functions must be coordinated to achieve superior overall logistics performance. Thus, the goal of integrated logistics management is to harmonize all of the company's distribution decisions. Close working relationships among functions can be achieved in several ways. Some companies have created permanent logistics committees made up of managers responsible for different physical distribution activities. These committees meet often to set policies for improving overall logistics performance. Companies can also create management positions that link the logistics activities of functional areas. For example, Proctor and

Gamble has created “supply manager” who manage all of the supply chain activities for each of its products categories. Many companies have a vice president of logistics with cross – functional authority. In fact, according to one logistics expert, three-fourths of all major wholesalers and retailers, and a third of major manufacturing companies, have senior logistics officers at the vice president or higher level. The location of the logistics functions within the company is a secondary concern. The important thing is that the company coordinates its logistics and marketing activities to create high market satisfaction at a reasonable cost.

### **3.9 THIRD AND FORTH PARTY LOGISTICS (3PL – 4PL)**

Third Party Logistics (3PL) is the management of logistic services beyond transportation. For example this might include storage, transshipment and value added services as well as the use of subcontractors.

Fourth Party Logistics (4PL) is the integration of all companies involved along the supply chain. 4PL is the planning, steering and controlling of all logistic procedures (for example flow of information, material and capital) by one service provider with long-term strategic objectives.

### **3.10 TOTAL COST CONCEPT**

A corollary of the systems approach is the total cost concept in respect of physical distribution. The cost refers to the summation of the cost involved in carrying inventory, warehousing, materials handling, freight charges and cartage. It envisages consideration of the total cost and not the individual cost of the each component in choosing the alternative courses of actions so that it

is the total cost that may be reduced; that cost configuration is accepted which contributes maximum of profits.

When the systems approach is not adopted and the total cost concept not employed, there is a managerial tendency to reduce cost every where, which is practically not possible. The only outcome of this is that the different components would work at cross – purposes, and as a result the cost of one component would stand reduced at the expense of another. For example, in order to reduce inventory carrying cost management may opt for an expensive and fast transport medium whose increased cost would ultimately eat up savings in inventory carrying cost unless the total cost is taken into account. Therefore, the cost on which managerial attention should be focused in any attempt to improve efficiency and reduce cost is the total cost of performing the physical distribution function and not the separate cost of the individual components. Management should in terms of trade – off in reducing alternative cost so as to maximize profits. By this kind of trade – off the total cost approach closer to achieving its maximum potential profits.

### **3.11 DISTRIBUTION RESOURCES PLANNING (DRP) SYSTEM**

DRP is a logistics information system innovation that enables managers to plan effectively and efficiently and deploy their finished goods inventories throughout a complex distribution network. The DRP system basically controls the flow of goods from the production facility through the various stocking points including the distributors and the retailers in a time phased manner. The centre point of an information management system that records and collates the inventory position across all the stocking points



and regularly matches it with the inventory position of the stocking point upstream.