UNIT-I

[Marketing Logistics: Concept, objectives and scope; System elements; Relevance of logistics in international marketing; International supply chain management and logistics; Transportation activity–internal transportation, inter-state goods movement; Concept of customer service.]

Learning objective:

After reading this chapter you should be able to understand the following

- **Marketing logistics concept, objective, scope and its elements**
- **Interface between international marketing and logistics & supply chain management.**
- **Role of transport in logistics.**
- **Concept of customer service.**

INTERNATIONAL LOGISTICS

Introduction: LOGISTICS

International marketing is becoming more important to companies as the world shifts from distinct national markets to linked global markets. Globalization brings homogenization of consumer needs, liberalization of trade, and competitive advantages of operating in global markets. Companies are forced to think and act globally in order to survive in such a dynamic environment. All these elements have a deep impact on the development and the positioning of companies on international marketplaces where competition is cruel. Furthermore, another significant change concerns the customers since they are more demanding in term of quality, lead time and order fulfilment. In this context, firms must be more and more flexible and reactive to anticipate and to adapt to such changes. This quest for flexibility and reactivity affects the conception and the management of firms and more generally their logistic systems and contributes to the development of partnership relations, to the emergence of mergers or strategic alliances between companies. As a result, a

firm can no longer be considered as an isolated entity but as a component of a wider supply network.

International Firms have begun to implement various strategies in order to remain competitive in world market. Logistics is one of the key areas in the process of international marketing as the delivery of goods to the buyer is as important as any other activity in business and marketing. Quite often, the most crucial part in International trade is the timely delivery of goods at a reasonable cost by the exporter to the importer. In fact, the prospective buyer may be willing to pay even higher price for timely supplies. The emergence of logistics as an integrative activity, with the movement of raw materials from their sources of supply to the production line and ending with the movement of finished goods to the customer has gained special importance. Earlier on, all the functions comprising logistics were not viewed as components of a single system. But, with emergence of logistic as an important part of corporate strategy due to certain developments in the field of international marketing has gained special significance. Before discussing the various aspects of logistics, let us look at its definition:

According to Council of logistics management:

"Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming the customer requirement".

This definition clearly points out the inherent nature of logistics and it conveys that Logistics is concerned with getting products and services where they are needed whenever they are desired. In trade Logistics has been performed since the

beginning of civilization: it's hardly new. However implementing best practice of logistics has become one of the most exciting and challenging operational areas of business and public sector management. Logistics is unique, it never stops! Logistics is happening around the globe 24 hours a days Seven days a week during fifty-two weeks a year. Few areas of business involve the complexity or span the geography typical of logistics.

I - CONCEPT OF INTERNATIONAL MARKETING LOGISTICS

Word, 'Logistics' is derived from French word 'loger', which means art of war pertaining to movement and supply of armies. Basically a military concept, it is now commonly applied to marketing management. Fighting a war requires the setting of an object, and to achieve this objective meticulous planning is needed so that the troops are properly deployed and the supply line consisting, interalia, weaponary, food, medical assistance, etc. is maintained. Similarly, the plan should be each that there is a minimum loss of men and material while, at the same time, it is capable of being altered if the need arises. As in the case of fighting a war in the battle-field, the marketing managers also need a suitable logistics plan that is capable of satisfying the company objective of meeting profitably the demand of the targeted customers.

From the point of view of management, marketing logistics or physical distribution has been described as 'planning, implementing and controlling the process of physical flows of materials and final products from the point of origin to the point of use in order to meet customer's needs at a profit. As a concept it means the art of managing the flow of raw materials and finished goods from the source of supply to their users. In other words, primarily it involves efficient management of goods from the end of product line to the consumers and in some cases, include the

movement of raw materials from the source of supply to the beginning of the production line. These activities include transportation warehousing, inventory control, order processing and information monitoring. These activities are considered primary to the effective management of logistics because they either contribute most to the total cost of logistics or they are essential to effective completion of the logistics task. However, the firms must carry out these activities as essential part of providing customer with the goods and services they desire.

ii) - SIGNIFIGANCE OF MARKETING LOGISTICS

The important of a logistics systems lies in the fact that it leads to ultimate consummation of the sales contract. The buyer is not interested in the promises of the seller that he can supply goods at competitive price but that he actually does so. Delivery according to the contract is essential to fulfilling the commercial and legal requirements. In the event of failure to comply with the stipulated supply of period, the seller may not only get his sale amount back, but may also be legally penalized, if the sales contract so specifies. There is no doubt that better delivery schedule is a good promotional strategy when buyers are reluctant to invest in warehousing and keeping higher level of inventories. Similarly, better and/or timely delivery helps in getting repeat orders through creation of goodwill for the supplier.

Thus, as effective logistics system contributes immensely to the achievements of the business and marketing objectives of a firm. It creates time and place utilities in the products and thereby helps in maximizing the value satisfaction to consumers. By ensuring quick deliveries in minimum time and cost, it relieves the customers of

holding excess inventories. It also brings down the cost of carrying inventory, material handling, transportation and other related activities of distribution. In nutshell, an efficient system of physical distribution/logistics has a great potential for improving customer service and reducing costs.

Logistics has gained importance due to the following trends

- Raise in transportation cost.
- Production efficiency is reaching a peak
- Fundamental change in inventory philosophy
- Product line proliferated
- Computer technology
- Increased use or computers
- Increased public concern of products Growth of several new, large retail chains or mass merchandise with large demands & very sophisticated logistics services, by pass traditional channel & distribution.
- Reduction in economic regulation
- Growing power of retailers
- Globalization

As a result of these developments, the decision maker has a number of choices to work out the most ideal marketing logistics system. Essentially, this system implies that people at all levels of management think and act in terms of integrated capabilities and adoption of a total approach to achieve pre-determined logistics objectives.

Logistics is also important on the global scale. Efficient logistics systems throughout the world economy are a basis for trade and a high standard of living for all of us. Lands, as well as the people who occupy them, are not equally productive. That is, one region often has an advantage over all others in some production specialty. An efficient logistics system allows a geographical region to exploit its inherent advantage by specializing its productive efforts in those products in which it has been an advantage by specializing its productive to other regions. The system allows the products' landed cost (production plus logistics cost) and quality to be competitive with those form any other region. Common examples of this specialization have been Japan's electronics industry, the agricultural, computer and aircrafts industries of United States and various countries dominance in supplying raw materials such as oil, gold, bauxite, and chromium.

Further more Logistics has gained importance in the international marketing with the following reasons:

1. Transform in the customers attitude towards the total cost approach rather than direct cost approach .
2. Technological advancement in the fields of information processing and communication.
3. Technological development in transportation and material handling.
4. Companies are centralizing production to gain economies of scale.
5. Most of the MNC organizations are restructuring their production facilities on a global basis.
6. In many industries, the value added by manufacturing is declining as the cost of materials and distribution climbs.
7. High volume data processing and transmission is revolutionizing logistics control systems.

8. With the advancement of new technologies, managers can now update sales and inventory planning faster and more frequently, and factories can respond with more flexibility to volatile market conditions.
9. Product life cycles are contracting. Companies that have gone all out to slash costs by turning to large scale batch production regularly find themselves saddled with obsolete stocks and are unable to keep pace with competitors' new-product introductions.
10. Product lines are proliferating. More and more product line variety is needed to satisfy the growing range of customer tastes and requirements, and stock levels in both field and factory inevitably rise.
11. The balance of power in distribution chain is shifting from the manufacturers to the trader.

iii) - OBJECTIVES OF MARKETTING LOGISTICS

The **General objectives** of the logistics can be summarized as:

1. Cost reduction
2. Capital reduction
3. Service improvement

The **specific objective** of an ideal logistics system is to ensure the flow of supply to the buyer, the:

- **right product**
- **right quantities and assortments**
- **right places**
- **right time**
- **right cost / price and,**
- **right condition**

This implies that a firm will aim at having a logistics system which maximizes the customer service and minimizes the distribution cost. However, one

can approximate the reality by defining the objective of logistics system as achieving a desired level of customer service i.e., the degree of delivery support given by the seller to the buyer.

Thus, logistics management starts with as curtaining customer need till its fulfillment through product supplies and, during this process of supplies, it considers all aspects of performance which include arranging the inputs, manufacturing the goods and the physical distribution of the products. However, there are some definite objectives to be achieved through a proper logistics system. These can be described as follows:

1. Improving customer service:

As we know, the marketing concept assumes that the sure way to maximize profits in the long run is through maximizing the customer satisfaction. As such, an important objective of all marketing efforts, including the physical distribution activities, is to improve the customer service.

An efficient management of physical distribution can help in improving the level of customer service by developing an effective system of warehousing, quick and economic transportation, all maintaining optimum level of inventory. But, as discussed earlier, the level of service directly affects the cost of physical distribution. Therefore, while deciding the level of service, a careful analysis of the customers' wants and the policies of the competitors is necessary. The customers may be interested in several things like timely delivery, careful handling of merchandise, reliability of inventory, economy in operations, and so on. However, the relative importance of these factors in the minds of customers may vary. Hence, an effort should be made to ascertain whether they value timely delivery or economy in transportation, and so on. One the relative weights are known, an analysis of what the competitors are offering in this regard should also be made. This, together with an estimate about the cost of providing a particular level of customer service, would help in deciding the level of customer service.

2. Rapid Response:

Rapid response is concerned with a firm's ability to satisfy customer service requirements in a timely manner. Information technology has increased the capability to postpone logistical operations to the latest possible time and then accomplish rapid delivery of required inventory. The result is elimination of excessive inventories traditionally stocked in anticipation of customer requirements. Rapid response capability shifts operational emphasis from an anticipatory posture based on forecasting and inventory stocking to responding to customer requirements on a shipment-to-shipment basis. Because inventory is typically not moved in a time-based system until customer requirements are known and performance is committed, little tolerance exists for operational deficiencies

3. Reduce total distribution costs:

Another most commonly stated objective is to minimize the cost of physical distribution of the products. As explained earlier, the cost of physical distribution consists of various elements such as transportation, warehousing and inventory maintenance, and any reduction in the cost of one element may result in an increase in the cost of the other elements. Thus, the objective of the firm should be to reduce the total cost of distribution and not just the cost incurred on any one element. For this purpose, the total cost of alternative distribution systems should be analyzed and the one which has the minimum total distribution cost should be selected.

4. Generating additional sales:

Another important objective of the physical distribution/logistics system in a firm is to generate additional sales. A firm can attract additional customers by offering better services at lowest prices. For example, by decentralizing its warehousing operations or by using economic and efficient modes of transportation, a firm can

achieve larger market share. Also by avoiding the out-of-stock situation, the loss of loyal customers can be arrested.

5. Creating time and place utilities:

The logistical system also aims at creating time and place utilities to the products. Unless the products are physically moved from the place of their origin to the place where they are required for consumption, they do not serve any purpose to the users. Similarly, the products have to be made available at the time they are needed for consumption. Both these purposes can be achieved by increasing the number of warehouses located at places from where the goods can be delivered quickly and where sufficient stocks are maintained so as to meet the emergency demands of the customers. Moreover, a quicker mode of transport should be selected to move the products from one place to another in the shortest possible time. Thus, time and place utilities can be created in the products through an efficient system of physical distribution.

6. Price stabilization:

Logistics also aim at achieving stabilization in the prices of the products. It can be achieved by regulating the flow of the products to the market through a judicious use of available transport facilities and compatible warehouse operations. For example, in the case of industries such as cotton textile, there are heavy fluctuations in the supply of raw materials. In such cases if the market forces are allowed to operate freely, the raw material would be very cheap during harvesting season and very dear during off season. By stocking the raw material during the period of excess supply (harvest season) and made available during the periods of short supply, the prices can be stabilized.

7. Quality improvement:

The long-term objective of the logistical system is to seek continuous quality improvement. Total quality management (TQM) has become a major commitment throughout all facets of industry. Overall commitment to TQM is one of the major

forces contributing to the logistical renaissance. If a product becomes defective or if service promises are not kept, little, if any, value is added by the logistics. Logistical costs, once expended, cannot be reversed. In fact, when quality fails, the logistical performance typically needs to be reversed and then repeated. Logistics itself must perform to demanding quality standards. The management challenge of achieving zero defect logistical performance is magnified by the fact that logistical operations typically must be performed across a vast geographical area at all times of the day and night. The quality challenge is magnified by the fact that most logistical work is performed out of a supervisor's vision. Reworking a customer's order as a result of incorrect shipment or in-transit damage is far more costly than performing it right the first time. Logistics is a prime part of developing and maintaining continuous TQM improvement.

8. Life-Cycle support:

A good logistical system helps to support the life cycle. Few items are sold without some guarantee that the product will perform as advertised over a specified period. In some situations. the normal value-added inventory flow toward customers must be reversed. Product recall is a critical competency resulting from increasingly rigid quality standards, product expiration dating and responsibility for hazardous consequences. Return logistics requirements also result from the increasing number of laws prohibiting disposal and encouraging recycling of beverage containers and packaging materials. The most significant aspect of reverse logistical operations is the need for maximum control when a potential health liability exists (i.e.. a contaminated product). In this sense, a recall program is similar to a strategy of maximum customer service that must be executed regardless of cost. Firestone classical response to the tyre crisis is an example of turning adversity into advantage. The operational requirements of reverse logistics range from lowest total cost, such as returning bottles for recycling, to maximum performance solutions for

critical recalls. The important point is that sound logistical strategy cannot be formulated without careful review of reverse logistical requirements.

9. Movement consolidation:

As the logistical system aims at cost reduction through integration, consolidation One of the most significant logistical costs is transportation. Transportation cost is directly related to. the type of product, size of shipment, and distance. Many Logistical systems that feature premium service depend on high-speed, small-shipment transportation. Premium transportation is typically high-cost. To reduce transportation cost.. it is desirable to achieve movement consolidation. As a general rule, the larger the overall shipment and the longer the distance it is transported, the lower the transportation cost per unit. This requires innovative programs to group small shipments for consolidated movement. Such programs must be facilitated by working arrangements that transcend the overall supply chain.

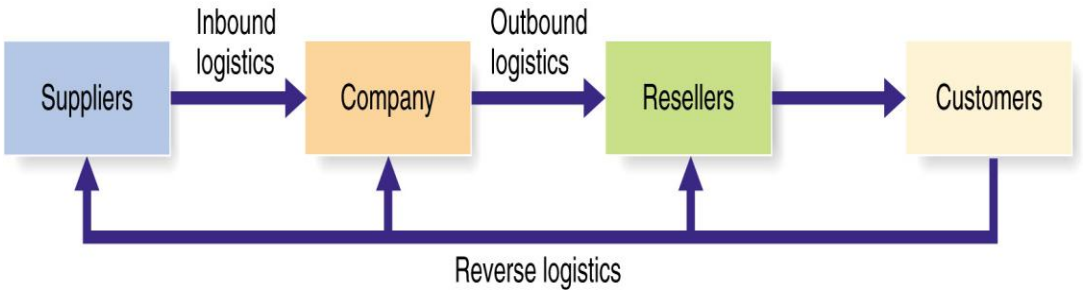
iv) - SCOPE OF THE MARKETING LOGISTICS

The development of interest in logistics after industrial revolution and world war II contributed to the growth in scope of logistical activities. The following areas are the major scope of logistics:

- Demand forecasting
- Distribution communication
- Inventory Control
- Material Handling
- Order Processing
- Part & Service Support
- Plant and Warehouse side selection
- Procurement
- Packaging

- Salvage & scrap disposal
- Traffic & transportation
- Warehousing & Storage
- Time & Place Utility
- Efficient Movement to Customer
- Return goods handling
- Customers Service

LOGISTICS MODEL



v) - LOGISTICS SYSTEM ELEMENTS

The following are the system elements of logistics:

1. Order processing
2. Warehousing
3. Inventory control
4. Transportation
5. Information monitoring
6. Facilities

Let us discuss the above said Elements in detail.

1. Order processing:

The starting point of physical distribution activities is the processing of customers' orders. In order to provide quicker customer service, the orders received from customers should be processed within the least possible time. Order processing includes receiving the order, recording the order, filling the order, and assembling all such orders for transportation, etc. the company and the customers benefit when these steps are carried out quickly and accurately. The error committed at this stage at times can prove to be very costly. For example, if a wrong product or the same product with different specifications is supplied to the customer, it may lead to cancellation of the original order (apart from loss in the credibility of the firm). Similarly, if the order is not executed within a reasonable time, it may lead to serious consequences. High speed data processing techniques are now available which allow for rapid processing of the orders.

2. Warehousing:

Warehousing refers to the storing and assorting products in order to create time utility. The basic purpose of the warehousing activity is to arrange placement of goods, provide storage facility to store them, consolidate them with other similar products, divide them into smaller quantities and build up assortment of products. Generally, larger the number of warehouses a firm has the lesser would be the time taken in serving customers at different locations, but greater would be the cost of warehousing. Thus, the firm has to strike a balance between the cost of warehousing and the level of customer service.

4. Inventory Control and Management:

Linked to warehousing decisions are the inventory decisions which hold the key to success of physical distribution especially where the inventory costs may be as high

as 30-40 per cent (e.g., steel and automobiles). No wonder, therefore, that the new concept of Just-in-Time-Inventory decision is increasingly becoming popular with a number of companies.

The decision regarding level of inventory involves estimate of demand for the product. A correct estimate of the demand helps to hold proper inventory level and control the inventory costs. This is not only helps the firm in terms of the cost of inventory and supply to customers in time but also to maintain production at a consistent level. The major factors determining the inventory levels are: The firm's policy regarding the customer service level, Degree of accuracy of the sales forecasts, Responsiveness of the distribution system i.e., ability of the system to transmit inventory needs to the factory and get the products in the market. The cost inventory consists of holding cost (such as cost of warehousing, tied up capital and obsolescence) and replenishment cost (including the manufacturing cost).

4. Transportation:

Transportation seeks to move goods from points of production and sale to points of consumption in the quantities required at times needed and at a reasonable cost. The transportation system adds time and place utilities to the goods handled and thus, increases their economic value. To achieve these goals, transportation facilities must be adequate, regular, dependable and equitable in terms of costs and benefits of the facilities and service provided.

5. Information monitoring:

The physical distribution managers continuously need up-to-date information about inventory, transportation and warehousing. For example, in respect on inventory, information about present stock position at each location, future commitment and replenishment capabilities are constantly required. Similarly, before choosing a

carrier, information about the availability of various modes of transport, their costs, services and suitability for a particular product is needed. About warehousing, information with respect to space utilization, work schedules, unit load performance, etc., is required.

In order to receive all the information stated above, an efficient management information system would be of immense use in controlling costs, improving services and determining the overall effectiveness of distribution. Of course, it is difficult to correctly assess the cost of physical distribution operations. But if correct information is available it can be analyzed systematically and a great deal of saving can be ensured.

6. Facilities:

The Facilities logistics element is composed of a variety of planning activities, all of which are directed toward ensuring that all required permanent or semipermanent operating and support facilities (for instance, training, field and depot maintenance, storage, operational, and testing) are available concurrently with system fielding. Planning must be comprehensive and include the need for new construction as well as modifications to existing facilities. Facility construction can take from 5 to 7 years from concept formulation to user occupancy. It also includes studies to define and establish impacts on life cycle cost, funding requirements, facility locations and improvements, space requirements, environmental impacts, duration or frequency of use, safety and health standards requirements, and security restrictions. Also included are any utility requirements, for both fixed and mobile facilities, with emphasis on limiting requirements of scarce or unique resources.

II - RELEVANCE OF LOGISTICS INTERNATIONAL MARKETING

Let us discuss the relevance of marketing and logistics in . Logistics is some time referred as other half of marketing. Marketing experts have recognized that for

developing a position of sustainable competitive advantage, a major source is superior logistics performance. Thus, it can be argued that instead of viewing distribution, marketing and manufacturing as largely separate activities within the business, they need to be unified, particularly at the strategic level. One might be tempted to describe such an integrated approach to strategy and planning as 'Marketing Logistics'. Business can only compete and survive either by winning a cost advantage or by providing superior value and benefit to the customer.

In recent years, numbers of companies have become aware that the market place encompasses the world, not just the India .As a practical matter, marketing managers are finding that they need to do much work in terms of conceptualizing , designing , and implementing logistics initiatives to market effective globally.
Following are the reasons behind the extension of logistics activities at global level to do business internationally.
The magnitude of global business are:

- Increase in the magnitude global business.
- Business are relying on foreign countries to provide a source of raw materials and markets for finished goods.
- Fall of global trade barriers.
- Increase in Global competition .

A perspective change in business and marketing urged the necessity of integrating logistics in marketing activities. Increasingly, the power of the brand is diminishing as technologies of competing product converge, making product differences less apparent. Faced with situations, the customer may be influenced by price or image perceptions, but over-riding these aspects the availability of product in stock may become the major consideration. A second change is that the customer' expectations of service have increased. The customer is now more demanding and more sophisticated. Industrial buyers are more professional in their

approach. Increasing use is made of formal vendor appraisal systems and suppliers are now confronted with the need to provide just-in-time delivery performance.

Another change that has had serve impact in many industries is the trend for product life cycles to become shorter. Rapid development in technology which have created markets where none existed and have rendered themselves obsolete as the next generation of product is announced. Such shortening life cycles create substantial problems for logistics management. In particular, shorter life cycles demand shorter lead times. Lead time is traditionally defined as the elapsed period from receipt of customer order due to the actual delivery. In today's environment there is a second aspect to lead time i.e., how long does it take from procurement of raw materials, sub-assemblies, etc. to the delivery of the final product of the customer?. What we are now witnessing is a situation where the product life cycle, in some cases, is in danger of becoming shorter than the procurement-to-delivery lead time with all the consequent problems for planning and operations that such a situation will create.

From the above points one can understand the role of logistics in marketing especially at the global level.

MARKETING AND LOGISTICS INTERFACE		
Marketing activities	**Logistics activities**	**Marketing logistics interface**
• Marketing research • Product mix • pricing • promotion • sales force management	• Forecasting • Transportation • Storage • Packing • Order fulfillment	• Customer service • Transport • Inventory processing • Material handling • Information

III- INTERNATIONAL SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) has been defined as "a process-oriented approach to procuring, producing, and delivering products and services to customers. SCM has a broad scope that includes sub-suppliers, suppliers, internal operations, trade customers, retail customers, and end users. It spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. The term supply chain management was coined by strategy consulting firm Booz Allen Hamilton in 198.Supply chains are dynamic and complex reaching into many customers and back into many suppliers throughout the world. It exists in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm. The following definitions are the evidence of role played by the logistics business development.

Definitions of Supply Chain Management
• A strategic concept that involves the understanding and managing of the sequence of activities - from supplier to customer - that add value to the product supply chain.
• The supply chain encompasses all activities associated with the upstream and downstream flow and transformation of goods and information from the raw materials stage (extraction), through to the end user.
• Supply chain management is the collaborative effort of multiple channel members to design, implement, and manage seamless value-added processes to meet the real needs of the end customer.

Traditionally, marketing, distribution, planning, manufacturing, and the purchasing organizations along the supply chain operated independently. These organizations have their own objectives and these are often conflicting. Marketing's objective of

high customer service and maximum sales conflict with manufacturing and distribution goals. Many manufacturing operations are designed to maximize throughput and lower costs with little consideration for the impact on inventory levels and distribution capabilities. Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there is not a single, integrated plan for the organization and there were as many plans as businesses. Clearly, there is a need for a mechanism through which these different functions can be integrated together. Supply chain management is a strategy through which such integration can be achieved.

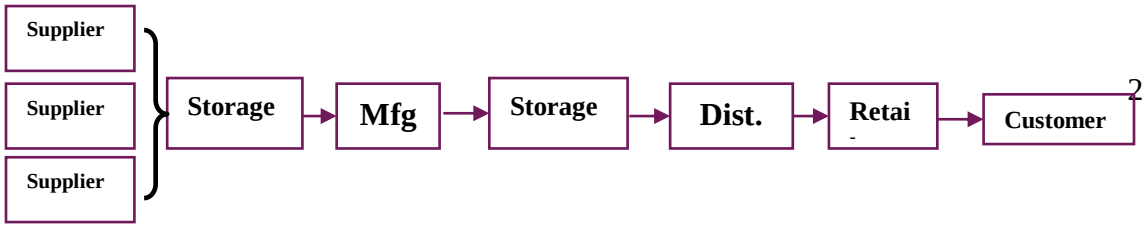
An example of a simple supply chain for a single product works as follows: From the production house the product starts it journey and travels through to the supplier, distributor, retailer and ends at the hands of the consumer. This whole journey is a well managed mechanism and controlled by supply chain management. When it goes global and the journey of the product covers multiple countries, then it is called global supply chain management. Global supply chain management has emerged as a major topic in the age of globalization and now it is sitting at the heart of the whole business system. With globalization, business has become more complex and Global supply chain management not only mobilizes products but also the entire value added chain, in which financial activities and sharing of information are also included. Big companies have many hubs around the world. Raw materials, finished products, finance and other pertinent information travel from one hub to the next. Global supply chain management has become the basis of the whole operation. The cost of production and profitability is dependant on the global supply chain as well as how well employees throughout the company are trained for such fast-paced tasks.

i) - LOGISTICS AND SUPPLY CHAIN MANAGEMENT

One of the main function of logistics is to make the goods and services available to the place where there is demand for the product. Supply chain is the process that is involved from the procurement of raw materials till the outcome as finished products. The logistics and the supply chain management is the two sides of a coin. They are interrelated and they function on their own simultaneously. Some experts distinguish supply chain management and logistics while others consider the terms to be interchangeable. From the point of view of an enterprise, the scope of supply chain management is usually bounded on the supply side by your supplier's suppliers and on the customer side by your customer's customers.The logistics plays an important role between sources of demand and sources of supply. The supply chain management is the planning and management of all activities involved in sourcing and procurement, conversions, and logistics management activities, including coordination and collaboration with suppliers, intermediaries, third party service providers and customers to facilitate integration of supply and demand management within and across companies.

Supply chain management is used in filling the gaps and the logistics is used in closing the gaps. Thus we can say that the supply chain management and logistics are part and parcel of a solution to the same purpose. Overall productivity of the organization increases if the supply chain management and logistics goes hand in hand.

TYPICAL SUPPLY CHAIN FOR A MANUFACTURER



ii) - NEED FOR SUPPLY CHAIN MANAGEMENT

The need of supply chain management has been identified as follows:

- Improve operations
- Increasing levels of outsourcing
- Increasing transportation costs
- Competitive pressures
- Increasing globalization
- Increasing importance of e-commerce
- Manage inventories

Major module of international supply chain management has two major components:

1. International movement of products and raw materials, title transformation, payments, controlling risk factors
2. In parallel with the above activities, an information network is hard at work. Information sharing and collecting is very important to run an effective global supply chain management system

ELEMENTS OF INTERNATIONAL SUPPLY CHAIN MANAGEMENT

ELEMENT	TYPICAL ISSUES

Customers	Determining what customers want
Forecasting	Predicting quantity and timing of demand
Design	Incorporating customer wants, mfg., and time
Processing	Controlling quality, scheduling work
Inventory	Meeting demand while managing inventory costs
Purchasing	Evaluating suppliers and supporting operations
Suppliers	Monitoring supplier quality, delivery, and relations
Location	Determining location of facilities
Logistics	Deciding how to best move and store materials

The efficiency of the global supply chain management of any company can make everything look easy. However in order to attain those efficiencies your employees need to understand the fundamentals. The most basic fundamental is that supply chain management is not just domestic anymore nor is it just for large corporations. Small and midsize companies have to be global supply chain management savvy if they wish to survive. The growth and development of a company is largely dependent on the global supply chain management system and its most important asset – employees.

iii) - SIMILARITIES AND DIFFERENCES BETWEEN DOMESTIC AND GLOBAL SUPPLY CHAIN MANAGEMENT

Though the concept of supply chain management is same at the domestic and international level, when it comes to practice few similarities and differences are there. The are:

Similarities:

- Conceptual framework

- Involve the movement and storage of products
- Role of information
- Quality monitoring
- economic and safety regulations

Differences:

- Distance
- Language
- Cultural differences
- Currency
- Political stability
- Infrastructure

iv) - OBJECTIVES OF SUPPLY CHAIN MANAGEMENT

The following are the major objectives of supply chain management and which are implemented by various organisation to enhance their competitiveness.

1. Logistics:

"Keeping the cost of transporting materials as low as possible consistent with safe and reliable delivery." Here the supply chain management system enables a company to have constant contact with its distribution team, which could consist of trucks, trains, or any other mode of transportation. The system can allow the company to track where the required materials are at all times. As well, it may be cost effective to share transportation costs with a partner company if shipments are not large enough to fill a whole truck and this again, allows the company to make good decision

2. Fulfillment:

Ensuring the right quantity of parts for production or products for sale arrive at the right time. This is enabled through efficient communication, ensuring that orders are placed with the appropriate amount of time available to be filled. The supply chain management system also allows a company to constantly see what is on stock and making sure that the right quantities are ordered to replace stock.

3. Production:

Ensuring production lines function smoothly because high-quality parts are available when needed.". Production can run smoothly as a result of fulfillment and logistics being implemented correctly. If the correct quantity is not ordered and delivered at the requested time, production will be halted, but having an effective supply chain management system in place will ensure that production can always run smoothly without delays due to ordering and transportation.

4. Costs:

"Keeping the cost of purchased parts and products at acceptable levels." Supply chain management reduces costs by increasing inventory turnover on the shop floor and in the warehouse controlling the quality of goods thus reducing internal and external failure costs and working with suppliers to produce the most cost efficient means of manufacturing a product.

5. Revenue & profit:

"Ensuring no sales are lost because shelves are empty. Managing the supply chain improves a company's flexibility to respond to unforeseen changes in demand and supply. Because of this, a company has the ability to produce goods at lower prices and distribute them to consumers quicker than companies without supply chain management thus increasing the overall profit.

6. Cooperation:

"Among supply chain partners ensures 'mutual success.'". Collaborative planning, forecasting and replenishment (CPFR) is a "longer-term commitment, joint work on quality, and support by the buyer of the supplier's managerial, technological, and capacity development." This relationship allows a company to have access to current, reliable information, obtain lower inventory levels, cut lead times, enhance product quality, improve forecasting accuracy and ultimately improve customer service and overall profits. The suppliers also benefit from the cooperative relationship through increased buyer input from suggestions on improving the quality and costs and though shared savings. Consumers can benefit as well through the higher quality goods provided at a lower cost.

v) - SUPPLY CHAIN ACTIVITIES

Supply chain management is a cross-functional approach to managing the movement of raw materials into an organization and the movement of finished goods out of the organization towards the end-consumer. As corporations strive to focus on core competencies and become more flexible, they have reduced their ownership of raw materials sources and distribution channels. These functions are increasingly being outsourced to other corporations that can perform the activities better or more cost effectively. The effect has been to increase the number of companies involved in satisfying consumer demand, while reducing management control of daily logistics operations. Less control and more supply chain partners led to the creation of supply chain management concepts. The purpose of supply chain management is to improve trust and collaboration among supply chain partners, thus improving inventory visibility and improving inventory velocity.

Several models have been proposed for understanding the activities required to manage material movements across organizational and functional boundaries.Few of major activities are:

1. Customer service Management

2. Procurement
3. Product development and Commercialization
4. Manufacturing flow management/support
5. Physical Distribution
6. Outsourcing/ Partnerships
7. Performance Measurement

The above said major Supply chain activities can be grouped into strategic, tactical, and operational levels of activities.they are:

Strategic:

- Strategic network optimization, including the number, location, and size of warehouses, distribution centers and facilities.
- Strategic partnership with suppliers, distributors, and customers, creating communication channels for critical information and operational improvements such as cross docking, direct shipping, and third-party logistics.
- Product design coordination, so that new and existing products can be optimally integrated into the supply chain, load management
- Information Technology infrastructure, to support supply chain operations.
- Where to make and what to make or buy decisions
- Align Overall Organisational Strategy with supply strategy

Tactical:

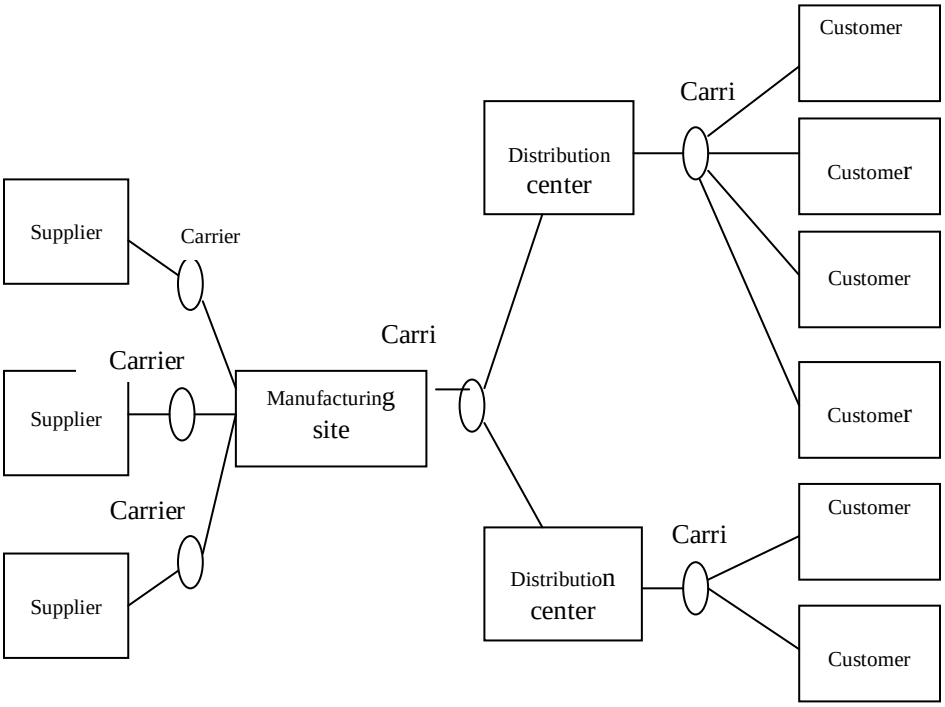
- Sourcing contracts and other purchasing decisions.
- Production decisions, including contracting, locations, scheduling, and planning process definition.
- Inventory decisions, including quantity, location, and quality of inventory.
- Transportation strategy, including frequency, routes, and contracting.

- Benchmarking of all operations against competitors and implementation of best practices throughout the enterprise.
- Milestone Payments

Operational:

- Daily production and distribution planning, including all nodes in the supply chain.
- Production scheduling for each manufacturing facility in the supply chain (minute by minute).
- Demand planning and forecasting, coordinating the demand forecast of all customers and sharing the forecast with all suppliers.
- Sourcing planning, including current inventory and forecast demand, in collaboration with all suppliers.
- Inbound operations, including transportation from suppliers and receiving inventory.
- Production operations, including the consumption of materials and flow of finished goods.
- Outbound operations, including all fulfillment activities and transportation to customers.
- Order promising, accounting for all constraints in the supply chain, including all suppliers, manufacturing facilities, distribution centers, and other customers.
- Perormance tracking of all activities .

Flow diagram of a Supply Chain



Typical Logistics Manager Activities

- Traffic and Transportation
- Warehousing and Storage
- Industrial Packaging
- Materials Handling
- Inventory Control
- Order Fulfillment
- Demand Forecasting
- Production Planning
- Purchasing
- Customer Service Levels

- Site Location Analysis
- Return Goods Handling
- Parts and Service Support
- Salvage and Scrap Disposal

vi) - SUPPLY CHAIN DECISIONS

We classify the decisions for supply chain management into two broad categories -- strategic and operational. As the term implies, strategic decisions are made typically over a longer time horizon. These are closely linked to the corporate strategy and guide supply chain policies from a design perspective. On the other hand, operational decisions are short term, and focus on activities over a day-to-day basis. The effort in these type of decisions is to effectively and efficiently manage the product flow in the "strategically" planned supply chain.

There are four major decision areas in supply chain management:

1. **Location,**
2. **Production,**
3. **Inventory**
4. **Transportation** (distribution), and there are both strategic and operational elements in each of these decision areas.

1. Location Decisions :

The geographic placement of production facilities, stocking points, and sourcing points is the natural first step in creating a supply chain. The location of facilities involves a commitment of resources to a long-term plan. Once the size, number, and location of these are determined, so are the possible paths by which the product flows through to the final customer. These decisions are of great significance to a firm since they represent the basic strategy for accessing customer markets, and will have a considerable impact on revenue, cost, and level of service. These decisions

should be determined by an optimization routine that considers production costs, taxes, duties and duty drawback, tariffs, local content, distribution costs, production limitations, etc.

2. Production Decisions:

The strategic decisions include what products to produce, and which plants to produce them in, allocation of suppliers to plants, plants to customer markets. As before, these decisions have a big impact on the revenues, costs and customer service levels of the firm. These decisions assume the existence of the facilities, but determine the exact path(s) through which a product flows to and from these facilities. Another critical issue is the capacity of the manufacturing facilities--and this largely depends the degree of vertical integration within the firm. Operational decisions focus on detailed production scheduling. These decisions include the construction of the master production schedules, scheduling production on machines, and equipment maintenance. Other considerations include workload balancing, and quality control measures at a production facility.

3. Inventory Decisions:

These refer to means by which inventories are managed. Inventories exist at every stage of the supply chain as either raw materials, semi-finished or finished goods. They can also be in-process between locations. Their primary purpose to buffer against any uncertainty that might exist in the supply chain. Since holding of inventories can cost anywhere between 30 to 40 percent of their value, their efficient management is critical in supply chain operations. It is strategic in the sense that top management sets goals. However, most researchers have approached the management of inventory from an operational perspective. These include deployment strategies (push versus pull), control policies , determination of the optimal levels of order quantities and reorder points, and setting safety stock levels, at each stocking location. These levels are critical, since they are primary determinants of customer service levels.

4. Transportation Decisions:

The mode choice aspect of these decisions are the more strategic ones. These are closely linked to the inventory decisions, since the best choice of mode is often found by trading-off the cost of using the particular mode of transport with the indirect cost of inventory associated with that mode. While air shipments may be fast, reliable, and warrant lesser safety stocks, they are expensive. Meanwhile shipping by sea or rail may be much cheaper, but they necessitate holding relatively large amounts of inventory to buffer against the inherent uncertainty associated with them. Therefore customer service levels, and geographic location play vital roles in such decisions. Since transportation is more than 30 percent of the logistics costs, operating efficiently makes good economic sense. Shipment sizes (consolidated bulk shipments versus Lot-for-Lot), routing and scheduling of equipment are key in effective management of the firm's transport strategy.

Supply chain executives have a daunting daily challenge managing a global supply chain. It is not about shipping orders; it is not about making product then pushing it out the door. Supply chain management is about developing a process to respond to the different requirements of each customer. They must keep customers or stores properly stocked and deliver the perfect order every time. They must balance the need for low costs, proper inventory levels and maximum service. They must ensure that supply chain management is an integral component of the company's strategic direction and plan to create and maintain competitive advantage. Being successful requires logistics effectiveness. Customers, competitors and vendors are global. This is an exciting challenge and opportunity

vii) - Principles of Supply Chain Management

1. **Principle of Selective Risk**
   Logistics systems should be designed so that system performance objectives are directly related to the importance of the product or customer.
2. **Principle of Information Selectivity**
   Logistics information systems should be designed to produce a focus on actionable and significant events.
3. **Principle of Information Substitution**
   Systems should be designed to use information in place of other resources whenever possible.
4. **Principle of Transaction Simplification**
   Systems should be designed to improve the efficiency and effectiveness of transactions.
5. **Principle of Variance Reduction**
   Systems should be designed to reduce the unplanned variance in the system.
6. **Principle of Inventory Velocity**
   Systems should be designed to facilitate the flow of inventory from raw material through the end user.
7. **principle of Shared/Shifted Risk**
   The system should be designed to shift the risk to channel members best able to bear it.

III - TRANSPORTATION

Transportation is one of the most visible elements of logistics operations. The role of transport in national economy is very crucial. Every business firm, regardless of

what it produces or distributes, requires the movement of goods from one point to another and, therefore, is involved in transportation. Transportation essentially concerns the spatial dimension of the business firm. "The spatial dimension refers to geographical relationships and reflects the combination of firms with respect to their materials sources, markets, and competitors, plus the spatial relations of the latter to their sources and markets". The purpose or function of transportation is to serve as a connecting link between the spatially separated units within a firm's own organization (such as between plants and warehouses) and between units of the firm and units of other firms and individuals (such as suppliers and customers). Good transportation has the effect of holding to a minimum the time and cost involved in the spatial relationships of the firm.

Transportation utility:

In economic theory terms, transportation's function is to create place utility for the goods produced or distributed by the firm. The word "utility" means usefulness or ability to give satisfaction. Place utility exists when goods are in the place where they can be consumed. Goods that are not in the place where they are needed have less than full value and so transportation creates value by creating place utility. Along with the necessity to have goods in the right place, the goods must be there at the right time (time utility) and in the right form (form utility) and in the possession or ownership of the person(s) who wants to consume them (possession utility). Whether it is delivering goods to a warehouse to serve markets, moving goods into storage for future use, or forming an integral part of a Just-In-Time system and delivering goods at the exact point in time they are needed.

Our current consumer driven economy is driven by our ability to offer a wide choice of competing products with wide scale or "intensive" distribution. Without place, time, form, and possession utility, goods have no value to the customer. In a broad sense, the production process is really not complete until all four utilities have been created because until then goods are not capable of giving satisfaction and

would not prompt a customer to exchange something of value for something with no value. Thus, transportation is an essential part of the total production process that cannot be overlooked.

Transportation in production and marketing:

In production, transportation function is looked after by executives of materials management department or general administration department or general department. Undoubtedly a part of the transportation function can be tagged on to purchase of materials, but the total transportation planning concept requires higher in-depth skills and expertise than are contributed by a purchase executive who is even otherwise preoccupied with the responsibilities of his complex purchase function. Bogged down in routine procedures of purchase, he is unable to plan adequately for transportation of various types of materials, plants and machinery in such a way as to optimize the expenditure of his own efforts and monetary resources.

Transport of the finished product is often left to the marketing manager. However, a marketing manager is oriented more towards marketing of the product and development of market than towards optimization of transportation cost, time or effort. The responsibility for estimates of arrival times at loading and unloading points of machinery, raw materials, etc., is often entrusted to those executives who have no personal knowledge of the subject, but who collect second-hand information on it from different sources. Moreover, while construction of a plant may be assigned considerable importance, movement of the finished product, raw materials and project materials may not be adequately provided for in a project report. Problems of transport of the finished product are sought to be attended to only at a later date.

i) - MODAL CHARACTERISTICS

Modes of transportation used in national and international logistics and supply chain management can be grouped under five models. They are rail, highway, water, pipeline, and air. The relative importance of each mode can be measured in terms of system mileage, traffic volume, revenue, and the nature of traffic composition. Each mode is discussed with respect to these measures.

1. Motor Carriers :

Highway transportation has expanded rapidly since the end of World War II. To a significant degree the rapid growth of the motor carrier industry results from door-to-door operating flexibility and speed of intercity movement.

Motor carriers have flexibility because they are able to operate on all types of roadways. In comparison to railroads, motor carriers have relatively small fixed investments in terminal facilities and operate on publicly maintained highways. Although the cost of license fees, user fees, and tolls is considerable, these expenses are directly related to the number of over-the-road units and miles operated. The variable cost per mile for motor carriers is high because a separate power unit and driver are required for each trailer or combination of tandem trailers. Labor requirements are also high because of driver safety restrictions and the need for substantial dock labor. In comparison to railroads, motor carriers are best suited to handle small shipments moving short distances.

The characteristics of motor carriers favor manufacturing and distributive trades, short distances, and high-value products. Motor carriers have made significant inroads into rail traffic for medium and light manufacturing. Because of delivery flexibility, they have captured almost all freight moving from wholesalers or

warehouses to retail stores. The prospect for maintaining stable market share in highway transport remains bright.

The primary difficulties relate to increasing cost to replace equipment, maintenance, driver wages, and platform and dock wages. Although accelerating labor rates influence all modes of transport, motor carriers are more labor-intensive, which causes higher wages to be a major concern. To counteract this trend, carriers have placed considerable attention on improved line-haul scheduling that bypasses terminals, computerized billing systems, mechanized terminals, tandem operations that pull two or three trailers by a single power unit, and utilization of coordinated intermodal systems. These enhancements reduce labor intensity and, thus cost.

Specialty carriers include package haulers 'such as Federal Express and United Parcel Service. These firms focus on specific requirements of a market or product. Despite the aforementioned problems, it is quite apparent that highway transportation will continue to function as the backbone of logistical operations for the foreseeable future.

2. Rail Network

Historically, railroads have handled the largest number of ton-miles continental. As a result of the early establishment of a comprehensive rail network connecting almost all cities and towns, railroads dominated intercity freight tonnage until after World War II. This early superiority resulted from the capability to transport large shipments economically and to offer frequent service, which gave railroads a somewhat monopolistic position. However, with the advent of serious motor carrier competition following World War II, the railroads' share of revenues and ton-miles started to decline.

The capability to efficiently transport large tonnage over long distances is the main reason railroads continue to handle significant intercity tonnage and revenue.

Railroad operations incur high fixed costs because of expensive equipment (track) , switching yards, and terminals. However, rail experiences relatively low variable operating costs. The replacement of steam by diesel power reduced the railroads' variable cost per ton-mile, and electrification offers potential for more reductions. New labor agreements have reduced workforce requirements, further decreasing variable costs.

3. Water Transport :

Water is the oldest mode of transportation. The original sailing vessels were replaced by steamboats in the early 1800s and by diesel power in the 1920s. A distinction is generally made between deep-water and navigable inland water transport.

The main advantage of water transportation is the capacity to move extremely large shipments. Water transport employs two types of vessels. Deep-water vessels, which are generally designed for ocean and Great Lakes use, are restricted to deep-water ports for access. In contrast, diesel-towed barges, which generally operate on rivers and canals, have considerably more flexibility.

Water transport ranks between rail and motor carrier in respect to fixed cost. Although water carriers must develop and operate their own terminals, the right of-way is developed and maintained by the government and results in moderate fixed costs compared to rail and highway. The main disadvantages of water transport are the limited range of operation and speed. Unless the origin and destination of the movement are adjacent to a waterway, supplemental haul by rail or truck is required. The capability of water to carry large tonnage at low variable cost places this mode of transport in demand when low freight rates are desired and speed of transit is a secondary consideration.

Typical inland water freight includes mining and basic bulk commodities such as chemicals, cement, and selected agricultural products. In addition to the restrictions of navigable waterways, terminal facilities for bulk and dry cargo storage and load-unload devices limit the flexibility of water transport. Labor restrictions on loading and unloading at docks create operational problems and tend to reduce the potential range of available traffic. Finally, a highly competitive situation has developed between railroads and inland water carriers in areas where parallel routes exist.

4. Pipelines:

It operates on a twenty-four-hour basis, seven days per week, and are limited only by commodity changeover and maintenance. Unlike other modes, there is no empty "container" or "vehicle" that must be returned. Pipelines have the highest fixed cost and lowest variable cost among transport modes. High fixed costs result from the right-of-way, construction and requirements for control stations, and pumping capacity. Since pipelines are not labor-intensive, the variable operating cost is extremely low once the pipeline has been constructed. An obvious disadvantage is that pipelines are not flexible and are limited with respect to commodities that can be transported: only products in the form of gas, liquid, or slurry can be handled.

4. Air Transport :

The newest but least utilized mode of transport is air freight. Its significant advantage lies in the speed with which a shipment can be transported. A coast-to-coast shipment via air requires only a few hours contrasted to days with other modes of transportation. One prohibitive aspect of air transport is the high cost. However, this can be traded off for high speed, which allows other elements of logistical design, such as warehousing or inventory, to be reduced or eliminated.

Air transport still remains more of a potential opportunity than a reality. Although the mileage is almost unlimited, airfreight accounts for significantly less

than 1 percent of all intercity ton-miles. Air transport capability is limited by lift capacity (i.e., load size constraints) and aircraft availability. Traditionally, most intercity airfreight utilized scheduled passenger flights. While this practice was economical, it resulted in a reduction of both capacity and flexibility. The high cost of jet aircraft, coupled with the erratic nature of freight demand, has limited the assignment of dedicated planes to all-freight operations.

However, premium air carriers such as Federal Express and United Parcel Service Overnight provide dedicated global freight operation. While this premium service was originally targeted at documents. it has expanded to include larger parcels. For example, both United Parcel and Federal Express have extended their air freight service to include overnight delivery from a centralized distribution center located at their air hub. This is an ideal service for firms with a large number of high-value products and time-sensitive service requirements.

The fixed cost of air transport is low compared to rail, water, and pipeline. In fact, air transport ranks second only to highway with respect to low fixed cost. Airways and airports are generally developed and maintained with public funds. Likewise, terminals are normally maintained by local communities. The fixed costs of airfreight are associated with aircraft purchase and the requirement for specialized handling systems and cargo containers. On the other hand, air freight variable cost is extremely high as a result of fuel, maintenance, and the labor intensity of both in-flight and ground crews.

TRANSPORTATION MODELS AND ITS FEATURES	
Rail	Nation’s largest carrier, cost-effective for shipping bulk products, piggyback

Truck	Flexible in routing & time schedules, efficient for short-hauls of high value goods
Water	Low cost for shipping bulky, low-value goods, slowest form
Pipeline	Ship petroleum, natural gas, and chemicals from sources to markets. High investments, covers long distance and fixed
Air	High cost, ideal when speed is needed or to ship high-value, low-bulk items

The following factors can be considered for the selections of international carrier .They are as follows:

1. **Transportation cost**-This includes Rates, minimum weight, loading and unloading charges.
2. **Transit time**- is the total time that elapses from the time the consigner makes the goods available for dispatch until carrier delivers same to the consignee.
3. **Reliability-** Refers the consistency of the transit time a carriers provides.
4. **Capability**-Refers to the carrier's ability to provide the equipment and facilities that is required for the movement of particular commodity.
5. **Accessibility**-Refers to carrier's physical access or geographical limits.
6. **Security**- Concern the arrival of good in the same condition.

ii) - TRANSPORTATION ACTIVITY

Whether the movement of material and equipment is by rail, sea, air or road, adequate facilities for their free flow to and from the factory must be ensured. In general the following activities are performed by the transport in logistics .

1. Terminal Facilities :

One of the major activities of transportation is making terminal arrangement. Besides the trade growth In India terminal facilities are usually reluctantly provided. The main reason could be of lack of infrastructural facilities. Another reason for this is that any delay in the unloading of trucks or wagons, or any inconvenience caused to truck operators, is not considered to affect adversely the interests of the project and therefore are not believed to be a loss to the carrier. In some cases, this may be true. Actually, however, if these facilities are liberally provided, a reduction can be obtained in freight rates. Also, the process can be minimized, if not eliminated. Adequate reception and dispatch facilities are generally not planned for even for major projects. Sometimes, there is a conscious or subconscious antagonism against the common carrier .

Major facilities available in terminals:

- ✓ **Adequate storage space .**
- ✓ **Loading and unloading arrangements.**
- ✓ **Storage facilities.**

It has not been recognized by the planners of individual projects that considerable savings can be affected by providing adequate terminal facilities because of the low quotation of rates by the transporter who can “come in” and “get out” fast from the factory instead of waiting for hours to unload or load the goods. The overall savings in transport rates would more than justify the expenditure incurred on the provision of additional facilities.

For rail movement, not only sufficient number of loading lines, but also sufficient number of marshalling, examination and holding lines must be planned for. These lines must be suitably connected with one another to ensure smooth shunting operations. The configuration of lines (yard design) is more important than the mere number of lines in the yard, for the requirements of prime mover (shunting engines) can also be cut down by a suitable design of yard.

2. Fleet management:

An important feature of movement of finished products of major projects is the type of vehicle used for movement. The vehicle dimensions, capacity, type and its special characteristics, if any, have to be examined with reference to the quality and quantity of goods to be moved. In the case of sea transport, the size, speed and the type of ship to be used are very important. In the case of road transport, capacity, moving dimensions, and the speed of the trucks are of great significant. In the case of rail movement, the capacity, type and general availability of wagons must be closely examined.

The capacity of vehicles and send their sectional speed together determine the throughput on a particular section. While planning movement of raw materials and finished products, it must be recognized that some sections of roads or the railways in the country have limited spare sectional capacity. With saturated sectional capacity, introduction of more vehicles tends to reduce their speed and, therefore, the total throughput. Planned movement on any section must take into account utilization of the existing sectional capacity, the expected general growth in traffic on the section, and the possible on a saturated section is inevitable, line Capacity of the section must be increased.

Major Carrier decisions:

- ✓ **Type**
- ✓ **Capacity**
- ✓ **Characteristics**

- ✓ **Speed**

3. key Movers:

The motive power utilized for the internal handling of vehicles and transportation to destinations is another important component of the total movement system. In the case of rail movement, locomotives required for shunting and marshalling of wagons within the plant must be of such weight, horsepower and performance characteristics as will match the specific tasks of shunting and reception and dispatch of wagons. In the case of road movement, suitable design and layout of conveyors and mechanical loaders can reduce the drudgery of annual labour and make pre-dispatch and post receipt handling operations more efficient.

4. Routing:

Another important aspect of transport preparation is the routes for streams of traffic, viz., roadways, railways, waterways and airways. The goal of efficient fleet management is to ensure on-time deliveries and pick-ups while reducing costs. Solving the vehicle routing problem is critical to efficient fleet management. In order to reduce cost and guarantee timeliness, routes must be created to reduce driving time and/or driving distance.. The routes or pathways must have adequate capacities. Generally speaking, because of lack of understanding of the transportation subject, executives take it for granted that capacity of routes is unlimited. For example, they generally feel that the problem of rail transport is solved fully and finally by the supply of adequate number of wagons by the railways. They are not able to appreciate that these wagons have also to be moved over a section of railways after loading has been completed. Again, positioning of a large number of trucks at the factory gate cannot be taken as the full and final solution of the problem of road transport just as chartering and berthing of vessels

for sea transport is not the full and final solution of the problem of movement of cargo by sea.

A very important but invisible component of movement activity is sectional capacity, which is dependent on permissible sectional speed and other characteristics of a section. In turn, sectional speed depends on the geometrics of the road (track in the case of the railway, sea route in the case of ships, type of road surface, carriage way, gradients and curves in the case of roads).

Over a section of railways or roadways between two stations A and B, only a limited number of wagons, trucks, or vessels can be pushed through, depending on the availability of terminal facilities to handle these vehicles, the facilities to enable these vehicles to move on the section, and availability of sufficient number of vehicles. Unless sufficient capacity is developed on each of the different routes to move the vehicles, the additional number of vehicles provided would not necessarily lead to higher levels of transport availability. On the contrary, movement may become more sluggish. Very often, restrictions are imposed by the railways on certain routes. In the case of road transport, the carrier quotes higher rates for routes which are highly congested, or poorly maintained, or of poor design.

5. Transit time management:

The relative locations of a plant and the customers or suppliers determine largely the transit time of raw materials, spare parts and finished goods. Transit time generally never receives adequate attention in the planning of major projects. There is a general impression that, if need be, transit time can be drastically cut any time by air-lifting a consignment. Apart from the fact that the neglect of transportation planning on account of this erroneous assumption leads to overall higher cost of transport, in practice, reduction in transmits time actually achieved may not justify that heavy cost of air transport. Rough estimates of transit time from unreliable information sources are generally utilized by “technical experts” for planning movements of goods. Although more detailed information may be readily available with appropriate authorities, it may not be solicited from them.

7. Distribution Pattern:

The pattern of movement of the finished product by road or rail must be planned properly. For example, when the requirements of the number of rail wagons are not to be worked out, it is not sufficient to take the average lead or distance for the whole country for calculating fleet requirements. It is also not sufficient to use the figure of the existing average lead of general goods, or even that pertaining to a specific commodity. Generally speaking, on the basis of the information supplied by the project management, the common carrier plans for the movement of goods to a specific destination, or region. However, when it comes to actual transport, because of imprecise preplanning, the manufacturer wants the common carrier to transport goods to anywhere and everywhere in the country. This presents a difficult problem. This manufacturer may feel that by providing information must be supplied to the carrier so that the carrier can plan the movement in entirety. The special variability of the movement and its impact on overall transport availability must be duly recognized.

8. Nature of Product:

Another aspect, which is often disregarded by project managements as well as the common carrier, is the variability arising out of the specialized nature of products to be moved. The generally low level of sophistication is transport planning in the country has made it difficult for planners to appreciate the fact that transport capacity is influenced by the nature of goods, their packing and other specialized requirements, such as special handling equipment, etc.

It is imperative that we understand that the modern logistics structure rests on efficient transportation. Techniques such as JIT (Just In Time) and Efficient Consumer Response (ECR) would not be possible without the highly developed transportation industry.

9.Asset Tracking:

In order to serve the customer firms are in a position to update them regarding the progress in movement of goods .The technologies like GSM really provide an enormous information that allows the service providers to identify the distance covered by any shipment as well as its current location. GPS technology is used to determine exact location. Furthermore, the actual condition of the goods can be controlled. For example, the rise in temperature in refrigerated transportation will activate an alarm within the logistics center using GSM.

iii) - TRANSPORTATION/LOGISTICS/MARKETING INTERFACES

Transportation moves products to markets that are geographically separated and provides added value to customers when the products arrive on time, undamaged, and in the quantities required. In this way, transportation contributes to the level of customer service, which is one of the cornerstones of customer satisfaction: an important component of the marketing concept.

Transportation is one of the largest logistics costs and may account for a significant portion of the selling price of some products. Low value-per-pound products such as basic raw materials (eg: sand and coal) are examples. Transportation costs for computers, business machines, and electronic components may be only a small percentage of the selling price. Generally, the efficient management of transportation becomes more important to a firm as inbound and outbound transportation's share of product cost increases. Even with high-value products, expenditures for transportation are important although the percentage of selling price may be low, primarily because the total cost of transportation in absolute terms is significant.

Customer service is a vital component of logistics management. While each activity of logistics management contributes to the level of service a company provides to its customers, the impact of transportation on customer service is one of

the most significant. The most important transportation service characteristics affecting customer service level are:

1. **Reliability**
2. **Dependability**
3. **On time transit**
4. **Market coverage**
5. **Flexibility performance**

In nutshell, objectives of marketing can be achieved through the efficient functioning of logistics and good transportation makes logistics more effective..

iv) - TRANSPORTATION AND INTERNATIONAL MARKETING LOGISTICS DECISIONS

Purchasing Decisions:

What to purchase and where to purchase are also affected by transportation considerations, regardless of whether the firm is a manufacturer, wholesaler, retailer or service organization. The goods involved may be component parts, raw materials, supplies, or finished goods for resale. The transportation characteristics of the goods, the availability, adequacy and cost of transportation have a bearing on the "what and where" decision.

Market and Pricing Decisions:

Because transportation creates time and place utility, both of which are necessary for economic exchanges to take place, its availability, adequacy, and cost have an effect on s pricing and other decisions made by a business firm in addition to

decisions related to managing the transportation function itself. Customer delivery requirements often require the timeliness which can only be achieved by the use of trucks.

Product Decisions:

For those firms that deal in tangible products, one such decision is the product decision, or the decision as to what product or products to produce or to distribute. The transportability of a product in terms of its physical attributes and the cost, availability, and adequacy of transportation enters into any product decision.

Market Area Decision:

Closely related to the product decision for firms dealing in tangible products is the decision relative to where the product(s) should be sold. This decision is affected by the transportation characteristics of the product(s) itself as well as transportation availability, adequacy and cost.

v) - INTERNAL TRANSPORTATION

Internal transportation is the management of a complex supply chain from suppliers to manufacturers through efficient transport. A critical part in supply chains that involve manufacturing is getting all the required parts and raw materials in the right sequence, the right quantity, the right quality and the right time to the manufacturing and assembly plants. In the search for the most cost-effective solutions to organize these often very complex activities, inventory levels are being reduced and technological advances are put to use to provide visibility in the whereabouts of all parts moving to the plant at any given time.

Internal Supply Chain:

- **A firm's internal functions include the different processes used in transforming the inputs provided by the supplier network.**

- **Activities include production scheduling, capacity planning, WIP management, shop floor control, scheduling maintenance and employees, quality control, and cycle time reduction.**

The above definition clearly spells out the role of internal transportation in supply chain. Various modes of transport used for the purpose consist of road transport, rail transport, water transport and multi modal transport. Among the above systems road ways and railways are considered to the prime mode of internal transport. Road transport considered as the important means to provide linkages to the internal transport and other systems. It is a mainspring which is capable of providing services on door-to-door basis. Over the period, road transport has made rapid strides both in terms of road network and the internal traffic movement. Railways is another important system in this context. Having made a modest beginning in 1960.To transport materials from a long distance railways plays a vital role. In order to cope the increasing demand for traffic movement of both goods and passenger, the Railways have initiated modernization programme by way of increasing the line and rolling stock capacity, electronic of routes, gradual replacement of stream engine by diesel and electric engines.

The service providers are under pressure for meeting greater customer expectations, minimizing operating costs, optimizing capacity and promoting operational excellence. The core activities related to the internal transportation are explained below.

1. Procurement Management:

Procurement of raw material and other inputs is essential element of manufacturing process. The transportation management framework designed to enable service providers to identify potential carriers and negotiate prices with carriers Leeds to efficient material delivery to the organization. This service streamlines transportation procurement and reduces labor and transportation costs.

2. Operations management :

Transportation related to various operations form the smooth flow of work progress. The transportation framework handles passenger and freight-related processes for air, sea & ground (road & railways), including reservations, bookings and passenger revenue accounting, along with data mining and analysis tools for planning, scheduling and forecasting.

3. Enterprise Resource Management:

The internal transportation framework can enable businesses to maximize business value through efficient management of enterprise functions. Capabilities of the framework include equipment / vehicle maintenance & planning, inventory management, warehouse management, asset management, data warehousing and human resource management. In general internal transportation enhances the overall performance of the organization and it plays a significant role in providing the origin-destination linkages to the cargo movement in international marketing.

vi) - LOGISTICAL BENEFITS OF TRANSPORTATION SYSTEM

The efficient performance of internal transport system brings the following benefits to the organizations.

1. Improved inbound in-transit visibility
2. Improved efficiencies in handling goods receipts
3. Improved communication with all parties involved
4. More efficient collaboration with logistics service providers
5. Improved dock efficiencies through consolidated pick up processes
6. Choice of internal transport
7. Plays a significant role in providing linkage between origin and destination .

vii) - INTER-STATE GOODS MOVEMENT

For a country's economy, the transportation sector is often viewed as an important barometer of growth. As more goods are consumed within a country, the transportation sector must grow accordingly in order to accommodate the transport of additional goods. For the inter-state goods movement logistics part a prime role and can be considered as a tool for getting resources, like products, services, and people, where they are needed and when they are desired. It is difficult to accomplish any marketing or manufacturing without logistical support. It involves the integration of information, transportation, inventory, warehousing, material handling, and packaging. The logistician must contend with many peculiarities of demand , distribution, competition and government regulation that differ from one country to another. These constrain the logistics system design generally to fewer choices than are domestically available and , at the same time, they force the logistician into operating the logistics system in a manner different from domestic operations for the same product.

The major transport models that are used for inter-state goods movement are include Aviation, road, shipping and courier. For inter-state transactions few additional logistical obligations are to be considered which are discussed below.

1. Documentation:

When it comes to national or international transaction, documents are prerequisite. Carrying and delivery of documents have become a part of logistical services. For any company actively involved in foreign trade, the increased documentation requirement is a commonly heard complaint. Handling the amount of documentation required for international shipments can be a burden for even companies with sophisticated logistics management.

2. Government Regulation:

The logistician who is planning or operating an international logistics systems have to deal with a vast number of legal regulations by governments that vary from democracies to dictatorships. These regulations can effect all aspects of distribution, ranging from packaging, marketing and documentation to the location of warehousing and manufacturing facilities. The latter are more generally affected because governments seek to satisfy their own interests in such areas as employment, industrial growth, uses of raw materials, and the acquisition of wealth.

3. Regional differences:

In inter-state goods movement finding regional differences is a common factor pervasive factor. Heavy tariffs, duties and taxes that governments place on imported goods often prove a hurdle to the trader. Regional differences, special zones and free ports, eliminate this disadvantage for the benefit of both the exporting and the importing country. There can be numerous advantages to the logistician responsible for international goods movement. Duties, quotas, and other restrictions and costs placed on the exporter or importer by governments are real concerns to the logistician. However the trade zone is a key link in the logistical channel for minimizing movement cost and for providing potential customers with service levels that are competitive with domestic products. Not only that , the trade zone is a forward base of production and storage that can reduce the impact of long lead times and help to match the costs of production, distribution and foreign sales more closely with the revenues from these sales.

4. Transportation:

Managing transportation for inter-state goods movement that results from growing international trade creates new problems for the logistician. International shipments often originate in the interior of one country and have a destination in the interior of another. The logistician may have to deal with various transporters and several freight classifications and tariff schedules. The liability of a carrier in international

movement is quite different from that of domestic carriers. In fact it is much less for the international carriers.

IV - CONCEPT OF CUSTOMER SERVICE

Logistics contributes to an organization's success by providing customers with timely and accurate product delivery. The key question is, who is the customer? For logistics, the customer is any delivery destination. Typical destinations range from consumers' homes to retail and wholesale businesses to the receiving docks of a firm's manufacturing plants and warehouses. In some cases, the customer is a different organization or individual who is taking ownership of the product or service being delivered. In many other situations, the customer is a different facility of the same firm or a business partner at some other location in the supply chain.

From a companies perspective, customer service has been viewed as an essential ingredient in marketing strategy. Identifying the elements which constitute customer service and making appropriate steps to enhance them are the prime activities of any organization. How logistics and supply chain management can be used to optimize the level of service provided is the central point of the discussion.
First of all let us discuss what is customer service?.
A definition from the Institute of Customer Service:

"**Customer service is the sum total of what an organisation does to meet customer expectations and produce customer satisfaction".**

Customer service generally involves:

- Service teamwork and service partnerships
- Actions by a number of people in a team or in several different organisations

i) - ELEMENTS OF CUSTOMER SERVICE

Customer service is an important basis for logistics costs. In order to serve the customer it is necessary to identify the pertinent elements . National council of physical distribution management identified the elements of customer service. They are:

1. **Pre- transaction element**-policy towards delivering customer service
2. **Transaction element**-directly related to delivery of customer service
3. **Post-transaction element**-post sales service / grievance handling

Regardless of the motivation and delivery purpose, the customer being serviced is the focal point and driving force in establishing logistical performance requirements. It is important to fully understand customer service deliverables when establishing logistical strategy. This part details the development of facilitating strategies.

CUSTOMER SERVICE		
Pre-transaction elements	**Transaction elements**	**Post-transaction elements**
1.Written statement of policy 2.Statement in hands of customer 3.Organizational structure 4.System flexibility Technical service	1.Ability of back order 2.Elements of order cycle Time 3.Transship 4.System accuracy 5.Order conveniences 6.Product substitution	1.Installation warranty 2. alterations 3. repairs 4.parts 5.Product tracking 6.Customer claims 7.complaints 8.Product packing

		9.Temporary replacement of product during repairs

The belief that customer requirements are more basic than products or services places a priority on fully understanding what drives market opportunities. The key is to understand and develop the combination of products and services that will satisfy customers. For example, if customers will be satisfied given three choices of different colored appliances, it makes little sense to offer six colors. It also makes little sense to try to market only white appliances if color selection is important from a customer's perspective. The basic idea is to develop sufficient insight into basic needs so that products and services can be matched to these opportunities. Successful marketing begins with an in-depth study of customers to identify product and service opportunities. If these opportunities can be economically satisfied, then the potential exists to develop a business relationship.

Elements used to measure the customer service:

Three fundamental dimensions of customer services are:

1. **Availability.**
2. **Performance,**
3. **Consistency**
4. **Reliability.**

1.Availability :

Availability is the capacity to have inventory when it is desired by a customer. Availability can be achieved in a variety of ways. The most common practice is to stock inventory in anticipation of customer orders. The appropriate number,

location, and stocking policy of warehouses are few of the basic issues in logistical system design. The system includes:

Stockout Frequency: Stockout frequency is the probability that a stockout will occur. In other words, this measure indicates if a product is available to ship to customers. A stockout occurs when demand exceeds product availability. The stockout frequency is a measure of how many times demand for a specific product exceeds availability.

Fill Rate: Fill rate measures the magnitude or impact of stockouts over time. Just because a product is out of stock does not necessarily mean that a customer requirement is going unsatisfied. Before a stockout affects service performance, it is necessary to confront a customer requirement. Then it becomes important to identify that the product is not available and to determine how many units the customer wanted. Fill rate performance is typically specified in customer service objectives. Fill rate can also be used to differentiate the level of service to be offered on specific products

Orders Shipped Complete: Orders shipped complete is a measure of the times that a firm has the entire inventory ordered by a customer. It is the strictest measure since it views full availability as the standard of acceptable performance. Orders shipped complete establishes the potential times that customers will receive perfect orders, providing all other aspects of performance have zero defects.

These three availability measures combine to identify the extent to which a firm's inventory strategy is meeting customer expectations. They also form the basis to evaluate the appropriate level of availability to incorporate in a firm's basic service platform.

2.Performance :

The performance cycle was positioned as the operational structure of logistics. Mission, type of customer being serviced, differentiated performance cycles and the degree of operational variance experienced over time. Operational measures specify the expected performance cycle in terms of (1) speed, (2) consistency, (3) flexibility, and (4) malfunction/recovery. Operational performance involves logistical commitment to expected performance time and acceptable variance.

Performance-cycle speed is the elapsed time from when an order is placed until shipment arrival. Such commitment must be viewed from a customer's perspective. The time required for performance-cycle completion can be very different depending on logistical system design. Given today's high level of communication and transportation technology, order cycles can be as short as a few hours or as long as several weeks.

3.Consistency

While speed of service is critical, most logistical managers place greater emphasis on consistency. Consistency refers to a firm's ability to perform at the expected delivery time over a large number of performance cycles. Failure to be consistent translates directly into customers needing to carry extra safety stock to protect against possible late delivery. Whereas availability is concerned with the ability to

ship products when required and performance-cycle speed is concerned with the commitment to complete all work requirements necessary to deliver specific orders at a prescribed time, consistency deals with compliance to delivery commitments over time. The issue of consistency is fundamental to logistical operations.

4.Flexibility

Operational flexibility refers to a firm's ability to handle extraordinary customer service requests. A firm's logistical competency is directly related to how well unexpected circumstances are handled. Typical events requiring flexible operations are

- Support of unique sales and marketing programs
- New-product introductions
- Modifications in basic service arrangements such as onetime changes in ship-to destinations
- Product phase-out
- Disruption in supply
- Product recall
- Customization of service levels for specific markets or customers
- Product modification or customization performed while in the logistics system, such as pricing, mixing; or packaging.

In many ways the essence of logistical excellence rests in the ability to be flexible. As a rule, a firm's overall logistical competency depends on the capability to "go the extra yard" when appropriate to satisfy a key customer requirement.

ii) - MEASUREMENT OF CUSTOMER SERVICE

The following elements are used to measure the customer service:

1. **Product availability**
2. **Order cycle time**
3. **Distribution system**
4. **Information system**
5. **Flexibility**
6. **Post sale product support**

iii) - VALUE-ADDED SERVICES

Value-added services refer to unique or specific activities that firms can jointly work out to increase their effectiveness and efficiency. Value-added services solidify business arrangements. Value-added services are easy to illustrate but difficult to generalize because they are customer-specific.

A clear distinction exists between basic service, and value-added services. Basic service is the customer service program upon which a firm builds its fundamental business relationships. All customers are treated equally at a specified level to build and maintain overall customer loyalty. Zero defects leading to perfect order performance is the maximum level of logistical availability, operational performance, and reliance. Perfect order commitments can be offered to select customers as a way to gain and maintain preferred supplier status. Value-added services represent alternatives to a zero defect commitment as a way to build customer solidarity.

Lists of value-added services which are observable in the relationships between manufacturers and retailers or wholesalers are given below:

- **Advanced shipment notification**
- **Packaging**
- **Mixed store-ready pallets**
- **Special Packs**
- **Precise delivery times**
- **Inner packs**
- **Special shipment**
- **Special Marking**
- **Drop shipment**
- **Point of sale Presentation**

- **Direct store delivery**
- **Quick and continuous replenishment**

A common characteristic among firms that exploit value-added services is their high degree of unyielding commitment to basic service performance. When a firm is committed to developing unique value-added solutions for major customers, it rapidly becomes involved in customized or tailored logistics. In effect, it is doing unique things to help specific customers achieve their expectations. Nokia's ability to produce a customer-unique cellphone or Toyota's capability to build a car to customer specification and deliver it within a week are prime examples of how value can be added to an otherwise basic product. In a value-added context, firms can provide unique product packages, create customized labels, create special bulk packaging, and offer information services to facilitate purchasing, place prices on products, build point-of-sale displays, and so forth, to stimulate business. In a purely logistical context, value-added services may require direct store delivery or be facilitated by a cross-dock arrangement or any other service that creates continuous value for key customers. Value-added services are most typically observed in well established channel relationships.

The range of value-added services spans a broad number of business-stimulating activities. Research firms that specialize in performing value-added services identified five primary performance areas: customer-focused services. Promotion focused services, manufacturing-focused services, time-focused services and basic service.

Value added service performance areas:

1. Customer-focused services:

Customer-focused value-added services offer buyers and sellers alternative ways to distribute products using third-party specialists. A fine example of customer-focused value-added services is fulfillment. Fulfillment consists of

processing customer orders for manufacturers, delivering directly to stores or homes, and providing such follow through as detailing required to maintain retail store shelf stocking. Such specialized value-added service can be effectively used to support new-product introduction as well as seasonal distribution on a local market basis.

2. Manufacturing-Focused Services:

As the name implies, manufacturing-focused value-added services involve unique product assortment and delivery to support manufacturing. Since every customer's physical facilities and manufacturing assembly are unique, it follows that the delivery and presentation of inbound materials and components should ideally be customized. One warehouse firm repackages a popular consumer dishwashing soap in as many as six different carton configurations to support alternative promotion and class of trade requirements. In another situation, surgical kits are assembled to satisfy the unique requirements of specific physicians. Still another example is a warehouse that cuts and installs various lengths and sizes of hose to fit pumps to individual customer specification. These are a few selected examples of value-added services being performed in the logistical channel by specialists.

3.Promotion-Focused Services:

Promotion-focused value-added services involve the assembly of unique point-of sale display modules coupled with a wide variety of other related services aimed at stimulating sales. Point-of-sale displays can contain multiple products from different suppliers mixed in a multi-tiered display unit designed to fit a special retail store. In select situations, promotion-focused value-added services may involve special presentations for in-store product sampling and even direct-mail promotion. Many promotion-focused value-added services include logistical support of point of-sale advertising and promotion materials. In numerous situations

gifts and premium merchandise included in a promotional effort are handled and shipped by service specialists.

4. Time-Focused Services

Time-focused value-added services involve using specialists to sort mix and Sequence of inventory prior to delivery. A popular form of time-based value-added service is the just-in-time (JIT) feeder warehouse. Under this, concept suppliers make daily deliveries to a JIT facility located adjacent to an assembly plant. The feeder warehouse sorts multiple vendor components into exact quantities that are sequenced for delivery to the assembly line when and where required. The objective is to reduce assembly plant handling and inspection to an absolute minimum.

A guide to serve the customer:

- **Fully uncover customer's needs .**
- **Show the involvement.**
- **Provide clear, accurate, relevant information**
- **Demonstrate a thorough understanding of the company's products and services.**
- **Deliver fast, efficient, correct service.**
- **Provide post-sales service.**

KEY TERMS

Customer service: Customer service is the sum total of what an organisation does to meet customer expectations and produce customer satisfaction".

Efficient Consumer Response (ECR) An initiative whereby elements of a supply chain work together to fulfill customer wishes better, faster and at less cost.

Inbound logistics: The movement of materials from suppliers or vendors in to production process or storage.

Integrated logistics :A comprehensive, system wide- view of the entire supply chain as a single process.

Just in Time: A production approach widely followed in the automotive industry which views production as a system in which all operations, including the delivery of materials needed for production, occur just at the time needed. This effectively eliminates the need for material stock.

Lead time: The time period between the placing of an order for goods or services and the completed delivery of those goods or execution of the service.

Out sourcing: The act of contracting out certain parts of a company's operations to specialist providers.

Pull System: A system where goods and materials are effectively pulled through the supply chain in response to goods being purchased by the consumer.

Push System: A system where goods are produced and pushed into the supply chain in response to demand estimates but in quantities that minimise production costs.

Reverse logistics: Planning and management of the flow of surplus, used, unwanted or non-functioning goods, equipment or packaging back through the supply chain.

Logistics : Logistics is the process of planning, implementing and controlling the efficient, effective flow and storage of goods, services and related information from point of origin to point of consumption for the purpose of conforming the customer requirement.

Supply chain management (SCM): is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of rawmaterials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption

QUESTIONS

1. Explain the concept of logistics? What are the objectives of logistics?
2. What is the relation between Marketing and Logistics. Quote a Suitable example to prove the relationship.
3. What are the key activities of the business logistics function?
4. Explain the scope of international marketing logistics.
5. Discuss the similarities between domestic and international logistics.
6. What do you mean by supply chain management?
7. Mention the factors and forces that give logistics importance among other functional areas of the firm.
8. Explain the role of transport in supply chain management
9. Explain the various activities of transport.
10. Explain the scope of internal transport.
11. Explain the activities of interstate transportation.
12. What major trends do you see in world trade and in the significance of global logistics?
13. Effective management of customer service requires measurement. Discuss.
14. Explain the role and importance of warehousing in the logistics system and cost and customer service issues associated with warehouse management.
15. Explain the issues associated with product packaging from logistics and marketing standpoints.

UNIT: II

Lesson 1

Introduction to Shipping Industry

Outline of the lesson

1. Terminologies of shipping industry
2. Classification of shipping industry
3. Characteristics of shipping

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the nature of shipping industry
2. *Define* the various terms of shipping
3. *Outline* the classification of shipping industry
4. *identify* the characteristics of shipping.

UNIT II

GENERAL STRUCTURE OF SHIPPING

Lesson 1

GENERAL STRUCTURE OF SHIPPING

Characteristics of shipping industry

Shipping industry has certain special characters and are presented below,

The permanent way: sea or ocean is a permanent way and it requires no capital expenditure in its construction like those of railways or roads or air transportation. No annual maintenance is required. It is open to all and there is freedom of movement except for restrictions imposed by the countries on their territorial waters. Although the sea routes are not required to be constructed or maintained, yet for safety and security, seas have been mapped, regular routes marked out and safety provisions like light houses and radio communications have been provided on the sea routes according to international conventions and agreements.

Terminal facilities: terminal facilities needed for ships are generally maintained by port authorities and shipping companies can avail them on payment of charges. Ports, harbors, docks and wharf, loading and unloading facilities and port installations like light houses and radio communications are maintained by the port authorities and offered to the individual shipping companies on payment. The

shipping companies need not invest in terminal facilities and it is this respect also that shipping differs railways and roadways.

Nature of capital expenditure: capital expenditure in shipping industry depends on the type and size of the vessels selected, the nature of trade served and the time when the purchase is made. Some of the important expenditures are:
Smaller capital investment: shipping requires small capital expenditure in the initial stages.

Only a small investment in the purchase of ships has to be made. Once the ship leaves a seaway, ways of voyage are provided by the nature at free of cost. Since permanent way is free and is open to all under international agreements, no investment is made in construction or maintenance of sea routes. A few routes for very short distance of sea way traffic – the panama, Suez, Corinth, Kiel canals are artificial and subject to tolls, but their use is normally open to all on equal terms. A little expenditure is required to be made in light houses and radio communications, but they are maintained according to the international conventions and agreements. The terminal facilities for harboring the ships, dock facilities, loading and unloading facilities are maintained by the port authorities and shipping companies are required to pay some dues for using them. Thus keeping in view the great importance of shipping, the capital investment is relatively very small.

Capital investment is a small multiple of annual receipts: the capital investment in shipping is a small multiple of annual receipts, particularly as compared to railways. While the capital in railways is ten times great in value as the annual gross earnings in ships it is roughly equal to the gross annual earnings. But its fixed investment is relatively high in comparison with the gross earnings as against the manufacturing industries and the distributing trades in which the fixed capital forms only a small portion of annual output.

No direct relation with the volume of Traffic: since the capital investment cannot be reduced and most of the operating expenses in shipping are constant, the shipping profits very finely and quickly react to the prevailing state of the trade. During the times of depression therefore the profits of the shipping companies are very hard hit and during boom they make fabulous profits. Therefore the profits of the shipping companies are very much fluctuating and only big shipping companies having good financial backing can successfully run shipping business during depression and compensate the loss during boom. Consequently, the law of diminishing returns applies to shipping.

Mobility of capital: The investment made in shipping is mainly in the ships purchased. In case one trade route is not profitable the ships can be moved to other routes and thus the investment made is not a dead loss as in the case of railways where capital is tied to the fixed routes and is completely irrecoverable.

Working expenses: the working or operating expenses in shipping may be divided into constant variable charges.

Constant charges are related to maintenance of ships and steamers, administration, and insurance charges. So constant charges are fixed and inflexible.

Variable charges:

It represents the smaller percentage and move with the volume of traffic. They may include bunker or fuel charges: port, dock or light dues: stevedoring, loading, and unloading charges and claims of short delivery and damage of goods.

Shipping income:

The shipping income is derived mainly from the freight and passenger traffic, but the bulk of the income is derived from freight traffic.

Flag registration:

In order to trade, a merchant ship must be registered with an appropriate national authority, and legally she will then be governed by the laws and protected by the country whose flag she flies. A stateless ship is internationally unacceptable and would find it virtually impossible to trade between the nations.

Each and every registered merchant vessel is issued with a vital document called per certificate of registry which must be available for inspection at ports of call and which should be kept safely with the other 'trading documents' listed earlier. This certificate a provisional document provides evidence of a ship's entitlement to fly her national colors.

Review questions:

1. Explain the classification of shipping industry.
2. Detail the characteristics of shipping as a transportation medium.

GENERAL STRUCTURE OF LINER AND TRAMP OPERATIONS

Lesson 2

Outline of the lesson

1. Terminologies of shipping industry
2. Classification of shipping industry
3. Characteristics of shipping

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the nature of shipping industry
2. *Define* the various terms of shipping
3. *Outline* the classification of shipping industry
4. *identify* the characteristics of shipping.

General structure of liner and tramp operations

Liner conference:

A liner conference is a group of two or more vessels operating carriers which provides international liner services for the carriage of cargo on a particular route or routes within specified geographical limits on uniform or common freight rates and on other mutually agreed conditions. A liner services provides

(1) Regularity of sailings to scheduled ports of call
(2) Stability of freight rates for a relatively long period of time which enables shippers to quote CIF prices.
(3) Uniform rates for all shippers
(4) Coverage of a wide range of ports: and
(5) Rebates on freight rates based on loyalty agreements.

There are over 360 liner conferences in the world which cover various trades. As distinguished from a conference, a rate agreement merely specifies the conditions under which the signatories to the agreement have to charge freight rates. There are 3 rebate systems in operation for this purpose.

(a) Deferred rebate system

Here a shipper who utilizes exclusively the vessels of the member lines of the conference for the carriage of cargo between the ports covered by the conference, receives a rebate of a certain percentage (usually ten percent of freight payments).

The rebate is computed for a designated period (shipment period), which is normally three to six months, but is paid after the same period (deferred period) of time following the shipment period, on the condition that the shipper gives his exclusive support to the conference lines, both during the shipment period and the deferred period.

(b) The dual rate system:

If the shippers sign a contract with the conference for exclusive patronage, they get the benefit of rates which are lower than the rates applicable to non-contact shippers.

(c) Immediate rebate system:

Here, the contract shippers are given cash or immediate rebate (usually9.5%) of freight on shipment of their cargoes. This procedure helps shippers to obtain their rebate straightway, without blocking money, as in the deferred rebate system.

Tramp shipping:

Under tramp shipping, ships are charted in one or the other of the following forms:

(i) Voyage charter

Here, ships are chartered for a specific voyage, e.g., Chennai to Singapore to carry 5000 tons of ore. Normally, traders prefer to go in for the voyage charter.

(ii) Time charter

Here, the ship is chartered for a specific period of time, e.g., from 1st January to 31st June. The chatterer may employ the ship on the basis of own requirements.

(iii) Demise charter

Here, the ship without floating personnel, fuel, etc is chartered on a time- charter basis. The chartered has to equip the ship with floating personnel, fuel and other necessaries and operate the ship. Normally, a ship owner or prospective ship owner prefers this method.

After the fixture is made, the documents, called the charter parties, are drawn up. There are different charter parties for different modes of charter and for different trades.

Review questions:

1. Explain the liner conference.
2. Explain the tramp shipping.
3. What are the different rate systems that are prevailing in liner conference?
4. What is chartering? Explain the different types of chartering.

CODE OF CONDUCT FOR LINER CONFERENCES:

Lesson 3

Outline of the lesson

1. Terminologies of code of conduct of liner conferences
2. Fundamental principle of code of conduct

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the liner conferences
2. *Understand* the code of conduct of liner conferences
3. *Different* types of principles of code of conduct.

Code of conduct for liner conferences

Code of conduct for liner conferences:

Up to the first half of the 20th century, sea borne trade was generally catered to by the merchant fleets of developed countries. When developing countries started building up their merchant fleets, there was strong demand from shipping lines of developing countries for increasing share for their national fleets in their country's overseas trade. As a result mainly for the purpose of equitable cargo sharing and for their matters relating to sea borne trade, United Nation's Convention on code of conduct for liner conferences was adopted in 1974.

The salient feature of the code is that for the purpose of determining the share of trade which the member lines shall have the right to carry the National Shipping Lines of each country, irrespective of the number of lines, shall be regarded as a single group of shipping lines for that country. When determining the share of trade with the approval of individual member lines and / or groups of national shipping lines, the following principles regarding their right to participation in the trade carried by the conference shall be observed, unless otherwise mutually agreed:

(a) The group of national shipping lines of each of the two countries the foreign trade of which is carried on by conference. Shall have right to participate in the freight and volume of traffic generated by their mutual foreign trade and carried by the conference.

(b) Third country shipping lines, if any shall have the right to acquire a significant part up to 20% in the freight and volume traffic generated by that trade.

India ratified the convention in 1978. How ever the code has come into force w.e.f. 6.10.83 after ratification by requisite number of member countries.

In 1986, a proposal to introduce legislation for giving effect to the provisions of the code was approved by the Government in principle. However due to some apprehensions expressed by the Ministry of matter was last considered in a meeting held between the minister of surface transport and the commerce minister in September 1991. As decided therein, a modified scheme of cargo support to the Indian Lines without legislative compulsion was proposed and sent to the Ministry of commerce in February 1992. The ministry of commerce has raised certain objections to this scheme also. The implementation of the modified cargo support scheme is under active consideration of the government.

COGNIZING the need for a universally acceptable code of conduct for liner conferences,

TAKING into account the special needs and problems of the developing countries with respect to the activities of liner conferences serving their foreign trade,

AGREEING to reflect in the Code the following fundamental objectives and basic principles:

a) The objective to facilitate the orderly expansion of world sea-borne trade;

b) The objective to stimulate the development of regular and efficient liner services adequate to the requirements of the trade concerned;

c) The objective to ensure a balance of interests between suppliers and users of liner shipping services;

d) The principle that conference practices should not involve any discrimination against the ship owners, shippers or the foreign trade of any country;

e) The principle that conferences hold meaningful consultations with shippers' organizations, shippers' representatives and shippers on matters of common interest, with, upon request, the participation of appropriate authorities;

f) the principle that conferences should make available to interested parties pertinent information about their activities which are relevant to those parties and should publish meaningful information on their activities.

Review questions:

1. Explain the code of conduct for liner conference in shipping industry.

FREIGHT STRUCTURE AND PRACTICES

Lesson 4

Freight structure and practices:

Freight rate structure

Outline of the lesson

1. Terminologies of different freight system
2. Basis of freight rate structure
3. Various cost concepts involved in freight rates
4. Determination of optimum freight rates

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the nature freight rates
2. *Explain* the freight structure
3. *Determine* the costs of freight rates
4. *Determine* the optimum freight rates.
5. *Analyze* the case of shipping industry.

Freight rate for any mode of transport are based on the following principles:

1. **Freight should cover the actual cost of transport operations. The actual cost of operation depends on the following factors.**

(a) freight costs:

Freight should cover interest on capital, depreciation, registration and insurance expenses of a vehicle, if applicable general upkeep of the vehicle, administrative overheads, and expenditure on other fixed facilities etc

(b) semi fixed cost

Freight should cover the salary of the driver, cleaner, conductor and miscellaneous maintenance expenses, which vary partially with the running of the vehicle.

(c) variable cost

Freight should cover the cost of fuel, lubricating oil and accessories which is incurred when the vehicle is on the move and the cost of repairs and maintenance directly attributable to the particular journey. These expenses are generally directly proportional to the distance over which cargo is to be moved. But freight must take into account damage to the vehicle and the consignment enrooted. Damage to vehicles or consignment is greater on bad routes; for example hilly roads command higher freight rates. Sea rates for consignments passing through hazardous or war – torn areas are also higher.

(d) vehicle utilization:

A transporter is interested in getting the maximum mileage out of his vehicle. He would like to move it all top speed to cover the distance in as short a time as possible

(I) If the consignments loaded or the route covered is not conducive to this objective for whatever reasons; the transporter would quote higher freight rates.

(ii) Higher freight rates are also quoted when vehicles are detained at terminals either for certain formalities, terminal congestion in busy ports or at factory gates, or while waiting for loading or unloading operations. Terminal detentions are invariably accounted for in the freight rates themselves, but they normally not noticed at all.

(iv) Freight rates take into account the expectation of obtaining a return trip with a load. If considerable empty movement of vehicles is involved after unloading, or if vehicles have to wait for another load, higher freight rates are quoted.

(v) Vehicle utilization is affected by the nature of goods. Hazardous goods which are prone to damage, or which are likely to cause damage to other consignments or the vehicle itself, attract higher freight rates. More over, consignments which can be loaded less by weight in a vehicle attract higher unit freight rate since they yield poor utilization of vehicle.

2. ***Traffic bearing capacity:*** an age – old consideration for quoting freight rates is the doctrine of 'what the traffic can bear'. Transportation adds place utility to goods, for it makes them marketable at another place. However after the addition of the cost of trans [port, the price of goods should be such that it is still attractive to the buyer. This will depend on the nature of the commodity.
3. ***Public use:*** freight rates all over the world are governed by the consideration that consignments required for public use will be carried at lower rates than others. For example food grains and salt are carried at rock bottom prices, sometimes even at those which do not cover the actual cost of

operation. These rates are justified on humane grounds that items of public use should be made available to the common man at the cheapest rate.

4. ***government policy:*** freight rates are often legislated upon of framed on the basis of government directive which aim at serving one or the other stated objectives – such as promotion of certain types of trade, development of certain industries, etc. in such cases, freight rates are either depressed to promote the particular traffic or hiked to discourage a particular traffic.
5. ***Reasonable profit:*** the transporter must provide for a reasonable profit after covering the cost of operations and capital investment. This margin must give not only reasonable return on investment and compensate him for the entrepreneurial time and effort he puts in, but also provide sufficient funds for future development of his enterprise.

Criteria for freight-rate determination

In arriving at a decision on questions of tariff policy in all cases mentioned in this Code, the following points shall, unless otherwise provided, be taken into account:

(a) Freight rates shall be fixed at as low a level as is feasible from the commercial point of view and shall permit a reasonable profit for ship-owners;

(b) The cost of operations of conferences shall, as a rule, be evaluated for the round voyage of ships, with the outward and inward directions considered as a single whole. Where applicable, the outward and inward voyage should be considered separately. The freight rates should take into account, among other factors, the nature of cargoes, the interrelation between weight and cargo measurement, as well as the value of cargoes;

(c) In fixing promotional freight rates and/or special freight rates for specific goods, the conditions of trade for these goods of the countries served by the conference, particularly of developing and land-locked countries, shall be taken into account.

The setting of freight rates:

The basis for setting liner freight rates is not standardized. Liner conferences generally use two principles, i.e. the cost of service and value of service; however these principles can rarely be applied very precisely across all products because they often have different characteristics. For example one product may have a far higher volume to weight ratio than another one with a higher density. The first product will occupy a proportionately larger space but exert a lower pressure on the ship's deadweight larger space but exert a lower pressure on the ship's deadweight capacity. This means that if the entire cargo of the ship composed of products of low density, the ship's deadweight capacity will not fully use. Similarly, if the cargo is largely composed of high density products, the ship's volume capacity will not be fully used. Ideally, ship owners aim to have a cargo mix that optimizes the ratio of a ship's volume capacity to its deadweight capacity. Conferences try to do this by applying a different base for setting the rates for different products. One of four bases used are,

- Per weight tonne
- Per measurement tonne
- Per weight tonne or measurement tonne, whichever is more favorable to the ship owner.
- According to the value of the product.(ad valor

Unit of freight:

The units of measurement (weight and dimensions) vary between the English and American systems, on the one hand, and the metric system on the other. Thus, a weight ton may in tariff books be a metric ton of 1000 kg or a long ton (equivalent 1016 kg). A measurement ton is traditionally defined as 40 cubic weight. But increasingly it is being defined as 1 cubic meter, equivalent to 35.5 cubic feet.

Since the freight by volume is more favorable to the carrier, the shipping line will charge by volume and not by weight.

While the storage factor or the load ability of a consignment would in principle provide a better basis for freight differentiation between different products, conferences also give consideration to such factors as the value of the consignment in relation to its

Stowage factor. Empirical studies have confirmed that the stowage factor and the value of a commodity per tonne are the two principal variables which have marked influence on freight rate structures.

FAK Rates:

FAK is an abbreviation of freight all kinds. FAK rates (a single rate for all kinds of freight) are not of much relevance to liner cargo as the structured commodity tariff is the rule and FAK rates the exception.

Liner terms:

Conference freight rates are quoted on liner terms. This means that liner freight is inclusive of the cost of loading the cargo onto the ship at the loading port and of unloading it from the ship at the discharge port. In other words, these costs are borne by the shipping line. Port charges do not fall into this category. These have to be borne by the shipper unless a conference freight schedule specifies its rates as inclusive of these charges.

Rate stability and increases

Shipping lines profess that one positive feature of conferences is the stability of freight rates. Intended increases in current freight rates are effected by conferences only after due notice has been served on shippers of the extent of the proposed increase. About three months advance notice is generally provided. This period includes the month in which the notice is given and following two months. The freight structure and any increases are often discussed by conferences with representative bodies of shippers such as shipper's councils. Usually conferences provide full justification for freight increases, substantiating these with an analysis of movements in operating, maintenance repair and /or capital costs.

Adjustments and Surcharges:

Conferences increase freight rates across the board when general inflation increases the costs of ship operations. Bunker fuel accounts for a major proportion of a ship's operating costs. If fuel prices increase suddenly, conferences generally avoid changing the basic freight rate schedule but the bunker adjustment factor as a method of compensating for increased operating costs due to higher fuel costs. When a conference decides to impose bunker surcharge, it expects its members to continue to use the freight rate schedule as the base rate and to add a bunker surcharge to the invoice.

Conferences deal in a similar fashion with the problem of port congestion, a periodic phenomenon particularly in developing countries. When its members experience delays in getting facilities at a port, conferences usually permit their members to add an agreed congestion surcharge. Once the port operations return to normal, the congestion surcharge withdrawn.

Another element which can affect net freight is the currency adjustment factor. With the floating of currencies, different currencies at times swing sharply in different directions. The U.S dollar may move sharply up against, say the Deutschmark. A ship owner in Hamburg may receive freight charges in Deutschmark, but may have to pay for the bunker in U.S.dollars. Because of diverging currency movements, the net freight revenue of a shipping line may be lower than it would have been if the exchange rates had remained stable. The currency adjustment factor is introduced to hold the tariff revenue at the same level (in the ship owner's currency) regardless of movements in exchange rates.

Case study:

Varun limited, a cash rich company, is a leading fruit processing company and involved in business of fruit pulp/processed fruit and natural fruit syrup (sarbat). The fruit pulp is mainly exported and has very limited market in metros, whereas sarbat is having very good domestic market. They are selling their products under the very popular brand 'Natural'. They have a modern plant, which is located near Bhopal. The fruits purchased from various fruit cultivating areas such as grapes from Nasik, etc. to make effective localized procurement they have 4 procurement centers they have very good cold storage facilities. The fruits are transported from this procurement centre to factory using hired trucks. While transporting fruits from warehouse to factory, there were shortages and also damages /decompositions that varied from 15 to 25 %and also there were inconsistency in transit time

. The 'Natural' packaging is one of the reasons for popularity of this brand. The quality and taste of syrup had created very good consumer base for sarbat. The sarbat is sold in ten different variants and three different packaging sizes. The sarbat is sold in ten different variants and three different packaging sizes. The sarbat loses the taste if it is kept for longer period (2 months) in normal condition. The taste remains to its best if it is kept in cold condition. The sarbat is distributed through 20 different distribution centers and are equally distributed in each zone. These centers are directly reporting to factory and passes information once a week. These sarbat were packed in very strong secondary packaging, even then there were 18%t 20% damages in transit.

There was excess inventory in some of the distribution centers while shortages in others. Also, specifically in summer season there were complaints about the quality (change in taste) of syrup.

Entry of multinationals with synthetic sarbat increased the competition and put lot of pressure on 'Natural'. Managing director of Varun Ltd formed a team of senior executive to come with concrete plan to fight the competition and increase market share and margin. And they decided to appoint a Logistic consultant to overcome

some of the problem. The managing Director wants to appoint you as logistics consultant to solve the following problem so that the company can fight competition and increase market share and margin.

Questions:

1. Suggest proper transportation policy to ensure minimum transportation loss of fruits and Sarbat and reduction in packaging cost.
2. suggest the appropriate distribution method to maintain the quality of Sarbat
3. Develop a demand forecasting technique to take care of seasonality, reduction in inventory and shortage at some area.
4. Suggest the use of information technology to substitute maintenance of high inventory without affecting customer service level.
5. establish a connectivity between factory and distribution centers (Networking diagram)

Review questions:

1. Define freight rate.
2. Explain the freight structure that is in practice
3. What are the costs involved in freight rates?
4. Explain the process to determine the optimum freight rate.

CHARTERING PRINCIPLES AND PRACTICES

Lesson 5

Outline of the lesson

1. Terminologies of chartering
2. Concepts of charter party principles
3. Different types chartering
4. UN convention on shipping
5. Different organs of UN convention

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the terminologies of chartering
2. *understand* the charter party principles
3. *Differentiate the* types of chartering
4. *Understand* the concept of UN convention
5. *Understand* the organs of UN convention.

Chartering principles and practices:

Chartering simply means the leasing in of a ship's cargo carrying capacity by someone who needs it.

Chartering essentially is a process of collecting and disseminating information. There are two parties who normally come together while fixing the vessel on charter.

Both these parties generally negotiate through an intermediary called a ship broker. In many cases the shipper or consignee is also the chartered. On finalization of all the terms and conditions of a charter through negotiations, a document called 'charter party' is signed either by the owners and chatterers or by their respective brokers on behalf of their principals.

The tramp trade deals with the operation of bulk carriers, tankers, and etc carrying cargoes in bulk from one port to another. Unlike in liner trade, there are no set ports of loading or discharging, no periodicity of shipment or even an agreed freight rate. Freight rate in tramp trade is generally decided by the law of supply and demand of tonnage/ cargoes and various other factors. In tramp trade there are various modes of chartering activities.

1. voyage charter
2. time charter / period charter
3. trip – time charter
4. bareboat charter
5. consecutive charter
6. Contract of affreightment.

Voyage charter:

Here a ship is chartered for shipment of an agreed quantity of cargo form one port or ports to another agreed port or ports. The charter agrees to pay a certain amount known as freight which can be computed either on a lump sum basis or per ton basis. In a voyage charter the owner is not only to meet the running expenses of the ship like officers/ crew wages, stores, provisions, insurance etc, but also operating expenses like port charges, light dues, bunker cost etc. sometimes the ship owner may find that the intended duration of the voyage is longer than what was anticipated at the time of fixing due to delay in obtaining a berth at load port or at discharge port. Such an eventuality is normally covered in voyage charter parties by way of demurrage to be paid by the chartered to the owner for the time spent in excess of the time stipulated in the charter party which is generally known as 'playtime'. In a voyage charter normally the cargo expenses are borne by the chartered / shipper/ receiver and hence the freight rate is expressed in FIO i.e. 'Free In and Out'. In some instances the loading expenses are to be borne by the ship owner in which case the freight is quoted on 'gross load' basis. Sometimes freight is quoted FIOT i.e. 'Free In and Out Trimmed' or FIOST that is 'Free In and Out spout Trimmed'.

Time charters:

Here a vessel is given on time charter by the owner for a fixed period of time, but instead of receiving freight the owner receives compensation known as charter hire in advance at certain agreed intervals. In a time- charter, the responsibility of scheduling the vessel's employment and meeting port expenses, canal dues, fuel costs, cargo expenses etc, remains with the charterer. However, running expenses of the vessel like officer's/ crew wages, stores, provisions, insurance, etc have to be met by the owner. In a time charter the charterer can either operate himself or sub-let the vessel on voyage charter depending upon his requirement. In case the market improves after the vessel is taken on time – charter and the charter sub – lets the vessel, it is possible that he will earn more money than what he has to pay to the owner by way of charter hire. Sometimes vessels are taken on long term charter to

fulfill contracted obligations like contract of Affreightment. Such long term charters are entered into so as to protect the charter from the vagaries of fluctuation of the freight market.

Consecutive voyages:

Depending upon the freight market some owners undertake to perform certain fixed number of voyages known as consecutive voyages. In this case, each voyage is considered separately and the freight/ demurrage / dispatch are settled for individual voyages.

Trip time charter:

This form of charter is becoming very popular and is resorted to by most of the owners and charterers.

A trip time charter resembles both a voyage charter as well as time charter because as in a voyage charter, the vessel performs a single voyage or a round voyage and like a time chart the owner/ charterer have to undergo some formalities as timecharter.

Bareboat charter:

In this type of charter, the vessel is given by the owner on charter for a period. Here the responsibility of operating the vessel rests with the charterer and the owner is paid a fixed hire as in the case of time charter. This form of charter is also known as 'Demise charter' and hence the charterer becomes the despondent owner and is responsible for manning as well as operating the ship as if he is the owner of the vessel.

Contract of Affreightments:

In this case an owner and charter agree to transport a certain quantity of specified cargo from one port to another during a fixed period at an agreed freight rate. Such COA generally depend on the type of ships to be used, periodically of shipment,

maximum drafts guaranteed at load/ discharge ports, demurrage/ dispatch, money payable etc.

Charter party principles:

Great care should be taken while drawing up the various clauses of charter parties in order to obviate any dispute at a larger stage. Some of the important clauses of a voyage charter party relate to:

(1) Description of vessel
(2) Voyage
(3) Cargo
(4) Freight rate
(5) Loading and discharging rates/ terms
(6) Laytime
(7) Strike clause
(8) Cessor clause
(9) Lien
(10) Cargo liabilities
(11) Arbitration.

Description of vessel:

This is very important principle and name of the vessel , year built, nationality, DWT, GRI, NRI, Draft, LOA, beam, speed / consumption, air draft of the vessel etc. it should also describe safe working load of the vessel's gears or cranes in the case of dry vessel and the capacity of the pumps in the case of the tankers. While giving deadweight capacity, it is advisable to give both the bale and grain cubic capacity of the vessel which is available for loading the cargo. Deadweight capacity can be expressed either in metric tonnes or in long tons. Usually the deadweight capacity includes also the fuel, fresh water, stores and constants etc. in case, owners have guaranteed a certain DWT in the charter party at a certain draft. It is the duty

of the owner to undertake the agreed cargo quantity at the given draft failing which the chartrerer can either frustrate the charter party or claim damages for breach of charter and also claim consequential damages.

Voyage:

The charter party usually would mention the port / area of loading. Such a description can take one of the following.

a) a fixed berth C.G .No.9 mechanical berth at Mormugao
b) A fixed port C.G.No 1/2 safe berth(s), Bombay

In case the land port is not mentioned in the charter party, it is advisable for owners to put a time for charterers to nominate the land port in order to avoid deviation. If there are many landports/discharge ports, generally a clause is incorporated in the charter party to state that the ports shall be in geographical rotation in order to avoid deviation.

Safe port/ safe berth:

Generally, a charter party mentions that the vessel shall be nominated by the chatterers to load from a safe port on safe berth. This means that the charter should nominate the vessel to a port where not only there is sufficient draft available for the vessel so that she can remain afloat, but also the port / berth should be free of swells or bad weather etc.

Despite such a stipulation in the charter party, it is always advisable for an owner to ascertain whether the intended load or discharge port / berth are safe enough for the vessel to remain afloat and carry out cargo operations. However the owner cannot claim any damages from charterers if such port or berth becomes unsafe. As corollary, if the charter party stipulates one safe port/ one safe berth, it is incumbent

on the charterer to nominate the vessel in such a manner that she can load / discharge safely.

Cargo:

It is essential to incorporate in the charter party the details and nature of cargo intended to be carried although some cargoes are well known by their brief description like HSS heavy Grain Sorghum Soyabean etc… however when certain harmful fertilizers are to be carried, it is better to give the physical and chemical specifications in order to ascertain whether they are harmful or dangerous for carriage. In case the cargo tendered for loading is not in accordance with the description in the charter party, the owners are entitled to cancel the fixture and also claim compensation.

Freight payment:

Generally speaking, the freight is deemed earned when the cargo has arrived at the discharge port and is ready for delivery. Thus if the owner cannot deliver the cargo he does not become entitled to freight. In order to protect such eventualities, the charter parties contain a clause ‘freight deemed to be fully earned and payable on shipment, ship and / or cargo lost or not lost. It may be clarified that in a case of damage to cargo, charter has no right to deduct the value of the damaged cargo from the freight payable to the owner.

Loading and discharging rates and terms:

Most of the charter parties lay down the loading and discharging rate or the time allowed for loading and discharging operations. So from that one can easily come to know about the time taken to load or discharge, which is called as ‘laytime’.

Laytime:

It is the time allowed by the owners to the charterer for completing the cargo operations without extra payment to the owners. In case the charterer exceeds the

laytime allowed, he will have to pay compensation known as demurrage at the agreed rate for the extra time used by the vessel. Conversely, if the charterer finishes the cargo operation before expiry of the laytime, owners should compensate to charterers by way of dispatch at the agreed rate. Normally dispatch is half of the demurrage and is worked out on all time saved or working time saved basis.

Strike clause:

With the growing unrest in labour all over the world, there have been instances where vessels have suffered heavy delays due to strike at loading or discharging ports. Most of the charter parties therefore contain strike clauses so as to clarify the counting of laytime in the event of a strike. The usual strike clause incorporated in the charter party is the 'centrocon' strike clause.

Cessor clause:

Many charter parties contain a cessor clause which relives the charterers from liability from the time a vessel has completed loading. The usual cessor clause reads as 'charterer's liability to cease when cargo is shipped and Bills of lading signed except with regard to payment of freight, deadfreight and demurrage at loading port'.

Lien clause:

It is specified in the event of non payment of freight or demurrage by the charterer. This is very complicated and legal issue; hence great care should be taken and legal advice obtained before exercising a lien on the cargo for non payment of freight or demurrage on order to ascertain whether the charter party gives legal right to the owner to exercise lien on cargo.

Arbitration:

Most of the charter parties lay down the venue of arbitrations which is generally LONDON or NEW YORK and the persons who are to act as arbitrations. Incase of

public sector or got bodies being involved in arbitration under the charter party dispute, ministry of shipping & transport has laid down that such dispute shall be referred to arbitration by a legal officer of the government of India.

Liner Bill of Lading:

1. **Definition:**

Wherever the term 'Merchant' is used in this Bill of lading, it shall be deemed to include the shipper, the receiver, the consignee, the holder of the bill of lading and the owner of the cargo.

2. **General paramount clause;**

When no such enactment is in force in the country of shipment, the corresponding legislation of the country of destination shall apply. But in respect of shipments to which no such enactments are compulsory applicable, the terms of the said convention shall apply.

3. **Jurisdiction:**

Any dispute arising under the bill of lading shall be decided in the country where the carrier has his principal place of business, and the law of such country shall apply except as provided elsewhere herein.

4. **Period of responsibility:**

The carrier or his agent shall not be liable for loss of or damage to the goods during the period before loading and after discharge from the vessel howsoever such loss or damage arises.

5. **scope of voyage:**

As the vessel is engaged in liner service the intended voyage shall not be limited to the direct route but shall be deemed to include any proceeding or returning to or stopping or slowing down at or off any ports or places for

any reasonable purpose connected with the service including maintenance of vessel and crew.

6. **Lighterage:**

   Any Lighterage expenses in all ports of loading or ports of discharge to be for the account of the merchant.

7. Loading, discharging and delivery of the cargo shall be arranged by the carrier's agent unless otherwise agreed.

Loading, storing and delivery shall be for the merchants account. Loading and discharging may commence without previous notice. The merchant or his assign shall tender the goods when the vessel is ready to load and as fast as the vessel can receive and but only if required by the carrier – also outside ordinary working hours notwithstanding any custom of the port. Otherwise carrier shall be relived of any obligation to load such cargo and the vessel may leave the port without further notice and dead freight is to be paid.

8. Delay:

The carrier shall not be responsible for any loss sustained by the merchant through delay of the goods unless caused by the carriers privately or by auction to cover any claims.

9. identity of carrier:

the contract evidenced by this bill of lading is between the merchant and the owner of the vessel named herein (or substitute) and it is therefore agreed that said ship owner only shall be liable for any damage or loss due to any breach or non – performance of any obligation arising out of the contract of carriage, whether or not relating to the vessel's seaworthiness.

Additional clauses:

a) Demurrage

The carrier shall be paid demurrage at the delay trade per ton of the vessel's gross register tonnage. Each merchant shall be liable towards the carrier for a

proportionate part of the total demurrage due based upon total freight on the goods to be loaded or unloaded at the port in question.

Above are the some of the principles that are applicable at the time of chartering of ship and thereafter.

UN CONVENTION ON SHIPPING:

Un-convention on shipping:

The Geneva conference opened in February 1948 and on 6 March 1948 the Convention establishing the Inter-Governmental Maritime Consultative Organization (IMCO) was adopted. (The name was changed in 1982 to International Maritime Organization (IMO)).

The main aim of this convention is to,

To provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade, and to encourage the general adoption of the highest practicable standards in matters concerning maritime safety and efficiency of navigation;

To encourage the removal of discriminatory action and unnecessary restrictions by Governments affecting shipping engaged in international trade so as to promote the availability of shipping services to the commerce of the world without discrimination; assistance and encouragement given by a Government for the development of its national shipping and for purposes of security does not in itself

constitute discrimination, provided that such assistance and encouragement is not based on measures designed to restrict the freedom of shipping of all flags to take part in international trade;

To provide for the consideration by the Organization of matters concerning unfair restrictive practices by shipping concerns in accordance with Part II;

To provide for the consideration by the Organization of any matters concerning shipping that may be referred to it by any organ or specialized agency of the United Nations;

To provide for the exchange of information among Governments on matters under consideration by the Organization.

The Convention provided for three main organs:

1. The Assembly
2. The Council
3. Maritime Safety Committee

The assembly:

The Assembly was to consist of all Member States and to meet once every two years, with provision for extraordinary sessions if necessary. Its main tasks were to vote on the budget and decide financial arrangements, to determine the general policy of the Organization to achieve the purposes of Article 1 and to adopt resolutions submitted to it by the Council and the MSC.

The council:

Six shall be governments of the nations with the largest interest in providing international shipping services;

Six shall be governments of other nations with the largest interest in international seaborne trade;

Two shall be elected by the Assembly from among the Governments of nations having a substantial interest in providing international shipping services,

Two shall be elected by the Assembly from among the governments of nations having substantial interest in international seaborne trade.

Maritime Safety Committee: (MSC)

The MSC was also an elected body consisting of 14 Members elected by the Assembly. Eight were to be the largest ship owning nations and the remainder were to be elected "so as to ensure adequate representation of other Members, governments of other nations with an important interest in maritime safety, such as nations interested in the supply of large numbers of crews or in the carriage of large numbers of berthed and unberthed passengers, and of major geographical areas". Members were to be elected every four years and were to be eligible for re-election.

The duties of the MSC were to consider "aids to navigation, construction and equipment of vessels, manning from a safety standpoint, rules for the prevention of collisions, handling of dangerous cargoes, maritime safety procedures and requirements, hydrographic information, log-books and navigational records, marine casualty investigation, salvage and rescue and any other matters directly affecting maritime safety".

Long process to entry into force:

It was hoped that the Convention would enter into force relatively quickly. The Geneva conference established a preparatory committee to deal with such matters as rules of procedure, draft financial regulations and a provisional agenda. It also resolved that a conference to revise the International Convention for the Safety of Life at Sea (SOLAS), due to be held in London later in 1948, should draft provisions taking into account the duties and functions which had been accorded to IMO, the intention being to delegate future responsibilities for the Convention to IMO.

However, not everyone wanted to see IMO come into existence. To some countries, much of Article 1 was unacceptable. Some were afraid that the treaty would lead to interference with their own national shipping industries and laws. Others felt that the IMO Convention was written by and for the benefit of the handful of countries which dominated shipping at that time.

By the mid-1950s the delay in ratifying the IMO convention was causing concern. The 1948 SOLAS Convention was already in need of revision. New maritime problems were also beginning to emerge, among them oil pollution. In 1954 a conference in London adopted the International Convention for Prevention of Pollution by Oil and agreed that it would become the responsibility of IMO once the new organization was established.

Gradually the number of Parties to the Convention increased. But many of them registered declarations or reservations which had the effect of greatly restricting the Organization's area of activities. Several used identical wording stating "it is in the field of technical and nautical matters that the Organization can make its contribution towards the development of shipping and seaborne trade throughout the world. If the Organization were to extend its activities to matters of a purely commercial or economic nature, a situation might arise where the Government (of

the country concerned) would have to consider resorting to the provisions regarding withdrawal".

Review questions:

1. What are the principles involved in chartering.
2. Explain in detail the charter party principles.
3. List out the three organs involved in UN convention by explaining their role.
4. Explain the UN convention on shipping industry.

References:

1. Pierre David: International Logistics, Biztantra 2003
2. Satish C. Ailawadi & Rakesh Singh: Logistics Management, Prentice hall of India 2005
3. Agrawal, D.K: Text book of Logistics ans supply chain management, Mc Millan India ltd 2003
4. Khanna, K.K: Physical Distribution, Himalaya Publishing, Delhi
5. Lambert, D; Strategic Logistic Management, Tata Mc Graw hill, New Delhi.

Outline of the lesson

4. Terminologies of ocean transportation
5. Concepts of containers
6. Types of containers
7. Advantages of containers
8. Indian container scenario
9. Problems & prospects of containerization

Learning Objectives

After studying this lesson, you should be able to:

5. *Understand* various terminologies of ocean transportation.
6. *Define* the term container
7. *Understand* the classification of containers
8. *List* the types of containers
9. *Identify* the advantages of containers
10. *Analyze* the problems & prospects of containers

UNIT III

OCEAN TRANSPORTATION: AN INTRODUCTION

Lesson 1

Ocean Transportation: An introduction

Seaways / waterways are the oldest mode of transport. When goods are transported through the water medium by a ship, it is called seaways transportation. Due to globalisation of the world market, seaways have a large potential for foreign trade. Throughout the world, this mode has acquired very high position due to its advantages like being the cheapest, having a larger capacity and flexibility. However, the greatest drawback of it lies in terms of slow speed.

Containers:

Transportation of cargo is greatly facilitated through containerisation and packaging developments. Containerisation is putting goods in boxes or trailers that are easy to transfer between two transportation modes. They are used in multi-modal systems commonly referred to as piggyback, fishy back, tranship or air truck.

Containerisation trend:

The international standards organisation (ISO) has defined a freight container as 'article equipment intended to facilitate the carriage of goods by one or more modes of transport without intermediate reloading'.

It is permanent character and accordingly strong enough to be suitable for repeated use fitted with devices permitting its ready handling, particularly its transfer from one mode to another, so designed as to be easy to fill and empty. The basic concept of containerisation is to place as much cargo as can be packed in a container made

of steel, aluminium or fibber board. With the new context of maritime and multimodal transportation, the container specification in terms of shape, size and material had to be specified, in line with United Nations economic commissions for Europe. Containers are articles of transport with the following features,

- Strong enough to be suitable fro repeated use
- Designed to facilitate transfer of goods by one or more modes of transport, without intermediate reloading;
- Fitted with hardware t allow easy handling especially when transferred from one mode of transport to another.
- Designed so that it can be easily filled or emptied.
- Designed to have an interval volume of 1 cubic metre to (35.3 cu ft) or more and to include all normal accessories and equipment at a container.

Classification of containers:

The containers are classified into various types depending upon their Characteristics. These are follows

Depending upon its functions:

a) less container load((LCL)
b) Full container Load (FCL)
c) Open top

Depending on its length:

a) 20 Ft container = 20x8x8.5
b) 40 Ft container = 40x8x8.5
c) 45 Ft container = 45x8x8.5

Depending on its weight:

a) Less weight container = below 18 tonnes
b) Medium weight container = 18 to 25 tonnes
c) Heavy weight container = above 25 tonnes.

Capacity:

The handling of containers is in terms of TEU's i.e. twenty feet equivalents units. The handling of on 20 feet container is equivalent t 1 TEU of 40 is equal and of 45 feet is equal to 3 TEUs.

The major containers in use have been built to ISO specifications which include their dimensions, material norms, physical features, maximum gross weight, minimum internal dimensions, minimum door opening dimensions, etc. Most containers come in two standard sizes which are commonly referred to as 20 feet and 40 feet containers. This statement is slightly inaccurate as the ISO standard dimension for the '20 feet container is in actual fact 19feet and 10.5 inches in length. Moreover these two containers come in two variations as far as height is concerned.

Types of containers:

1. **End loading:** Fully enclosed, equipped with end – doors, suitable for general cargo. It is basic intermodal container.
2. **Side loading:** fully enclosed, equipped with side door for use in stowing and discharge of cargo.
3. **Open top:** used for carriage of heavy, bulky or machinery items where loading or discharge of the cargo through end or side door is not practical. Most open top containers are equipped with fabric covers. Some open top versions are filled with removal hatch – panel covers of a detachable full size metal roof.

4. **Ventilated:** for cargoes which should not be exposed to rapid or sudden temperature changes, ventilated versions are available.

5. **Refrigerator**: also known as refer container. Insulated and equipped with a built in refrigeration system, powered by direct electrical connection or by diesel or gasoline generator used primarily for refrigeration of frozen foods.

6. **Dry bulk:** designed for carriage of dry bulk cargoes such as chemicals and grains.

7. **Liquid bulk:** tank type containers for carriage of goods

8. **Flat rack:** available in a variety of sizes and models, the flat racks are used for lumber, mill products, large heavy or bulky items or machinery & vehicles. Some are equipped with removable sides and fabric covers.

9. **Livestock:** containers for livestock carriage. These containers are available for transporting poultry, cattle, and other livestock.

The impact of containerisation in global trade:

Containerisation and its steadily growing offshoot, intermodalism, reached the age of 40 years during 1996, since Malcolm Mclean introduced the first ocean –going container in 1956. Through the ensuing four decades the container has become a vital part of the transportation industry the world over and containerisation / intermodalism is indispensable to world commerce.

Containerisation which is also commonly called intermodality or multimodality had caused tremendous impact on the organisation. Operations and structure of transport industry and international trade. In order to achieve the objective of intermodality, mutual co operation and co ordination among the various elements of transport are essential. Carriers belonging to the road transport, shipping or railways can no longer operate on the basis of maximising their own profits and displaying disregard for other links in the transport – distribution chain. In the intermodal transport perspective, a transport mode can no longer consider itself as a separate entity, it has to interact and adapt itself to the requirement of the intermodalism. Increased

co- ordination and integration among shipping lines, ports, railways, trucking companies have helped in the formation of large multi – modal transport conglomerates like sea – land American president line, Lloyd, Mearsk, just to name a few.

Advantages of containerisation:

1) permits door to door service which may be from factory or warehouse of shippers to the warehouse of the buyer.
2) No intermediate handling at port or at transhipments points
3) Low risk of cargo damage and pilferage enables more favourable cargo insurance premium to be obtained compared with conventional eliminates shipments.
4) The absence of intermediate handling plus quick transit eliminates risk cargo damage and pilferage.
5) Elimination of intermediate handling at terminal points ensures substantial savings in labour.
6) Cargo arrives better condition
7) Freight rates are much competitive when compared with those for less than container loads.
8) Transits are much quicker combination of faster vessels, the rationalisation of ports of call and substantially quicker cargo handling.
9) Encourages development of trade, quicker payment of export invoices.
10) Container vessels attain much improved utilisation of port facilities and are generally more productive.
11) Faster transits are encouraging many importers to hold reduced stocks/ spares.
12) Provision of through documentation.

13) More reliable transits
14) Emergence of new markets
15) Overall provides much improved quality of service
16) Less packing needs for containerized shipments.

The risk in container traffic is mainly attributable to the introduction of house stuffing at the port from November 1992. Apart from traditional items of cargo, a number of new items of cargo are also now being exported in containers through the port since the introduction of house stuffing. Certain items of cargo which had earlier been diverted to ports like Tuticorin are also routed Cochin port for export.

A feature of container traffic at the port is that there is an imbalance in the import of a large number of empty containers to meet the needs of the growing export traffic.

Indian scenario:

The concept of containerisation gained acceptance at Indian major ports as early as the 1970s when the port of cochin situated on the west coast of India received containers for the first time one of the conventional general cargo vessels of the American president Lines in the year 1971.

These containers were discharged with the help of the tip's derricks and unloaded on the wharf and empty containers were stuffed at the quay shelf. In the same way, import containers were discharged, kept to the quay, and the cargo thus stuffed were taken to the port's transit sheds. No specialised items of handling equipment were made available for this purpose. For all practical purposes, these containers, both empty and loaded were as navy lifts.

In the same manner, other ports also received containers and the pace of containerisation was rather slow in the 1970s largely due to non availability of

specialised handling equipment. In the 1980s the pace of containerisation in this country gained momentum

Out of the 80.51 million tonnes handled in the year 1980-81 at all major ports in India the share of general cargo was 15.77 million tonnes, representing 19.6percent of the total port traffic. In the year 1984-85 out of the 106.08 million tonnes, the share pf general cargo was 14.48 percent of the total port traffic and in 1991, out of the total traffic of 152.85 million tonnes, the share of general cargo rose to 28.15 million tonnes, but the percentage share of total traffic remained more or less the same.

In 1995-96 out of the total traffic of 215.33 million tonnes the share of general cargo was 17.77 million tonnes, representing about 22.6 percent of the traffic.

Since commodities like petroleum oil and lubricants (POL), fertilisers, finished fertilisers, raw materials, iron ore, cement, steel, coal, etc, are not susceptible to containerisation, it is proper to take only the share of several cargos in the total traffic handled by the ports as the variable cargo base for assessing scope and potential for containerisation at Indian major ports.

Once the total general cargo base is known it would be possible to examine what proportion of the general cargo would lend itself for containerisation. In the year 1984-85 out of total cargo traffic of 19.48 million tonnes, 15.96 percent has been containerised.

It is also interesting to note that even though the total general cargo component i.e. 48.77 million tonnes in 95-96 went up to 55 million tonnes in the next year, the percentage increase of containerised cargo as a proportion to the total general cargo would show only a marginal increase of about 2%.

Inadequate port infrastructure facilities for container handling and other logistics problems have come in the way of making a deep penetration of containerisation in the general cargo base at Indian major ports.

Problems and prospects of containerisation:

- **Slots space insufficiency:**

When the containers are unloaded, they are stacked in 4 tiers in the ICD. There is insufficiency of container storage space. The problem that arise is that unless the containers are cleared from the top, the containers which are to be handled urgently and which happen to be in the last or first tier, have to wait till the container in the upper tiers are cleared. This takes considerable time and delays the handling of the containers.

- **Delay in destuffing:**

This has to be done in respect of the containers before they are transported out of the ICD to their respective destination. However, this destuffing can be done only after customs clearance, which takes long time and this also delays the handling of the containers.

- **Absenteeism:**

The main problem regarding the labour pertains to the operators of the cranes. Always 30 to 40% of the crane operators are on leave and as a result it is not possible to stuff / destuff and operate the cranes. This delays the loading and unloading of containers.

- **Security risk:**

No doubt there should be proper arrangements for the security of the containers regarding their movement into and out of the ICD. However sometimes there is harassment of the transporter by the security personnel even for minor things

leading to the detention of the truck, resulting in delay in the movement of containers.

- **Customs clearance problems:**

The containers on receipt at the port are unloaded from the ship and taken to the container freight station. For taking these containers out of the ICD for delivery to the consignees, customs clearance is required. For this purpose the following documents are required to the customs:

1. Bill of lading
2. Invoice
3. Packing list
4. Quantity / weight list
5. Purchase order
6. Material analysis report
7. Letter of credit
8. Material catalogue.
9. Projects write up i.e the purchase for which the cargo is imported.

These documents are required for import of all types of cargo. In case, if any of the above documents are not in proper form, or could not be submitted to the authorities, delay occurs in the clearance of the cargoes...

Occasionally there will be delay in receipt of the bill of lading from the shipping agents and then there will be delay in clearance.

Review questions:

1. Write short notes on
   (a) Container.
   (b) Basis of classification of containers
   (c) Types of containers.

2. Explain the advantages of containerisation.
3. Write an account on the Indian scenario on containerisation.

4. Bring out the problems and prospects of containerisation.

CONTAINER FREIGHT STATION: (CFS)

Lesson 2

Container freight station: (CFS)

Outline of the lesson

1. Terminologies of container freight station
2. Concept of CFS
3. Facilities provided by CFS
4. Concept of Inland container Depots(Dry ports)

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the nature of container freight station
2. *Know* the facilities provided by CFS
3. *Outline* the concept of Inland container depots

At a container port, ISO containers move from ship to railway wagons through various stages from ship to berth, berth to container, container yard to container freight station (CFS) and from there to railway marshalling yard. At these stages, the handling of containers in the CFS is of great importance and much of the success of handling international containers depends upon the design, planning and operations of the container freight station.

A CFS is a station is an enclosed area where rail and road facilities are provided for the transfer of containers between road and road and between road and rail units. It contains facilities of mobile and static cranes, warehouses for goods, customs clearance sheds etc.

The main activity of CFS is to ensure that a container is ready for onward movement either towards the ship or towards the hinterland by road or by rail. Containers arrive at the CFS in an empty or loaded condition by road, rail, or ship, either in break- bulk condition or in container loads. It is the function of the CFS to match the goods and containers after observing the prescribed formalities and move them forward in an empty or loaded condition.

The goods for export, which may arrive in a bulk condition at the CFS are stuffed into containers for easy handling and transport by ship. The less than container loads (LCLS)
Arriving from different places is stripped and the contents are reformed into full container loads (FCL) at the CFS. The empty containers are sent to the places where they are required.

The main facilities provided by CFS are:

1) Warehouses

2) Stripping and stuffing stations, where containers are destuffed and stuffed – these activities have to be performed in separate allotted areas to avoid a mix up contents.
3) Separate stacking areas for loaded containers meant for export and import and keeping empties.
4) Container park area.
5) Back up, storage, workshop, fuelling station, tractor trailer park, fire station.
6) Roads and parking area for road units
7) Receipt and despatch facilities including offices.

To achieve a smooth flow of movement, the CFS provides for a road and rail interface with areas gradated for import and export activities.

CFS handles goods arriving for export by rail as well as by road. It is not necessary that goods arriving by road should come in containers. Some of the goods by road may reach in bulk condition. At the CFS, such goods are stuffed into containers.

The size of a CFS is determined on the basis of the traffic offered, the frequency of services and time required for completing the operations and formalities. At the CFS an area for seven day storage on an average stack of 1.5 containers high basis may be provided. Stripping and stuffing stations are provided with covered area.
The location of CFS should not be an obstacle to the future development of the port. Nor should it take away the area behind the port's active zone which is required for such support facilities as storage, shed, workshop facilities, maintenance shops, repair shops for sick containers, buildings for various offices etc.

The location of the CFS should be away from the berthing place and the container yard, so that sufficient land is available for back up facilities required not only now but also 30 to 40 years.
CFS should also facilitate centralisation of customs inspection. Therefore it should be a bonded area.

Inland Container Depots or Dry ports:

- With the increase in containerisation of cargo all over the world, the ICD have assumed an important role in the logistics chain.
- A lot still needs to be done to upgrade the existing facilities at ICDs
- The waiting time of containers before loading them on block trains at ICDs is high.
- For imports: the container take on an average 15-18 days before they leave the gateway ports. The surprising things are that the same goods coming from the UK to India takes only 24 days.
- Container delays at Indian ports cost approximately US $ 70 million a year, putting us at the cost disadvantage.
- With the passing of multi modal transport of goods act 1993 to promote inter – modal transport, development of ICDs have become of paramount importance to facilitate 'door to door' delivery concept. Private sector takes the lead in developing ICDs either by joint venture or other acceptable mode of participation.
- Electronification of ICDs and customs with the user should be initiated on a priority basis.

As export and import of cargoes in India started rising, use of containers has been on the rise. These containers were however handled mainly at the major ports leading to slackened cargo movements. This led to the formation of container depots in link with CONCOR to undertake the transport of the containers. This system of linking of gateway ports through railways was approved and the Indian railways were entrusted with the work. Inland container Depots were established at the following places by the Ministry of commerce, Govt of India.

1. Anaparthi
2. Bangalore
3. New Delhi
4. Guntur
5. Tirupur

6. Coimbatore

7. Hyderabad

Review questions:

1. Explain the term container freight station. (CFS)
2. Detail the facilities provided by the container freight station.
3. Explain dry port / Inland container depot. (ICD)

MULTIMODAL TRANSPORTATION AND CONCOR

Lesson 3

Outline of the lesson

1. Terminologies of Multi modal transportation
2. Role of container corporation of India (CONCOR)
3. Multi modal transport system and concepts

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the nature of Multi modal transportation
2. *Describe* the role of container corporation of India
3. *Outline* the multi modal system and concepts

Multimodal transportation and concor:

CONCOR was incorporated in March 1988 under the Companies Act, and commenced operation from November 1989 taking over the existing network of 7 ICDs from the Indian Railways.

The company was set up with the objective of developing multi modal logistics support for India's International and Domestic containerized cargo and trade. The task was to provide customers with the advantages of direct interaction and door to door services that formed the backbone of road transport, while capitalizing on the robust and more economical option of rail movement on the Indian Railways network.

CONCOR - The Multimodal Logistics Professionals

Ever since globalization transformed the transport sector, national boundaries have become permeable to penetration by trade, creating the need for flexible transport solutions. Intermodalism and containerization were the by-products of this era and were poised to metamorphoses transport of "general cargo", moving it 'seamlessly' through sea and land arteries. Forty years ago, the physical process of exporting or importing goods was arduous. Goods needed to be transported by lorry to the port, unloaded into a warehouse and then reloaded into the ship 'piece by piece'.

Malcolm McLean's idea of containerization changed the basics of cargo transport by standardizing the dimensions of the container and simultaneously improving the productivity of ports by mechanizing handling of container-carrying 'cellular' ships and reducing their handling to a few hours only. Unitisation helped elimination of multiple handling of cargo and made transfers quick, cheap and easy. As

containerization came to stand for 'cargo care', it grew by leaps and bounds the world over.

Indian Railway's strategic initiative to containerize cargo transport put India on the multi-modal map for the first time in 1966. Given the continental distances in India (almost 3000 km from North to South and East to West), rail transport could be the cheaper option for all cargo over medium and long distances, especially if the cost of inter-modal transfers could be reduced. Containerized multi-modal door-to-door transport provided the ideal solution to this problem. It was this idea that saw the Indian Railways entering the market for moving door-to-door domestic cargo in special DSO containers starting in 1966.

Though the first ISO marine container had been handled in India at Cochin as early as 1973, it was in 1981 that the first ISO container was moved inland by the Indian Railways to India's first Inland Container Depot (ICD) at Bangalore, also managed by the Indian Railways.

Expansion of the network to 7 ICDs by 1988 saw increase in the handling of containers, and along the way, a strong view had emerged that there was a need to set up a separate pro-active organization for promoting and managing the growth of containerization in India

It was established as a separate organisation for undertaking certain concentrated and specialised intermodal activities in the field of containerisation where Indian railways had not been able to focus adequate attention, including

- Establishment and management of ICDs and container freight station (CFSs)
- Custodianship of import/ export cargo at ICDs and CFSs in view of heavy state revenue involvement.

- Effective coordination with a large number of agencies for providing specialised services related to international trade and transport.
- Organising point to point liner train services by innovative marketing.

CONCOR being a multimodal operator,

- Spearhead the container revolution in the country.
- Build and operate infrastructure and linkages for rapid and accelerated inland penetration of containerised international trade traffic and for land bridging.
- Develop and promote use of ICD containers for domestic general goods.
- Develop technologies for optimal inter modal services.
- Provide technical know how consultancy and management services in the fields of multimodal transport, warehousing, management of terminal packaging and palletisation, container leasing and repairs etc
- Function as a multimodal transport operator and eventually as non vessel owning MTO
- Develop specialised customer – friendly modal freight terminals with particular emphasis on warehousing, road haulage, cargo handling composite, documentation, customer relations and ancillary facilities like insurance, banking and packaging.
- Undertake extensive market research and bring about a reorientation of production and distribution management of domestic trade cargo.

Multimodal transport system:

As we know every mode of transport has its own strengths and weakness in absolute as well as relative terms. These strengths and limitations put challenges and opportunities before surviving and growing in the competitive environment. Further more, challenges before the transportation industry have further been

intricate in the last two decades, mainly due to growing awareness about the alluring contribution of logistics and supply chain management for sustainable growth of the corporate enterprises. That is why after realizing their limited strengths and emerging challenges, various modes of transport have started cooperating with each other to pool their recourses and facilities so as to have a win – win situation to all while meeting the service expectation of their customers. The beginning of the state of the art transport technology has given the impetus to the concept of multi modal transportation, emphasizing the coordination of two or more modes to transport rather than in competition with each other.

Multimodal transport system has been defined as the carriage of goods by at least two different modes of transport on the basis of a multi-modal transport contract from place in one country to a place designated for delivery situated in a different country.

In another definition, multimodal describes a shipment that takes several different means of transportation - road, rail, ocean, air, - from its point of departure to its point of destination. This meaning has evolved recently to limit the use of this term to freight for which a single bill of lading covering more than one of these alternatives is issued.

In Multimodal transport system, one transport document, and one rate and through liability are used.

Multimodal transport, an old concept is a term used to describe the linking of transport responsibilities, documentation and liability in the movement of goods (by land, sea, and air) using the existing infrastructure. This linking results in improved transport efficiency and provides the user with a single point of responsibility and grater cost transparency.

The ultimate aim of multi – modelism is to make the movement of goods from seller to buyer more efficient through faster transit at reduced costs.

Multimodal transport brings benefits by enabling exports to be placed in the market places of the world at a reduced cost and so be more competitive. Like wise costs associated with imports will be reduced thus leading to reduced foreign exchange outflow and cheaper imported goods,

Multimodalism is all about:

- Coordination of the different modes of transport
- Coordination of documentation
- Coordination of the commercial and physical aspects of the commercial transaction between the buyer and the seller.

Thus multi modal/ inter modal transportation is the use of more than one mode of transport for the movement of shipment from the origin to its destination. Inter modal systems are joint, point to point through transportation services involving two or more modes on a regular basis. In this system, inter – modal operators use multiple modes of transport to take the advantage of the inherent economies of each and thus provide integrated service at the lowest total cost.

Piggyback:

Piggyback is the best known and most widely used inter modal transportation system, which is an outcome of the coordination between railways and roadways. It is also called as 'trailor on flat car' (TOFC) or container in flat car (COFC). This system involves picking up goods in a trailer or container by truck, delivering it to rail, removing the truck

Trailor and loading it on a flat car of rail for a long distance by rail, and at the destination, detaching the trailor from rail, reattaching it to a truck which makes the final delivery.

This inter modal transportation system became very popular and widely used from the 1960s in the USA and 1980s onward in India, accounting for maximum freight cargo movements in recent years.

Fishyback:

The inter modal transportation system is achieved by coordination of road and water modes of transport. It functions in the same fashion as piggyback combines roadways and railways. In other words, in fishyback service, the goods containing boxes are loaded on the trailor which will be further loaded on a ship. Again at destination, it will be unloaded from the ship and reloaded on truck train for final delivery.

This coordinated transportation system is used widely in the case of export / import freight cargo.

Trans ship:

Trans ship refers to a inter modal transportation system which is the combination of coordination efforts of railways and waterways for the bulk movement of freight cargo. Again, it functions in the same pattern.

Airtruck:

As the name itself says, this inter – modal transportation system is the outcome of the coordination between airways and roadways. That is, it refers to exchange of goods containers/ boxes between air and road carriers. It is also referred to as birdyback.

Review questions:

1. write a short notes on
    (a) Multi modal transport
    (b) CONCOR (Container corporation)
2. Explain how the CONCOR acts a as multi modal transporters in India.
3. Explain the following terms
    (a) Piggyback
    (b) Fishy back
    (c) Trans ship
    (d) Air truck.

ROLE OF INTERMEDIARIES

Lesson 4

Outline of the lesson

1. Terminologies of different Intermediaries of shipping
2. Role of freight brokers, shipping agents, Liner agents
3. Process of Clearing & Forwarding(C&F)
4. Role of C&F agents- their services and activities
5. Process of selection of C&F agents and fixation of fees
6. Ship owner and shipper consultation mechanism
7. Types of consultation machinery.

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the role of Intermediaries
2. *Know about* the nature of C&F
3. *Outline* the different services of C&F agents
4. *Describe* the consultation machinery and its mechanism and their types.

Role of intermediaries:

In the concept of movement of goods in international trade, varied activities are to be preformed. Movement of goods from the supplier's premises to the port is the first task.

A string of intermediaries relieves the importers /exporters in moving / clearing / forwarding the cargo. And perfect coordination is needed amongst the different intermediaries. To function as a team in order to move the goods from manufacturers to the end user, it is necessary all these work with the mission of efficient cargo movement. It is imperative that intermediaries are used to carry out these diverse tasks. They should good at coordination.

Freight broking:

A ship broker generally specialists in a certain market or in a sector of a market. In a chartering, an owner and a charterer have an interest in the broker's sources of information, his particular knowledge as well as his skill of negotiation. Normally both parties will have their own broker – the owner's broker and the charterer's broker. Thus, both parties negotiate through their representative principal's interests and intentions. Sometimes the broker will have a certain authority to bind his principal but normally the negotiations will be carried out in close co operation between the principal and the broker. When the agreement has been concluded, the broker will often obtain specific authority to sign the agreement, which he does sometimes 'as agent only', without mentioning the party or parties and sometimes 'as agent for X'. in the former case certain legal problems may arise as to who has really entered into the agreement. An owner may choose to do his business through one sole confidential or exclusive broker, or he may prefer to work through a large number of brokers, who will then have equal possibilities to do the business. Sometimes, the broker introduces a first class charterer or first class carrier without

mentioning a name. Should it appear later that the carrier or charterer is not first class; the broker may become liable for the consequences of his wrong description. A broker engaged in efforts to bring together an owner's confidential broker of a suitable charterer is known to be doing competitive chartering. Similarly cable brokers are those who mainly list orders circulated in shipping centres such as New York and then distribute the lists to brokers on other shipping centres like Singapore, London, Tokyo, or hamburgh.

The function of the broker is to represent his principal in charter negotiations and he has to work for and protect his principal's interest in following ways:

1. The broker should keep both the owner and the charterer continuously informed and about the market situation and the market development, about the available cargo proposals and shipment possibilities and should in the best possible way cover the market for given positions and respectively.
2. The broker should act strictly within given authorities in connection with the negotiations. Some times the broker will have a fairly wide framework with an absolute limit which must not be exceeded.
3. The broker should in all respects work loyally for his principal and should carry out the negotiations and other work connected with the charter scrupulously and skilfully.
4. The broker may not withhold any information from his principal nor give him any wrong advice.

A ship broker working for a charterer will also have as one of his duties, immediately after the charter negotiations have been concluded to make out the original charter party in accordance with the agreed terms and conditions.
Corresponding standards and commercial ethics also to the sale and purchase broker as to his behaviour during the negotiations and how these are carried out. The final memorandum of agreement is generally prepared by a sale and purchase broker.

The commission paid to the broker is called brokerage and is always calculated on a percentage of the gross freight under consideration of the charter party and is generally in the region of 1.25%. how ever is sale and purchase deals, the figure is often 1-2%.

Shipping agents:

The shipping agents may be of two types:

a) port agents
b) liner agents

Port agents;

The task of the port agent is to represent the owner and assist the vessel for the owner's account in order that she will have the best possible business. The port agent should in all respects assist the ship's captain in his contacts with all local authorities like the customs and port, and he also has to procure the provisions and other necessities, communicate orders to and from the owners etc. it is important that the owner employs a reliable and energetic agent. In tramp chartering, loading and discharging will often be the for the charterer's account. The chatterer may then prefer to be entitled to nominate the port agent in order to further his interests. The question of appointing an agent is generally an important in the charter party, since the parties have to establish whether the charter party shall stipulate owner's agent or charter's agent. If the charterer's agent is to be nominated, but if actually appointed by the owner, the latter will do so only by authority of and for the account of the charterer. If the owner has to accept the charterer's agent, he may protect his interest to a certain extent by appointing a husbandry agent, who will then assist the master and look after the owner's interests in order that the charterer's agent will not act to the disadvantage of the owner.

Liner agents:

Liner agents are important group of functionaries in liner shipping. Whereas brokers and port agents rarely enter into written contracts with their principals, liner agents often enter into written contracts often under certain standard forms. A liner agent functions like a general agent for the liner within a geographical area. Liner agents represent the owner in many different ways. Their functions are:

a. To advertise about the arrival and departure of vessels.
b. Pay port dues and customs charges if any
c. Appoint a stevedore to load / unload the cargo
d. To arrange for the documentation relevant to various departments on behalf of the vessel and issue the bills of lading on behalf of the master.
e. Procure and supply provisions for the crew and the vessel.

The cargo booking will normally be made without special negotiations through a quotation in accordance with the tariff in force, and as soon as the booking has been noted and confirmed by the agent, there is an agreement for the carriage of goods and a booking note is normally issued. The agent will normally have, before every loading occasion an allocation of space from the owner which he may book up without any further authorisation from the owner except dangerous cargoes and certain other unusual goods.

Role of clearing and forwarding agencies:

C&F

Before the goods are put on board a vessel, they have to be cleared through customs at the port of shipment. Once unloaded at the destination port, the goods have again to be cleared through customs. This is a legal requirement in all the countries of the world.

Responsibility of clearance of goods and associated costs at the two ends of maritime transportation process will depend on the purchase contract terms. The

supplier is responsible for customs clearance at the loading port for all trade terms (INCOTERMS) except when the contract is on ex-works or FAS terms.
The importer is responsible for clearing goods through customs on arrival at the port of his country in all cases except when the purchase contract specifies the following two terms: delivered duty paid (DDP) and delivered ex quay (DEQ).

The C&F Process:

The forwarding and clearing of goods has its own complexities. Most of all it requires good deal of familiarity with port and customs rules and regulations. These rules and regulations are altered and amended off and on throughout the year. This is particularly the case with customs in developing countries, where import trade regulations are constantly reviewed and changed. The reasons for this may include changing domestic supply and / or demand conditions, the foreign exchange situation, revenue and budgetary needs. Interpreting these rules and regulations requires the kind of expertise which often comes more from interacting with customs officials and established precedents than from printed manuals.

Apart from customs clearance, under certain trade terms the importer will be responsible for the inland movement of goods in the supplier's country and later in his own country. This requires close contact with local transport operators as well as knowledge of inland freight rates in all the different supply countries.

Customs, port clearance and buying international maritime freight services involve much documentation and filling up of forms prescribed by customs, shipping companies, transport operators, etc. compliance with requirements and accuracy of information are vital for proper assessment of freight, customs clearance and settlement of insurance and other claims. Importers need to be familiar with procedures and adapt at completing documents correctly if they are to avoid consequences of mistakes.

Constant contact with shipping companies and shipping brokers is of utmost importance in optimising freight costs through negotiating freight rates, in planning and selecting the most advantageous lines, schedules and ocean routes.

The freight forwarder and his role:

The united states government's federal maritime commission, the agency having regulatory and licensing control over freight forwarders in that country, defines a freight forwarder as 'a person carrying on the business of forwarding for a consideration who is not a shipper or consignee or a seller or purchaser of shipments to foreign countries, nor has any beneficial interest therein, nor directly or indirectly controls or is controlled by such shipper or consignee or by any person having such a beneficial interest'

The term carrying on the business of forwarding means the dispatching of shipments by any person on behalf of others, by ocean going common carriers in commerce from United States and also adds having the formalities incidental to such shipments.

Some of the main services are:

Act as a shipper's agent, arranging transport services and preparing documentation.

Act as a transport specialist assisting the shipper in selecting the most economical mode of transport and / or most cost effective route:

Act as a multi modal transporters, i.e. as a principal transport operator with direct contractual responsibility for the carriage of goods from door to door, assuming liability for those segments of transportation for which he himself may not be the actual operator.

Act as a provider specialist services in packing, container stiffing / de stuffing, customs, raising claims, etc.

A more detailed listing of the specific activities entailed in freight forwarding includes;

- Arranging and contracting vessel space on behalf of importers
- Arranging for transport of goods from internal origin point to export terminal
- Applying for export licences
- Tracing cargo deliveries to shipside with internal carriers.
- Arranging packing and marking of goods
- Arranging warehousing or storage
- Arranging sampling, surveying, etc
- Preparing dock receipts required by customs
- Determining the commodity description / classification to ensure application of the lowest possible freight rate
- Preparing consular invoices and / or certificates of origin and arranging for the consultation or visa of these if required
- Arranging crane or other special services
- Arranging marine insurance
- Negotiating freight rates
- Arranging for auditing of freight bills
- Distributing documents such as bills of lading, etc
- Preparing customs bills of entry at the importer's end
- Arranging for inspection, surveys etc and other ports and customs formalities for clearance of goods.

The specific functions to be performed by a freight forwarder for an importer will be determined by the terms of the purchase or contract.

Selection of correct C&F agent:

An importer should approach the selection of the right freight forwarder in much the same manner as he selects the right supplier of his goods or a lawyer. The selection process should ensure the competence and integrity of the candidate. Goods of considerable value as well as their controlling documents are entrusted to the freight forwarder. Since the importer will often seek the forwarding agent's advice and counsel on how best to protect or advance his interests, the relationship must be built on trust and confidence.

The forwarder should have technical know how and competence to perform all the services required of him. He should also maintain personal contact with many individuals on various levels who provide the network of essential services to facilitate sound and economic shipping services.

Thus the fee of the C&F is only one of the factors that should be weighted in the selection process. The most important other ones are:

- Financial viability
- Quality of service
- The terms and condition of the forwarder's services.

The C&F fee:

The fee is usually provided in two forms. Vessel owners generally provide in their tariffs that compensation of 1.25% of the freight charges is payable by them to freight forwarder's and similar agents.

By ad hoc arrangements, freight forwarders also assess charges or fees based upon the volume and / or depth of the detailed work they will be required to do for the shipper. Between them, the shipper and freight forwarders will agree on the arrangement for reimbursing the forwarder for expenses which may agree to meet these expenses initially from their own recourses, most now require their principals to place funds with them in advance of anticipated expenses for ocean freights, insurance, internal freight charges, etc. in case of C&F/ CIF purchases, the entire

cost of these elements is invariably incorporated into the seller's prices. This means, in effect that the importer ultimately pays for these costs in the commodity price itself. In such cases forwarders are acting on behalf of the seller who has nominated and paid them.

Ship owner and shipper consultation:

Shipping is a competitive industry. The demand for shipping services is a derived one. Shipping services do not have alternative applications. So amongst ship owners competition arises to corner the existing traffic. The causes for the competition are as follows

- Freedom of use of a certain highways: the permanent way of ocean being a gift nature is free. It is open to all persons and countries of the world without acquiring any rights to float the ships and steamers. Except for some restrictions in coastal waters of the countries, the ship are free to move anywhere on the sea and it invites international competitors.
- Small investment; shipping requires small investment to start the sailings. The capital investment in construction of permanent way, signals, bridges, tunnels, culverts and platforms etc is not there in purchasing a steamer or a ship. The facilities of loading, unloading and harbouring are maintained by the port authorities and therefore no investment is to be made by the ship owner. Such facilities become available on payment of port dues. The initial investment being small, it invites many competitors from different corners of the world.
- Greater mobility of ships: the ships have a great range of mobility. First, the ocean highways are very extensive and entire world routes are available for movement. They are not limited to some routes as is the case with inland waterways and railways. Secondly, the ships are not tied with a particular route like the railways. If one route becomes unremunerative they can be floated on other routes without any loss of capital or time. Hence the greater and frequent mobility of ships makes shipping competitive.

- High proportion of fixed and constant expenses and fluctuations in traffic: most of the capital expenditure is made in purchasing the ships and most of the operating expenses are made in upkeep of the vessel, management and insurance which are constant and have no relation with the volume of traffic. Since most of the expenses are constant and are not irreducible in case of less volume of traffic, every shipping company tries its best to acquire more and more business to reduce its cost per unit of operation. In the process of acquiring more business they resort to cut throat competition and sometimes they reduce their rates to the extent that they recover only variable expenses and a little more. Therefore during depression these shipping companies are very hard hit and try to acquire business at any cost and competition , thus tends become suicidal.
- Freedom of determination of rates: the rates and fares in railways and motor transport are regulated by the government of the country to a great extent, but the rates and fares in shipping are determined under free conditions in the absence of any regulatory provisions. So there are no minimum or maximum limits under which the rates should vary. Therefore rate-cutting and monopoly charging are prevalent in shipping.
- Competition in tramp services: because of greater mobility, freedom of movement from any port to any port and at any time unlike the liners which are run on a fixed route and according to a fixed schedule, and their variety of size and speed, the competition in tramp shipping is more serious. They provide quick and prompt service to the shipper and are always ready to offer accommodation according to the needs of the shipper. They are very alert and watchful so that they may reach where they are wanted at a given moment. They try to reap the best of the available traffic. Their whole success depends upon their best employment of the ships and therefore they keep busy in searching new markets and new traffic. So they charge rates according to the supply position of the ships or according to the demand position of the traffic.

- Competition in line services: in line services is restricted to a considerable extent as compared to tramp services. The main reason is that the line service requires high initial capital investment in maintaining large fleet of passenger and cargo liners. Liners are generally bigger and faster vessels. Moreover to provide safety, comforts and amenities to passengers, a good amount of money is required to be spent. The chances of many competitors in line service are therefore limited. If competition takes place among liners it leads to their collective suicide. Their mobility is limited to certain routes and they cannot take advantage of fluctuations in traffic. The liners, therefore become the members of conferences, go into some formal or informal agreements and they try to eliminate the cut throat competition, avoid unnecessary duplication of services by traffic allocation and advance planning of sailings, try to maintain uniformity and stability of rates by mutual understandings and agreements. So competition in line services is considerably limited due to high initial investment, limited number of competitors and conferences and agreements formed by them for regulating the rates, traffic, and other conditions.

Competition has led to rate wars and collapse of shipping companies. To restore order, consultation amongst shipping companies is needed.

Types of consultation machinery:

Consultation machinery among ship owners take four forms, like

1. conferences or Rings
2. pooling arrangements
3. Agreement system.
4. Shipper's council and association.

Shipping conferences:

The conferences are association of companies, resembling an ordinary cartel or trust, formed to control supply and prices and to limit entry into the trade. Shipping

ring or conference ' is a combination, more or less close of shipping companies formed for the purpose of regulating or restricting competition in the carrying on of trade of a given trade route or routes'. Conferences are formed only in a line trade and not in the tramp service, because the former is a more stable and regular organisation. Since the conferences are made for particular routes only, a shipping company may join many conferences on different routes. Likewise, the shipping companies may not join conference of a particular route and carry on independent business. The organisation of conferences varies. It may be completely formal or informal. The alliance is not one of shipping companies for all purposes but only as to their operations within a specified area. A conference may have lines of various nationalities as its members and their purpose of alliance might differ from conference to conference.

To conclude that liner conferences has two main objectives:

1. To regulate competition between its members.
2. To protect its members as a body against outside competition from tramps or non conference lines.

Advantages of conferences:

1. Prevention of competition and protection of weaker lines: the organisation of conference regulates the competition among the liners by entering into agreements on subjects like fixation of rates, allocation of traffic and other sailing conditions. It curtails the unhealthy competition among the liners and protects the weaker liners, which otherwise would have been ousted in free competition. This also protects the liners against outside competition, particularly due to deferred rebate system, which makes the big shippers loyal to the conference lines.
2. Regular sailings: the conferences have promoted regularity of service, better distribution of sailings and fixed timings. In turn, when the shipping companies are assumed of sufficient amount of traffic their cost of operation goes down and they are in a position to introduce better vessels and facilities

for the shippers. Moreover, when shippers become loyal to the conference lines, it becomes obligatory on the part of the shipping companies to provide sufficient accommodation and organise sailings efficiently to meet the requirements of the shippers.

3. Stability and infirmity of rates: the regulation of rates and traffic not only reduces the competition and unhealthy practice of rate – cutting but also leads to stabilisation and uniformity of rates. Stability of rates is a great advantage to the shipping companies as it enables them to calculate their income more reasonably and accurately. It is also advantageous to the shipper who can calculate freight cost more exactly in their cost structure. The fluctuating rates hamper the development of international and national trade.
4. Increase in sailings: when the shipping companies are not under the constant threat and danger of cut throat competition they try to promote sailings in accordance with the real needs of the traffic. New routes are served and new commodities are carried which also become remunerative in course of time.

Disadvantages of conferences:

1. Creation of shipping monopolies: the conference agreements and deferred rebate system enabled many lines to create monopolies. By acquiring monopolies powers they compete with tramps and non conference lines. They have prevented the establishment of new lines and crushed non conference lines. They exert arbitrary power over rates, domestic shippers and become careless in providing proper service. They sometimes grant special rates and accommodate to large shippers and refuse to publish tariff and classification.
2. Preferential treatment: the shipping conferences have given preferential treatment to some big shippers and favoured them as against the other shippers. The deferred rebate system in itself is a preferential treatment, but

the shipping rings offered other concessions and favour beyond the reasonable rates of deferred rebate.

3. Against independent shipping: the policies adopted by these conferences are anti social and detrimental to the free and independent shipping business. The deferred rebate system compels the shippers to patronize and sponsor only the lines of the conference. This restricts the new entrants in shipping and the old non conference lines become so powerless and helpless that they have to close their line. Moreover, in the absence of competition, stagnancy and inefficiency among conference lines usually creep in. the shippers who are favoured by these lines also monopolize in international trade in those commodities on certain routes as others cannot compete with them. Thus the policies and practices adopted by the conference lines are against the independent growth of shipping and international trade.

Pooling arrangements:

The liners also into money and traffic pool agreements to avoid friction and cut throat competition. in case of money pool, total earnings of all member lines are deposited in a common fund which after deducting the operational expenses, is to be distributed among them in a ratio already agreed upon at the time of formation of the pool. According to the freight or traffic pool, the amount of traffic which each member line has to carry is fixed. It is divided territorially or between certain areas or certain ports. Thus, the tendency of fetching traffic to its own line is avoided. Since the member carrier has to operate on a fixed route or operate only within fixed timings, each member has to keep a watchful eye over the operations of other members. If the pool is of enduring character, no member remains interested in plying more ships than agreed upon. However if it is not permanent, each member endeavours to enlarge its own connections so that when the renewal of the pool is under consideration, it may be in a position to claim a greater share of the traffic.

The pooling arrangements were very common before the Second World War and they had regulated the competition to a great extent. But after the war their importance declined. Many shipping conferences provided for the pooling arrangements. But since the disclosure of the agreement was made compulsory under the United States merchant shipping act 1916 and similar acts in other countries their importance declined.

Agreements system:

When in 1911 the deferred rebate system was declared illegal in South Africa, a new system – the agreement system was evolved there. The ship – owners, in order not to be thwarted in their customary mode of controlling the freedom of the shippers, instituted the agreement system. According to this system an agreement between the representative body of shippers and the conference shippers was entered into and the shippers agreed to give entire support to the regular lines in the conference. In return, the lines undertook to maintain regular berth sailings at advertised dates, the ships to sail full or not , and to provide sufficient accommodation for the ordinary requirements of trade and further to maintain stability of freight which was specially prescribed in the agreements, and quality on rates for large and small shippers alike.

But the agreement system did not evolve the enthusiasm of either the shippers or the ship owners. The important reasons were it was less reprehensive in result than deferred rebate system and more impracticable. It can succeed only when there is a fully represented and organised body of shippers to negotiate with the conference line members.

.

Shipper's council and association:

All India shippers' council strives for co operation, among the shipping concerns. Protection of member's interest is paramount consideration. Rate fixation, route fixation, co operation among members, stacking claim for foreign tonnage, stacking

claim for maximum domestic tonnage, technological developments in shipping, ensuring stability of rates, drawing up a scheme of uniform rebates, representing members interest with the government, licensing with 'transchart' development of shipping statistics, public and private sector co operation, developing the members to cope up with new developments in maritime traffic such as containerisation, multi modalism etc, codifying shippers rights and liabilities etc are the tasks of All India Shippers Council.

Review questions:

1. Explain the roles of following shipping intermediaries and their duties.
    (a) freight brokers
    (b) Shipping agents – Port agents, Liner agents.
2. Explain the term clearing and forwarding agents. Bring out the process followed by C&F agents by detailing their services and activities
3. Explain the mechanism of selecting the C&F agents and for fixing the fees.
4. Write a short note on ship owner and shipper consultation.
5. Explain the following consultation mechanism
    (a) conferences
    (b) pooling arrangements
    (c) agreement systems
    (d) Shipper's council and association.

References:

6. Pierre David: International Logistics, Biztantra 2003
7. Satish C. Ailawadi & Rakesh Singh: Logistics Management, Prentice hall of India 2005
8. Agrawal, D.K: Text book of Logistics ans supply chain management, Mc Millan India ltd 2003
9. Khanna, K.K: Physical Distribution, Himalaya Publishing, Delhi
10. Lambert, D; Strategic Logistic Management, Tata Mc Graw hill, New Delhi.

UNIT IV

AIR TRANSPORT AND AIR TRANSPORTATION

Overview

The history of civil aviation in India began in December 1912. This was with the opening of the first domestic air route between Karachi and Delhi by the Indian state Air services in collaboration with the imperial Airways, UK, though it was a mere extension of London-Karachi flight of the latter airline. Three years later, the first Indian airline, Tata Sons Ltd., started a regular airmail service between Karachi and Madras without any patronage from the government.

At the time of independence, the number of air transport companies, which were operating within and beyond the frontiers of the company, carrying both air cargo and passengers, was nine. It was reduced to eight, with Orient Airways shifting to Pakistan. These airlines were: Tata Airlines, Indian National Airways, Air service of India, Deccan Airways, Ambica Airways, Bharat Airways and Mistry Airways.

In early 1948, a joint sector company, Air India International Ltd., was established by the Government of India and Air India (earlier Tata Airline) with a capital of Rs 2 crore and a fleet of three Lockheed constellation aircraft. Its first flight took off on June 8, 1948 on the Mumbai (Bombay)-London air route. At the time of its nationalization in 1953, it was operating four weekly services between Mumbai-London and two weekly services between Mumbai and Nairobi. The joint venture was headed by J.R.D. Tata, a visionary who had founded the first India airline in 1932 and had himself piloted its inaugural flight.

Significance of Air Transport

Air transport is the most modern, the quickest and the latest addition to the modes of transport. Because of speed with which aeroplanes can fly,

travel by air is becoming increasingly popular. As far as the world trade is concerned it is still dominated by sea transport because air transport is very expensive and is also unsuitable for carrying heavy, bulky goods. However, transportation of high value light goods and perishable goods is increasingly being done by air transport

Nationalization of Airlines

The soaring prices of aviation fuel, mounting salary bills and disproportionately large fleets took a heavy toll of the then airlines. The financial health of companies declined despite liberal Government patronage, particularly from 1949, and an upward trend in air cargo and passenger traffic. The trend, however, was not in keeping with the expectations of these airlines, which had gone on an expansion spree during the post-World War II period, acquiring aircraft ad spares.
The Government set up the Air Traffic Enquiry Committee in 1950 to look into the problems of the airline. Though the Committee found no justification for nationalization of airlines, it favored their voluntary merger. Such a merger, however, was not welcomed by the airlines.

Foreign Airlines

Foreign airlines carrying international passenger traffic to and from India existed long before Independence. Their operations are governed by bilateral agreements signed from time to time between the Government of India and the governments of respective countries. In 1980-81, the number of such airlines was 35. It rose to 49 in 1996-97.
The share of foreign airlines in India's scheduled international traffic has increased. In 1971, their share was 55.58 per cent which went up to 65 per cent and declined to 58 per cent during 1972-75. It fell to 55.72 per cent in 1976 and further to 55.02 per cent in 1977. Between 1978 and

1990 it gradually increased and rose to 75.93 per cent. In 1996, the share was nearly 72 per cent.

Open-Sky Policy

The Open-sky policy came in April 1990. The policy allowed air taxi-operators to operate flights from any airport, both on a charter and a non charter basis and to decide their own flight schedules, cargo and passenger fares. The operators were, however, required to use aircraft with a minimum of 15 seats and conform to the prescribed rules. In 1990, the private air taxi-operators carried 15,000 passengers. This number increased to 4.1 lakh in 1992, 29.2 lakh in 1993, 36 lakh in 1994 and 48.9 lakh in 1995.

The 1996, private air taxi operators carried 49.08 lakh passengers which amounted to a 41.14 per cent share in the domestic air passenger traffic. Seven operators viz NEPC Airlines, Skyline NEPC, Jet Air, Archana Airways, Sahara India Airlines, Modiluft and East West Airlines have since acquired the status of scheduled airlines. Besides this there were 22 nonscheduled private operators and 34 private operators holding no-objection certificate in 1996. The number of plus 120 category aircraft in the private sector was 34 and the total fleet strength was 75 in June, 1996. Two out of seven scheduled air taxi operators suspended their operations in 1996 because of the non-availability of aircraft.

Infrastructure and Related Facilities

Airport Authority of India:

set up on April 1,1995 by amalgamating the international Airport Authority of India and the National Airport Authority of India, the Airport Authority of India was to handle all matters relating to

infrastructure for civil air traffic and transport at the international and the domestic airports and enclaves in the country.

Indira Gandhi Rashtriya Uran Akademi:

It was set up at Fursatganj to standardize and improve the flying training facilities in the country. Till January 1997 it had trained 289 pilots on fixed wing aircraft and 20 pilots on rotary wing aircraft.

Flying/gliding training clubs:

On December 31,1996, besides the above Akademi, 41 flying clubs/institutes and their branches including nine private institutes were imparting flying training. Five gliding clubs, seven gliding wings of flying clubs and a government Gliding Centre, Pune, were imparting training in gliding.

Development of Civil Aviation

The repeal of the Air Corporation Act from 1 March 1994 enabled private operators to provide air transport services.

Six operators were given the status of scheduled operators on 1 February 1995.

Currently there are five international airports and 87 domestic airport in the country with 28 civilian enclaves for defence purposes.

The Airport Authority of India plans to invest Rs 35,000 million for the construction and up gradation of airports.

Budgetary support of Rs 485.50 million was allocated to AAI in 1996-97.

In august 1996, in a major policy decision, the government allowed the private sector to set up air cargo complexes in a bid to ensure smooth movement of export cargo.

Domestic and foreign investors including NRIs have been invited to participate in the development of infrastructure support at select airports.

With a market share of 43% Indian airlines is the biggest player in

aviation.

Rs 24,710 million have been marked for development of the civil aviation sector in the annual plan for 1997-98.

The Indian Air cargo Market

The growth of air cargo in India has also been manifold though it might not have kept pace with the progress made all over the world. Table 1 shows how both international and domestic air cargo traffic has increased, reflecting an overall year on year growth.

Table 1: Trends in cargo traffic at five international airports in India. (Figures in '000 tonnes)

Period	International Cargo	Domestic Cargo	Total	Percentage Increase
1972-73	47.4	33.6	81	-
1982-83	165.4	84.6	250	209%
1992-93	300.5	90.9	391.4	56.56%
1999-2000	494.2	183.0	677.2	73%

Future Outlook Of The Industry

Future projections reflect that the air cargo industry both in the domestic sector and the international sector will continue in its upward trend of growth. Fig.1 reflects that the domestic air cargo will continue at a

somewhat steady rate of growth whereas the international air cargo movement as illustrated in Fig.2 shows a steeper rate of growth indicating that international air cargo trade will flourish at a higher rate of growth.

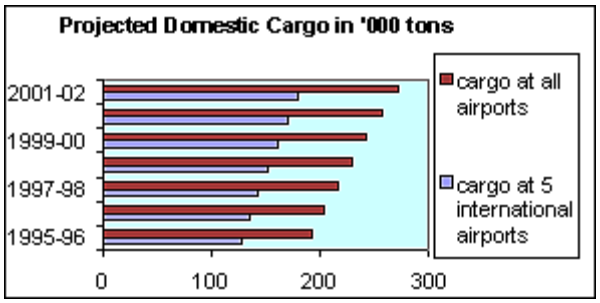


Fig. 1

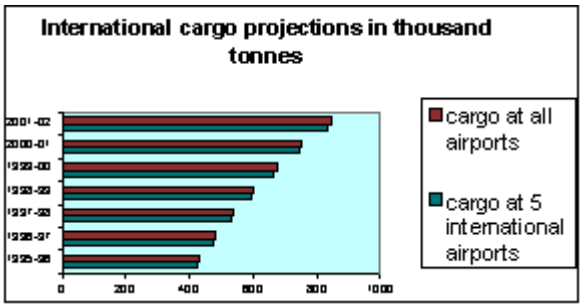


Fig. 2

Both Domestic cargo and International cargo are poised to grow according to the projections. The major reasons, which can be attributed to this increase, are Increase in overseas trade

Indian economic policies Customer service orientation

Inventory concerns E-commerce development

DOMESTIC AIR TRANSPORT POLICY

INTRODUCTION

On 28th May, 1953 consequent to the coming into force of the Air Corporations Act, 1953 - Government of India nationalised the airline industry. In accordance with this act, the two air corporations, viz. Indian Airlines Corporation and Air India International, were established and the assets of all the then existing air companies (nine) were transferred to the two new Corporations. The operation of scheduled air transport services was made a monopoly of these two Corporations and the Act prohibited any person other than the Corporations or their associates to operate any scheduled air transport services from, to, or across India.

However, after 40 years, in 1994 the wheel had turned a full circle as the Air Corporation Act, 1953 was repealed with effect from 1.3.94 and with that ended the monopoly of the Corporations on scheduled air transport services. The air transport in India has been opened to operation of scheduled services by any carrier who fulfils the statutory requirements for operation of scheduled services.

AIR TAXI SCHEME

Since 1986 upto the repeal of the Air Corporations Act 1953 in March 94, private airlines were allowed to operate charter and Non-scheduled services under Air Taxi Scheme which meant, inter-alia that they could not publish time schedules, or issue tickets to passengers. The Air Taxi Scheme was introduced in 1986 to boost tourism and augment domestic air services. The scheme was progressively liberalised.

POLICY GUIDELINES FOR STARTING AIR TAXI AND SCHEDULED AIR TRANSPORT SERVICES

The repeal of Air Corporations Act. 1953 with effect from 1.3.1994 has demonopolised the domestic air transport services and enabled private operators to provide scheduled air transport services. However, in order to

ensure safety, security and orderly growth of air transport services and keeping in view the infrastructure constraints at a number of airports, Government is permitting addition of some limited capacity to existing operators and import / acquisition of any type and size of aircraft to operators based on the projections of traffic growth.

CHANGES IN THE POLICY ON DOMESTIC AIR TRANSPORT SERVICES

a. Although no scientific appraisal of the performance of private operators has been carried out, it generally appears that but for one or two jet aircraft based operators and a couple of other regional airlines, no private operator has been able to provide regular, stable and professionally run air transport service in the country.

b. A need was, therefore, been felt to review the existing policy guidelines and suggest modifications which could lead to orderly development of domestic air transport industry in a healthy competitive environment. Accordingly, the Ministry of Civil Aviation prepared a framework of policy for domestic air transport services keeping in view the various parameters.

c. The Cabinet approved the policy paper on 24.1.1997. Salient features of the policy framework as approved. The Cabinet, however, desired that modalities for NRI/Foreign equity participation in the domestic air transport services sector be formulated and brought up for approval.

The modalities for permitting NRI/foreign equity participation in the domestic air transport services sector was approved by the Cabinet on 1.7.1997 (also shown at**.** On 17.7.1998 comprehensive guidelines in this regard were issued by the DGCA vide AIC No. 4/1998 .

CATEGORIES OF AIR TRANSPORT SERVICES

- **Scheduled Air Transport Service:**

  Scheduled Air Transport Service means an air transport service undertaken between the same two or more places and operated according to a published time table or with flights so regular or frequent that they constitute a recognisably systematic series, each flight being open to use by members of the public.

  Requirements to become Scheduled Air Transport Operators are given at **ANNEXURE-V.**

- **Non-Scheduled (air taxi) services:**

  Air Taxi Operation means an air transport service other than scheduled air transport service and may be on charter basis and/or non-scheduled basis. The operator is not permitted to publish time schedule and issue tickets to passengers.

  Requirements for becoming Non-Scheduled Operator at **ANNEXURE-VI.**

- **Air Cargo Services:**

  An air cargo service means air transportation of cargo and mail. Passengers are not permitted to be on these operations. It may be on scheduled or non-scheduled basis. These operations are to destinations within India. For operation outside India, the operator has to take specific permission of DGCA demonstrating his capacity for conducting such operation.

Requirements for becoming an Air Cargo Operator are at **ANNEXURE-VII.**

FOREIGN EQUITY PARTICIPATION IN AIR TRANSPORT SERVICES

Under the new policy recently approved:

- Foreign equity upto 40% and NRI/OCB investment upto 100% is permissible in the domestic air transport services;
- Equity from foreign airlines is not allowed, directly or indirectly, in the domestic air transport services.

PROCEDURE FOR STARTING AIR TAXI/SCHEDULED AIR TRANSPORT SERVICES

Aircraft Acquisition Committee set up in September, 1994, considers proposals for grant of permission to operate air taxi/scheduled air transport services. Recommendations of the Committee are submitted to the Minister (CA) for approval. The present composition of the Committee is:-

1. Joint Secretary, Ministry of Civil Aviation - Convenor
2. Joint Secretary & Financial Advisor (F.A.), Ministry of Civil Aviation - Member
3. Chairman, Airports Authority India - Member
4. Director General of Civil Aviation - Member
5. Commissioner of Civil Aviation Security, Bureau of Civil Aviation Security - Member

The three stage clearance procedure laid down for starting Air Transport Services is as under:

(1) Issue of NOC for Scheduled/Air Taxi services - The competency and viability of the company to operate air transport service is considered at this stage.

(2) Import permission for aircraft - The details of specific types of aircraft, their airworthiness, seating capacity, mode of acquisition and arrangements of security programme, training facilities for crew and engineers, Operations Manual, maintenance facilities, etc. are looked into by the Committee.

(3) Issue of permit for Scheduled/Non-Scheduled air services - Permit is issued by DGCA after completion of all requirements laid down in the regulations/guidelines.

- Applications for stage 1 and 2 clearance as well as for import of aircraft by existing operators are required to be submitted by applicants in the prescribed forms.

- The applications are scrutinised on receipt to find out any prima facie deficiency.

- After the application is found complete in all respects, it is circulated to the Members of the Committee for comments.

- The applications are considered in the meeting of the Committee.

- The recommendations of the Committee are

submitted to the Secretary/Minister (CA) for approval.

- The final decision is communicated to the applicant.

- NOC holder for Air Taxi/Scheduled Operations is given permit by DGCA after completion of all requirements laid down in the guidelines / instructions.

DETAILS OF SCHEDULED/NON-SCHEDULED OPERATORS AND NOC HOLDERS

There are, at present, 2 Scheduled and Non-Scheduled/Air Taxi Operators in the private sector and companies hold NOC to operate air transport services (List at ANNEXURE-VIII**).**

EXISTING FLEET AND CAPACITY SANCTIONED

The details of the existing Fleet of Scheduled private operators are at **ANNEXURE-IX**

PASSENGERS CARRIED BY PRIVATE AIRLINES AND INDIAN AIRLINES

The passengers carried by private airlines & Indian Airlines since 1990 is shown at **ANNEXURE-X**

ROUTE DISPERSAL GUIDELINES

- With a view to achieving better regulation of air transport services and taking into account the need for air transport services of different regions in the country, the Government vide order dated 1.3.94 have laid down route dispersal guidelines. (**Annexure - XI).**

- According to these guidelines, all scheduled operators are required to deploy in the North Eastern region, Jammu & Kashmir, Andaman & Nicobar Islands and Lakshadweep (category-II routes) at least 10% of their deployed capacity on trunk routes (category-I routes). 1% capacity is to be deployed exclusively within Category-II stations.

50% of the capacity provided on category-I routes is to be provided on routes other than category-I and category-II routes (category-III routes).

Civil Aviation

Civil Aviation Sector

The civil aviation sector has played an important role in India's economy. It provides fast and reliable mode of transport across the country and is particularly important for many areas/places still not adequately connected by rail or road. In 2000-01, 42.03 million domestic and international passengers and 846.42 thousand tones of cargo were handled at various airports in the country. With increasing globalisation, this sector will play a more significant role in integrating the Indian economy with the rest of the world.

Regulators and Operators

The regulatory functions are the responsibility of the Directorate General of Civil Aviation (DGCA) and Bureau of Civil Aviation Security (BCAS). Operational functions are performed by Air India Ltd., Indian Airlines Ltd., Pawan Hans Helicopters Ltd. together with other private sector airline operators.

Air India provides international air services while Indian Airlines and its wholly owned subsidiary, Alliance Air, and private sector operators like Jet Airways and Sahara Airlines provide domestic air services in the country. Indian Airlines also provides international air services to some of the neighboring countries.

Pawan Hans Helicopters provides helicopter support services primarily in the petroleum sector.

Infrastructural facilities are provided by the Airports Authority of India (AAI). It manages 94 civil airports including 11 international airports at Delhi, Mumbai, Kolkata, Chennai, Thiruvananthapuram, Bangalore, Hyderabad, Ahmedabad, Goa, Amritsar and Guwahati and 28 civil enclaves at defence airfields.

Major Policy Initiatives

The civil aviation sector in India has undergone some significant developments/ transformation during the Ninth Plan period. The more important developments are :

The Government considerably disengaged itself from commercial operations of airlines.

The Government encouraged an increase in the role of the private sector in order to bridge the resource gap as well as to bring greater efficiency.

A decision has been taken to disinvest up to 60 percent of Government equity in Air India of which 40 percent would be offered to the private sector and the balance 20 percent to employees, financial institutions and public. However, not more than 26 percent of the total equity would be held by a foreign airline. In the case of Indian Airlines, out of 51 percent equity to be disinvested, 26 percent would be given to a strategic partner and balance 25 percent to the employees, financial institutions and public. The process of disinvestment has, however, been delayed.

The decision to restructure existing airports at Delhi, Mumbai, Chennai and Kolkata through long-term lease in order to make them world class is another important milestone. The process of leasing of four metro airports, however, has also been delayed. The new airport at Neduembassery near

Kochi has been constructed by Kochi International Airport Limited, a company promoted by the Kerala government with equity participation form a large number of non-resident Indians and financial institutions. Green-field international airports at Hyderabad and Bangalore are also on the anvil with equity being shared by the AAI (13 percent), State Government (13 percent) and joint venture partner (74 percent)

Emphasis was laid on improvement/upgradation in airport infrastructure/upgradation in airport infrastructure. Domestic passenger and cargo transport services.

Keeping in view the current security scenario in the country and elsewhere, the Government has taken a number of special steps to tighten security at the Indian airports for the safety of passen-gers. Subsequent to the hijacking incident involving Indian Airlines flight IC-814 in December 1999, the contingency plan to deal with hijacking and other unlawful activities operations is being revises.

Issues and Strategies

The demand for air transport traffic had hovered around 10 million passengers for quite some time. After registering a negative growth in 1997-98, the growth rate picked up. In 2000-01, the passenger growth rate was 7.9 percent and the rate of growth is likely to dip in 2001.2002.

The increase in demand for air transport depends on a number of factors, which include rate of growth of the economy and fall in real prices of air services. The airlines operate at very thin margins. The airlines operate at very thin margins. The utilisation of capacity becomes another important factor for determining the viability of air operators. In order that air transport plays its role in accordance with its comparative advantage, it is necessary to remove the bottlenecks effecting the sector. To enhance the operational efficiency in the civil aviation sector, the infrastructure

facilities may be augmented, specifically to ensure full utilisation of runways leading to improved payload. Other steps required include extension of runways where payload penalty is experienced, strength ending of Air Traffic Services (ATS) routes and use of satellite based navigation system to reduce flying time and allocation of optimal flight levels through a modern air traffic management system.

Fuel is the largest component of airline cost. Even though the pricing of Aviation Turbine Fuel (ATF) is now on import parity basis, the rated applicable for domestic operations continue to be significantly higher than that of international operations. Further, the ATF is subject to high rate of sales tax varying from 20 to 36 percent. The high ATF cost for domestic air transport increases the cost of operation and makes it unlivable even in areas where it has comparative advantage over other modes of transport. The removal of this constraint would help in stepping up the rate of growth of the sector.

Route Dispersal Guidelines

The Ministry of Civil aviation has formulated route dispersal guidelines which, inter alia, provide for the air operators to operate at least 10 percent of their deployment of capacity on trunk routs, in Category II routes which are meant to connect the northeastern region, Jammu and Kashmir, Andaman and Nicobar Islands and Lakshadweep. The guidelines are aimed at ensuring the availability of a minimum level of air operations in Category II routes. However, the airline operations in Category II routes, being short-haul in nature, are loss-making. The operation of route dispersal guidelines is meant to cross subsidise operations in Category II routes form the profits generated on trunk routes. All the airlines are, therefore, forced to operate part of operations, on Category II routes. The more appropriate way to ensure reliable air services in these areas would

be to provide direct subsidies though minimum subsidy bidding. The amount of subsidy required to support the air operations may be funded by setting up a fund through contributions made by operations on trunk routs and supplemented through other means.

Foreign Equity Participation

At present, the domestic air transport policy debars foreign airlines form equity participation in the companies formed for domestic air transportation. The policy allows participation of foreign individuals/companies up to 40 percent and the participation of non-resident Indians (NRIs)/ overseas corporate bodies (OCB) up to 100 percent in the domestic air transport services. The issue relating to permitting foreign airlines equity investment in companies formed for domestic operations may be reconsidered. Moreover, overall increase in the foreign equity limit in domestic airlines operations may also be considered with a view to attracting new technology and management expertise.

International Air Transport

In the past, capacity constraint on some of the international routes has been experienced and this has had an adverse impact on tourism and trade. There is a proposal to review the policy of regulating international services through bilateral air services agreements. While reviewing this policy, the interest of national carriers, on the one hand, and the need for promoting tourism and trade and the convenience of the travelling public on the other, will be considered. Domestic private carriers may also be permitted to utilise international air transport bilateral traffic rights subject to the first right of refusal by Air India and Indian Airlines. For future rights acquired through bilateral negotiations, the possibility of competitive bidding should be considered.

Foreign Equity

At present, the foreign equity limit in the international services is 26 percent. In order to attract investment in the sector, the possibility of increase in foreign equity may also be considered.

International Air Transport Tourist Charter

Currently, international air cargo services are governed by the open sky policy. It is applicable to all airports having custom and immigration facilities. There is no restriction on these flights within the country except carriage of domestic cargo. The operators of cargo flights are also free to charge rate as per market conditions.

In order to promote international tourism, the liberal policy of foreign charter flights could also be considered. Charter flights may be permitted to all airports having customs/immigration facilities.

Infrastructure Facilities

Barring a few airports, the available infrastructure facilities are under-utilised a most airports. About 50 percent of the airports under AAI are not being utilised by various airlines. Besides, there area a large number of airports where full infrastructure is available but only one or two flights a day operate, leading to heavy under-utilisation of infrastructure as well as wastage of manpower. Only nine airports of AAI manage to make profits. In view of this, no new airport should be opened without government approval. Private sector participation may be encouraged wherever it is considered necessary to construct a new airport.

There is a continuing effort forwards upgradation and modernization of air traffic services. The navigation and surveillance facilities are to be upgraded as a matter of priority to be in line with world standards. New approaches in airport designs would be considered to accommodate technological innovations like the new large aircraft. Technological upgradation should be extended to cover the ground facilities through introduction of automation and computerisation, mechanisation of baggage handling facilities and provision of aero-bridges etc.

Leasing of Major Airports

The organisational structure of airports could be corporatised to enable the entry of the private sector, both for existing and Greenfield airports. The process of long-term leasing of airports at Delhi, Mumbai, Chennai and Kolkata in order to make them world class has already been initiated. This would help in attracting investment to improve infrastructure facilities and services at these airports. The AAI could also develop other airports with the lease rental of these airports. There are a number of issues relating to the leasing of the four metro airports. This include terms of lease, transfer of employees, lease payment, aeronautical tariff setting, financing of capital expenditure etc. which need to be resolved at the earliest so that development of these airports could be initiated. It would also be necessary to specify the appropriate standards to develop all these airports keeping in view the facilities available in the newly developed airports in Asian countries.

Regulatory Framework

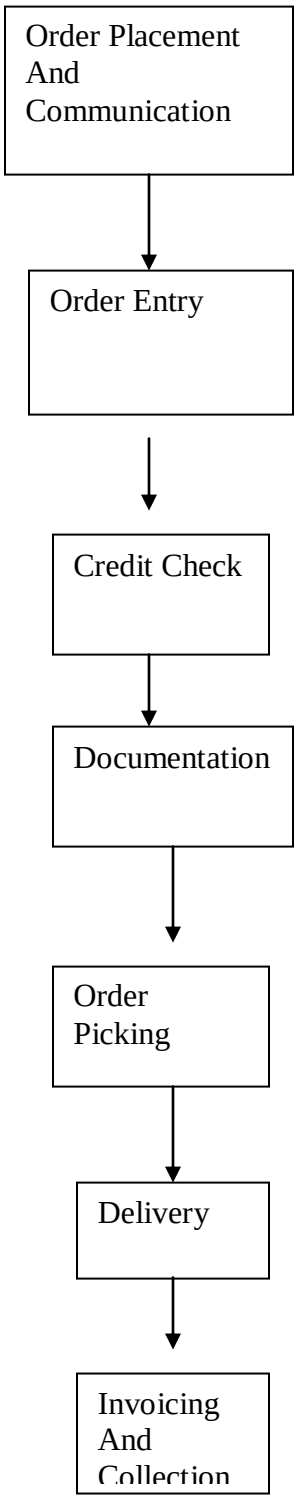
Considering that the major airports would be developed through long-term lease and there is move towards privatisation of airlines, it is considered essential to have a regulatory framework in place. Airport are considered as 'natural monopoly' and, therefore, there is need to regulate them. The regulatory authority needs to monitor the airport charges and performance of airport infrastructure against specific standards. Airline services is a field for competitive development. Yet considering the present size of te market and the presence of economies of scale, the need for monitoring quality of services and the provisions of air services for meeting social obligations, it may be necessary to consider providing a suitable regulatory framework for the air services as well.

TOTAL COST CONCEPT

Many problems at the operational level in logistics management ariose because all the impact of specific decisions,both birect and indirect bare not taken into account throughout the corporate system.Too often decisions are taken in one area can lead to unforeseen results in other areas. Changes in policy on minimum order value, for example may influence customer ordering pattern and lead to additional costs. Similarly changes in production schedules that aim to improve production efficiency may lead to fluctuations in finished stock availability and thus affect customer service

The problems associated with identifying the total system impactof distribution policies are immense.By its very nature the logistics cuts across traditional company organization functions with cost impacts on most of the functions.Conventional accounting system do not usually assist in the identification of these company wide impacts , frequently absorbing logistics related costs in other cost elements. The cost for processing orders for example is an alamgam of specific costs incurred in different functional areas of business which generally prove extremely difficult to bring together The following figure 1.1 outlines the various cost elements involved in the complete order processing cycle, each of these elements having a fixed and variable cost component which will lead to different total cost per order

Accounting practice for budgeting and standard setting has tended to result in compartmentalization of company accounts thus budgets tend to be set on a functional basis The trouble is that policy cost do not usually confine themselves with the same watertight boundaries. It is the nature of logistics that like a stone thrown in a pond the effect of the specific policies spread beyond their immediate area of impact



1.1 STAGES IN ORDER TO COLLECTION CYCLE

A further feature of logistics decisions which contributes to the complexity of generating appropriate cost information is that they are usually taken against the benchmark of an existing system. The purpose of total cost analysis in this context is to identify the change in costs brought about by these decisions. Cost must therefore be viewed by incremental terms –The change in total costs caused by the change to the system. Thus the addition of an extra warehouse to the distribution network will bring about cost changes in transport, inventory investment and communications. It is the incremental cost difference between the two options which is the relevant accounting information for decision making in this case .Figure 1.2 shows how total logistics cost can be influenced by the addition ,or removal of a depot from the system

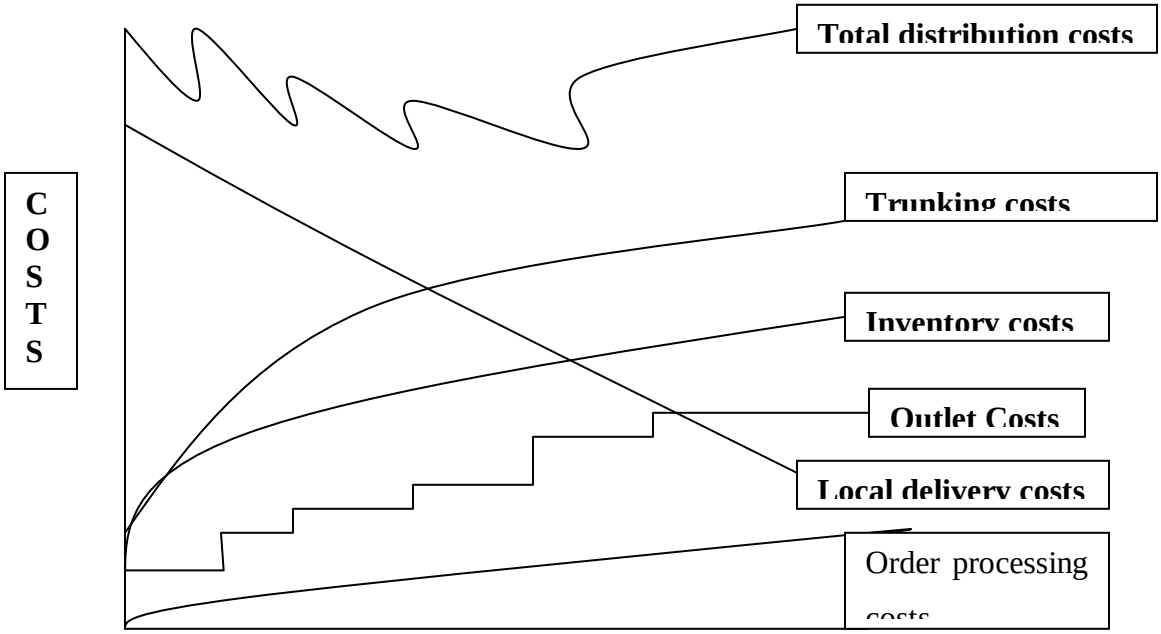


Fig. 1.2 **The Total Costs of a Distribution Network**

FREIGHT STRUCTURE AND OPERATORS

Shipping companies offer mixed sea/air services different container sizes , scheduled and unscheduled services. As previously observed the extended lead time

involved in long sea passages are forcing companies to use air freight to an extent which appears costly but which in the context of inventory holding costs, potential lost revenue and market flexibility may be worthwhile expense.

The freight forwarders are specialist in tariff operations, custom clearances and shipping tariffs and schedules. They assist operators in determining and paying freight, fees and schedules. They assist exporters in determining and paying freight fees and insurance charges. Forwarders also do export packing when necessary. They usually handle freight from port of export to overseas port of import. They may also move inland freight from factory to port of export and through affiliates abroad, handle freight from port of import to customer. Freight forwarders also perform consolidation services from air and ocean freight . They contract for blocks of space on a ship or airplane and resell that space to various shippers at a rate lower then generally available to individual shippers

A licensed forwarder receives brokerage or rebates from shipping companies for booked space. Some companies and manufacturers engage in freight forwarding or some phase of it on their own , but they may not ,under law receive brokerage from shipping line.

A CASE STUDY OF DHL

DHL provides a worldwide network for all of your air freight needs, with time-defined and guaranteed services supported by preferred carriers. DHL offers standardised connections and fixed schedules on all main routes, with commercial lift as well as charter capacity.

As the market leader, it offers competitive rates for all time and cost requirements. All end-to-end logistics processes are supported by leading-edge information management systems, providing the customer with complete shipment transparency.

AIR FIRST

Whether door-to-door or airport-to-airport, Air First guarantees priority handling and a service to match your deadlines. Your freight is placed on the first available flight and forwarded with a maximum transit of two days airport-to-airport.
This service is available 24 hours a day, 7 days a week, 365 days a year.

Customer Benefits

- No weight or size restrictions (subject to aircraft)
- Booking guarantee
- Clear transit time statement
- Service agreement guarantee

Tracking services DHL provides a worldwide network for all airfreight needs, with time-defined and guaranteed services supported by preferred carriers. DHL offers standardized connections and fixed schedules on all main routes, with commercial lift as well as charter capacity.

A core element of their freight management service offering is the ability to move single or complex shipments by air, at any time and to any destination.

They are the world's leading provider of airfreight services. Their operations are managed from over 135 countries around the world and provide services to and from all key markets.

They handle over seven million shipments annually totaling 2.4 million tonnes. Managing the movement of a single shipment or a complex freight management programme, They provide a flexible approach and a personalised service to all customers.

A full range of time definite delivery and specialized services is also available to meet specific requirements.

Supported through their Preferred Carrier Program, they have airline partnership agreements with 16 major carriers, providing preferred access to competitive pricing and capacity.

Their airfreight capabilities include:

- Airport-to-airport
- Door-to-door
- Consolidation
- Time-defined services
- 24x7 time-critical
- Special handling (temperature-controlled, high-value, oversized)
- Restricted and dangerous goods
- Guaranteed capacity
- Customer-specific strategic capacity programs
- Web-based global shipment track and trace
- Customs clearance
- Document preparation
- Industry-specific and specialist transport services are provided for the movement of chilled and frozen goods, hazardous chemicals and temperature-sensitive pharmaceutical products
- e-Quotation (pilot phase)
- e-Booking (pilot phase)
- Edifact connectivity

- Express/Wheels Up customs clearance

Air Premier is a reliable and scheduled service, combining price and time considerations for both door-to-door and airport-to-airport. Your shipment arrives within three days at airports in every major marketplace worldwide.

Customer Benefits

- No weight or size restrictions (subject to aircraft)
- Booking guarantee
- Clear transit time statement
- Performance guarantee
- Freight unitized and sealed at secure facilities
- Tracking services
- e-Quotation (pilot phase)
- e-Booking (pilot phase)
- Edifact connectivity

AIR VALUE

Air Value uses creative routing via major gateways, meaning customers can benefit from further cost savings. Transit times are increased by only 1-2 days over Air Premier.

Customer Benefits

- No weight or size restrictions (subject to aircraft)
- Defined transit time statement
- Freight unitized and sealed at secure facilities
- Tracking services
- e-Booking (pilot phase)
- e-Quotation (pilot phase)
- Edifact connectivity

They provide clients hassle-free and quick services for all their consignments from collection of the documents to delivery of the consignment to their respective buyers. They are equipped with well-qualified, experienced & trained staff supported by full-computerized documentation and armed with the latest communication equipments, which can guarantee the best service in this field.

Air Freight Forwarding

Import By Air

A team of knowledgeable staff who will import a tiny parcel to large machinery from anywhere in the world. Having close relationships with agents across the globe can arrange the best routing along with excellent rates, which cannot be beaten. They can custom clear your goods within a few hours of the arrival and delivery can be made on the same day at reasonable prices. They also have a 24-hour number for customers to advise us of any urgent shipments that may arrive after office hours.

Export By Air

They specialize in managing the movement of any weight of cargo of all shapes and sizes at reasonable rates. They will monitor your shipments from the time it leaves your premises until it reaches its destination. Import & Export by Sea will ship any package whatever the size or weight using prominent shipping lines. They have a very good working relationship with all major shipping lines, which work closely as a team to ensure total customer satisfaction. All our staff are extremely knowledgeable which will always provide a wide range of options to adapt and satisfy your budget and time constraints. They recognize that freight forwarding is no longer a simple matter of carrying goods from A to B. The provision of logistics, packing and insurance in a cost-effective package is a must in today's competitive market.

Custom Clearance

Being a Custom House Broker with facilities like online billing of papers with customs EDI. They offer a wide range of custom clearance services that include for both Export & Import:

Liaison with all regulatory agents, council to deal with all types of cargo

Advice on all modes of transportation- surface, sea and air

Arranging of storage in clearance stage, movement of goods

Coordinating between warehouse statutory authority and the shipping line

Speedy transaction of all custom formalities and obtaining all required certificates

Packing

They undertake any type of packing for which we have a reputable company with experienced staff and adequate materials.

Shipping

Committed Cargo arranges for the most suitable routes, schedule & vessels and handles the related formalities along with constant cargo tracking. Our shipping services include:

- Custom clearance, forwarding & Sea Freight Consolidation
- Shipping
- Packing and transport of containers
- Multi modal transport facilities
- Warehousing and services at all major sea and dry ports

Warehousing

A fully automated warehouse for consolidating and holding shipments and bulk goods, short and long term under the care of a logistics control and inventory management team.

Transport

We can arrange pick up and delivery of goods to/from anywhere in the India. Our drivers have the ability to handle all types of goods and are aware of the safety and importance that are in order. They enjoy hi-tech connectivity through its state-of-the-art communications network and advanced office automation. This helps in round-the-clock monitoring of cargo movement and to track progress. This in turn enables quick decision making in the event of a snag or delay. Further, the customer is kept updated on demand about the progress of shipment.

CARRIER CONSIGNEE LIBALITIES ACCORDING TO:-

THE MULTIMODAL TRANSPORTATION OF GOODS ACT, 1993

.(1) This Act may be called the Multimodal Transportation of, Goods Act, 1993.

(2)It extends to the whole of India except the State of Jammu and ment, Kashmir.

(3) It shall be deemed to have come into force on the 16th day of October, 1992.

Definitions.

2. In this Act, unless the context otherwise requires,--,

1(a) "carrier" means a person who performs or undertakes to perform for a higher, the carriage or part thereof, of goods by road, rail, inland waterways, sea or air;

(b) "competent authority" means any person or authority authorised by the Central Government, by notification in the Official Gazette, to perform the functions of the competent authority under this Act;

(c) "consignee" means the person named as consignee in the multimodal transport contract;

(d) "consignment" means the goods entrusted to a multimodal transport operator for multimodal transportation;

(e) "consignor" means the person, named in the multimodal transport contract as consignor, by whom or on whose behalf the goods covered by such contract are entrusted to a multimodal transport operator for multimodal transportation;

(f) "delivery" means,--

(i) in the case of a negotiable multimodal transport document, delivering of the consignment to, or placing the consignment at the disposal of, the consignee or any other person entitled to receive it;

(ii) in the case of a non-negotiable multimodal transport document, delivering of the consignment to, or placing the consignment at the disposal of, the consignee or any

person authorized by the consignee to accept delivery of the consignment on his behalf;

(g) "endorse" means the person in whose favor an endorsement is made, and in the case of successive endorsements, the person in whose favor the last endorsement is made;

(h) "endorsement" means the signing by the consignee or the endorsee after adding a direction on a negotiable multimode transport document to pass the property in the goods mentioned in such document to a specified person;

2(i) "goods" means any property including live animals, containers, pallets or such other articles of transport or packaging supplied by the consignor, irrespective of whether such property is to be or is carried on or under the deck;

(I) containers, pallets or similar articles of transport used to consolidate goods; and

(II) animals;

3(j) "mode of transport" means carriage of goods by road, air, rail, inland waterways, or sea;

4(k) "multimodal transportation" means carriage of goods, by at least two different modes of transport under a multimodal transport contract, from the place of acceptance of goods in India to a place of delivery of the goods outside India;

5 (l) "multimodal transport contract" means a contract under which a multimodal transport operator undertakes to perform or procure the performance of mutlimodal transportation against payment of freight;

6(la) "multimodal transport document" means a negotiable or non-negotiable document evidencing a multimodal transport contract and which can be replaced by electronic data interchange messages permitted by applicable law;

7(m) "multimodal transport operator" means any person who--

(i) concludes a multimodal transport contract on his own behalf or through another person acting on his behalf;

(ii) acts as principal, and not as an agent either of the consignor, or consignee or of the carrier participating in the multimodal transportation, and who assumes responsibility for the performance of the said contract; and

8(r) "special drawing rights" means such units of accounts as are determined by the International Monetary Fund;

9(s) "taking charge" means that the goods have been handed over to and accepted for carriage by the multimodal transport operator;

MULTIMODAL TRANSPORT DOCUMENT

ISSUE OF MULTIMODAL TRANSPORT DOCUMENT.

Where the consignor and the multimodal transport operator have entered into a contract for the multimodal transportation and the multimodal transport operator has taken charge of the goods, he shall, at the option of the consignor, a negotiable or non-negotiable multimodal transport document.

Provided that the multimodal transport operator shall issue the multimodal transport document only after obtaining, and during the subsistence of a valid insurance cover.

The multimodal transport document shall be signed by the multimodal transport operator or by a person duly authorized by him.

Multimodal transport document to be regarded as document of title.

Every consignee named in the negotiable or non-negotiable multimodal transport document and every endorsee of such document, as the case may be, to whom the property in the goods mentioned therein shall pass, upon or by reason of such consignment or endorsement, shall have all the rights and liabilities of the consignor.

Nothing contained in sub-section (1) shall prejudice or affect the right of the multimodal transport operator to claim freight from the consignor or enforce any liability of the consignee or endorsee by reason of his being such consignee or endorsee.

CONTENTS OF MULTIMODAL TRANSPORT DOCUMENT.

The multimodal transport document shall contain the following particulars, namely:-

1.The general nature of the goods, the leading marks necessary for identification of the goods, the character of the goods (including dangerous goods), number of packages or units and the gross weight and quantity of the goods as declared by the consignor;

2.apparent condition of the goods;

3.The name and principal place of business of the multimodal transport operator;

4.The name of the consignor;

5.The name of the consignee, if specified by the consignor;

6.The place and date of taking charge of the goods by the multimodal transport operator;

7.The place of delivery of the goods;

8.The date or the period of delivery of the goods by the multimodal transport operator as expressly agreed upon between the consignor and the multimodal transport operator;

9. Freight payable by the consignor or the consignee, as the case may be, to be mentioned only if expressly agreed by both the consignor and the consignee;

a) The signature of the multimodal transport operator or of a person duly authorized by him;

b) The intended journey route, modes of transport and places of transshipment, if known at the time of its issue;

c) Terms of shipment and a statement that the document has been issued subject to and in accordance with this Act; and

d) Any other particular which the parties may agree to insert in the document, if any such particular is not inconsistent with any law for the time being in force.

10.Provided that the absence of any of the particulars listed above shall not affect the legal character of the multimodal transport document.

RESERVATION IN THE MULTIMODAL TRANSPORT DOCUMENT.

(1) Where the multimodal transport operator or a person acting on his behalf knows, or has reasonable grounds to suspect, that the particulars furnished by the consignor in the multimodal transport document do not accurately represent the goods actually taken in charge, or if he has no reasonable means of checking such particulars, the multimodal transport operator or a person acting on his behalf shall insert in the multimodal transport document a reservation specifying the inaccuracies, if any, the grounds of suspicion or the absence of reasonable means of checking the particulars.

(2) Where the multimodal transport operator or a person acting on his behalf fails to insert the reservation in the multimodal transport document relating to the apparent condition of the goods, he shall be deemed to have accepted the goods in apparent good condition.

EVIDENTIARY EFFECT OF THE MULTIMODAL TRANSPORT DOCUMENT.

(a) the multimodal transport document shall be prima facie evidence of the fact that the multimodal transport operator has taken charge of the goods as described in the document; and

(b) no proof to the contrary by the multimodal transport operator shall be admissible if the multimodal transport document is issued in negotiable form and has been transmitted to the consignee or transferred by the consignee to a third party, if the consignee or the third party has acted in good faith relying on the description of the goods in the document.

RESPONSIBILITY OF THE CONSIGNOR.

(1) The consignor shall be deemed to have guaranteed to the multimodal transport operator the adequacy and accuracy, at the time the multimodal transport operator takes charge of the goods.

(2) The consignor shall indemnify the multimodal transport operator against loss resulting from inadequacy or inaccuracy of the particulars.

(3) The right of the multimodal transport operator shall in no way limit his liability under the multimodal transport contract to any person other than the consignor.

RESPONSIBILITIES AND LIABILITIES OF THE MULTIMODAL TRANSPORT OPERATOR

BASIS OF LIABILITY OF MULTIMODAL TRANSPORT OPERATOR.

(1) The multimodal transport operator shall be liable for loss resulting from-

(a) any loss of, or damage to the consignment;

(b) delay in delivery of the consignment and any consequential loss or damage arising from such delay,

where such loss, damage or delay in delivery took place while the consignment was in his charge;

Provided that the multimodal transport operator shall not be liable if he proves that no fault or neglect on his part or that of his servants or agents had caused or contributed to such loss, damage or delay in delivery:

Provided further that the multimodal transport operator shall not be liable for loss or damage arising out of delay in delivery including any consequential loss or damage arising from such delay unless the consignor had made a declaration of interest in timely delivery which has been accepted by the multimodal transport operator.

Explanation.-For the purposes of this sub-section, "delay in delivery" shall be deemed to occur when the consignment has not been delivered within the time expressly agreed upon or, in the absence of such agreement, within a reasonable time required by a diligent multimodal transport operator, having regard to the circumstances of the case, to effect the delivery of the consignment.

If the consignment has not been delivered within ninety consequtive days following the date of delivery expressly agreed upon or the reasonable time referred to in the Explanation to sub-section (1) the claimant may treat the consignment as lost.

Limits of liability when the nature & value of the consignment have not been declared & stage of transport where loss or damage occurred is not known.

1.Where a multimodal transport operator becomes liable for any loss of, or damage to, any consignment, the nature and value where of have not been declared by the consignor before such consignment has been taken in charge by the multimodal transport operator and the stage of transport at which such loss of damage occurred is not known, then the liability of the multimodal transport operator to pay compensation shall not exceed two Special Drawing Rights per kilogram of the gross weight of the consignment lost or damaged or 666.67 Special Drawing Rights per package or unit lost or Damaged, whichever is higher.

"Explanation.-For the purpose of this sub-section, where a container, pallet or similar article is stuffed with more than one package or units, the packages or units enumerated in the multimodal transport document, as packed in such container, pallet or similar article of transport shall be deemed as packages or units".

(2) Notwithstanding anything contained in sub- section (1), if the multimodal transportation does not, according to the multimodal transport contract, include carriage of goods by sea or by inland waterways, the liability of the multimodal transport operator shall be limited to an amount not exceeding 8.33 Special Drawing Rights per kilogram of the gross weight of the goods lost or damaged.

Limits of liability when the nature & value of the consignment have not been declared and stage of transport where loss or damage occurred is known.

Where a multimodal transport operator becomes liable for any loss of, or damage to, any consignment, the nature and value whereof have not been declared by the consignor before such consignment has been taken in charge by the multimodal transport operator and the stage of transport at which such loss or damage occurred is known, then the limit of the liability of the multimodal transport operator for such loss of damage shall be determined in accordance with the provisions of the

relevant law applicable in relation to the mode of transport during the course of which the loss or damage occurred and any stipulation in the multimodal transport contract to the contrary shall be void and underforceable.

"Provided that the multimodal transport operator shall not be liable for any loss, damage or delay in delivery due to a cause for which the carrier is exempted from liability in accordance with the applicable law".

Libility of the multimodal transport operator in case of delay in delivery of goods under certain circumstances.

Where delay in delivery of the consignment occurs under any of the circumstances mentioned, or any consequential loss or damage arises from such delay, then the liability of the multimodal transport operator shall be limited to the freight payable for the consignment so delayed.

Assessment of compensation.

(1) Assessment of compensation for loss of or damage to, the consignment shall be made with reference to the value of such consignment at the place where, and the time at which, such consignment is delivered to the consignee or at the place and time when, in accordance with the multimodal transport contract, it should have been delivered.

(2) The value of the consignment shall be determined according to the current commodity exchange price, or, if there is no such price, according to the current market price, or, if the current market price is not ascertainable, with reference to the normal value of a consignment of the same kind and quantity.

Loss of right of multimodal transport operator to limit liability.

The multimodal transport operator shall not be entitled to the benefit of limitation of liability under any of the provisions of this Chapter if it is proved that the loss, damage or delay in delivery of consignment resulted from an act or omission of the multimodal transport operator with intent to cause such loss, damage or delay or recklessly and with knowledge that such loss, damage or delay would probably result.

Limit of liability of multimodal transport operator for total loss of goods.

The multimodal transport operator shall not, in any case, be liable for an amount greater than the liability for total loss of goods for which a person will be entitled to make a claim against him under the provisions of this Act.

Notice loss of or damage of goods.

(1) The delivery of the consignment Notice to the consignee by the multimodal transport loss of operator shall be treated as prime facie or dam- evidence of delivery of the goods as described age to in the multimodal transport document unless goods. notice of the general nature of loss of, or damage to, the goods is given, in writing, by the consignee to the multimodal transport operator at the time of handing over of the goods to the consignee. (2) Where the loss or damage is not apparent, the provisions of sub-section (1) shall apply unless notice in writing is given by the consignee of the loss of, or damage to, the goods within six consecutive days after the day when the goods were handed over to the consignee. The responsibility of the multimodal transport operator for the goods under this Act shall cover the period from the time he has taken the goods in his charge to the time of their delivery".

MISCELLANEOUS

Special provision for dangerous goods.

(1) Where the consignor hands over the prescribed dangerous goods to a multimodal transport operator or any person acting on behalf of such operator, the consignor shall inform him of the nature of the dangerous goods and, if necessary, the precautions to be taken while transporting such goods.

(2) Where the consignor fails to inform the multimodal transport operator or the other person acting on behalf of such operator of the nature of the dangerous goods and such operator or person does not otherwise have knowledge of the dangerous goods-

(a) the consignor shall be liable to the multimodal transport operator or the other person acting on behalf of such operator for all loss resulting from the multimodal transportation of such goods; and

(b) the goods may at any time be unloaded, destroyed or rendered innocuous, as the circum- stances may require, without payment of compensation.

Right of multimodal transport operator to have lien on goods and documents .

. (1) The multimodal transport operator who has not been paid the amount of consideration stipulated in the multimodal transport contract shall have a lien on the consignment and on the documents in his possession.

(2) Notwithstanding anything contained in sections lien on 13, 16 and 18, the period during which the goods are goods in possession of the multimodal transport operator and in exercise of his right of lien referred to in sub- documents. section (1) shall not be included for the purposes of calculating the time of delay under any of those sections.

General average .

Notwithstanding anything contained in any other provision of this Act, it shall be lawful for the parties to the multimodal transport contract to include in the multimodal transport document any provision relating to general average. xplanation.-For the purposes of this section, "general average" means loss, damage or expense reasonably incurred in order to avert danger to property in common peril and in the common interest involved in the multimodal transportation.

Limitation on action.

The multimodal transport operator shall not be liable under any of the provisions of this Act unless action against him is brought within nine months of-

(a) the date of delivery of the goods, or

(b) the date when the goods should have been delivered, or

(c) the date on and from which the party entitled to receive delivery of the goods has the right to treat the goods as lost under sub- section (2) of section 13.

Jurisdiction for instituting action.

Any party to the multimodal transport contract may institute an action in a court which is competent and within the jurisdiction of which is situated one of the following places, namely:--

(a) the principal place of business, or, in the absence thereof, the habitual residence, of the defendant; or

(b) the place where the multimodal transport contract was made, provided that the defendant has a place of business, branch or agency at such place; or

(c) the place of taking charge of the goods for multimodal transportation or the place of delivery thereof; or

(d) any other place specified in the multimodal transport contract and evidenced in the multimodal transport document.

Arbitration.

(1) The parties to a multimodal transport Contract may provide therein that any dispute which may arise in relation to multimodal transportation under the provisions of this Act shall be referred to arbitration.

(2) The arbitration proceeding may be instituted at such place or in accordance with such procedure as may be specified in the multimodal transport document.

therein, be exercisable also by such officer or authority as may be specified in the notification.

AMENDMENT OF CERTAIN ENACTMENTS

Amendment of the Carriers Act, 1865 (3 of 1865)

In the Carriers Act, 1865,--

(a) in section 2, in the definition relating to "common carrier", after the words "engaged in the business of", the words "transporting property under multimodal transport document or of" shall be inserted;

(b) in sections 6, 7 and 8, for the words "property delivered", the words and brackets "property (including container, pallet or similar article of transport used to consolidate goods) delivered" shall, respectively be substituted;

(c) in sections 9 and 10, for the words "goods entrusted", the words and brackets "goods (including containers, pallets or similar article of transport used to consolidate goods) entrusted" shall, respectively, be substituted.

UNIT V

INVENTORY MANAGEMENT

Lesson 1

Inventory management

Introduction: An Introduction

Inventory constitutes one of the most important elements of any system dealing with the supply, manufacturing and distribution of goods and services. In fact,

Outline of the lesson

10. Terminologies of inventory Management
11. Types of Inventories
12. Cost aspect of inventory management
13. Symptoms of poor inventory management
14. Need foe effective control of inventory.

Learning Objectives

After studying this lesson, you should be able to:

11. *Understand* the Basic inventory concepts
12. *Differentiate* the types of inventories
13. *Outline* the cost aspects of inventory
14. *identify* the symptoms of poor inventory management

15. *Know* the need for effective inventory control.

inventories are common to farms, manufacturers, traders, hospitals, temples, prisons, zoos, universities, and governments.

The term inventory can be used to mean several different things such as:

1. The stock on hand of materials at a given time(a tangible asset which can be seen, measured and control);
2. An itemized list of all physical assets;
3. The value of the stock of goods owned by an organization at a particular time;

In logistics and supply chain perspective, inventory is any idle material resource of an enterprise awaiting future sales, use, or transformation. In other words, it refers to stocking of raw materials, in process, finished, packaging, tools and equipments, spares and others in order to meet an expected demand or distribution in future.

Inventories of raw materials or finished goods are maintained primarily to bridge the gap between availability and demand. An inventory level represents a major market- logistics decision. Salespeople would like their companies to carry out enough stock to fill all customer orders immediately. Inventory problems are caused primarily because it is impossible to make the goods available at the time and place available at the time and at the place desired by the customers by undertaking the manufacture instaneously.

With the concept of customer oriented approach, inventory management becomes an additional burden to the organization for a considerable amount of capital may be locked up in inventories.

Types: There are several ways in which inventories are classified, namely;

Nature of materials: Due to structure and shape the inventories are classified.

Production Inventories: raw materials, parts and components which are consumed in the production process of goods, come under the category of production material inventories.

MRO Inventories: maintenance repair and operating supplies which are used in the production process but do not become a part of the products, called MRO items, and their stocking is called MRO inventories. Items like lubricating oil, old cloths, machine spare parts, etc., are not a product produced but they are required for the smooth functioning of the production process and so their stock is maintained.

In process Inventories: these goods are partially completed\finished goods that are still in the production operation, i.e. semi finished products found at various stages in the production process are called in process inventories.

Finished goods Inventories: these inventory items are final products, available for sale and distribution, i.e. completed products ready for shipping.

Elements of Inventory costs:

The objective behind proper inventory management is to ensure the availability of materials at the right time, in the right place, at the right cost. The various elements of inventory costs are:

(a) procurement cost
(b) carrying cost
(c) Stock out cost.

Procurement cost:

Cost which are related to order from indenting stage to accounts, cost of transmission of an order, cost of postage (including cost of following up), cost of transportation, invoice pricing, cost for receiving the goods, and cost of final feeding of data in the logistics information system.

Carrying cost:

Cost which are related to space rent for storage of goods, cost of working capital locked in the inventory, cost of insurance of goods, breakages in handling, and cost of depreciation.

Stock out cost:

Cost which are related to economic consequence of either an external or an internal shortage. An external shortage occurs when a customer order is not filled, whereas an internal shortage occurs when an order of a group/department within the organization is not filled.

Inventory management:

Inventory is a major use of capital and, for this reason the objectives of inventory management are to increase corporate profitability, to predict the impact of corporate policies on inventory levels, and to minimize the total cost of logistics activities.

Better inventory management can increase the ability to control and predict the reason of inventory investment to changes in management policy.

So the top level management must determine the inventory level required to achieve least total cost logistics, given the required customer service objectives.

Purpose of inventory management:

Many firms in developed markets have embraced the concept of just in time inventory. So it is important to realize that inventory can serve a variety of useful purposes within an organization. Some of them are

- Facilitates economics of scale. Management may decide to buy the large quantities of an item in order to qualify for a discount or similarly lower transportation costs may be realized by shipping larger quantities at one time. In every case inventory is being utilized as a way to obtain savings in other parts of logistics systems.

- Offers a means of balancing supply and demand. Some firms can only sell their products at certain times of the year. In order to utilize their fixed investment in buildings and equipment and maintain a skilled labor force, management may decide to produce all year and store the finished goods until the selling season arrives.
- Provides protection from uncertain demand. Despite management's best forecasting efforts, demand can never be known with absolutely certainty. Similarly transport vehicles break down, raw materials may suddenly be unavailable, and manufacturing lines may stop. For all these reasons, inventory is utilized to ensure that customer needs are met even when the production process itself is interrupted.

Improving inventory management:

Top management commitment. Top management support is essential if inventory is to be managed effectively. Because lower inventories have an impact on many different parts of the logistics system, senior leadership must ensure that all of those activities are working together to meet customer needs without the luxury of excess stock.

ABC analysis of all inventory items: management must first understand which goods in inventory are the most important in terms of their contribution to the objectives of the organization. Those few items that generate the most profits would be designated "A" items and perhaps maintained at virtually 100 percent availability. The bulk of the goods in inventory would be denoted "B" items that might be supported at, for instance 80 percent levels. Finally there could be some low demand items classified as "C" goods which are maintained at very low levels or possibly not stocked at all.

Improved performance of other logistics activities: managers must ensure that the rest of the logistics system is functioning efficiently. It may be that inventory policies have evolved as a way to obscure other problems that should be dealt with

directly. By reviewing transportation, order processing, and warehousing functions, management may find that order cycle variability can be reduced by improving those activities that would lower the need for inventory.

Improved demand forecasting: demand forecasting is also a way of reducing variability, this time in terms of expected versus actual sales. Better forecasting techniques can be utilized to more accurately predict actual sales.

Inventory management software: software is currently available for virtually any type of inventory management situation and allows managers to track sales by item,costs,length of time in inventory, etc. many of the more comprehensive packages are structured around some variation of material requirements planning (MRP) or distribution requirements planning (DRP) depending on the nature of the inventory concerned.

Postponement: it involves modifying or customizing products after the main manufacturing process is complete. Final configuration of products can be delayed until the distribution cycle or even performed after delivery.

Inventory control procedures:

Inventory control is a mechanical procedure for implementing an inventory policy. It

(a) comprises perpetual

(b) Periodic review

Perpetual review:

In perpetual review, daily inventory status is reviewed to determine replenishment needs. It is implemented through a re order point and order quantity.

$$ROP = D \times T + SS$$

Where

ROP = reorder points in units

D = average daily demand in units

T = average performance-cycle length in days

SS = safety or buffer stocks in units.

In perpetual review:

1. On hand inventory represents quantity that is physically present in the particular distribution facility.
2. On order inventory represents quantities that have been ordered from suppliers.
3. If the on hand plus on order quantity is less than the established reorder point, inventory control process will initiate another replenishment order.

Periodic review:

In periodic review, the inventory status of an item is reviewed at regular intervals such as weekly or monthly. The basic re order point is adjusted to consider the extended intervals between reviews.

The formula for calculating the periodic review reorder point is

ROP = D (T + P/2) + SS

Where ROP = reorder point

D = Average daily demand.

T = average performance cycle length

P = review period in days

SS = safety stock.

Symptoms of poor inventory management:

This following section deals with how to recognize situations where inventories are not being managed properly. Some of the symptoms may be associated with poor inventory management are

1. increasing numbers of back orders
2. High customer turnover rate.
3. Increasing number of orders being cancelled.
4. Periodic lack of sufficient storage space.

5. Wide variance in inventory turnover among distribution centers and among major inventory items
6. Deteriorating relationships with intermediaries, as typified be dealer cancellations and declining orders.
7. Large quantities of obsolete items.

Inventory management in a global market:

Managing inventory becomes much more complex when dealing with the distances and different customer service requirements of internationally dispersed markets. The technical side of inventory management remains the same and it is equally applicable in a domestic or global setting. The challenge is that different approaches are required for different markets. The long retail channels and multiple middlemen still common in Japan, for example can necessitate the use of higher inventory levels than in Northern Europe and the United States where channels seem to be getting shorter. Supporting customers in developing nations can necessitate the placement of inventory in that country, or staging it somewhere between the point of manufacture and the point of consumption. So the reality is that an organization may have multiple inventory strategies intended to support different customers around the world. The common threads tying these policies together must be an awareness of customer needs and an appreciation for the cost of utilizing inventory to cover up other logistic problems.

Review Questions:

1. Define inventory management and its objectives.
2. What are the different types of inventories?
3. Explain the different costs involved in Inventory Management.
4. Explain the symptoms of poor inventory management and how to Improve it.
4. Explain inventory control and need of it.

WAREHOUSING

Lesson 2

Outline of the lesson

1. Terminologies of warehousing
2. Role of warehousing
3. operations of warehousing
4. Classification of warehouses
5. Nature and importance of warehousing.

Learning Objectives

After studying this lesson, you should be able to:

1. *Know* the nature and importance of warehousing
2. *Outline* the role of warehousing
3. *Differentiate* the types of warehousing
4. *Differentiate* operations of warehousing

Warehousing

Introduction:

A warehouse is a location with adequate facilities where volume shipments are received from a production centre, broken down, resembled into combinations representing a particular order or orders and shipped to the customer's location or locations. The rationale for establishing a warehouse in a distribution network is the creation of a differential advantage for the firm. This advantage accrues from achieving a lower overall distribution cost and / or obtaining service advantage in a market area.

Warehouse in new scenario:

The concept of a distribution warehouse or a distribution centre is vastly different from the earlier concept of a godown for storage. The need of that system is sue to

- Ensuring protection against delays and uncertainties in transportation arising from a variety of factors.
- Eliminating lack of sophistication in production control and consequent uncertainties in the availability of product at the desired time and place.
- Providing for adjustment between the time of production and the time of use because production and use can be seldom synchronized.
- Serving as a reservoir of goods, receiving surplus goods when production exceeds demand and releasing them when a scarcity of goods is anticipated.

The modern distribution centre or distribution warehouse is a pivot in the physical distribution system. So according to this system movement is the primary objective of a warehouse. As per this new concept a warehouse is a location where inputs

(incoming factory shipments) are converted into outputs (outward shipments representing orders of customers). This conversion takes place without consuming too much time.

Thus a warehouse may be defined as a location of temporary storage facility and from where they are dispatched with the main objective of maintaining the flow of goods throughout the system. These goods may be raw materials or finished products. **Prima facie,** a warehouse adds to the cost of distribution. But with the modern concept of warehousing, the other benefits which accrue far outweigh the additional cost.

Warehousing operations:

The essential processing of materials in a warehouse involves the following operation

- **Receiving goods:** A warehouse accepts the merchandise delivered by a transporter or an attached factory and then accepts the responsibility for this merchandise.
- **Identifying goods:** The appropriate stock – keeping units are identified and a record made of the number of each item received. It may be necessary to identify the item by an item code, tag, a code of the carrier or container, and / or by physical properties.
- **Sorting goods:** The incoming goods are sorted out for appropriate storage area in the warehouse.
- **Dispatching goods to storage:** the goods are kept aside where they can be found later when needed.
- **Holding goods:** The goods are kept in storage under proper protection until needed in the warehouse.
- **Retrieving selecting or packing goods:** Items ordered by customers are taken out from storage and grouped in a manner useful for the next step.

- **Marshalling goods:** the several items making up a single order are brought together and checked for completeness and order records are prepared or modified.
- **Dispatching goods:** the consolidated order is packaged suitably and directed to the right transport vehicle. The necessary shipping and accounting documents are also prepared.
- **Preparing records and advices:** the number of orders received, the items received and on hand etc., are recorded for replenishment action and stock control and the demand and receipt data are forwarded to a control centre located elsewhere.

Types of warehouses:

Bonded warehouses:

Private and public warehouses can be "bonded under the customs and excise act and municipal corporation regulations, facilitating deferred payment of customs, excise or octroi duty. The warehouseman releases only those goods on which the duty is paid on production of proof of such payment and release order issued by the appropriate authority.

Field warehouses:

They are managed by the public warehousing agency in the premises of a factory or company which needs the facility for borrowing from a bank against the certification of goods in storage or in process by an independent professional warehousemen.

Cold storages:

Cold storage facilities are provided for perishables against payment of a storage charge for the space utilized by different parties. In a cold storage, it is essential that

the temperature is regulated and temperature variation is controlled to the degree particularly necessary for certain sensitive items.

Agricultural warehouses:

These warehouses are meant for storing agricultural produce grown in a certain area and are located in assembling or regulated markets. These warehouses receive agricultural commodities either directly from the farmers or through their commission agents or from wholesalers. They make is possible for the owners of the commodities to avoid distress sale and obtain better prices at a later case. They also encourage speculative trading.

Distribution warehouses:

These warehouses are located close to the manufacturing concerns or consuming areas. Their location depends on the nature of the product, the time taken for transit, operating costs and the need to make the product available in the market in obedience to the demand for it.

Buffer storage warehouses:

These warehouses are built at strategic locations with adequate transport and communication facilities. They store food grains or fertilizers etc by or for the government for easy marshalling and supply to various far off or nearby consuming areas in response to the orders of the government or government agencies.

Export and import warehouses:

These warehouses are located near the ports from where international trade is undertaken. They provide transit storage facilities for goods awaiting onward movement. Facilities for break- bulk, packaging, inspection, marking, etc., are available at these warehouses. Import warehouses also provide customs bonding facilities and the facility of deferred payment of duty.

Warehouse functions:

In a warehouse basically two types of functions that are performed. These are:

(i) movement

(ii) Storage.

Movement: the movement function sub divided into receiving, in- storage handling and shipping.

Receiving:

Merchandise and materials arrive at the warehouse in quantities larger than what is dispatched. The activities involved are:

- Unloading the transportation vehicle, this in most cases is manual.
- In Indian context, limited automated and mechanized methods have been developed that are suitable to varying product characteristics.
- The product is hand- stacked on pallets to from unit load for movement efficiency.

In storage handling:

On receipt of the product, it becomes necessary to transfer the merchandise within the warehouse to position it for storage pr order selection. When the order is received, the required products are accumulated and transported to a shipping area. This helps in selection process for grouping materials, parts, and products into customers' orders.

Shipping:

Shipping involves checking and loading orders onto transportation vehicles. Shipping in unit loads leads to considerable saving of time in loading the vehicle. Checking operations are required to be done when merchandise changes ownership as a result of shipment.

Storage:

Storage is another function performed in a warehouse. Storage can either be planned or extended.

Planned storage:

Storage for basic inventory replenishment is referred to as a planned storage. Its duration varies depending on the performance cycle length.

Planned storage must provide sufficient inventory to fulfill warehouse's function within the logistical system.

Extended storage:

Extended storage refers to inventory in excess of that planned for normal warehouse operation. This becomes necessary as;

- Sometimes storage may be required for several months prior to customer shipment.
- Seasonal items require storage to wait for demand or to spread across time.
- Erratic demand, product conditioning, speculative purchases and discounts call for extended storage.

Nature and Importance of Warehousing:

Warehousing is used for the storage of inventories during all phases of the logistics process. Two basic types of inventories can be placed into warehousing are

(1) Raw materials

(2) Finished goods.

So in general the warehousing of inventories is necessary for the following reasons.

1. To achieve transportation economies.
2. To achieve production economies.
3. To take advantage of quantity purchase discounts and forward buys.
4. To maintain a source of supply.
5. To support the firm's customer service policies.

6. To meet changing market conditions.
7. To overcome the time and space differentials that exists between producers and consumers.
8. To accomplish least total cost logistics commensurate with a desired level of customer service.
9. To support the Just in Time (JIT) programs of suppliers, vendors, and customers.

Some of the services that can be provided in a warehousing programme are,

- Temporary storage
- Quick delivery
- Balancing of supply and demand
- Manipulation in transit (marking, bottling, packing, grading etc),
- Maintenance of stock inventories for emergencies or regular programmes,
- Specialized services for particular commodities such as cotton, tobacco, chemicals, and liquors etc.
- Refrigeration or cold storage.
- Bonded warehouse services
- Invoicing and collection
- Payment and distribution of transportation charges
- Elimination of consignment selling.
- Protection against temporary factory shutdowns
- Sales promotional activities.

Review Questions:

1. What is warehouse? Explain its role.
2. Explain the nature and importance of warehouse.

3. What are the different operations involved in warehousing?
4. What are the different types of warehouses?

TOTAL COST APPROACH TO LOGISTICS:

Lesson 3

Outline of the lesson

1. Terminologies of total cost approach to logistics
2. Role of different cost approach to logistics
3. Different costs involved in logistics

Learning Objectives

After studying this lesson, you should be able to:

1. *Understand* the terminologies of logistics
2. *Identify* the different roles of cost approach
3. *Outline* the various costs involved in logistics

Total cost approach to logistics:

Total cost analysis is the key to managing the logistics function. Management should strive to reduce the total cost of logistics rather than the cost of each activity. So logistics must be viewed as an integrated system rather than the individual system, because reduction in one cost invariably lead to increase the cost of other components. Effective management and real cost savings can be accomplished only by viewing logistics as an integrated system and minimizing its total cost given the firms customer service objectives. So the main costs which are involver are

(1) Customer service level
(2) Transportation costs
(3) Warehousing costs
(4) Order processing and information costs
(5) Lot quantity costs
(6) Inventory carrying costs

Customer service level:

Most business people find it difficult, if not impossible to measure this cost. The cost associated with alternative customer service levels is the cost of lost sales(not only the margin lost by not meeting current sales demand, but the present value of all future contributions to profit forfeited when a customer is lost due to poor availability, long lead times, or other service failures).

By comparing total logistics system costs, management can make knowledgeable judgment about the likelihood of recovering, through increased sales, the increase in total system costs brought about by an increase in customer service levels. Of course, management could also reduce spending in some other to component of the marketing mix – promotion, for example – in order to maintain profits with a similar sales volume. Likewise, with decrease in customer service levels, management can improve profitability or increase expenditures for other

components of the marketing mix in an effort to maintain or improve market position. At the end the goal is to determine the least total cost method of logistics while keeping customer service objectives in mind.

Transportation costs:

Costs associated with the transportation function can be identified in total and be segments (i.e. inbound, outbound, by vendor, by customer, by mode, by carrier, by product, or by channel). This detail is necessary to determine the incremental costs associated with changes in the logistics system. If Transportation costs are not currently available in any other form, management can determine them at a relatively low cost by sampling product flows and auditing freight bills (for common carriers) or corporate accounting records (for private fleets).

Warehousing costs:

Warehousing costs are all the expenses that can be eliminated or that must be increased as a result of a change in the number of warehousing facilities. Warehousing costs should be separated into two distinct categories:

a) Throughput costs

b) Storage costs

Throughput costs:

These costs are associated with selling product in a given market by moving it into and out of a warehouse in that market, and the fixed costs associated with the facility. Example is charges that public warehouses assess for moving product into and out of their facilities, and the costs of leased and owned facilities for the movement of the goods.

Storage costs:

Warehousing costs related to inventory storage should be included in inventory carrying costs. These warehousing costs change with the level of inventory held in a

specific warehouse and tend to be negligible in a company- owned or leased warehouse.

Throughput costs should be included instead in warehousing costs so that the increments can be easily added or subtracted when the logistics system configuration system changes.

Order processing and information costs:

Order processing and information costs include the cost of order transmittal, order entry, order processing, related handling costs, and associated internal and external communication costs. When establishing these costs management should remember to include in the analysis only those costs that will change with decision being made.

Lot quantity costs

Lot quantity costs are those production related or purchasing/acquisition costs that will change as a result of a change in the logistics system. Generally it consists of production preparation costs, capacity lost due to changeover, materials handling, scheduling and expediting. The lot quantity costs associated with purchasing are the costs of buying in various quantities.

Inventory carrying costs:

Conceptually inventory carrying costs are the most difficult costs to determine next to the costs of lost sale. Inventory carrying costs should include only those costs that vary with the level of inventory stored and that can be categorized into 4 costs.

a) Capital costs
b) Inventory service costs
c) Storage space costs
d) Inventory risk costs.

Review Questions:

1. Explain the role of different cost approach in logistics
2. What are the different costs involved in Logistics?
3. How the total cost approach is relevant in the case of International Business?

References:

11. Pierre David: International Logistics, Biztantra 2003
12. Satish C. Ailawadi & Rakesh Singh: Logistics Management, Prentice hall of India 2005
13. Agrawal, D.K: Text book of Logistics ans supply chain management, Mc Millan India ltd 2003
14. Khanna, K.K: Physical Distribution, Himalaya Publishing, Delhi
15. Lambert, D; Strategic Logistic Management, Tata Mc Graw hill, New Delhi.