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The multimodal transport operators : with emphasis on the shipping company in the role

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THE MULTIMODAL TRANSPORT OPERATORS; WITH EMPHASIS ON THE SHIPPING COMPANY IN THE ROLE

By

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: **The Multimodal Transport Operators; With Emphasis on The Shipping Company in the Role.**

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Multimodal transport is an integral part of international trade today. As the concept has flourished, so have the plethora of companies offering such integrated services.

This dissertation is a study of the various types of companies acting as multimodal transport operators. It enumerates the range of knowledge, expertise and capability required of a multimodal transport operator today. Against this background, the strengths and weaknesses of each type of company are examined and their performances are evaluated in the context of the present liner transport scenario.

The study stresses the role of the shipping company as multimodalist in view of the pre-eminent part it has played in the development of the concept. It also delineates the actions required to be taken by a shipping company aspiring to become a multimodalist.

A brief look is taken at the developments in the multimodal transport field in India, including an examination of the major operators.

The concluding chapter assesses the future of the concept and the anticipated role of the chief protagonists in this field of transportation.

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1. INTRODUCTION

1.1 BACKGROUND BRIEFS.

Multimodal transport is not a new transport system. International trade has always involved a number of modes of transport for movement of the goods from seller to buyer. History has it that even before the Christian era, ocean services linked ports from N. Africa to China, covering Arabia, Iraq, Iran, India and south-east Asia. In some sectors, as between India's Gujarat and the Persian Gulf, coasting was a regular commercial activity. Men and vessels worked in relays with cargo being periodically sliced and spliced at one entrepot or other. For instance, a cargo in the spice trade might be made up on India's Malabar coast, partly of local pepper and partly of other drugs and spices from Malacca and further afield. The goods would be transhipped in Aden, unloaded in the Gulf of Suez and carried by land and water to the Mediterranean coast across Egypt. Here they might be taken further west by land over the Alps, then down the Rhine to Antwerp, the principal distribution centre for western Europe. ('Multimodal Travel in Days of Old', 1st February 1996).

In the early days of sea transport, the shipowner was also the cargo owner. As international trade diversified and became more complex, the shipowner started

carrying cargo for other shippers. For such cargoes, he accepted responsibility from the time the cargo was accepted on board until the time it was discharged. In other words, the ship's rail was taken as the datum at which responsibility of the goods changed hands from the shipper to the carrier at the loading end and from the carrier to the consignee at the discharging end. Hence came the practice of checking marks and numbers and condition of cargo at the time of loading and discharging, a practice which is still prevalent in the breakbulk trades.

This system of carriage envisaged a segmented approach to transport based on port to port shipments. It was the shipper's responsibility to move the cargo from his warehouse to the loadport. Correspondingly, at the other end, it was the consignee's responsibility to move it from the discharge port to his own warehouse. The carrier's responsibility was restricted to ocean transportation on a "port to port" basis. Customs examinations and export formalities were done at the loading port. Separate arrangements were deemed necessary at each step - transportation to port, receiving at port with all attendant formalities, loading on board, sea transportation, insurance coverage, discharge, delivery and movement to consignee's warehouse. At each step there had to be separate contracts, separate billing, and different conditions and levels of liability. Total cost structure was difficult to define and overall costs were high.

Then came containerisation and, in its wake, the concepts of cargo consolidation, stuffing at shipper's warehouse and Full Container Loads (FCL). Pre-export customs examination and other formalities now shifted from the port premises to inland points - the shipper's warehouse, Inland Clearance Depot (ICD), Container Freight Station (CFS). There was now no question of the carrier checking the marks and numbers of individual packages. Instead the container came to be identified as "cargo" for purposes of international transport - the contents being accepted on "shipper's load and count". In short, containerization brought about a sea change in perceptions related to international freight transport. It was not long before the

trading fraternity came to realise that the container provided the means of, not just secure transportation, but secure "door to door" transportation. This realisation proved the catalyst for change in trading practices. (Setchell, 1989).

The responsibility datum now shifted from the ship's rail further inland, to the point where the cargo lay stuffed and ready for shipment i.e. the shipper's warehouse, Inland Clearance Depot (ICD), or Container Freight Station (CFS). It became the carrier's responsibility to pick up the stuffed container at the designated inland point and likewise deliver it to a designated inland destination. With the ocean carrier's services now extended to an inland point, the concept of multimodal transport stepped into the picture. This concept is therefore a direct corollary of containerisation.

Faced with increasingly fierce competition and falling freight levels, shipping companies were forced to rationalise operations and seek new avenues for survival. One of these was picking up the gauntlet thrown down by the trading community - that of offering a full scale co-ordinated multimodal transport service. Their own rationalisation measures, aided by containerisation, had already created a pattern of operations featuring loadcentring at particular ports and feedering from others. This pattern of operations was also seen to favour the multimodal system.

The other major factor that paved the way for multimodalism was the development of the landbridge systems. These systems provided the option of substituting land transport for part of an all water route, resulting in considerable savings in maritime distances and, consequently, in transit times. Two distinguishing features were the hallmarks of these systems:

(i) the entire movement was covered by a single Bill of Lading issued by the shipping company

(ii) goods remained in the same container throughout the transit.

They were thus the immediate precursors of the multimodal transport concept of today. (Muller, 1995, page 104). Canada was the pioneer in the field, but it is the USA which, beginning in the sixties, today offers the most extensive landbridge systems in operation. In the east, the Trans-Siberian landbridge commenced operations in 1967, between the Pacific ports of Nakhodka and Vostochny to several European gateway ports. However, it was never fully utilised and it has been inundated with problems since the disintegration of the erstwhile USSR. The latest addition to this field has been the Chinese landbridge, which was inaugurated in 1995, a culmination of two years trial operations. It runs parallel to the ancient Silk Route, from Lianyungang on the west coast of the Pacific Ocean to Rotterdam on the east coast of the Atlantic, across 40 countries of Asia and Europe. The total length is 10900 kilometres - 2000 kilometres shorter than the Trains-Siberian Railway, 8000 kilometres shorter than the Lianyungang/Rotterdam sea route through the Suez Canal and 11000 kilometres shorter than the same route through the Panama Canal. ('Lianyungang To Become International Hub For Asia Europe Continer Transport', January 1996).

Thus it will be seen that multimodal transport has been in circulation for some time in the world of liner shipping; in other words, as mentioned earlier, it is not a new idea. What is new today is, not the concept itself, but the industry's approach to it. The modern version of multimodalism is an integrated approach to the entire transportation chain, in contrast to the segmented approach earlier. Multimodal transport, in today's parlance, is a term used to describe 'the linking of transport responsibilities, documentation and liabilities in the co-ordinated movement of goods by land, sea or air.'(Setchell, 1989).

The reason for the resurgence of this concept, albeit in a new avatar, is the sheer volume of international trade today and the increasing element of containerization. The following figures show progressive trade volumes over the years, along with the proportion containerised:

TABLE 1

TRADE VOLUMES

YEAR	GLOBAL GENERAL CARGO TRADE	CONTAINERIZED COMPONENT	PERCENTAGE
1980	527 million	120 million	23%
1985	552 million	172 million	31%
1990	673 million	269 million	40%
1995	740 million	408 million	55%

(Source: Lloyd's Shipping Economist, April 1996, page 7)

The diversified nature of trade is provided for in the variety of boxes being used, in order to take full advantage of multimodal transport -

for general cargo	standard general purpose (GP) units
for over-dimensional cargo	open top units, flat racks, over height or over width units
for perishable cargo	refrigerated units or ventilated boxes
for liquid cargo	tanktainers
for dry bulk cargo	special dry bulk units or GP boxes using an inner liner

Where the standard boxes are incompatible with the transport modes due to size, as for example with air transport, special boxes are being constructed to suit the purpose.

Unprecedented efforts are being made to create and enhance operational synergies among the different modes of transport. Advanced ports like Rotterdam and Singapore already boast of sea-air terminals. Several international conglomerates offer combined transport services on a global basis. CSX Corporation, for example, includes sea as well as overland transport in its portfolio. Hanjin, along with sister concern Korean Air, operates dedicated cargo services by sea and by air. Transport is no longer viewed in isolated segments, but as an integrated whole.

There is no doubt that the proportion of containerization in international trade will continue to increase, as will total trade itself. As containerization advances, so will multimodal transport networking and that in turn will stimulate further containerization. Multimodal transport had its genesis in containerisation; it now provides added stimulus to further developments in the field and thus guarantees its own regeneration.

Another factor which is likely to add impetus to the trend towards multimodalism is the growing social concern for the environment and ecological values. Transport networking is seen as environment-friendly as it promotes the use of each transport mode where each has a comparative advantage.

1.2 MAIN DEFINITIONS IN THE THEORY OF MULTIMODALISM

It is not the purpose of this paper to discuss at length the general aspects of the multimodal transport concept. However, for ready reference, definitions of some main terms are given below.

Mode of transport: ' the method of transport used for the conveyance of goods' (Multimodal Transport Handbook, 1995, page 12).

Means of transport: ' the vehicle used for the transportation of goods' (Multimodal Transport Handbook, 1995, page 12).

Multimodal transport: '... the carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country.' (U.N.Convention on International Multimodal Transport of Goods, 1992).

Multimodal transport operator: '... any person who, on his own behalf or through another person acting on his behalf, concludes a multimodal transport contract and who acts as a principal, not as an agent or on behalf of the consignor or of the carriers participating in the multimodal transport operations, and who assumes responsibility for the performance of the contract.' (U.N.Convention on International Multimodal Transport of Goods, 1992).

Multimodal transport contract: '... a contract whereby a multimodal transport operator undertakes, against payment of freight, to perform, or to procure the

performance of, international multimodal transport.' (U.N.Convention on International Multimodal Transport of Goods, 1992).

Multimodal transport document: '... a document which evidences a multimodal transport contract, the taking in charge of the goods by the multimodal transport operator, and an undertaking by him to deliver the goods in accordance with the terms of that contract.' (U.N.Convention on International Multimodal Transport of Goods, 1992).

In summary, the salient features of a multimodal operation are:

- international transport of goods from the country of origin to the destination country
- use of more than one mode of transport for the movement of the goods
- a single through transport document covering the entire transportation chain, irrespective of number or nature of transport modes used
- a single through freight rate charged for the entire transit
- a single operator who assumes full responsibility for the entire operation.

The emphasis in multimodal transport is not on the physical handling of goods but on the management and responsibility of the transport. The overall objective is faster transit at reduced costs.

2. REQUIREMENTS OF A MULTIMODAL TRANSPORT OPERATOR

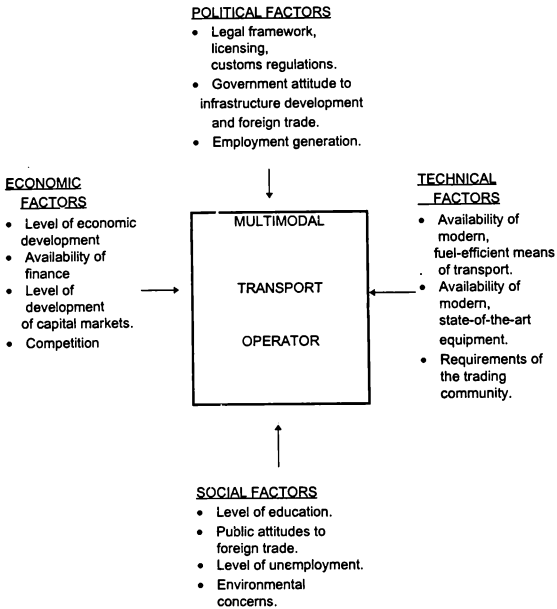
Having established how the concept of multimodal transport gained ground, it would now be pertinent to explore the requirements of an operator in this field.

2.1 THE "P.E.S.T." FACTORS

It is first necessary to study the external environment within which the multimodal transport operator is required to perform, as depicted in the following diagram:

FIGURE 1

THE P.E.S.T. FACTORS



The above diagram is self explanatory and depicts the external factors - political, economic, social, technological i.e. "P.E.S.T." - which influence the

activities of the multimodal transport operator. These are also the factors which must be taken into account by the government of the country planning the foundation of a multimodal transport network.

The multimodal transport concept does not operate in isolation ; the multimodalist is part of a large integrated transport system. For it to be successful, national policy must consider transport as a whole, not in unimodal segments. Laws and regulations should be made compatible, promoting free interchange of cargo from one mode to another. It requires massive education and training of people in the bureaucracy, banking and trading communities to give them the knowledge, understanding and confidence in using modern terms and systems and to enable them to integrate their tasks. More importantly, it needs a comprehensive national strategy, focused on the requirements of the end users, i.e. the trading community.

The trading community tends to measure service in terms of the following factors:

- competitive prices
- origin to destination transit times
- reliability of sailing schedules
- container tracking
- loss or damage
- ease of documentation
- logistics advantages

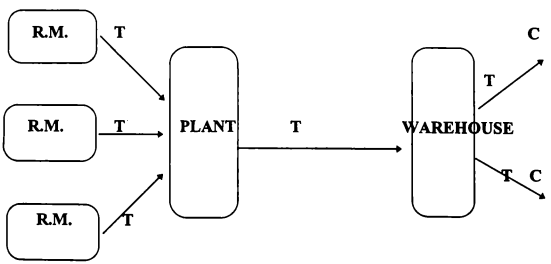
Transportation decisions are increasingly being based on the logistics approach as managements all over the world recognize that these decisions have a

substantial cost impact on overall operations and profits. The latest buzzword is "supply chain management", a concept which takes a look at the entire operation, from the source of raw materials all the way through to the delivery of the final product to the end user. Logistics is, in essence, co-ordination of movement and storage, which form the basic elements of the function, so that total costs are minimized (Coyle, Bardi & Cavinato, 1990, page 40). The logistics function is viewed as a series of links and nodes. The nodes are the fixed points in the system (i.e. storage points) and the link is the transportation used to connect the nodes (i.e. movement).

The following graphic representation of the basic transportation flow from raw material to final customer is self-illustrative:

FIGURE 2

BASIC TRANSPORTATION FLOW



R.M. = Raw material source (node)

T = Transportation (link)

C = Customer (node)

(Source: Coyle et al, 1990, page 41).

A recent survey ('Shippers' Priorities Confirmed', Sept., 1995) has revealed a trend among shippers to go for overall cost, service and reliability packages, rather than individual factors, when selecting carriers. Individual factors are evaluated as a part of the whole package. Interestingly, of the latter, the factors considered of supreme importance were as follows:

- carrier response level 48%
- carrier's IT capability 38%
- quality of carrier's documentation 34%
- reliability of sailing schedules 30%
- special equipment availability 28%
- wide port coverage and intermodal capability 15%
- lowest possible rates 12%
- multi-trade capability 7%

Large volume shippers do negotiate the lowest freight rates they can achieve and exporters of low value products cannot do otherwise. On the whole, though, shippers gave a clear mandate in favour of overall service packages from carriers, combining attractive rates, sailing schedule reliability, wide port coverage and intermodal capability, and, to a lesser extent, multi-trade capability.

The transportation decision begins with identification of the cost and service goals to be achieved through the service. The selection itself is a two part process. The initial decision involves selection of mode and the second relates to specific carriers within the mode. The transportation manager first examines the cost and service profiles of different modes including a combination of two or more modes (multimodal service) and selects the mode or combination that matches the company's cost and service goals. Next, he examines the cost and service characteristics of individual carriers within the selected mode/modes and selects the specific carrier to provide the desired service. Obviously, the carrier who can offer transport combinations, as opposed to solo transport options, will have a distinct competitive advantage in this process.

These are the demand factors which will influence the level and quality of service offered by the multimodal transport operator. The other set of influencing factors will be the competitive ones. The multimodal transport operator will need to analyse and dissect the market to find out where he can gain a strategic advantage, given his own inherent strengths. According to C.K.Kim (1987, pages 55-57), there are three generic strategies which can be used for fighting competition -

I. Overall cost leadership - This involves aggressive construction of efficient scale facilities, vigorous pursuit of cost reductions, tight cost and overhead control, etcetera. This is the main strategy of the mega operators in liner shipping. It gives them the ability to quote very low freight rates and thus, a favourable position vis-à-vis substitutes. It effectively eliminates marginal competitors and provides substantial barriers against potential entrants through economies of scale and cost advantages.

II. Differentiation - This involves differentiating services offered to the buyers, creating something that is perceived in the industry as being unique. In traditional liner operations, each carrier had developed different ways of cargo stowing,

handling and vessel scheduling depending largely on cargo and trade routes. Containerization brought in unification of cargoes from a heterogeneous mix, requiring different types of servicing, to a homogeneous lot carried in standard boxes in much the same way for all cargoes. Handling facilities and stowage methods became more or less standardized all over the world. With unification of trade routes and large sized ships, global consortia have almost eliminated the differentiation factor among themselves.

III. Focus - This involves concentrating on a particular buyer group, commodity or geographic market, combining both the above strategies. Essentially, it means attempting to carve out an operational niche in which the company can then concentrate all its efforts and expertise. Today this may be the best launching pad for the aspiring multimodal transport operator pitted against the heavyweights of the shipping industry.

In addition to the above, the general laws of transportation (Coyle et al, 1990, page 423) also apply to multimodal transport and must be duly considered -

a) It is a service, not a production activity, and is based on derived demand.

b) It is a service that cannot be stored. Transportation managers must adopt various efficiency techniques and responsive management structures for optimum results.

c) Transportation firms are geographically dispersed; carrier operations take place over vast distances.

d) The firms' product (the service) is constantly in motion.

e) There is no one ideal form of carrier management.

2.2 THE BASIC REQUIREMENTS

Against the above background, the ensuing paragraphs enumerate the qualifications required of a multimodal transport operator.

(A) He should be capable of determining his total costs for a through transport movement. He has to ensure that he is not only in a position, but in a better position than other operators, to put together an economical through transport package for his client. He has to bear in mind that costs will be affected by season, direction of traffic, volume of other goods in the same movement, the equipment and the means of transport used. He must therefore have a sound working knowledge of transport economics in every field of transport.

(B) He will need to have a fleet of vehicles - ships, railcars, trucks - at his disposal, either through direct ownership or through special contracts. He will also need to have a fleet of containers of various dimensions and types.

Major multimodal transport operators generally operate, either through ownership or under lease, large, modern, well-equipped intermodal terminals. These are managed either by their own handling companies or through a contract with a company specialising in intermodal operations. Some of them also provide warehousing and distribution services, in other words, a complete logistics package.

Keeping all this "hardware" functional will require establishment of maintenance and repair centres for each. It will also require continuous updating of equipment and training of personnel in view of the high obsolescence quotient of modern technology.

Backing up all the above activities, the multimodal transport operator will need to establish a world-wide computer network for inventory tracking, monitoring, intermodal scheduling, documentation and EDI.

(B) It follows from the above that the aspiring multimodal transport operator must have a very sound financial resource base and a track record of business integrity. This is essential to enable him to plan and deliver a complete service and to assume responsibility for indemnifying shippers in case of loss or damage to cargo.

(C) He must have a wide network of contacts, both at home and abroad, associated with international transport. Strict control of the entire transportation chain is an essential prerequisite of successful multimodal operation. The geographic dispersion factor added to the multiplicity of carriers involved between the shipper and the consignee makes it difficult to establish single through accountability for the ultimate service. Without effective discipline and accountability, reliable service is impossible to maintain. The multimodal transport operator will therefore need a well-dispersed international base of branch offices, representatives and agents covering all his service areas.

(D) He will need highly qualified staff well versed in the intricacies of international transport procedures to meet operational, legal and service requirements. Operational expertise would include knowledge of the latest situation and trends in the market, regulations, procedures and practices for trade and transport, rate levels and cost structures of various transport modes and terminals. The staff should also be capable of advising clients on trade terms to use, for example, the appropriate INCOTERMS or UCP provisions, in order to reap the full benefits of the multimodal transport concept.

Legal expertise would cover the entire gamut of laws and regulations dealing with international trade and transport, both national and international. It would

include a thorough knowledge of the risk allocations and insurance systems applicable under the Hague Rules, the Hamburg Rules and the UNCTAD/ICC Rules. Legal expertise will also be invaluable in the selection of the most suitable multimodal transport document, which is the basic contract governing his operation as multimodal transport operator and is therefore of supreme importance.

(E) He will need to have his own insurance coverage arrangements since he will be accepting liability for the entire through transport. The limit of liability that he is prepared to offer should be clearly specified.

(F) He must have a reliable customer support base consisting of his core customers. This group is of utmost importance as it will form the basis of all his future policies. He should be in a position to continuously nurture this base - study and constantly update himself on their requirements, suit his service features accordingly and ensure an open, flexible approach at all times.

In establishing the status of a multimodal transport operator, the focus is on the financial standing, the know-how and experience of the company and its range of contacts - in other words, the software of transportation. (Henshaw, 1993). Ownership, operation and control of any specific mode of transportation, i.e. the hardware, is a preferred, though not essential qualification. The degree of preference lies in public perception, as a transporter already involved in international trade commands a higher degree of confidence from the trading public.

3. THE MULTIMODAL TRANSPORT OPERATORS

As the concept of multimodal transport gained currency, different companies, with varying backgrounds in the transport sector, have expanded their operations to take up the role of multimodalist. The main characteristics, advantages and disadvantages of these operators are discussed in the ensuing paragraphs.

3.1 DIFFERENT TYPES OF OPERATORS

1. Freight Forwarders: These are the companies which traditionally acted on behalf of the shippers/consignees to arrange a series of unimodal transport moves, without accepting any liability themselves. Their services may range from assembly and consolidation of shipments at the point of origin to distribution at the final destination including transport arrangements (ocean and land), warehousing and documentation. An apt quote from Paul Lamboley, former member of the Interstate Commerce Commission, USA, - 'a freight forwarder is best described as being the carrier to a shipper and the shipper to a carrier.' (Muller,1995, page 130). They have a foot in both camps, the shipper's as well as the carrier's, and are fairly knowledgeable about both.

Freight forwarding, by its very nature, is a personal, service industry. As such, it seems to gain little from economy of scale and tends to retain its limited size.

Advantages:

- Since freight forwarders are already arranging transport on a mode to mode basis, they are in a position to accept responsibility for the entire chain of operations, from origin to destination, issuing a through multimodal transport document as required by the Multimodal Transport Convention.

- They can provide a number of additional services at both ends - cargo consolidation, stuffing, documentation, warehousing, insurance.

- They can offer a wide choice of modal options to their clients, based on their extensive knowledge of the markets.

- Since they have no financial stake in any mode of transport, their choice is likely to be unbiased, dictated solely by their clients' needs.

Disadvantages:

- They are highly vulnerable to competition from all modes of transport. Direct carriers in through transport do not always welcome freight forwarders as they are accused of undercutting rates.

- They have no financial stake in the industry. This has often led to the emergence of "suitcase operators", who have no definite standing in the market and no financial resources to back the Multimodal Transport Documents issued.

- Since they do not own any mode of transport, they have to subcontract all stages of the transport chain. However, they do not have the financial resources to

command the confidence and goodwill of sub-contractors and may therefore be unable to secure the best possible services.

- Most of them do not have any international organisation and little or no contacts at the other end of the transport chain. They are therefore not in a position to exercise effective control over the entire multimodal operations.

In their capacity as freight forwarders, these companies play a limited role and therefore cannot undertake the multimodal transport operator's functions effectively. However, should they be successful in expanding operations and achieving international status as IMCs (see below), they will represent a potent force in this field .

2. Intermodal Marketing Companies (IMCs): Also known as Intermodal Management Companies, (Muller, 1995, page 137) they are non vessel operating common carriers (nvoccs) set up with the sole objective of providing a multimodal service. In other words, they are organisers of international transport services. They do not own any means of transport; nevertheless, they offer their clients comprehensive, door to door services, covered under through bills of lading or equivalent documents, on the basis of leases, slot charters and various contractual arrangements with various carriers.

Advantages:

- They are a more sophisticated version of the conventional freight forwarder. As such they enjoy all the advantages of the latter and a few additional ones besides.

- They have a world-wide network of offices and agents. This is in fact the fundamental framework of their operations.

- Since they do not own any transport equipment, vehicles or vessels, they are not tied to the demands of a rigid transport infrastructure and are not burdened with the corresponding enormous capital costs. They have, in principle, far more potential and flexibility than established and heavily equipped transport operators.

- They have no commitment to any specific trade route or Conference. They can, therefore, offer the shippers the widest choice of transport routes and the most flexible arrangements.

- They have a particularly effective role to play in arranging international trade for landlocked countries.

- As defined by Y.Hayuth, (1987,127), multimodal transport is 'an organisational creature'; the IMC is an organisation oriented service - an apparently perfect match.

Disadvantages:

- Far more than freight forwarders, the IMCs are perceived as greater competition and inimical to the interests of the direct carriers. They have been accused of rate cutting and of using their hold on large volumes of cargo to wrest unfair concessions. Thus at a time when the sector is over-tonnaged, IMCs may find it easy to secure shipping space. However, when the situation eases, they may find the going tough as shipping companies would give preference to direct clients.

- The scale of operations necessarily has to be large, on a world wide basis, in order to be effective.

Despite their perceived shortcomings, IMCs do provide the best alternative to the conventional carrier as multimodal transport operators. They have the expertise, they have the framework and they have the operational flexibility; all they need is sufficient volumes of cargo and commitment to trade.

3. Shippers' Associations: They may consist of members having a common line of commodities or a variety of commodities with a common destination. They do not own any transportation equipment and are non-profit organisations generally with small staff and corresponding low costs of operation. They are formed to enhance the bargaining power of the shippers, with local maritime authorities and with the shipping community, through the collective approach.

Advantages:

- They can influence local authorities to create a forum for shippers and shipping lines to discuss pricing or service changes and for domestic transportation. They can thus perform a key role in ensuring better co-operation and co-ordination on transport issues.

- They can provide a full range of consultancy services including selection of routings, freight contracting terms and conditions, freight negotiations with carriers and monitoring the movement of consolidated consignments. The Korean Shippers' Council (KSC), for instance, has a Multimodal Transport Subcommittee studying various transport options with a view to saving shippers' money on their inland distribution. ('KSC Fights On', July 1995).

- They can provide logistics support through computer services on a less costly and more efficient basis than each member working individually. Full advice on liner schedules, ports, freight forwarders and cost computations can be made readily available.

- They can secure and offer rate discounts to their members through their collective bargaining power.

- They can provide legal or arbitration services in case of disputes involving members.

- The Philippine Shippers' Bureau is even providing accreditation services under a government mandate for all freight forwarders, cargo consolidators, nvoccs and breakbulk agents engaged in international trade. This is aimed at professionalizing the freight transport industry, thereby raising overall service standards. ('PSB's Regional Thrust', March 1996).

Disadvantages:

- Shippers themselves can directly obtain rate discounts from shipping companies through consistent support, volumes and negotiation. Such freight rates have the advantage of being confidential, which does not hold true for freight rates obtained through shippers' associations.

- Other third parties can advertise and solicit all types of cargoes. They are not limited to a particular membership. They can therefore offer larger volumes of cargo to carriers and thus secure larger discounts.

- Shippers' associations do not have an international organisation of their own and must depend on individual members for this purpose. Their members are geographically scattered and, more importantly, likely to be in direct competition with each other. Full assistance is therefore not always available.

These limitations of shippers' associations tend to negate the advantages of the services they provide. The latter, though undeniably important, are not sufficient to give them an edge over other multimodal transport operators.

4. Terminal Operators: It is an accepted fact that physical and documentation activities at the point of change between marine and land transport have a considerable impact on overall transit times and costs. Till date, the transfer of containers from ship to rail and vice versa remains one of the weakest, least efficient and most costly links in the intermodal chain. Terminal operators are the managers of these "interchange points", handling the co-ordination of movement between various modes of transport. As such they are directly involved with around 40% of direct transport costs (Setchell, 1989). They provide the interface between marine and landside activities.

Advantages:

(Setchell,1989)

- They generally have well developed communications systems with ocean carriers, ports and landbased transporters.

- They have, well in advance, all required information regarding arrival of the vessels and containers on each, as well as data concerning the onward movement of the latter.

- They are well versed with the problems of container inventory management and control. Reducing dwell time in their facility is a major concern as increased dwell time would lead to increase in container population, which in turn leads to demand for increased operating area and avoidable capital expenditure. It also leads to lower operating standards and thus increased costs per unit handled.

- They are well placed to ensure co-ordinated movement of documents with physical movement of containers to meet Custom's requirements.

- They have the assets to provide financial security to support the issuance of multimodal transport contracts.

- They sometimes have the advantage of an international network through vessel owning shareholders. If not back to back arrangements can be made between terminals at each end of the marine transport segment.

Disadvantages:

- They are tied down, locationally, to one particular point in the transport chain. This makes it difficult to extend control over the entire operation.

- They do not have an international network of their own, which again hampers effective control.

- They can provide tremendous facilities within their own ambit of operations to ease modal interchange. However, beyond their own sphere they have very little influence on the multimodal infrastructure.

- With the magnitude of investment required in their own sphere of operations, they have a vested interest in attracting clients to their own facilities to ensure optimum utilisation. They may not therefore be able to provide a genuinely unbiased sketch of what is best for the customer.

Their shortcomings, particularly their physical limitations of reach, nullify their strategic advantages. The effect is that they are operationally restricted to a limited area, in their own vicinity.

5. Land based Transport Companies: These include railways and trucking companies providing overland transport to and from ports. Typically, they own one mode of transport, usually at one end of the transport chain. The ocean/air leg of the transit is

subcontracted. Nevertheless, their importance cannot be ignored. Experience has shown that the level of development of multimodal traffic greatly depends on the attitude of the overland transport operators, particularly the railways, towards this transport concept.

Advantages:

- They form an integral part of the transport chain with a heavy investment in the hardware of the industry. They therefore have a substantial stake in its development and progress.
- They have the financial standing to provide the support necessary for the issuance of multimodal transport contracts.
- Since they are actively involved in the field, they have a wider knowledge and a better understanding of transport economics and can guide their clients accordingly.
- They are capable of wide dispersal and extensive coverage of geographical areas in the hinterland. No client is inaccessible in terms of physical reach.

Disadvantages:

- In most cases, they will account for a very small part of the total transport chain.
- Generally, their activities are concentrated in their own end of the transport chain. They lack the international base required for multimodal operations.
- Their set up is usually characterised by outdated top heavy organisation structures, a limited sales force and high labour costs. ('Europe's Intermodal Cure', October 1995). They also do not have the requisite level of knowledge pertaining to logistics, export-import procedures, customs formalities, documentation, etc.

They are, in short, not geared to cater to the demands of international trading operations.

- Railways have been frequently criticised by users for their inflexible approach, lack of market understanding (particularly pricing) and lack of service orientation. ('Europe's Intermodal Cure', October 1995).

- In most countries, land transport facilities, particularly in the case of the railways, have been focused almost entirely on passenger traffic. This orientation has been reinforced from time to time by demographic, economic and political considerations. The interests of this very important segment have to be compromised to a large extent in order to divert capacity to cargo traffic.

- In developed countries, road networks are plagued by growing saturation, high economic costs of accidents, increasing levels of noise and pollution. ('Europe's Intermodal Cure', October 1995). In developing countries, road networks are either non-existent, badly maintained or under-developed.

The lack of knowledge and expertise on issues pertaining to the handling of international trade and the unavoidable emphasis on passenger traffic render them an unsatisfactory choice for the multimodal transport operator role.

6. Air Transport Companies: Airline services represent the only mode of transport theoretically capable of substituting ocean transport, albeit to a very limited extent at present. As such, all the advantages that the aircraft has over the ship, as a means of transport, will be available to these companies giving them a commanding position in the industry.

Advantages:

- They have the required world wide operational set up with offices and agents scattered all over the globe.

- They have qualified staff well versed in the procedures and formalities of international trade.

- They command the fastest mode of transport and are therefore in a position to offer the best transit times. This issue has to be considered from three aspects. The first is, obviously, the speed of the aircraft. The second relates to the location of airports. At inland points, airports are generally closer to the markets than seaports, which reduces subsequent land transit. The third aspect concerns the frequency of service. The number of flights per day or per week available to shippers are far more than the number of sailings available. Transhipment connections can therefore be effected faster. Just-in-time inventories can be scheduled effectively. Unexpected increases in demand can be successfully catered to by additional supply at short notice. (Hayuth, 1987, pages 127-134).

- As in other modes of transport, the airlines industry is also heavily capital intensive. These companies are therefore in a position to provide the financial backing for issuance of multimodal transport contracts.

Disadvantages:

- The most obvious constraint that these companies have to contend with is their high cost of operations. In a comparison of transport costs alone, air is certainly

the costliest mode of transport. However, an overall cost comparison may yield a different result as evidenced hereunder:

(a) The faster trip and less handling allow the use of lighter packaging or no packaging at all. This translates into savings at both ends - packing and unpacking.

(b) The high degree of safety and reliability of today's aircraft, the short time that the cargo is in transit, the low rate of cargo damage and spoilage all contribute to lower insurance rates assessed on air freight.

(c) For the trade, capital costs are reduced as a result of minimum inventory levels, lower warehousing costs and less capital tied up in "goods in transit".

Despite these factors, air transport is still perceived to be a high cost option. (Hayuth, 1987, pages 127-134).

- Air transport companies are not capable of carrying the enormous volumes and parcel sizes that are required to make international trading profitable.
- Like other landbased operators, airlines too consider the passenger traffic as their target segment. Cargo traffic is considered of secondary importance.

Given the present level of development in air transport, these companies will continue to be peripheral players in the multimodal market, at least for the present. Their area of operations will be confined to the speciality segments - perishables, high value cargoes, peak season demands.

7. Inland Waterways: River transport is perhaps the oldest mode of transport known to mankind. It is also the one which has been the slowest to adapt to containerisation

and multimodal transport. It is only recently that transport operators are awakening to the substantial potential offered by this mode in the multimodal transport set up.

Advantages:

(Hayuth, 1987, page 124)

- It is the cheapest form of transport and can result in substantial savings in the total through transport package.
- It provides a relatively congestion free movement with none of the transport bottlenecks experienced in other modes, particularly road.
- It is a pollution free, environment friendly mode.

Disadvantages:

- This system has always evoked images of an old and unreliable service. It will take time and a lot of effort for public perceptions to change.
- It is the slowest of all modes of transport. A study made in Europe showed that for a 350 kilometre route along the Rhine, the required transit time was 7 hours by road and 15 hours by express freight train. In comparison, it was 20-25 hours for downstream barge navigation and 35-40 hours for upstream barge navigation. (Hayuth, 1987, page 124)
- Equipment, transfer facilities and infrastructure in river transport are not sufficiently developed to meet the needs of integration into the multimodal network.

- River transport is restricted to areas where navigable waterways are available. Geographical coverage is therefore limited.

- Barge operators do not have the international set up nor the financial background required for effective multimodal operations and control.

River transport operators have never really been serious contenders for the role of multimodal transport operators due to their restricted role in the field.

3.2 THE SHIPPING COMPANY

Ocean carriers are the companies owning/operating shipping services all over the world. International trading of goods across continents has come a long way today since the early days of the humble barrel as a means of cargo unitization to the sophisticated container of today. Containerisation has been the common denominator of the emerging multimodal transport concept. Throughout this evolutionary process, the initiatives and drive towards development and change have always come from shipping.

For years, the European Union (EU) has been encouraging efforts to transfer freight from Europe's clogged highways to its under utilized and environment friendly railways and inland waterways. Once again, it took a group of shipowners to breathe life into a EU directive opening up European rail tracks to private freight services. Sea Land, Nedlloyd and P&O Containers, joined recently by Maersk, are operating shuttle trains from Rotterdam to Italy and Germany, paving the way for an EU-wide network of ship/train services. ('EU Maritime Policy - All At Sea', March 1996).

Shipping is, therefore, the one segment of the transport industry which can claim the distinction of having been involved in multimodal transport right since its inception and continues to play an active role in its further development.

Advantages:

- Having evolved in the backyards of the shipping industry, multimodal transport is a concept that shipping companies are familiar with. Tremendous amounts of knowledge and expertise have been accumulated in this field by the industry over the years. It is not without reason that the Korean Multimodal Transport Law requires a "maritime expert" as an essential precondition to setting up as a multimodal transport operator.

- Shipping is perceived as having an ongoing involvement in international trade. Established ship operators, with their proven expertise in the field, generally command more confidence among the trading public than any other operators.

- The shipping industry has always been readily responsive to environmental and social issues. Some companies have even initiated procedures to achieve the ISO 14001 certification through a systematic Environmental Management System. (Järlhem,1996). Multimodal transport is considered to have positive impacts on both counts as its integrated networking can facilitate diversion of freight traffic from congested roadways to alternative, lesser utilized modes. The initiatives taken by the shipping industry in this respect have already been mentioned earlier.

- Shipping is a derived demand almost totally dependant upon international trade of goods. Shipping companies have to work towards facilitation and enhancement of

trade to ensure their own survival. They are therefore extremely flexible to the requirements of trade.

- Shipping companies engaged in international trade will inevitably have a network of agents, offices and representatives covering the areas they are serving. Most of them also have well developed communication and EDI set ups. They can therefore handle the requirements of shippers, consignees, customs, etc., at both ends of the transport chain.

- They have existing contracts with landbased operators for minimum haulage required at ports and terminals. These can be upgraded and extended to cover multimodal transport operations.

- A number of shipping companies own their own containers and can therefore assure clients of ready availability when required.

- Shipping companies have direct ongoing contacts with ports and terminals. In several cases , they even have a hand in the development of these ports/terminals owning their own container handling equipment. They can therefore facilitate turnaround of cargo at these interface points.

- Eighty per cent of world trade today moves by sea. Even where a full logistics package has been offered, it has been observed that the cargo spends maximum time with the sea segment. Shipping therefore will be an integral and inevitable part of most multimodal operations.

It is interesting to note the views expressed by Mr.M.Morgenstern, CEO of Zim Israel Navigation, in this respect:

> " ....It is under this concept (multimodal transport) that carriers take upon themselves all relevant activities, or assign some to other sub-contractors.

But it must be remembered that the carriers always remain responsible for the complete chain.

....Let us face it, the carrier is the only one to have control of the ports of call, movements in both directions and to know the final destination of the container several weeks in advance.

Theoretically, anyone can take it upon himself to run the integrated operation, but the ocean carrier is the only one to really benefit from this strategy and its efficiency, and thereby share it with the customer....."

('Commentary', 1996)

Disadvantages:

- With their heavy investment in their own mode of transport, they are likely to emphasize this mode at the cost of others. They may favour their own investments and commitments as a result of which, customers may not always be guaranteed an optimum choice.
- There is an inherent risk of an oligopolistic market being created when large shipowning consortia take over as powerful ship operating multimodal transport operators. This may not be in the national interest, particularly for countries with limited maritime fleets.
- Being tied down by their own sectoral infrastructure, they may not be flexible in their response to the clients' needs.

At present, ship operators, with their extensive knowledge and expertise in the fields of international trade and transport, provide the best option as multimodal transport operators.

4. EXPANSION OF THE TRADITIONAL "OCEAN CARRIER" ROLE.

4.1 THE LINER SHIPPING MARKET

The last decade of the century has seen a marked trend towards globalisation of the world economy. As industrial countries approached the point of diminishing returns in economies of scale, operational diseconomies set in and labour costs skyrocketed. Major industries shifted operations to developing countries, where labour was still relatively cheap and capital was the need of the hour. In the process, they fuelled the industrialisation process in these economies, some of which were already at the takeoff stage. This led to the creation of new markets and a radical transformation in the old ones. Asia emerged as a two tier market with sophisticated economies like Japan and Singapore spreading their production bases to their less developed neighbours and thus changing from supply to demand centres. Intra Asia trade grew phenomenally and the area developed into the largest regional market in the world. Increasing industrialization also brought in its wake a general improvement in standards of living and a consequent increase in demand for brand name consumer and luxury goods, particularly in Asia and South America.

The industrialisation of the developing countries, the de-industrialisation of the developed states and the consequent expansion of demand for international

movement of goods resulted in globalisation of transport services, particularly shipping.

It also resulted in a changed cargo mix in both directions and increased containerization. From the developing countries of Asia to the developed nations of Europe and the US, breakbulk shipments of primary products, raw materials and intermediate goods came to be replaced by containerized shipments of sophisticated electronic and computer equipment, auto CKD kits, auto spares, sportswear and fashion garments. As the volumes increased, the need for repositioning of empties and "wrong size" units forced increased containerization of trade in the opposite direction too. Thus the industry witnessed the extraordinary spectacle of industrial and household garbage - waste paper, used plastic bottles, empty cans, scrap metal, textile waste and rags - moving in sophisticated containers from US, Europe and Australia to Asia, West Africa and South America. The volumes were equally stunning - 50% of total traffic on the westbound trans-Pacific leg, 33% on the eastbound Europe/Asia leg. ('Low Value Box Cargoes', April 1996).

This trend towards globalization of production bases and markets has ushered in the era of the mega carriers and their global consortia and with it, a further tightening of the competitive screw. Entry into big time container operations is now more complex and more costly than ever. All the recent alliances have involved the top 20 carriers, who were already dominating the world's key trade routes and will now continue to do so more extensively. The following tables, giving details of the recent alliances, serve to illustrate this point.

TABLE 2

THE MAJOR ALLIANCES

1. APL/OOCL/MOL/Nedlloyd - (Global Alliance)
2. Sea-Land/Maersk
3. NYK/Hapag-Lloyd/NOL/P&O - Grand Alliance
4. Hanjin/DSR Senator/ChoYang - (TRICON)
5. K-Line/Hyundai/Yang Ming

TABLE 3

THE SERVICES OFFERED

(A) East and South East Asia/ US East Coast via Suez

- Sea-Land/Maersk
- NYK/Hapag-Lloyd/NOL/P&O
- Hanjin/DSR Senator/ChoYang

(B) Asia/US East Coast via Panama

- APL/OOCL/MOL/Nedlloyd
- Sea-Land/Maersk
- NYK/Hapag-Lloyd/NOL/P&O

- Hanjin/DSR Senator/ChoYang (3 services)
- Hanjin/Yang Ming

(C) Asia/US West Coast

- APL/OOCL/MOL (3 services)
- Sea-Land/Maersk (3 services)
- NYK/Hapag-Lloyd/NOL/P&O
- Hanjin/DSR Senator/ChoYang
- K-Line/Hyundai/Yang Ming (4 services, of which Hyundai participates in 3 and Yang Ming in 2)

(D) North and East Asia/PSW*/PNW* 'sweeper services'

- APL/OOCL/MOL (3 services)
- Sea-Land/Maersk (2 services)
- NYK/Hapag-Lloyd/NOL/P&O (2 services)
- Hanjin/DSR Senator/ChoYang (2 services)
- K-Line/Hyundai/Yang Ming (2 services, of which Hyundai participates in one)

*(PSW = Pacific South West; PNW = Pacific North West)

(E) East and South East Asia/Europe

- APL/OOCL/Nedlloyd/MISC

- Sea-Land/Maersk
- NYK/Hapag-Lloyd/NOL/P&O
- K-Line/Yang Ming
- Evergreen/Lloyd Triestino

(F) Asia/Europe 'sweeper services'

- APL/OOCL/Nedlloyd/MISC
- Sea-Land/Maersk
- NYK/Hapag-Lloyd/NOL/P&O (2 services)
- Hanjin/DSR Senator/ChoYang (3 services)
- K-Line/Yang Ming

(The numbers in brackets indicate the number of service loops operated by the corresponding alliance. Where no figures are given, the alliance operates one service loop only.)

(Source:'Global Alliances', March 1996).

World liner shipping traditionally has three mainstream routes - Far East/US West Coast (USWC) transpacific, Far East/ US East Coast (USEC) transatlantic (via Europe) and Far East/Europe. All three have been unified into one horizontal round-the-world route with vertical connections through feeder systems. The mega operators thus have at their service a globally integrated operational network. They use modern, large, fast tonnage, which is fuel efficient and cost effective, allowing

them substantial economies of scale. The high load factor necessary to realise scale economies is sought to be achieved through capacity sharing arrangements.

In a bid to add a further thrust to their global networking, the mega-carriers have also been making forays into the North/South trades, hitherto considered specialised niche trades for the existing operators. Their strategies in these trades have not been consolidated as they are still undetermined whether to treat these trades as distinct profit centres in their own right or merely as cargo conduits for their East/West axial operations. Nevertheless, the effects of the intensification of competition are already being felt on these routes.

To the world of liner transport, shipping consortia, even large ones, are not a new phenomenon, being accustomed to dealing with conferences, pooling arrangements, rate agreements and other alliances in various forms. So why have the present groupings elicited such a concerted response? Legally, a global alliance is just another consortium or carrier agreement. In terms of operations and commercial implications, though, a different picture emerges. The following features of the present day global alliances set them apart from the erstwhile groupings -

- The sheer size of operations, in terms of number of slots and service coverage, is staggering.
- The fleet of containerships belonging to all members is pooled and rationalised
- Co-operation extends to ownership of several vessels, equipment interchange, feeder networks and a common definition of technical standards for containers
- Potential integration of intermodal activities is under review
- They aim to connect as many direct ports of call to their network as possible and offer the best service frequencies.

Global alliances represent an awesome concentration of surface transport power. This potential risk is offset by the scale and quality of service networks introduced by the alliances. Nevertheless, they make a formidable Goliath in competitive liner shipping. ("Global Alliances", March 1996).

Proliferation of low value cargo in the major container trades and the intensely fierce competition, aided by the looming spectre of overcapacity, exerted a continuous, unrelenting downward pressure on freight rates in liner shipping. Sensing a momentum swing, shippers responded by holding off, waiting for freight rates to come down further. At present, therefore, this is very much a buyers' market. As one intermodal supplier has been quoted as saying - "No one in his right mind would want to be in the business right now". (''Not for the Fainthearted", March 1996).

This is the competitive scenario for liner shipping. For the liner operator aspiring to become a multimodalist, it is also essential to consider the multimodal transport scene.

4.2 THE MULTIMODAL TRANSPORT MARKET

Innovations and improvements in the field of multimodal infrastructure and operations have always originated from the developed West. Nevertheless, despite the encouragement it has received, multimodal traffic in the developed world shows no signs of a dramatic improvement. In Europe, it currently represents only 4% of total goods movement. In USA, multimodal traffic volumes are reportedly "flatlining"; in 1995, multimodal originated traffic declined by 0.6%. ("US Intermodal: Flat in '95, +3% in '96?', December 1995). The trading community,

while enthusiastic about the obvious benefits of multimodal operations in transport, is still sceptical about the ability of different modes to co-operate in the field. (Persson, 1996).

On the other hand, the all-water transatlantic routes, particularly on the Asia/USEC trade route, are showing signs of a dramatic revival - traffic increased by 10.6% in 1990-'94, while during the first six months of 1995 the increase was 8.1% ahead of the corresponding figures during the same period of 1994. Analysts believe that this figure would have been higher if left solely to market mechanism. However, many carriers on this route own dedicated terminals at USWC ports and also control their own multimodal and /or inland logistics companies. They therefore have a vested interest in keeping cargo movements in-house to maximize company revenues. One of the reasons cited for the reversion to the all-water option is that there is no restriction on the size of the vessel using the Suez transit. Secondly, multiple handling of containers is reduced. Direct services are seen to be cheaper, with less risk of cargo being damaged or delayed and have the flexibility to avoid major congested terminals. Another key advantage that these services are perceived to have is speed from origin to destination with less scope for in transit delay. ("Asia-USEC Renaissance", November 1995).

While the US landbridges continue to be widely used, the eastern ones are yet to gain popularity. Recent attempts to revive the operation of the Trans-Siberian rail route have evoked a lukewarm response. One of the Russian officials dubbed it a "crazy mistake" adding further that "..there are just no prospects for it. Eighteen per cent of capacity was used at its peak; now half that." ("Looking to Asia", February 1996). The new Chinese landbridge appears to be faring better. A number of countries have already made arrangements for trial operations on this run - Japan, Republic of Korea, USA and some Central Asian Republics. ("Lianyungang To Become International Hub For Asia-Europe Container Transport", January 1996) A US based 'non vessel operating common carrier'(nvocc), Conflo Lines, is even

offering a rail transport option to Mongolia. Cargo will be routed either through Tianjin (China) for connection via the Chinese landbridge or through Vladivostock/St. Petersburg (Russia) if the Trans-Siberian rail route is used. ("Conflo Launches Mongolian Rail Service", March 1996).

Companies offering world-wide multimodal transport services once more feature a list of the big names in the business of international transport: APL,Sea-Land, Maersk, P&O, NOL (all shipping lines), Burlington,Conflo Lines, ITS (all nvocc operators). Particularly noteworthy is the initiative described in an earlier chapter taken by Sea-Land, Nedlloyd, P&O and Maersk to operate shuttle trains from Rotterdam to Germany and Italy for container traffic. However, their multimodal activities are largely restricted to developed countries, where the full facilities exist as an integrated whole.

In the developing countries, multimodal transport is still a fledgling operation. These countries are still coming to terms with the gestation problems - poor infrastructure, high cost of moving boxes inland, lack of investment in new technology, lack of communication facilities inland, concentration on passenger rather than freight services, social costs for rehabilitation of thousands of people living in squatter camps along proposed railway routes. In most of these countries, there is no cohesive, integrated transport policy encompassing all modes of transport. Governments are preoccupied with survival issues - poverty alleviation, 'food-for-all' programmes, education, employment. Transport figures very low in the pecking order of priorities. In a developing economy, any investment decision is measured primarily against its ability to sustain an adequate level of employment.

Shipping is universally recognised as the cheapest form of transportation of goods world-wide; but it is highly capital intensive. Likewise, rail is the cheapest form of land transport; but in developing countries its main purpose is passenger transport and increasing its operational ambit again requires a heavy dose of capital.

Roads are inadequate and poorly maintained. The whole system is far from 'container friendly' and, under these circumstances, multimodal transport networking appears a distant dream.

4.3 THE INDIVIDUAL MULTIMODAL TRANSPORT OPERATOR

Under such business conditions, what strategic options does the multimodal transport operator have?

1) He can concentrate on conventional breakbulk cargoes which defy containerisation, e.g. project cargoes, lengthy or heavy steels, etc. However, if he concentrates exclusively on this market segment, then multimodal transport is beyond his operational ambit. Alternatively, he can use the breakbulk service to gain market support, then branch out into the containerised segment and subsequently into the multimodal transport market.

2) He can concentrate on local or regional traffic. Several shipping companies like Shreyas Shipping and Regional Container Lines have done this with great success.

3) He can provide exclusive feeder services for the axial East-West routes, like Ivaran Lines (Miami/South America) and Seacon (Singapore/South and South East Asia). As the mega operators deploy progressively larger tonnage on the main trade lanes, economic considerations will force them to restrict their ports of call. This will increase their need for feedering from various areas to their "load centre" ports.

4) He can identify a niche market for himself which may be too small to attract the mega carriers and focus his efforts on this market segment. (Beth, 1996). This may be the best strategy under the current competitive scenario.

Having chosen his basic strategy, all the decisions taken by the shipowner must be gauged, and constantly updated, against the preceding backdrop, which is itself in a constant state of flux. These decisions are summarized below in a step - by - step progression.

The shipowner's first step must be to ensure an adequate level of knowledge and expertise among his chosen staff. They should be aware of, and committed to, the goals sought to be achieved through the transition from ocean carrier to multimodal transport operator. If required, they should receive intensive training in any or all of the following:

a) The legal framework underlying the multimodal transport system. This includes national and international laws and conventions.

b) Customs procedures, business procedures, INCOTERMS, banking formalities.

c) The basic techniques of transportation efficiency, viz. -

- maximize capacity utilization, minimize empty haulage for both containers and ships
- undertake consolidation of cargoes moving in small lots
- ensure effective scheduling which calls for optimal equipment in place, sufficient manpower for handling and optimum speed of transport. The golden rule to be borne in mind is that consistent reliable service is often more desirable than the fastest possible service.
- minimize handlings

- use marketing tools effectively - including strategy, market research, customer contact and follow up

- co-ordinate activities within the organization. This may call for development of 'customer service teams' to replace the functional organization. Each team would consist of operations and marketing personnel and would be responsible for all activities related to specific client accounts right from pre transport canvassing to post transport claims settlement.

d) Development of Market Intelligence Systems for customers and competition. Typically, a customer data base should include -

- points of origin, addresses, key traffic contact persons

- commodity flows by traffic lane, including those not handled by the multimodal transport operator

- special equipment needs

- loss and damage experience

- billing and collecting experience

- the shippers' customers, location, contact persons

- special problems

Likewise, a competition database should include

- financial information

- changes in key personnel

- acquisitions and newbuildings
- operational plans

The second step for the shipowner, and one which would make the first more effective, is to identify the trade or market segment where he wishes to serve as multimodal transport operator. With the strategy of 'focus' as his generic choice, ideally he should concentrate on an area where he already has a well established shipping operation. This would give him the advantage of having a base agency network and port/terminal contacts.

Nevertheless, he will require a thorough market research in his chosen trade relating to

- commodities traded
- direction of flow
- frequency
- volumes - total, commodity-wise, shipper-wise, destination-wise
- balance of flows between ports
- requirement of repositioning
- scope for triangularization of routes through feedering and slot chartering arrangements to reduce empty repositioning costs.
- Number of competitors and their activity levels

At the end of the second step, he should be in a position to decide the size and scale of his planned commercial venture.

Having decided on his area and scale of operations, the next (third) step should be to identify the key shippers in the trade. These companies should be investigated in relation to their present method of transportation, freight rates, problems experienced, future plans. After the background study, they should be contacted with a view to enlisting their cargo support, partial if not total. It is essential to have such minimum tie up arrangements prior to commencement of operations in order to create a solid base. These commitments can then be translated into a minimum number of boxes per sailing. This would help to decide the size of ships, frequency of sailings and ultimately, market share.

The next (fourth) priority relates to the upgrading of leasing contracts for containers. It is more economical to commence operations with leased containers, rather than outright purchase, as it reduces the burden of carrying a large inventory. Moreover, outright purchase involves heavy investment as the required container to ship slot ratio is generally 3:1. On the other hand, if leased, containers can be offleased where not immediately required and on-hired where required, thus reducing the incidence of empty repositioning costs. It will not wholly eliminate repositioning costs as the off hire/on hire may not always be possible. Containers may not be available on hire when and where required. Alternatively, low off hire limits may not permit off hire of all empties at a particular time and place. Nevertheless, continuous efforts are essential to minimize repositioning costs as they may amount to more than the cost of ship maintenance. A study carried out four years ago by Drewry Shipping Consultants came to the conclusion that the average expense incurred by a shipping company on repositioning of empty containers was USD 395 per TEU. ("Global Alliances to Share Equipment", October 1995). Careful study should be made of pick up charges (in high demand areas), drop off charges (in low demand areas) and off hire limits being offered in the contracts.

Next (fifth) comes the selection of subcarriers and inland local representatives. One of the major problems in multimodal transport management

stems from the fact that the employee who comes into contact with the end receiver of the service, as for example the truck driver, has a relatively low position in the organisation. Also, he is subjected to minimal supervision during the discharge of his duties. (Coyle et al, 1990, page 423). It is therefore imperative that these "front-line" employees are properly trained to insure against possible ill will among customers. Utmost care must be exercised in the choice of subcontractors and local representatives. Feedback from this front-line group should not only be allowed, it should be actively encouraged. Choice of sub-contractor must also ensure that he is financially secure and has adequate liability insurance.

The next (sixth) consideration for the multimodal transport operator would be the arrangement of efficient insurance coverage, particularly liability coverage. In this respect, he must bear in mind that his liability towards his client will usually exceed his recovery from the actual carrier, where applicable. In some cases he may not be able to recover from the actual carrier at all and may therefore have to bear the full liability. This may happen, for instance, if the sub-carrier becomes insolvent or there are difficulties in proving at which stage of the transit the damage occurred. Another aspect that he must consider is that, in view of the international character of multimodal transport, the chosen insurance company must have international connections and must be prepared and able to settle claims in foreign exchange.

As a shipowner, he will be accustomed to dealing with P&I Clubs for liability coverage. However, these Clubs do not offer 'door-to door' cover as required under multimodal transport operations. That is the domain of the Through Transport Club (TT Club).

The next (seventh) step is the selection of the multimodal transport document. Obviously it has to be one which is acceptable to the trade in general and the banks in particular. For this reason, the chosen document should be based on the latest

version of the UNCTAD/ICC Rules (currently 1980) or the Multimodal Transport Convention, e.g. the BIMCO MULTIDOC '95. It must be borne in mind, however, that the MULTIDOC '95, being based on the UNCTAD/ICC Rules, incorporates liabilities in excess of the Hague and Hague-Visby Rules. Such a contract will not be fully covered by the regular P&I cover. BIMCO's 'COMBICONBILL' (revised 1995) is based on the Hague-Visby Rules and therefore may be considered as a commercial alternative to MULTIDOC.

The multimodal transport operator can also create his own multimodal transport document based on the Rules, but should then refer it to the International Chamber of Commerce, Paris, as a precautionary measure, to check for acceptability and accuracy. A further double check with the TT Club is also recommended.

The importance of the right choice of document cannot be overemphasized. It is this contract that spells out the terms and extent of the carrier's liability. Depending on the method of transport, a number of different international conventions or national laws may apply, either compulsorily or by agreement, to the individual segments of transport. The terms of the contract may therefore vary considerably. It is of utmost importance to study individual contracts carefully in order to asses what liabilities are assumed by the carrier and to ensure that it does not prejudice the carrier's P&I cover in any way. It is also prudent to ensure that contracts with sub-contractors are on back-to-back terms with the multimodal transport document. ("Through Transport", January 1996).

With the operational set up in place, the next (eighth) step is the calculation of costs for the purposes of tariff compilation. Tariff rates need to be set for each loading /delivery combination and preferably maintained on line for ready reference. Each tariff rate must include the following elements:

- All transport costs, including inland and/or feeder

- Intermediary interchange point charges
- Tally, documentation, other miscellaneous charges
- Insurance premia
- Container rentals
- Container pick up and drop off charges
- Container repairs
- Empty container repositioning costs
- Capital costs of equipment
- Overheads
- Taxes
- Profits

(Carl, 1996)

These considerations must be juxtaposed with prevailing market demands - what the traffic can bear, "Freight All Kind (FAK)" rates, "Commodity Box Rates (CBR)", volume discounts.

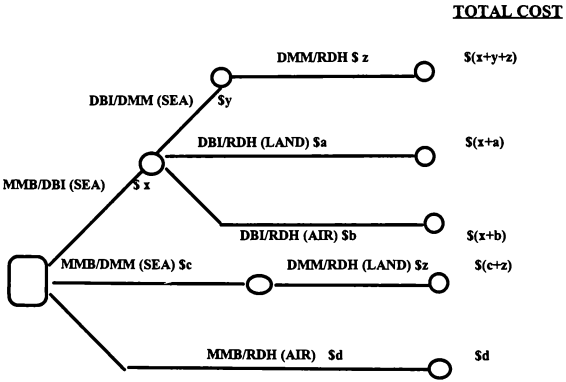
It follows then, that the multimodal transport operator must maintain, and continuously update, an array of stand-alone cost estimates for each transport segment and interchange point on his chosen route. These should, further, be capable of being cost effectively integrated into through transport systems that support the efficient flow of cargoes, translating into time and cost benefits to the customer. The multimodal transport operator should be in a position to combine, match and arrange

the assets at his disposal in mutually harmonious combinations, taking advantage of their synergy.

Given below as illustration, is a Decision Tree Model for a shipment of mangoes from Mumbai (India) to Riyadh (Saudi Arabia) -

FIGURE 3

DECISION TREE MODEL



(i). MMB = Mumbai (Bombay)

(ii).DBI = Dubai; DMM = Dammam; RDH = Riyadh

(iii).$x,etc = cost of the corresponding transport segment

(iv).The words in brackets indicate the mode of transport.

Development of such models incorporating both cost and time elements facilitates quick comparison of alternatives available to the shipper. The balance then is a matter of choice, depending upon which criteria he considers most important.

Step number nine relates to data assimilation, dissemination and the communications network. As a ship operator, he will already have such a system in place, interlinking all his ports of call and agents/branch offices. This must be extended to cover inland points, local representatives and all subcontractors.

As a communications system, EDI is primarily a buyer/seller system, which carriers are adopting as the third party between these two. It computerises and transmits basic documents that were traditionally processed manually - documents like order placement forms, purchase orders, bills of lading, delivery receipts, etc. Successful EDI systems require carrier participation because the shipment flow would otherwise be "blind" to both buyer and seller. When the carrier is linked into the system, all three know where the shipment is at any moment in time. (Coyle et al, 1990, page 434).

Shipment tracing and tracking is the single most crucial application of a computerised data system. It is imperative to establish proper container control right from the start.

Another important computer application is cargo booking and stowage planning. The cargo reservation system must evaluate each booking request in terms of each ship's voyage, the already planned loads, weights and so on. The stowage application must take into account the following considerations:

- capacity utilisation
- stability and balance from stem to stern, side to side and top to bottom

- loading in off-loading sequence
- hazardous cargo and 'special handling requirement' containers to be treated separately and loaded in particular spaces.

Other applications include scheduling, tariffs, billing, freight payments, customer and competition data banks, quality measurement systems.

The final (tenth) step relates to the introduction of a Quality Management system. According to the ISO definition, quality is the sum of the characteristics of a unit with respect to its suitability to fulfil defined and specific conditions. In other words, it is a subjective concept and depends upon the level of satisfaction or utility derived by the ultimate buyer.

Considered as a whole, the strategy of a multimodal transport operator is to focus on whatever it takes to attract and hold a customer. His Quality Management system therefore must be oriented towards the same objective. It should create activity specific controls and checks directed towards bringing under control the technical, administrative and human factors affecting the quality of the service. All controls should be aimed at reduction, elimination and prevention of quality deficiencies - the "zero defects" goal. (Multimodal Transport Handbook, 1995, page 173).

For example, Statistical Process Control (SPC) (Coyle et al, 1990, page 445) is a method of capturing key data in a transportation system and charting it for the purposes of correcting service breakdowns and/or reinforcing proper service attributes. Some elements of service which lend themselves easily to SPC are listed below for illustration -

- reliability of pick up
- transit time reliability

- accuracy of shipment billing and collecting
- loss, damage and related claims processing

Recorded over time, such statistics help to identify the areas where the system is weak. A multimodal operation is basically a chain of transportation and any chain is only as strong as its weakest link. Identifying the weak links in the chain is the first step towards correcting them.

Whatever the controls built into the system, Quality Management requires specific questions to be devised to ensure that planned objectives are being met. A sample list of such questions related to operational and administrative aspects is given below: (Carl, 1996)

Operations

- Quotations to customer right?
- Cargo picked up as demanded?
- Containers carefully stowed and packed?
- Clients kept advised on cargo?
- Cargo delivered as agreed?
- Follow up action?

Administrative

- Quality Management certificates updated?
- Staff aware of need for Quality Management?

- Call Quality Management meetings with management and staff?
- Demand same standards of performance from sub-contractors, local representatives and agents?

In the final analysis, quality is a frame of mind, an attitude, that must pervade the entire organisation - top management, middle management, staff, agents and sub-contractors. This consideration, and its continual application, should bring the multimodal transport operator back full circle to step one - viz. upgrading of staff skills and expertise.

A close perusal of the foregoing paragraphs will yield the inevitable conclusion that none of the steps listed are mutually exclusive, neither is the given order of performance in any way sacrosanct. In actual practice, most of the steps will be performed in tandem, concurrently with each other. The list is, moreover, not exhaustive; the multimodal transport operator will inevitably come across additional bylanes - for example, procedures for registration with the appropriate authorities.

It would also be pertinent to note that this listing is made with reference to the shipowner multimodal transport operator and thus takes certain aspects for granted - for example, the existence of an areawide agency network. For other groups of multimodal transport operators, additional steps will be involved, in keeping with the overall requirements outlined in Chapter II.

5. THE INDIAN CONTEXT

India is a vast and variegated land, covering a total area of 3,287,263 square kilometres. The southern peninsular part of the country, which harbours all the major ports, is triangular in form, tapering off southwards, and constitutes a relatively small portion of the total area. The larger major portion of the land mass constitutes the vast landlocked hinterland of northern India. Indian ports therefore have a massive hinterland to serve, which makes India an ideal arena for a multimodal transport network. However, Indian efforts towards this objective have been hamstrung by myriads of problems.

According to the recent report of Drewry Shipping Consultants (April 1996, pages 3,4), India's total general cargo trade, excluding bulk cargoes and liquids, was around 24 million tonnes in 1995. The total number of containers recorded by the major Indian ports was estimated to be 1,395,700 TEUs ("Codeword: Privatisation", April 1996). Allowing for a discount factor of 15% for transhipment, double handling or double counting and lightweight boxes, the balance works out to 1,186,345 TEUs, which translates into 16,608,830 metric tonnes of cargo (at the rate of 14 tonnes per TEU) or 70% of the total. The Indian government's stated aim is to containerise 70% of general cargo exports by the year 2000. However, the foregoing statistics appear to suggest that this level may have already been attained, even perhaps surpassed. Small wonder then that the effects of underdeveloped infrastructure facilities are already being felt.

According to the Containerisation International Regional Review: India ("A Changing Mix", April 1996), the country's box traffic has more than doubled since 1990 and projected growth rates for the next five years are placed at 15% to 20% per annum. Trade growth over the past year has been estimated at 25% to 30% for exports and 20% for imports. These figures, extrapolated, point to a traffic level of well over three million TEUs being handled by Indian ports by the turn of the century.

Given this projected trade growth, the pressures on infrastructure will intensify unless urgent solutions are implemented. With containerisation an ongoing activity, a further quantum jump in box traffic is to be expected. Although this represents a very exciting prospect for carriers, it also highlights the infrastructure hurdles that such a development will inevitably encounter and the urgency for initiating solutions. Even the conservative estimate of ESCAP points to an increase of 34% in throughput by the year 2000, which would require an additional six dedicated container berths to be built. (Drewry Report, April 1996, page 68). The overall estimate is for a required increase in port capacity to the tune of 80% to 100% over the next six years.

Against this background, a study of India's venture into multimodalism requires, first, examination of the existing facilities.

5.1 THE PORT SECTOR

The physical inefficiencies of the transport system - lack of high grade, high capacity cargo handling equipment, limited berthing facilities and shortage of inland movement means - culminated in one major fall out: port congestion. With this

notoriety, it was not long before Indian ports came to be increasingly sidelined as "direct call" destinations, despite the substantial traffic flows that the country commanded. The Indian subcontinent as a whole became a wayport location with India itself being transformed into a transhipment market. Indian ports came to be treated as some of the many spokes emanating from the regional hubs of Singapore, Colombo and West Asia Gulf. However, the recent past has seen an encouraging reversal of this trend as a number of the world's mega-carriers rethink their policy. For instance, on the West Coast India/Europe route, CMA, Ellerman, Zim Israel Navigation, P&O Containers and the Maersk/Sea-Land alliance have all launched direct end to end services.

It is now up to the country to not only maintain this interest but to develop it further. To this end, the first step must necessarily deal with the 'gateways' of trade - i.e. the ports. Given below are comparative port statistics related to container traffic for the major Indian ports:

TABLE 4

CONTAINERS HANDLED AT INDIAN PORTS

PORTS	1994/5	1995/6 (E)	1996/7 (P)
Mumbai	486,993	500,000	525,000
JNP	244,070	330,000	400,000
Madras	200,386	199,700	258,000
Calcutta/Haldia	117,000	129,000	140,000
Cochin	86,450	95,000	105,000
Tuticorin	57,000	70,000	100,000

Kandla	51,250	62,000	75,000
Vishakhapatnam	11,145	10,000	12,000
TOTAL	1,254,294	1,395,700	1,607,000

1. All figures are in TEUs
2. E = Estimated; P = Projected
3. Mumbai = Bombay; JNP = Jawaharlal Nehru Port

Source: Containerisation International Regional Review: India (April, 1996), page 18.

Trade movement shows a distinctly skewed distribution with 60% of the traffic being handled by the ports of Mumbai and JNP. This skewness needs to be addressed, with Madras being given its due role in consideration of the fact that it is the natural outlet for Pacific Rim countries.

In terms of trade volumes, Mumbai continues to be India's premier port despite being mainly general cargo oriented with a comparatively low draft availability. It is expected to retain this position in the near future with projected throughput of 800,000 TEUs by 1999. Attempts at privatisation in Mumbai have been reasonably successful. APL had been allotted a container berth which it utilised to its fullest capacity; however the lease has not been renewed so far. The State-owned Shipping Corporation of India also has a reserved berth. Shreyas Shipping and X-press Container Lines, both regular feeder operators, also have preferential berthing arrangements. Mumbai shares two problems in common with the other major ports of Madras and Calcutta, apart from the fact that all three are over one hundred years old. One is their urban location, which leaves limited space for further expansion, and the other is lack of adequate container handling equipment. A solution to Mumbai's space problem was the rationale behind the

commissioning of JNP. Of all Indian ports, this port is perhaps the best poised to do justice to the projected traffic volumes, with sufficient room for expansion. Again, a key constraint is availability of additional equipment. Privatisation is now being initiated in an attempt to overcome the chronic shortage of funds for equipment; towards the end of the last year, one container berth had been offered to the private sector on 'Build - Operate - Transfer' (BOT) basis.

Madras, despite its shortcomings, has no challenger to its pre-eminent position on the East Coast of India. Plans are afoot to lengthen the existing container terminal by 200 metres, but a major capacity boost will come with the development of the satellite port of Ennore. In the meantime, in a partial move towards privatisation, priority berthing facilities have been accorded to major users like Bengal Tiger Lines. ("Codeword: Privatisation", April 1996).

Calcutta is a river port and has restricted draft availability. Apart from congested wharves, labour problems have been a recurring obstacle to development. Its satellite port, Haldia, has a slightly better draft and is less congested, with more room for expansion. Two new berths are presently under construction.

Cochin was the first Indian port to handle containers way back in the eighties but subsequently lost its lead due to poor labour relations and lack of investment. However, it is back in the reckoning now with a new container facility inaugurated in 1995 and further plans on the anvil. Tenders are also being processed for a new container facility at Vallarpadam directly across the harbour from the present facilities with private sector participation.

Kandla is the preferred port of shipment for the trading community in the northern hinterland due to comparatively low costs of handling, transportation and storage. However, the port has an endemic congestion problem, which appears likely to spill

over into the next century. Kandla has already joined the 'privatisation' effort; one bulk cargo berth has been allotted to a private operator.

Tuticorin may well prove to be the dark horse on the Indian container ports firmament. It has been providing surprisingly efficient service and quick turnaround despite having no gantry cranes and being a shallow water port, both of which require calling vessels to be self geared. Plans have been cleared for dredging and construction of a gantry equipped container terminal.

From the multimodalist's point of view, an analysis of the facilities offered by the ports is incomplete without consideration of their inland connections. On this basis, Mumbai comes through reasonably well, followed closely by JNP and Madras. All these ports offer both road and rail connections to various hinterland destinations. Kandla is well connected by road but rail connections are almost non-existent. Cochin has linkages mostly within South India, as does Calcutta within East India. The available transport base is far from adequate and the overall networking leaves much to be desired.

5.2 THE RAIL SECTOR

As in the US, in India, too, the long distances involved make the rail option financially viable and attractive. In recognition of this, the Container Corporation of India (CONCOR) was established in 1989 as a wholly government owned undertaking, to set up and operate ICDs and to operate block train services between major ports and ICDs. The organisation has been successful, both financially and operationally, and has given a tremendous impetus to the process of transport networking. It has pursued an aggressive policy of expansion to cater to hinterland

demands for both international as well as domestic traffic. ICDs are currently operational at several places - Delhi, Bangalore, Ludhiana, Coimbatore, Ahmedabad, Hyderabad, Guwahati, Guntur, Pune and Varanasi. New facilities are planned at 16 inland destinations including Nagpur, Gwalior, Rewari, Agra, Aurangabad and Balasore. CONCOR has also initiated plans for setting up an ICD in Nepal in collaboration with the Nepali government, since India is that country's main gateway to international trade. ("Intermodal Opportunities", April 1996).

However, despite its undoubted success, CONCOR has not been able to rise above the inherent inefficiencies of the country's transport system. A telling comment was made during discussions with Maersk officials when they spoke of the delays suffered in transporting containers from JNP to ICD New Delhi. They remarked that their experience in multimodal transport in India had been far from satisfactory and that they had no plans at present for direct involvement in its development. They are also not involved in the joint venture that their global shipping partner, Sea-Land, is planning with an Indian company, Mahindra & Mahindra, in this field.

Even more telling is the report of the Indian Ministry of Commerce on this subject, which states emphatically that Indian inefficiencies in this area have resulted in raising inland transportation costs.("Indian Inefficiencies Raise Costs", January 1996). According to this report, the total cost of shipping a container from ICD Delhi to Europe is USD 1760; of this, inland haulage from the ICD to the gateway port, Mumbai, alone accounts for 30%. The total transit time is 28 days, of which inland haulage accounts for 10 days or almost 36%. For a similar shipment on the ICD New Delhi/Singapore route, the inland haulage accounts for 45% of the total cost and 10 days (62%) of the total 16 days transit.

The concept of 'liner trains' implies synchronisation of vessel and train schedules to avoid idling of the boxes. This has not been built into the system. The

rail car fleet stands in urgent need of modernisation to accommodate linertrains and double stack carriage. The present fleet is restricted to a payload of 16 tons per axle due to track and bridge limitations. Outdated vacuum car brakes limit train length and speed - the average flat car has a payload capacity of 42 tons and the average train length is 32 to 45 FEUs. Overhead clearances pose another problem. (Sinha, 1994).

Inspite of the obvious difficulties involved, perhaps sensing the tremendous potential available in this field, the private sector has responded with alacrity to the recent liberalisation of rail transport. Mahindra & Mahindra has entered into a joint venture with US intermodal giant, CSX Corporation to provide road haulage and container block train services, focusing initially on the ICD Delhi/Mumbai route. It also plans to be involved in setting up ICDs and in port management. Since the Sea-Land/Maersk alliance has recently launched a WCI/Europe direct shipping service, for the US company at least, the two moves are probably planned on a "mutual benefit" principle. Kirloskar, another Indian industrial group, is proposing to set up a RoadRailer service, again on the ICD Delhi/Mumbai route, in association with Wabash National Corporation of the US. ("Intermodal Opportunities", April 1996). The RPG group has started container leasing activities in India through its financial services arm, Ceat Financial Services Ltd (CFSL). It will concentrate on the finance and long term leases in the domestic and overseas market. By joining forces with large established transport companies in India, CFSL plan to establish a chain of depots with state of the art handling, repair and communication facilities along major transport corridors thus facilitating efficient distribution and transhipment. ("Container Leasing in India", 1996).

As mentioned earlier, rail is of prime importance in India because of the vast distances involved. At 62,400 kilometres, India has the third largest rail network in the world. (Drewry, 1996, page 71). It is also the more economical and environment friendly option. However, as is the case with most developing countries, Indian

railways consider the passenger segment their primary service target. They therefore have limited rail space or rail time to spare for freight traffic. Massive investment is required in laying new tracks, acquisition of equipment and setting up of facilities in order to fortify rail as an effective contributor to the multimodal experiment.

5.3 THE ROAD SECTOR

India possesses an extensive road network, the second longest in the world (1.843 million kilometres). (Drewry, 1996, page 71). Successive governments at the Centre have followed a consistent policy of trying to connect all villages and remote areas to nearby towns and market centres. Industries are also well dispersed in the hinterland and not confined to coastal areas, with the various State industrial development corporations ensuring that the basic road infrastructure is made available to them.

Roadways in India are categorized as national highways, state highways, district roads and village roads. Construction and maintenance are largely the responsibility of the respective States. However, for national highways, the Central Government provides supervisory and financial assistance to some extent. Barring national and State highways, almost all other roads are of single lane width, with a maximum axle payload of 7.5 metric tonnes. (Sinha, 1994). Poorly maintained in the first place, seasonal monsoons wring a heavy toll, with a number of them being reduced to slushy stretches. Hazardous driving conditions, broken axles, traffic bottlenecks and pollution are all customary 'perils of the road' for India.

Road haulage plays a complementary role to rail transport. Containerised multimodal transport using road as a feeder link from factory to rail terminal and

from railhead to consumer has proved to be the most effective method of distribution. Studies in Europe have shown that for long distances exceeding 800 kilometres, road transport loses its competitive advantage; rail is much more economical. ('Europe's Intermodal Cure', October 1995). In India, this effect is aggravated by the poor road infrastructure.

5.4 COASTAL AND INLAND WATERWAYS

Coastal and inland water transport is in its infancy and, to date, has made little impact in domestic cargo transport. The Central Inland Water Transport Corporation (CIWTC) was established in 1967, presumably to address this problem, but has not been very effective. India has 10,211 kilometres of navigable waterways, excluding coastal seas, of which only 2,000 kilometres are presently being utilised by mechanically propelled vessels. There is no uniform marking of navigable channels and no standard "Signs and Signals" system. "Rules of the road" for inland waterways are made by different authorities in different States. Vessel Construction and Survey rules also differ from State to State. There is no uniformity in manning and certification requirements for operators of these vessels and no facility for their formal training. Harmonization of rules will require training in all these concepts, as also in the use of various equipment available for life saving, fire fighting and pollution prevention. Training programmes must also be geared to overcome the inevitable language problems, in view of the multitude of languages and dialects spoken all over the country. (Ganguli, 1988)

Most of the major river systems in India feed ports on the eastern seaboard. As the country's landmass slopes gently from west to east, almost all rivers flow in the same direction into the Bay of Bengal. Only two rivers, the Narmada and the

Tapi, flow westwards into the Arabian Sea. On the other hand, as already seen earlier, almost 60% of the country's container trade is routed through two ports on the west coast - Mumbai and JNP. For these ports, as for other areas along the coast, river transport is not an available option. They have to depend on land transport or, alternatively, on coastal shortsea shipping.

The latter refers to transportation by ship over relatively short distances, generally following the coastline and with a high frequency of port calls. An established well organized shortsea shipping system creates what is called the "coastal superhighway". Since vessels on such a run frequently hop in and out of ports, it is also referred to as the "port hopper" service. Shortsea shipping caters to three markets - the feeder market, the "door to door" multimodal market and the purely coastal market. (Wijnolst, Sjobris, Peeters, Verbeke, Declerq, Schmitter, 1994, pages 5,13).

There are at present, no dedicated coastal services operating on the Indian coast. Feeder services connecting Indian ports to the main trade lanes use Singapore, Colombo or UAE ports as regional hubs. Coastal shortsea shipping therefore has a lot of scope for development in India.

Promotion of shortsea shipping should go hand in hand with development of inland waterways; both modes are complementary and contribute in a similar manner to the development of environment friendly transportation. It is essential to enhance the accessibility of inland waterways for shortsea shipping vessels in order to stimulate the use of sea-river combinations. This will require careful study and selection of the right type of vessel, establishment of uniform rules, regulations and codes for operation, creating a network of ports capable of handling containers along the rivers and along the coastline and a well organized training programme. The focus should be on efficient integration of these two water based modes of transport.

5.5 THE LEGAL FRAMEWORK

The Indian Multimodal Transport of Goods (MMTG) Act of 1993 is in place, one of the few national acts to legislate specifically on this issue, particularly in a developing country. However, it has been the subject of some controversy. The Act is based on the Multimodal Transport Convention, thus incorporating the Hamburg Rules, which India has not yet ratified. Normal bills of lading are based on the Hague Visby Rules; this creates an anomalous situation for the carrier with regard to the different liability regimes applicable.

Another major problem is that the Act does not extend to imports and does not cover shipments by air. These omissions appear to be inadvertent and proposals for amendment are straightforward.

Furthermore, some of the definitions given are not specific enough to satisfy trade and changes have been recommended by both the shipping community and the shippers' federations. Since the changes are based on the Hague Visby versus Hamburg Rules controversy, no final decision is likely in the short run.

A further point of contention was the stipulation that only an enterprise registered as a shipping company or a freight forwarding concern in India is eligible to register as a multimodal transport operator. This problem, however, has been overcome through the joint venture arrangements that have since been so registered. Another aspect perceived as a stumbling block is the "annual turnover" requirement for registration. This has been stipulated in Indian currency, which means that the applicable limit would change as per currency fluctuations, particularly in case of foreign collaborations.

The Act also requires modifications to be made in the Indian Customs Act. In fact, operation of a fullfledged multimodal transport network would require substantial changes in the regulations and requirements of the Indian Customs, which are presently hamstrung by elaborate documentation and heavy inspection procedures.

For these and other reasons, the MMTG Act has not been implemented so far. A number of proposals and amendments are under consideration and results are awaited. (Sinha, 1994).

5.6 THE MULTIMODAL TRANSPORT OPERATORS

A number of companies have registered themselves as multimodal transport operators under the MMTG Act of 1993. However, very few have the capacity to influence multimodal transport development in India or, indeed, to function as multimodal transport operators in the fullest sense.

The companies that appear to have the maximum potential are both public sector concerns - the Shipping Corporation of India (SCI) and CONCOR. Both are transport providers in their own right - SCI in shipping, CONCOR in rail transport. One major feature that is common to both, apart from their ownership, is their extensive country wide penetration. Obviously, CONCOR has the advantage in this case since SCI has to depend on CONCOR's facilities or road transport for inland transportation. However, SCI enjoys by far the greater advantage in its international status and world-wide coverage.

Shreyas Shipping, along with its nvocc sister Balaji Shipping, may be another contender. They are subsidiaries of the Dubai-based Orient Express Lines Inc. Shreyas is presently operating feeder services from major Indian ports to the regional hubs of Colombo and the UAE. Of late it has been expanding its activities and consolidating its position in its niche.

CFSL, as reported earlier, is planning to enter the field of container leasing and finance. It aims to secure a dominant position in not only the domestic market but also in the emerging markets represented by multimodal transport operators in the Indian subcontinent. Their strategy is to offer a well-planned repositioning and feeder service covering major corridors, for GP and reefer boxes, which should significantly reduce repositioning costs to the carriers. They intend to set up joint operations with established transport companies, creating a network of centres offering handling, repair and communication facilities at key locations.

Natwar Parikh Ltd., originally a trucking company that expanded into nvocc and multimodal operations, has also established offices in Europe.

In addition to the above, there are also the foreign/Indian joint ventures reported earlier - CSX/Mahindra, Wabash/Kirloskar, the Nepal government/CONCOR.

5.7 SUMMARY

Potentially, the greatest problems for India lie in the port sector, particularly if trade growth emulates projections. In fact, as stated in the Drewry Report (April, 1996), the real fear for India is not that trade will not materialize as projected, but that the country's ports will be found inadequate to provide the capacity demanded.

The resultant chronic congestion will lead to Indian ports being marginalised in the international trade lanes while Indian cargoes will be siphoned in and out through various feedering hubs.

Although Colombo and Karachi lead the way at present in South Asia, the future of the region lies undoubtedly in the Indian ports. India is where the majority of the regional cargo will originate or be destined to and the degree to which Indian ports can rise to meet this challenge will determine their future position in world liner shipping. A failure to meet the challenge now will condemn the country indefinitely to a role as a satellite of Colombo/Singapore/UAE ports.

The sheer size of India, her population and, in consequence, her trade will ensure that the country merits consideration in any analysis of world trade. However, if the country is to consolidate its "main haul" status in container shipping, as justified by its trade volumes, then significant changes need to be implemented fast. Creation of additional handling capacity in ports is one part of the solution. It also requires establishment of additional ICDs, more extensive road and rail connections and implementation of the 'linertrains' concept, perhaps through a collaboration between the state owned enterprises, SCI and CONCOR. Connections between ports, through rail and shortsea shipping systems, need to be enhanced; for instance, a landbridge between the east and west coasts, between Mumbai and/or JNP to Madras and/or Calcutta could cut voyage times by two days if effectively implemented and would be a boon to container repositioning. Such a system may give rise to some initial disputes as one port may gain traffic at the expense of the other; nevertheless, it is worth consideration. Dedicated freight corridors should be considered between terminals and rail/road connections to ensure smooth flow of container traffic. This will be very difficult for ports like Mumbai and Madras, which are situated within large commercially active urban centres; but the option must be explored. Development of coastal shortsea shipping with small feeder vessels or ro-ro vessels should be actively encouraged by the authorities. Due

consideration must also be given to tariff structures, customs requirements and the formalities required at the transport interchange points.

For multimodal transport in India, the basic infrastructure connecting the hinterland to the coastal gateways is in place. It only needs to be upgraded to make it 'container friendly' and more amenable to networking for multimodalism.

Any study of an integrated transport system would be incomplete without due consideration of the trading activity which spawns it. India's international trade figures and projections have already been examined at the commencement of the chapter. It would be pertinent to have a look at the trading environment also.

From the global standpoint, for some time now, the World Trade Organisation has been forcefully pushing for the total abolition of barriers to free trade and has thus bolstered the global trend towards economic liberalisation . There is an emerging consensus against the introduction of social issues, which has been a major contentious point in the past. The scene is therefore set for a quantum jump in the total volume of international trade.

As far as India's own trade is concerned, there are no indications of any radical shifts in the geographical patterns of import and export movements. As India resumed political relationships with Israel and South Africa, new trade avenues have opened up in these areas. Future trade patterns are likely to favour the South East Asian region, particularly if full membership of the ASEAN trading block materialises.

In India's immediate neighbourhood, in South and South East Asia, there have been overwhelming changes in the pace and pattern of economic development, with liberalisation the catchword of the day. Regional co-operation has been gaining increasing acceptance; collective action through regional organisations, like the Association of South East Asian Nations (ASEAN) and the South Asian Association

for Regional Co-operation (SAARC), is considered indispensable for future growth. India has 'observer' status with ASEAN and is a full-fledged member of SAARC.

Interestingly, in recent months, SAARC countries have been working on methods for the establishment of an integrated transit system for the seamless movement of goods within their own boundaries. At the group's initiative, a survey was recently conducted by the New Delhi based Institute of Economic Growth; the outcome was a report recommending the establishment, by SAARC countries, of a regional transit network with designated sea ports, airports and road routes between these nations - India, Pakistan, Bangla Desh, Nepal, Bhutan, Sri Lanka and the Maldives. As a follow up to the study, SAARC members have agreed to set up an inter-governmental group of experts to prepare a comprehensive report on the proposed transition of South Asia from a preferential trade area to a free trade area. ("Indian Ocean Trade Grows", December 1995).

There have also been proposals to create a regional trade grouping of the Indian Ocean rim countries. If it materialises, this has the potential to be an impressive trade network, extending from the West Asia Gulf countries in the north to the islands of Mauritius, Seychelles and Madagascar in the south, and from the East African states in the west to the Indian sub-continent nations in the east. Transport networking over such a vast region is a staggering idea and would represent a major feat.

6.CONCLUSION

International multimodal transport is essentially governed by the same set of underlying economic principles as its domestic counterpart. The difference lies in that the former is not, and cannot be, insular in nature, seeking "protected industry" status or government subsidies for survival. True, a country may provide safeguards for its cabotage trade or cargo support in some form to its national operators. But in the ultimate analysis, the system has to stand for itself. The multimodal transport firms that it encompasses must therefore constantly monitor changes in operational features, domestic and global, and in international policies to ensure they retain an "at par" status with the rest of the world.

It is imperative for the multimodal transport operator to build a network capable of meeting his service needs and to be able to monitor each aspect of it. It cannot be denied that the shipping company, with its international orientation, is in the best position to undertake such constant monitoring. This is particularly true in the case of developing countries, where the transport industry is not yet fully mature. Having said that, it must also be stated that other companies, notably those set up as International Management Companies (IMCs), can develop the required attributes to provide an effective alternative.

Successful multimodal transport operation depends entirely on the extent to which it facilitates through transportation. It does not necessarily have its rationale

in cost savings. Increase in multimodal transport services is not likely to result in significantly lower prices; fuel and other costs are likely to preclude this.

The fate of multimodalism lies in the hands of the multimodal transport operators who implement the concept. In industry, today, the trend is towards specialisation, where companies are increasingly seeking to confine themselves to their "core activities". Multimodal transport is, in essence, a contradiction of this trend. How realistic is it to expect one multimodal transport operator to accept responsibility for a variety of transport modes, regardless of the synergetic inter-relationship between the modes?

The answer to this question has a very shaky foundation; it is based on the attitude of the potential multimodal transport operator towards the responsibility of transport and the confidence he reposes in the multimodal transport networks at his disposal. His perception of the risk level involved will depend upon the extent of development of the various transport modes. If he considers the attendant risks to be within acceptable parameters, he will be willing to accept responsibility for the entire through transit and multimodalism will thrive. This is the situation in developed countries today. With their well developed, organised infrastructure in all modes of transport, multimodal transport is in its element.

In developing countries, the situation is in stark contrast. Basic transport infrastructure is in varying stages of development in the different modes and modal networking is a difficult proposition. Container tracking is often impossible in the hinterland. Under the circumstances, few firms would be willing to undertake the responsibility for the entire through transport chain. Multimodal transport does exist in these countries, but in its earlier segmented form. With capital resources scarce and transport a low priority in planning, the current situation seems doomed to continue well into the next century.

For the economies in transition, the situation is slightly different. Here the basic infrastructure is in place for all elements of transport - land, air and water; it only needs to be upgraded to meet the demands of networking. Multimodal transport operators may be willing to invest in the upgrading in order to then make use of the facilities to start up their own transportation networks. The attitude towards accepting responsibility for the whole transit is likely to be more forthcoming. This is the stage where national governments, while supporting the development of multimodal transport, will step in to regulate operations in the field. This is to ensure that domestic firms can also have the opportunity to gear up for the competition.

It appears therefore that, for some time to come, multimodal transport will probably be restricted to certain regions of the world or to small pockets in others. For the multimodal transport operator, the key to success will lie in the flexibility of the service that he can offer in different regions of the world to his clients. He will have to bear in mind that, in the ultimate analysis, multimodal transport requires "intensive management focused on six points: designing appropriate services for the market place, offering services at the right price, maintaining and constantly improving quality, being attentive to customers' productivity, doing all of these first and doing them all of the time."(Coyle et al, 1990, page 470).

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