CHAPTER - I

NATURE AND IMPORTANCE OF THE SHIPPING INDUSTRY

Ocean transportation as a term is often used synonymously with the shipping industry, in transport literature. In shipping circles, the term transportation merely refers to the carriage of goods by water—the service afloat. However, the term shipping industry is broader in its connotations, and includes not only the ships afloat with cargo but also many shore activities that service the ships. Likewise, shipping men very often use the terms shipping industry and merchant marine interchangeably, though the latter is usually defined as commercial ships of a nation, privately or publicly owned, as distinct from the navy.

Since shipping like any other form of transportation, does not produce anything tangible and provides only the service of transporting goods and passengers, that is an adjunct in the general process of production; it did not receive the status of an industry for quite some time at the hands of orthodox theoreticians engaged in verbal niceties. Ocean shipping, by providing transportation service creates place utility, and the modern high speed vessels which command higher freight rates also create time utility. It, therefore, adds to the time and place value of the material wealth produced by other shore industries. "In some relatively
rare cases, ocean transportation also creates form utility; an example of this is when wines or distilled spirits are placed in a vessel for a long voyage, because of vessel's motion, expedites the aging process."

**Its Importance as the Carrier of the Sea Borne Trade of the World**

The modern shipping industry constitutes a family whose members are many and of varied types. It includes large luxury passenger liners, tramp vessels, passenger cargo vessels, dry cargo ships, refrigerators and refrigerator ships, oil tankers, ore carriers etc. This complex amalgam of the merchant marine provides a pipeline through which three-fourths of the world trade passes. "International shipping is rooted in the necessity for large scale exchange of basic commodities between the peoples of the earth; passenger travel may be curtailed without serious national consequences, interference with the movement of overseas mails may now be mitigated by cable and radio communications and by air transport, stoppage of the transborder movement of finished product would react unfavourably on both the exporting and the importing country; but stoppage of the world flow of basic commodities would have

a paralysing effect on the progress of nations ..... (It is
the carrier of basic commodities in large quantities and at
low rates which renders possible the concentration of materials,
machines and men at strategic points where this combination
may most efficiently produce an industrial product, it is
the refrigerator ship which makes the food products of one
area the daily diet of the world.)* ("For centuries, the
ship was the main instrument of commerce and communications
between nations. Today three-fourths of the trade among
nations is transported by water. To this would be added an
enormous additional tonnage if inland water way, river, and
canal and Great Lake traffic were included. Many countries
and geographical areas are noncontiguous, separated by broad
expanses of water, and the principal means of contact remains
the ships.+"

Other Functions:

The foregoing paragraphs highlight the important function
shipping renders in the overseas trade of a country. Its
second important function is to provide transport facilities
coastwise and thereby to supplement internal communications
provided by roads and railways. As a matter of fact, "prior
to the railway age, the coastwise shipping activities rivaled
that in the overseas trade in importance". @ It is therefore

* Report of the Reconstruction Policy Sub-Committee on Shipping,
1946, p.2.
+ Ocean Transportation by C.E. McDowell, H.M. Gibbs, p.2.
@ The American Maritime industries and public policy, 1739-1914,
by John G.B. Hutkins, p.5.
not surprising that shipping has played an extremely significant role in the development of the internal transportation system of many maritime countries of the world.

**Carriage of Mails and Passengers:**

The third important function of shipping is to provide rapid, frequent and dependable mail service, the importance of which cannot be exaggerated in the consistently interdependent world of today. "In the eighteenth and the early part of the nineteenth century, the British Government provided, first, royal sailing packets, and later, steamships, expressly for both the imperial and foreign postal services. This policy gave way to that of subsidising fast steamships in the second quarter of the later century. The demand for improved communications, indeed was an important consideration causing adoption of subsidy systems by almost every maritime nation." *Obviously the public, the Government and the businessmen have a vital stake in carriage of mail by sea.*

**Its Role in Defence of a Country:**

Besides these normal peacetime functions, shipping has played an important role in the defence of a country, in the past. In the modern times, with the development of totalitarian warfare involving intricate long range economic planning, shipping as well as shipbuilding have assumed considerable importance. Merchant ships are necessary in any military

* Ibid, p.6.*
operation, involving ocean transportation both as transports and carriers of military supplies. "Secondly, the merchant marine must be relied upon to maintain overseas transportation services in time of war in order that essential war products, industrial raw materials and other cargoes may be imported and cargoes of export goods may be shipped, out to pay for the imports and to relieve certain markets from glut."* The availability of sufficient supply of tonnage, therefore, is the major responsibility of the shipbuilding industry in times of war. Thirdly, since shipping services are more flexible than roads or railways, the merchant shipping can supplement and relieve the internal transportation system which becomes generally overloaded with traffic, during wartime conditions. Fourthly, the merchant vessels can earn substantial foreign exchange particularly in wartime when the freight rates remain at a high level on account of increased demand for transport services. However, the vessels of belligerent countries are obviously at a disadvantage. 

✓ The merchant marine is very rightly considered as the fourth arm of a country, since it directly contributes to its naval power. "For instance, venetian galleys and round ships, the Portuguese, Dutch, and English East Indiamen, and the Spanish plate ships were all vessels of considerable naval power and frequently saw action."+ However, in modern times,

the vessels of war have become highly specialised and it has become rather difficult to construct merchant ships of similar design. Therefore, their importance as combat units has declined. But as supply ships and special service vessels, they have acquired added naval value. So long as war is a possibility, the merchant fleet of a country will have to be looked upon as the necessary adjunct to the navy.

Characteristics of the Shipping Industry:

Cheapest Mode of Transport: It is necessary here to examine the economic characteristics of water transport in general and the shipping industry in particular. "Throughout commercial history, water transport has been cheaper on the whole, than land transport. The reason is obvious—the land road has to be constructed, often by great labour and expense, and it has to be kept in repair, or sooner or later, it will become impossible. Nature and time may cause modifications in the water road, but, in the main, it changes little during the history of a nation; it enjoys a permanency foreign to human attempts at road making on land. The modern example of this can be illustrated by contrasting the capital outlay required for a railway company and a steam company". The largest railway company in the United Kingdom has a capital of 448 millions sterling, and the capital of the four great companies is 1126 millions sterling, but there is not a single British shipping company whose capital is more than
20 millions sterling, and returns relating to shipping, published in survey of shipping in January 1944, showed for 57 companies a total capital of 90\(\frac{1}{2}\) millions sterling. The cause of this great difference is the cost of acquiring and constructing the track, a permanent way. For example, 852 millions sterling has been spent on acquiring and equipping railway lines open to traffic in this country. It is not surprising, therefore, that primitive man chose the water rather than the land route when he had to the chance, and that he first applied himself to the provision of a suitable water vehicle. * This was the position two decades back. Since then, though there has been a general rise in the cost of capital investment, of all the three forms of transport, viz. road, railways and ships, the relative difference in the capital outlay involved for water transport on one hand and the roads and railways on the other is unlikely to change in favour of the latter. In fact, water transport is considered the most economical form for bulk transport. * During world war II, the U.S. Office of Defence Transportation developed figures on the costs of moving crude petroleum per thousand ton-miles. The results were as follows:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Cost per thousand ton-miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck</td>
<td>$61.25</td>
</tr>
<tr>
<td>Railroad</td>
<td>$16.95</td>
</tr>
<tr>
<td>Pipeline</td>
<td>$3.44</td>
</tr>
<tr>
<td>Ocean Tanker</td>
<td>$0.82 (^+)</td>
</tr>
</tbody>
</table>

* Transport, its history & economics, by A.D. Evans, pp. 1-2.
+ Ocean Transportation, by McDowell & Gibbs, pp. 2-3.
This is made possible because water is a gift of nature which requires comparatively, very limited outlay to be made serviceable. Likewise, the ports and harbours are also gifts of nature. However, their equipment and maintenance involve considerable investment of capital, which is partly recovered, by laying port dues, by the state or the port trusts authorities. In view of the growing volume and value of modern seaborne commerce, this outlay on ports which does not fall directly on the carrier is comparatively very small.

The Cost of Ships in Proportion to Business Done:

The cost of ships in proportion to the cargo or passengers carried is comparatively small. "The old time sailing vessel was built for what we would now regard as small-scale business, though even that was large-scale when compared to carriage by human pouters as pack animals. Ships for deep rivers or ocean transport are now built in large unit sizes and are very costly. But in proportion to the quantity or numbers carried, the cost is small. Initial capital outlay, therefore, for this form of transport service is, compared to others, economic. Its only disadvantage is that it is fixed by nature along given lines and can be used only where the natural gift is in existence." Human ingenuity and effort can, no doubt, make canals, and join rivers as well as oceans, e.g. by the Suez or the Panama canals. But the scope for these is limited by geography and available quantity of
water in a river."* However, the maintenance cost of a steamship is substantively higher than the old time wind-jammer, but the increasing substitution of oil for coal leaves a much large space for payload. Saving in labour cost can also be realised. "The economic and profitable management of shipping enterprise thus becomes a matter only of securing adequate cargo or passengers."* 

**Advantages Over Other Means of Transportation:**

The risks of water carriage and physical hazards resulting into shipping losses, so common in by gone days, are

* INSDA - Memorandum to the Fiscal Commission of 1949, pp.2-3.
+ "The time occupied in filling bunkers is reduced to a very large extent. The absence of coal dust does away with a great deal of labour in cleaning the ship. The steaming efficiency of oil is much greater than that of coal so that fewer boilers need to be used for maintaining the same speed, as when coal is used. Furthermore, a great reserve of power can be kept in hand to make up for lost time by reason of bad weather, or other adverse conditions; or else a higher speed can be developed. The number of hands on the stoke-holds was reduced (in the Mauretains) from 328 to 90, and off course, the laborous and heavy work of the stoker disappears". Transport, its history and economics, by A.D. Evans, p.80.

© INSDA - Memorandum to the Fiscal Commission of 1949, pp.2-3.
effectively guarded against by technical means as well as by insurance cover. With the result that they no longer constitute a serious disability of the shipping industry. "Erection and maintenance of light houses and life boats; buoying of channels, and provision of suitable dock facilities or loading and unloading equipment are all liabilities of the state, which a modern country has to maintain for its own reasons. Sea transport (therefore) today is much safer from the point of view of accidents; and speed is no less, nor is regularity of service lacking compared to even mechanised road transport. The terminal costs of ports and storage tend to increase. But even these do not make water transport costlier per unit".*

Another sphere in which water transport enjoys a comparative advantage is the expenditure of energy in propelling the vehicle. "It is estimated that on a good wagon road a single horse power will drag about 3000 lbs. at the rate of 3 feet per second; on a railway about 30,000 at the same rate; in water as much as 2,00,000 lbs."+ This, very obviously is on account of less resistance of the medium through which the vehicle is propelled. "But besides the initially lower expenditure of energy, there are other advantages in favour of water transport on the high seas which necessarily leave the balance of advantages in its favour, so that wherever the alternative is at all possible the business will preferably

* Ibid, p.3.
+ Handbook of Commercial Geography: Chisholme, Introduction, p.XXXIV.
go to water carrier. For on land, inspite of the most laudable exertions in recent years for constructing through transcontinental routes, there is almost everywhere the difference in gauges and the barriers of frontiers and custom houses, which necessarily demand a break of bulk or of run to the grave prejudice of the economics of the carrying business. * (The latter hinderance are not completely conspicuous by their absence in water transport. However, their occurrence is the minimum possible). "On sea, there need be no such break of bulk provided those who manipulate and understand the practice and the art of properly stowing the cargo in the most effective and the economic manner, a modern ship can be made to serve almost as well for small as for large scale operations. The railroad, moreover is fixed and can take goods only along the given route. The steamer is free of the seas, except in war time when great naval powers try to restrict the freedom of the seas. ** An unduly large steamer may, indeed, be

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* Trade, tariffs and transport in India, by K. S. Shah, p. 411.
** The oceans provide the greatest highways of international trade, which, from port entrance to port entrance are free and open to all who observe the international rules of the road at sea. Although, ocean traffic follows certain definite routes, no nation, and of course no company, can convert any route into an exclusive right of way, such as railroad corporation possesses. A few short sections of some
restricted in its trading radius between ports where there are adequate facilities of dock-room and loading apparatus at considerable cost. The Suez canal and the Panama canal, besides, have imposed definite limits on the size of the ship that could participate in the trade going through these channels though the limit is large enough to exclude only the largest vessels afloat.*

Limitations of the Industry:

In spite of so many factors in favour of water transport that make it the cheapest and the most convenient mode of transport, the actual operation of the shipping industry is far more complex. This is ordinarily not conceded or appreciated. A ship is often called a 'floating factory' for whose maintenance, it is necessary to have adequate complement of competent staff, a network of worldwide agencies to secure the traffic, insurance service to protect the ship from marine hazards, and satisfactory repair and terminal facilities.

Joint Costs and Scale of Operation:

The shipping industry like other forms of transport is characterised by the principle of joint costs which was noticed first by Prof. Taussig. The element of jointness in shipping expenditure comes in many ways unlike other modes of transport. Firstly, in a single voyage a ship carries a variety of cargo, and the cost of this common service has to be apportioned to different types of commodities. Secondly, the possibility or otherwise of securing return cargo also influences the rates charged for outbound and inbound cargoes. Obviously it is desirable for a vessel to be fully loaded and for that purpose it has to engage itself to a triangular or more circuitous voyage. This has resulted in the round the world operations of several lines. Therefore, from the starting point of the ship's journey to its final return to that point, constitutes one whole unit of service whose cost has to be jointly borne by several commodities. Thirdly, "... (the) element of jointness generally of less significance to most other types of transportation, is the stowage factor or the relation of a cargo's weight to measurement. For a ship to operate at the greatest advantage it should be loaded so as to be 'full and down', that is, it should be loaded to its full capacity to the railway and the ocean highway".

Johnson-Heubner, "Principles of Ocean Transportation".
carry weight and at the same time to its full cubic or space capacity. A vessel with a cargo of iron and steel products may be submerged to its Plimsoll mark (legal depth), while much of its space remains empty. On the other hand, a vessel may fill its holds with a light-weight commodity, such as loosely baled cotton, and still retain unusual, considerable lifting capacity".*

Fourthly, it is also very important for a liner with a fixed schedule to secure adequate cargo. Some shippers may require more frequent service although they may not be in a position to provide sufficient cargo. Others may provide a large volume of business only at certain intervals of time. A ship, which can secure, adequate quantity of cargo regularly for its scheduled sailings will be able to quote lower rates for all commodities then the one required to sail at certain seasons with unused space and weight capacity. "Such cargo complementarity is another instance of jointness and is well illustrated by the


A variety of stowage factors is illustrated by the following:

<table>
<thead>
<tr>
<th>Commodities</th>
<th>Cubic ft. space occupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One ton of lumber</td>
<td>80</td>
</tr>
<tr>
<td>2. One ton of wood pulp</td>
<td>45</td>
</tr>
<tr>
<td>3. One ton of canned goods and dried beans</td>
<td>55</td>
</tr>
<tr>
<td>4. One ton of iron steel bars</td>
<td>15</td>
</tr>
<tr>
<td>5. One ton of iron and steel pipes</td>
<td>36</td>
</tr>
<tr>
<td>6. One ton of lawn movers in boxes</td>
<td>71</td>
</tr>
<tr>
<td>7. One ton of oil prints in barrels</td>
<td>24</td>
</tr>
</tbody>
</table>
operations of some industrial carriers whose efficiency of operation is improved by the existence of a predictable and steady volume of proprietary cargo."

This element of joint costs in shipping industry imposes a compulsion to have some minimum scale of operation. "The joint costs of production of transport requires (moreover), a large capital outlay which in turn requires large scale production if sufficient returns are to be obtained." However, in other forms of transport and particularly in railways the compulsion of joint costs is tempered by a relative flexibility in its operation. If the traffic offerings at a given time is less than the capacity of a goods train, a few wagons can be detached and can be placed on crowded lines. This facility is non-existent in the case of shipping. A ship has to move as one unbreakable unit irrespective of the availability of the traffic.

**Flexibility in Movement:**

Unlike the capital equipment of shore industries ships enjoy a considerable degree of mobility which permits them to be shifted from one area to another. A shipowner is always confronted with alternative opportunities of employment. He has also the facility of shifting his vessel from a depressed trade to a more active route with larger cargo offering. "In the case of tramps, they tradionally make it their business to

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© Economics of shipping, by S.N.Haji, p.5.
try to be in that portion of the world where the most remunerative rates are to be earned. (As a result, opportunity costs assume a greater importance in shipping than in most other industries and the continued scheduling of vessels in a regular service can be maintained only by foregoing the opportunities presented by alternate employment. This does not mean that a liner operator will remove a vessel from a given trade whenever higher profits are available elsewhere; because the operator will naturally consider the long-term repercussions that such an action might have upon his relations with other shippers on his customary route and his competitive position vis-a-vis other participants in trade. Nevertheless, some shifting of vessels can easily take place and frequently does. It is not inaccurate to visualise the world's shipping tonnage as a pool from whose margins, carrying capacity will flow to those areas currently offering the most attractive possibilities."

A shipowner as other owners of capital equipment also has an option of laying up his vessel in times of depressed business conditions. However, it is common knowledge to shipowners that a ship depreciates more rapidly when idle. Besides, he has also to consider the effects of his action on the shippers as well as his rivals on the route. While reaching such a decision he has to consider the 'lay-up' costs and the prevailing level of freights. A shipowner sometimes is

* International Shipping Cartels, by Daniel Marx, p.15.
also confronted by, "cargoes which readily contaminate others and by those which are themselves easily contaminated. In such cases the ship operator may be forced to decide one or the other."*

**Laws of Returns and Shipping:**

The shipping industry illustrates perhaps the best example of the economic law of increasing returns, or of decreasing cost. "That is to say, it is an industry in which, after a certain stage, the cost of operation grows less rapidly than the volume of business done. Each ton of freight added to the existing traffic adds relatively less, to the haulage cost. It follows therefore, that the net return increases more than proportionately with the growth of expansion of traffic."† The existence of unused carrying capacity gives rise to increasing returns in shipping industry especially when its fixed costs, ordinarily constituting 70 to 75 percent of the cost of the voyage, are high. The unused capacity occurs on account of seasonal and cyclical fluctuations in world trade. It is little surprising that the shipping industry has been plagued by chronic phenomenon of unused capacity in a large number of peace time years.

"The complementary law of diminishing returns applies, with equal force to shipping rates. When traffic diminishes

† Economics of shipping, by S.M. Haji, p.9.
only a portion of the cost could be reduced; in other words, a reduction in the volume of traffic does not necessarily mean corresponding reduction in the operating cost of the steamer*. This tendency is further aggravated by the indivisible nature of a ship, unlike a railway train, made up of component parts, whose size can be changed according to demand. It is on account of law of diminishing returns that the shipping companies prefer to lay up the ships than to send them on voyages in times of trade depression. The cost of lay up proves a lesser financial burden than the losses incurred on account of ruinously low rates of freights if the ships were kept running.

Inelastic Nature of the Industry :

"The many quick and sudden changes in the character of the shipping industry as a paying proposition may further be studied by a consideration of the application of the two laws of increasing and decreasing returns, from the point of view of the long and short term production of transport 'manufactured' by the shipping company .... what makes this question so interesting is the suddenness with which the available tonnage becomes inadequate for the trades it has to serve, and on the contrary the sudden decline in demands which necessitates the laying up of so many steamers simultaneously."+

+ Ibid, p.16.
In such situations, the shipping industry finds it difficult to adjust because of the highly inelastic nature of the industry. A ship, normally on run for twenty-four hours cannot expand its working capacity further; and a new ship cannot be ordered immediately.

This is very much in contrast to shore industries which can expand their production capacity with a relative ease by increasing the number of shifts in the factories. "Attention may here be drawn to a result of the inelastic nature of the industry in so far as it necessitates the provision, even in normal times, of a tonnage which will meet the requirements of the world at moments of its greatest demand. One result of this supply being constant and the demand fluctuating is that in times of trade depression the rates of freight reach surprisingly low levels .... in times of decline, the industry being inelastic is in worse position, than other manufacturing industries, which can change their output to meet the changing demand of the market. If ordinary times must bear the cost of maintaining ships which would be required in abnormal times, it follows that the normal rates of freight must be high enough to more than cover the cost of a service, the interest on capital and a reasonable rate of profit. Moreover, if a shipping company is not to be wound up during a long period of depression, it is essential that it should have
large capital reserves to fall back upon in the event of a long spell of commercial stagnation."

Relation of Fixed Investment to Gross Earnings:

It may also be mentioned here that fixed investment in shipping industry is relatively high, compared to its gross earnings. This is very much in contrast with manufacturing industries and distributive trades in which the fixed capital forms much lower proportion of the output. Consequently, this feature of the shipping industry further aggravates the lack of adjustability to changing conditions of international trade and the industry alternatively faces financial success and financial failures. "In times of depressed trade and consequent slackened traffic, the heavy capital charge cannot be reduced nor can a large proportion of the operating expenses. Later, however, when trade revives the traffic grows, the receipts increase without a corresponding increase in the operating expenses. It is thus that shipping profits react very finely, and quickly to the prevailing state of the trade. This reaction explains why shipping is meant only for people with long patience and a longer purse. The profits of the industry are intermittent and the fat years must be taken with lean ones, if the matter is to be reviewed in the proper manner."*

+ Ibid, p.42.
Complex Nature of the Industry:

The foregoing analysis clearly reveals the highly complex nature of the shipping industry. Its cost characteristics viz. fixed costs, joint costs, opportunity costs, often involve shipping industry in a choice between cut-throat competition and monopolistic arrangements. The freedom of the ocean highways, flexibility in the movement of the ship and the relatively small capital required,—there are small ships that can be purchased with a small capital outlay or hired—make it easier to engage in ocean transportation. Therefore, any one with some acquaintance with shipping business and in a position to raise minimum capital required can become successful shipowner at least theoretically, competing on equal terms with the biggest liner company. "Except in unusual times or in restricted fields, a vessel may usually be chartered as readily as a house may be rented. In each large port there are ship brokers who are in cable connections with other large ports, and they are thus informed regarding ships in all parts of the world."* As a result, one need not be astonished to find cut-throat competition and price discrimination resulting on account of the allocation of expenses arbitrarily to such commodities or markets as appear expedient in order to secure lower costs and higher profits.

* Transportation by water, by Johnson, Hutner and Henry, pp. 358-359.
"Such is often the case, and as in other areas of the economy where cut-throat competition is inherent, monopolistic arrangement generally follows ..... these monopolistic arrangements in shipping industry have commonly taken the form of shipping conferences or rings, a variety of 'tying' devices, and pooling agreements of various sorts ...". However, it should be noted that it has been found more difficult to maintain a transport monopoly at sea than on land. "The mobility of the ship, the small investment required before active competition can commence, the freedom of the ocean highway and the fluctuations in streams of traffic have all operated in favour of free competition."*

Dependence on Terminal Facilities:

Unlike other forms of transports, shipping services are very largely dependent upon the provision of terminal facilities which are usually owned, controlled and maintained by the state or public authority. "The characteristics of various shipping routes are largely influenced by the ability of the available ports to handle different types of vessels, by the

* International Shipping cartels, by Daniel Marx, p.22.
+ Economics of transport by M.R. Bonavia, p.125.
nature of their communications with the hinterland, whether railroad, river or canal, and by the availability of appliances and labour, skilled and unskilled, for cargo handling." These factors directly affect the 'turnround' of ships. Unreasonably longer detentions of ships in ports reduce their earnings and add considerably to their expenses. A decline in port efficiency means an increase in marine freights, and it is notable that since the 1939-45 war much attention has been paid to the problem created by the increase in turn-round time in many ports of United Kingdom. The causes of delay include war damage which has not been repaired, changes in the character of the traffic which it has not yet been possible to match by installing new cargo handling appliances suitable for present day conditions, an increase in size of the ships, which restricts the number of berths and increases loading time, import controls and bulk buying arrangements which concentrate the arrival of large quantities of goods and labour troubles including unofficial strikes and 'go-slow' tactics, coupled by restrictive practices by a minority of dock workers. A few of the factors enumerated above might have disappeared with post-war rehabilitation of port conditions and renovation of port equipment. However, the remaining ones continue to bedevil the efficiency of ports and therefore the efficiency of shipping services.

+ Ibid, p.22.