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BARGE CARRYING SYSTEM AS A FACTOR OF IMPROVING TRANSPORTATION SERVICE OF THE DEVELOPING COUNTRIES

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Growth in international trade among the different groups of countries, including the exchange between the industrial countries and the developing ones, has resulted in a continual increase of maritime shipping. The obvious consequence of this process is a constant rise in the size of the world merchant fleet expressed as an increase both in number and tonnage, as well as reflected in the dynamics of the technological progress in all spheres of the naval economy.

The rate of increase in the world merchant fleet and the maritime shipping was relatively high over the passed decade as it has exceeded the growth indexes of the world production and the world G N P.

Table 1. Rate of growth of the merchant fleet tonnage and the sea - borne trade in the years 1966-1976

/ a year proceeding = 100 /

Year	Growth in fleet tonnage /percentage/	Rate of growth of maritime trade / percentage/	
		mill.tons of cargo	bln. ton - miles
1966	6,8	8,2	6,65
1967	6,4	5,2	15,9
1968	6,6	9,4	15,8
1969	9,0	9,6	11,7
1970	7,4	10,9	13,6
1971	8,7	3,8	10,0
1972	8,5	7,2	11,7
1973	8,0	12,96	17,5
1974	7,4	4,0	6,4
1975	9,9	-6,3	-6,2
1976	8,7	7,7	9,7

Calculated on the basis: Lloyd Register, Statistical Tables - BIMCO Bulletin, No.VI,1976, p.3951; Fearnley and Egers Chartering Co. Ltd., Review, 1976, p.14.

As a result of this dynamic growth, the world merchant fleet has reached a tonnage of more than 300 million BRT in 1974, and in 1977 its size and structure were as follows:

Table 2. The world merchant fleet according to the state of June 1sth 1977 /ships over 300 BRT/

Number and type of ships	Tonnage /thous. BRT/	Load capacity /thous.DWT/	Share of different ship types in the world fleet / percentage /		
			in number of ships	in tonnage	in load capacity
1. ships total 31870	357043	610527	100	100	100
2. Tankers 7099	1722780	328044	22,3	48,4	57,7
3. Ships for transport of dry cargo 24771	184263	2822482	77,7	51,6	46,3

Source: Shipping Statistic Yearbook 1977, Institute of Shipping Economics, Bremen 1977, pp. 5-6

The absolute size of the sea-borne Transport reached 3043 million tons in year 1975, and in 1976 - 3277 million tons[1]/, while the structure of the transported cargo has shown a predominance of bulk freight, both liquid and dry; crude oil and its products were the dominating freight, which x jointly constituted in year 1975 - 49%, and in year 1976 - 50,34 % of all shipments in maritime transport

Table 3. Cargo structure in maritime transport in years 1965, 1966 and 1975, 1976

Year	Cargo size mill.tons	Percent share of main cargoes							
		total	oil /crude/	oil processed articles	total oil and its products	iron ore	coal	corn	other cargoes
1965	1638	100	33,7	10,7	44,4	9,3	3,6	5,0	37,7
1966	1772	100	34,35	11,0	45,35	8,6	3,45	5,2	37,4
1975	3043	100	41,3	7,7	49,0	9,6	4,2	4,5	32,7
1976	3277	100	43,17	7,17	50,34	8,84	3,72	4,3	32,8

Derived on the basis: Fearnley and Egers Chartering Co.Ltd. Review 1976, p.14

1/ Size of freights in ton-miles amounted to: in 1975 - 15,3 bln, in 1976 - 16,8 bln.

Table 3. Cargo structure in maritime transport in years 1965, 9966 and in 1975 and 1976

Year	cargo size / mln tons/	percentage share of main freights							
		total	oil /crude/	oil-processed articles	total oil& products	iron ore	coal	corn	other cargoes
1965	1638	100	33.7	10.7	44.4	9.3	3.6	5.0	37.7
1966	1772	100	34.35	11.00	45.35	8.6	3.45	5.2	37.4
1975	3043	100	41.3	7.7	49.0	9.6	4.2	4.5	32.7
1976	3277	100	43.17	7.17	50.34	8.84	3.72	4.3	32.8

derived on the basis: Fearnley and Egers Chartering Co.Ltd., Review 1976, p.14.

The structure of demand for specific cargoes and directions of traffic form the shares of particular countries in the world navigation. The biggest share in turnover of merchandise transported by the sea is represented by the group of highly developed countries, moreover this share is lower as pertains to loadings than unloadings. The situation is reversed in the developing countries, whose share in loadings considerably exceeds disembarkations. taking place in their ports. It is a result of the economic role of the Third World countries which still remain the principal exporters of raw materials to the developed countries. The said raw materials, mainly oil , are exported by sea.

Table 4a - Structure of loading in maritime shipping in particular groups of countries in years 1950 - 1975

Year	World loadings /mil tons/	Highly developed countries		Developing countries		Socialistic countries	
		loadings /mil tons	world share /%/	loadings mil tons	world share %	loadings mil tons	world share %
1950	550	215	39,1	308	56,0	27	4,9
1959	996	349	35,0	597	59,9	50	5,0
1970	2605	812	31,17	1628	62,5	155	5,95
1971	2699	821	30,4	1718	63,65	160	5,92
1972	2901	907	31,3	1808	62,3	159	5,5
1973	3276	1048	32,0	2061	63,0	167	5,0
1975	3175	1036	32,5	1953	61,5	186	5,9

Table 4b - Structure of unloadings in maritime shipping as regards particular groups of countries in years 1950 - 1975

Year	World unloadings /mil tons/	Higly developed countries		Developing countries		Socialistic countries	
		unloadings /mil tons/	world share %	unloadings /mil tons	world share %	unloadings /mil tons/	world share %
1950	549	380	69,25	154	28,05	15	2,7
1959	992	751	75,7	220	22,2	21	2.1
1970	2530	2013	79,6	442	17,4	75	3,0
1971	2649	2082	78,6	486	18,4	81	3,0
1972	2866	2267	79,1	496	17,4	97	3,4
1973	3238	2553	78,8	574	17,7	111	3,4
1974	3256	2562	78,7	590	18,1	104	3,2
1975	3081	2357	76,5	597	19.4	122	4,0

Despite certain fluctuations of the developing countries share in the volume of the loadings and anloadings in the world maritime shipping, their share in the maritime trade turnover have shown stability in reaching 40 % of this turnover in the seventies.

Table 5. Share of particular groups of countries in the world maritime transport turnover in years 1970-75

Year	World transhipments /mil tons/	rate of growth %	Share of groups of countries in world transhipments /percentage/ total	developed countries	developing countries	socialist countries
1970	5.13	-	100	55.0	40.5	4.5
1971	5.35	4.15	100	54.3	41.2	4.5
1972	5.77	7.8	100	55.5	40.0	4.5
1973	6.51	12.9	100	55.3	40.4	4.5
1974	6.57	0.9	100	55.3	40.3	4.4
1975	6.25	-4.8	100	54.25	40.8	4.95

source: Statistik der Seeverkherswirtschaft, August1977, No.8, pp. 167-168.

Such a high share of the developing countries in the world sea-borne trade turnover visualises very well the importance of the Third World countries in the development of the maritime shipping and in supplying raw materials as well as agricultural and food products for the developed countries. The cargo traffic from and to the developing countries is generally carried out by ships belonging to ship-owners from the developed countries. The transportation requirements are fulfilled thank to the development and tonnage growth of the principal world fleets, including so called "cheap flags". Yet from the point of view of further development of the maritime trade, the most important problem of the transport services in the developing countries in not an increment in the number of vessels or their tonnage, but an increase in handling capacity of their ports.

Unsatisfactory infrastructure development, and especially congestion of sea ports in the developing countries, constitute the main obstacle to development of maritime shipping in these countries. The present state clearly indicates that these difficulties have a tendency to intensify.

1. Main factors limiting the development of the maritime trade with the Third World countries.

The economic growth theory of the Third World countries exempliefies great many factors limiting the possibilities of acceleration, including both institutional and socio-political factors as well as the other barriers of the eceonomic character which are connected with unsatisfactory levels of accumulation, market and productia capacity development in these countries.

In the course of the growth initiation in the developing countries, especially in its second decade, the transportation barrier was revealed with a great intensity. This barrier is closely connected with the infrastructure underdevelopment of the developing countries, has a bearing on possibilities of internal and external transportation links and restricts carrying capacity as regards interdepartamental section as well as spatial systems. The transportation barrier in the developing countries has the greatest significance as regardsmaritime shipping. Many of these countries

are exporters of raw materials shipped overseas, and at the same time they are importers of various goods supplied by the overseas countries. The ability to cope with the international trade requirements is thus to a great extent determined by transport capacity.

Main factors limiting growth of the maritime trade in the developing countries may be stated as follows:

1. lack or underdevelopment of national merchant fleet,
2. Lack of national production and repair bases for fleet service,
3. unsatisfactory capacity pertaining to servicing and supplying ships in national ports ,
4. too small handling capacity and technological backwardness of the ports.

Solutions for the above mentioned problems may be sought in different planes, both in sphere of external linkages of the developing countries, as well as on the base of actuating their own financial and material potentialities.

A poor development of the merchant fleet of the developing countries and its unsatisfactory carrying capacity create difficulties of a bottlenck character, and above all difficulties in balances of payment, which is a result of a necessity to use foreign vessels for carrying both exported and imported goods. This situation has an effect on diminishing a degree of dispositional self-reliance of the developing countries in the field of loading and unloading organization in the ports and creates a state of dependency on foreign carriers. Though in the essence of the matter

it is principally a problem of payments , as it can be assumed that in the face of their own transport inefficiency the developing countries can use services of the foreign lines or base their sea-transport on chartering vessels from foreign ship-owners. The degree of difficulties existing in the sphere of sea-transport arises from general hardship occurring in particular countries as to condition of their trade and payments balances. There exists a number of varians for solving the problems depending on specified situation of a given country.

1. It may be accepted that there will appear transportation service rendered solely by the foreign carriers both in export and in import. Many countries importing goods from the Third World assume that for their transport, vessels of a receiving party, or vessels chartered by the said party are used.

2. There appeares a variant of a mixed character, in which part of freights is carried by foreign vessels, and another part by vessels of a developing country, while concentration of the latter is possible for the shipments in particularly important connexions or the ones characterized by high freight costs. This sort of solution can be found among others in Egypt. Between 1969-1970 the Egyptian fleet carried 25% of all cargoes exported and imported in transactions with the West European countries, which constitued 20.2% of total Egyptian turnover realized by sea. Whereas in servicing

the maritime trade with the East European countries[3/] constitutingthen 46.6% of the total sea-borne trade, the Egyptian fleet took part in transporting only 6% of all imported and exported freights.[4/] This was the result of particularly advantageous freight conditions that Egypt was availed in the trade with the socialist countries.

3. Expansionary variant may appear in particularly advantageous conditions, where a developing country is able to expand a state of its fleet by means of ordering new ships, buying second-hand vessels or by making an effort to launch its own ship-building industry and start producing ships for the national fleet. This variant assumes a gradual increase of the share of national fleet in maritime trade shippings, and further, possibly taking over principal transportation tasks. The OPEC countries among others have taken a decision concerning constructionof their own fleet in a pursuit of creating a fleet of tankers for their oil exports. For this purpose a ship-owning company -- United Arab Shipping Co /UASC/ was formed, whose shareholders are Kuwait, Saudi Arabia, Qatar, Oman, United Arab Emirates and Bahrain.[5/] The oil countries by utilizing their financial resources intend

3/. Apart from the socialist countries there enter: Greece, Cyprus, Turkey; main position being occupied by Soviet Union, Poland and Yugoslavia.

4/. A.M, Farahat. An Approach Proposal for the Egyptian Problems with Emphasis on Scheduling Aspects. INP, Memo.1082, pp. 26-30

5/. Petrodollar Strength and the International Insurance Cake "Fairplay International Shipping Weekly" 9.9.1976 p.59

to intensify the growth of the maritime economy by way way of investments in construcitons of new ports and fleet development.

4. We may finally accept a stagnation variant where a particular country is outside the sphere of interest of shipping companies, nor does it have any possibilities of development of its own merchant fleet. In this case there appear difficulties in the field of transportation preventing the freight carriage by sea; the cause for the stagnation. Resolution of this state depends on obtaining an international aid and conditions of special preference.

The lack of national repair and production base for servicing national and foreign vessels constitutes on of common phenomena in most of the developing countries. Distinguishing between repair and production functions in the shipping industry is essential. Though it may be accepted that the developing countries do not have at present and will not have in the future the proper conditions for launching their own production of sea-vessels[6/] and consequently they must build their fleet on the basis of foreign purchases; it is necessary in these countries which show increasing needs in the field of the maritime trade to expand repair shipyard in order to ensure services

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6/. Currently 22 developing countries have entered a list of ship producers / condition i 1976/, 6 of which /Brazil, Argentina, India, Singapur, South Corea & Taiwan/ have reached a yearly output of finished ships above 30 thousand BRT.

for vessels entering their ports. Realizing the importance of this problem a number of developing countries have undertaken an effort to equip their ports with floating docks, indispensable for carrying out major repairs and surveys of ships as well as with repair workshops for handling different types of ships[7/] -- which is of a great consequence for the countries which are in possession of ports which are situated at the important sea routes of an intense ship traffic. Creation of repair shipyards may not only become the factor inducing the ships to enter these ports, but it may as well create conditions for deriving foreign currency receipts on the score of repair services for foreign shipowners. The solution of the problems resulting from lack of repair back-up facilities in the shipyards may come about in a similar way as in the merchant fleet case. Thus there may be involved foreign or national investments or a joint utilization of the two sources for financing the repair shipyard construction. It seems, that even when making use of transport services rendered solely by foreign vessels, the developing countries still must create a repair base in their ports, at least at the level ensuring the most essential repair services. On the other hand, it may be accepted that both national fleet and foreign ships will use foreign shipyards based on the appropriate repair plans.

In broad terms it may be stated that the lack of national merchant fleet and repair shipyards does not

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7/. For example, the shipyard in Alexandria bought a new dock in West Germany in 1976.

exclude a possibility of utilizing by the developing countries services of foreign shipowners. Even though this causes a great deal of complications and burdens these countries with additional foreign currency expenditures, still it does not constitute an ansolute barrier in the scope of using the maritime shipping for the purpose of realizing export and import tasks.

The matter is different in case of handling capacity of the ports, providing the port services and catering the ships at a level required by the contemporary technical and exploatational demands of the maritime shipping. The present situation existing currently in the developing countries concerning the port congestion causes the emergence of very high, if not catastrophic losses, coming out of excessive prolongation of lay-time of the ships in the ports. The main reasons for the development of the port congestion may be stated as follows:

1. technical backwardness of the ports as represented by unsatisfactory length of wharfing, too small depth of port entries and harbour basins in relation to increasing size of contemporary vessels, lack of satisfactory transhipment equipment as well as of harbour service craft / tugs, pilot motor-boats, pontoon cranes, barges and dump-scows for transitory transhipments on roadstead or in outer harbour /, lack of adequate warehouse space as well as of developed land transportation network at a port area and its immediate surroundings; all these deficiencies cause unnecessary extension of transhipment time, prolong the period of idle lay-time and consequently increase losses of ship-owners.