

Affecting Factors to the Efficiency in the Container Shipping

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Abstract—Vietnam currently has 39 container shipping ships with a total tonnage of about 30,000 TUE; Vinalines has 11 ships. Thus, Vietnam's container fleet annually transports between 1.2 and 1.3 million TUE. Thus, compared with the total volume of imports and exports through the port each year about 18 million TUE, the container fleet of Vietnam is less than 10%. According to the report of the Vietnam Maritime Administration, up to now, Vietnam's fleet has 1,568 ships with a total tonnage of about 7.8 million tons, ranking 4th in ASEAN (after Singapore, Indonesia, Malaysia) and 30th in the world. The average age of Vietnam's fleet is currently 15.6, younger than 5.2 years of the world (20.8 years old). The structure of Vietnam's fleet has also grown towards specialization, especially, Vietnam's container fleet has grown quite well from 19 ships (2013) to 39 ships (2019).

Index Terms—Affecting Factors, Efficiency, Container Shipping.

I. INTRODUCTION

About volume of goods handled by seaports by Vietnamese fleets reached 81.2 million tons, up 16% over the same period in 2018; in which the volume of containerized cargo through the port of Vietnam fleet reached 1.2 million TEUs, up 5% over the same period last year. The Vietnamese national flag fleet has now been able to handle nearly 100% of inland transport by sea, except for some specialized vessels such as liquid cargo (LPG), bulk cement, etc. mainly household items, food, coal, building materials, machinery, containers, petroleum, general goods [1]. For international shipping, Vietnam's fleet is carrying about 7% of market share and mainly transports routes such as China, Japan, Korea, Southeast Asia, the fleet. Vietnam container operates mainly on short routes of Southeast Asia and Northeast Asia; a number of bulk carriers have transported goods on European routes. According to the assessment of the Vietnam Maritime Administration, Vietnam's container fleet is mostly small vessels, mainly domestic and Southeast Asia, Vietnamese businesses do not have enough financial resources to upgrading fleets makes it very difficult to compete with large and modern fleets in the world [2]. According to a research report of the Logistics Forum just took place in Da Nang, currently, the whole country has 281 ports with a total capacity of over 550 million tons / year [3]. Most seaports have made full use of natural conditions, met the requirements of transporting goods by sea, actively serving the process of socio-economic development in coastal areas and across the

country, creating motivation to attract and promote related economic and industrial sectors for mutual development. Most of the major ports in Hai Phong, Da Nang, Ba Ria - Vung Tau, Ho Chi Minh City ... have been upgraded to receive ships of up to 30,000 DWT [4]. Typically, Cai Mep - Thi Vai port receives ships of up to 18,300 TEU (194,000 DWT), which is operated weekly, directly connecting Vietnam's imports and exports to the Northern European market. In the Central region, the seaport is also on a good growth trend recently such as Da Nang port, Cam Ranh port.

The fierce competition along with the widespread economic downturn has forced large container carriers to have a new direction to combine each other into groups and group members to contribute to the operation on each route, inviting one carrier is allowed to queue on group ships on a slot basis [5]. Vietnam's container shipping activities, which are relatively set-up, in which Vietnamese shipping companies largely act as agents to collect commissions from ocean freight charged by foreign container shipping companies and businesses sales of complementary related services [6]. However, facing the great challenge of globalization of the world economy, in order to increase the competitiveness of Vietnamese companies with foreign companies, key corporations play a leading role in the economy has been established, including Vietnam National Shipping Lines. Marine Corporation is assigned by the Government to manage the Vietnamese fleet, of which the container fleet has been assigned to GEMARTRANS Company directly to manage the business. Due to the limited financial situation, Vietnamese container fleets mostly operate in the form of loan-purchase-hire-purchase yet to be developed, the small number of vessels with small tonnage capital is only enough to operate short routes. On the route of inland transport Saigon - Hai Phong, due to the nature of safe, guaranteed transportation and lower freight rates than traditional transport by far, by truck, so the couple Vietnamese vessels have been mostly well operated since opening the service and have received support from customers [7]. With the small number of ships and the remaining low tonnage, which cannot be operated on routes far from Vietnamese fleets, there is still fierce competition from rivals such as WANHAI, APM, APS, STRAITSHIPPIH, leading to severe freight rates, greatly affecting the business efficiency of the fleet. In addition, because the target market is quite narrow, although there are few competitors, the level of competition is very high, freight rates are severely reduced. In order to ensure a profitable market share and business, it is essential that regions in the region need to meet to formulate a standard rate schedule and to increase the number of trips, in the condition that there are few ships, it is necessary to reach

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place arrangements [8].

Among Vietnam's current ports, there are 9 ports capable of renovating and upgrading to receive ships of 50,000 DWT which are the average ships in the world or container ships of up to 3,000 TEU. Each year, Vietnam's seaport system receives more than 130 million tons of cargo of all kinds, but mainly concentrates in major ports such as Tan Cang, Sai Gon, Hai Phong, Ben Nghe, Cai Lan, Da Nang, VICT. Currently, Vietnam has more than 60 seaports of all sectors and localities managing the output capital of about 40 million tons/year for all types of goods (excluding crude oil) [9]. Technical facilities of the ports are lacking, backward, inconsistent, unstable for ships of 20,000 tons (general goods) and durability for ships of 3-5 thousand tons for Container ships. In recent years, there is a situation of disorganized development, disorganization, no overall planning, causing competition for investment waste. Flow in and out of Vietnamese seaports is also a problem worth mentioning [10]. Most of the navigable channels into our ports are along the rivers, with high tidal fluctuations, greatly affected by sedimentation, long channels, and limited depth. Every year, the state must spend a huge amount of money to dredge and maintain waterways to ensure that ports can receive the increasing volume of goods [11]. Although most Vietnamese seaports have motorable roads connected to national roads, these routes often face congestion. Some ports are located in urban areas and residential areas, thus the traffic situation is stopped, and only works at night, which greatly limits the capacity of the ports. The container transportation by rail and road is one of the essential transport stages in multimodal transport. Not only serving customers from port to port, but carriers are increasingly inclined to serve customers from door to door [12]. In Vietnam, the current development of container transportation by road is developing spontaneously to meet market demand, there are a small number of companies specializing in road transport and a number of shipping lines owning vehicles to serve as their own bridge, while most tracks are privately owned [13]. In general, the cost of freight containers from the port to the customer's warehouse (and vice versa) is relatively high. At peak times such as the export of agricultural products, the number of existing vehicles does not meet the transport needs and is also overloaded for traffic in some big cities like Ho Chi Minh City or Hanoi. A large number of vehicles on the road with high payloads have caused phenomena such as traffic congestion, broken roads. However, a research report of the Logistics Forum also shows that connecting major seaports in the world uses transport modes such as railways and highways. Meanwhile, Vietnam's seaport system has only Hai Phong port connected to the railway, but the exploitation efficiency is not high, and there is no separate highway for transporting goods [14]. Traffic connecting waterways is limited by the static of bridges crossing the river. Therefore, the efficiency in transporting goods to the seaport has not been optimized in terms of time and transportation costs [15].

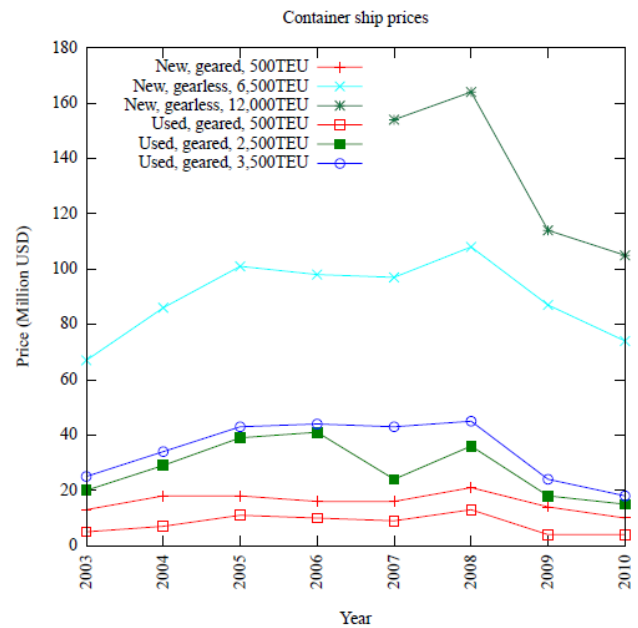


Fig. 1. Container ship prices

It can be said that containerization in the field of shipping is the largest revolution in the world after the revolution in information technology. The practical experience of many countries with developed container transport systems has shown the tremendous economic effects that it brings. The method of container transportation has grown around the world for more than two decades. Many countries have quickly built container ports to receive modern container ships as well as develop this fleet. Currently, our country is at an early stage of containerization. Foreign trade activities have started to use containers for transporting import and export goods by sea. Facing the requirements of scientific-technical progress and demands of foreign customers as well as the great economic benefits brought about by container shipping, the construction of the container port system and the current Container fleet.

II. ADVANTAGES AND DISADVANTAGES

In order to create international container shipping routes, thereby promoting domestic enterprises to invest in developing container fleets to ask the State to have mechanisms and policies to support businesses as well as the vision from the Government to start. to build international container shipping routes from now on. A container ship that can transport to international routes with a capacity of about 20,000 TUE requires a large amount of investment, so domestic enterprises are unlikely to invest, the representative of Vinalines said. In addition, Vinalines representative also said that in order to participate in international container transportation, the capacity of Vietnamese enterprises must be further improved to join with international shipping alliances. Only then can Vietnam participate in the market share of international cargo transportation to seaports around the world. As mentioned, the management team and crew members of the maritime industry are an advantage for the development of the fleet. However, this is also a difficulty due to the fact that most of the seafarers' officers are of average age and not highly re-trained. A fairly common fact today is that Vietnam's import

and export companies continue to buy and sell goods under the method of buying CIF to sell FOB, which means that the right of transport for the Vietnamese side is not focused properly level. This comes from a number of reasons. Some export products of Vietnam have low quality and competitiveness, so foreign partners often press on prices and modes of transport. In addition, many of our export businesses do not have a firm grasp of chartering and shipping services, so there is a fear of risk, which has given way to partners. It is recognized that Vietnamese import and export businesses have not received reasonable support from the banking and insurance systems due to our limited financial capacity. On the State's side, Vietnam has not really had strong policies to encourage the purchase and sale of import and export goods carried by the national fleet to reduce the foreign currency, which is the freight paid for foreign fleets. Moreover, the lack of uniformity of coordination between the maritime authorities and regulations, laws and sub-laws on maritime is simply a difficulty for resolving related team disputes ship. In addition, one factor causing many difficulties for the development of the fleet is that our port system is generally defective. For example, the problem of port charges is still high, the access time is quite long, the loading and unloading technique of the workers is still poor, causing a lot of damage to the bags. One factor that causes many challenges for Vietnam's shipping fleet is the fierce competition of foreign fleets, especially in the field of container shipping, crude oil, and produce oil. While Vietnam's fleet, as analyzed, there are many limitations in quantity and payload. Many ships with poor technical conditions, over 20 years old ship age, crew members are not enough to meet the requirements plus limited financial capacity, these are major challenges for the Vietnamese fleet when having to apply the Ministry International safety management law (ISM code). This is the supplementary Code in the Convention on Life Safety at Sea (SOLAS 74), which came into effect on July 1, 1998. Phase 1 applies to passenger ships, oil tankers, chemical tankers, gas carriers, bulk carriers and high-speed cargo ships with a gross tonnage of 500 GRT or more. From July 1, 2002, phase 2 applies to other types of cargo ships and mobile offshore drilling rigs with a total capacity of 500 GRT or more. The purpose of this Code is to ensure safety at sea, prevent injury to people and property, and avoid damage and pollution to the environment, especially the marine environment [6]. Right from the first phase, Vietnamese ships in the scope of application of the Code have faced many difficulties because Vietnam still has deficiencies in safety equipment, life-saving, fire-fighting, and anti-fire devices pollution, so many shipowners are forced to restrict the operation of these vessels. Many ships operating on foreign routes are also regularly inspected and the ship's detention status for several days due to failure to meet the requirements of the International Convention and ISM code.

In fact, the development experience of nations shows that the marine economy is always considered a spearhead industry of coastal states, in which the leading role is the seaport. Where there is a seaport, it will be a city of economic, industrial and commercial development. The prosperous seaport, the stronger the sea economy. Seaport

infrastructure has long been considered the backbone of shipping, especially since the arrival of containers and logistics. The seaport has become the center of connecting the national transportation network with the outside world, where the busy activities of multi-mode of transportation for which logistics is the driving force. According to statistics, each year over 16 million tons of goods in the Mekong Delta exported by sea. However, only 30% goes straight from the Mekong Delta ports by small barges. The remaining 70% must be transported to ports in the city. Ho Chi Minh City and Vung Tau. Every ton of export goods transports to TP. Ho Chi Minh to "piggyback" additional 7 USD cost. Commodities, agricultural products made by farmers thus reduce much competitiveness compared to other countries in the region due to the addition of transportation costs.

Previously, to export, enterprises in the Mekong Delta had to transport bulk cargo by barges to HCMC. Ho Chi Minh City or Ba Ria - Vung Tau province and then close the container. Imports also have the same intermediate stage, wasting a lot of time and money. The opening of Tan Cang - Cai Cui port is an important milestone in connecting the Mekong Delta economic region with the regions. Currently, the volume of imported goods in Can Tho is stable at 60 TEU / shipment and 30 TEU / shipment at the end of the year is better than 60 TEU or more.

III. SOLUTIONS

One of the important factors to increase the competitiveness of the container fleet is the human factor. Currently, the number of crew members in Vietnam is relatively large but the qualification, as well as foreign language proficiency, mostly does not meet the requirements. In addition, the quality of newly-graduated seafarers is weak, the mechanism of use and training is still inadequate, failing to meet production requirements of the economy and integration requirements. Meanwhile, the training, re-training, and raising of the qualifications of crew members are carried out by shipowners on their own ability without the coordinated coordination between universities and high schools maritime with state management agencies are the Ministry of Transport and Vietnam Maritime Administration with shipping companies. The training programs also need to be renewed content, training time so as to reduce the theoretical volume, improve practical skills. For officers and crew members working on international maritime routes, there is a need to have a pay policy based on the efficiency of the ship's business. In addition, there should be policies on allowances and higher financial incentives for crew members such as dangerous and dangerous allowances, expensive allowances. Transport is an extremely important part that cannot be separated during containerization. However, the overcrowding of the road while the railway cannot meet the requirements for loading and unloading, as well as transporting container cargo, makes the transport freight much higher. Because of this problem, containerization in Vietnam's cargo transportation has been slowed down compared to other countries in the world. The investment in railway equipment as well as the construction of roads connecting ports and industrial parks and ports to reduce congestion for roads, assuming

transportation costs are an indispensable thing. On the other hand, businesses need to strengthen coordination and association with production, export and import businesses to actively seek freight contracts, gradually creating a closed, specialized logistics service system. Karma. It can be said that the weak point of the Vietnamese fleet is that the fleet structure has not been rational. Currently we have more than 1,800 ships. However, the number of small ships, bulk carriers is too much while specialized ships, container ships, tankers, and liquefied petroleum gas account for very little. In addition, although Vietnamese shipping enterprises are many, with about 600 enterprises, there are over 500 private enterprises and only account for one fourth of the total tonnage, showing that the majority of enterprises in this field are still fragmented, small operations. The key weakness of the shipping industry today is the inadequate management of the enterprises, connection problems, alliances between shipping lines, between shipping lines and shippers are not tight, plus the trade practices make the market share of transports of imports and exports of Vietnamese fleets low. Another factor that brings difficulties for Vietnamese fleets is the average age of the high fleet, currently about 17.7 years old while the average age of foreign fleets is only around 10 years old. According to statistics, in 2014, the total transport volume carried out by the Vietnamese fleet was estimated at 98.5 million tons (135.7 billion T.Km), a slight increase of 0.13% compared to 2013. Vietnam's shipping business still faces many difficulties and continues to face fierce competition.

In fact, the development experience of nations shows that the marine economy is always considered a spearhead industry of coastal states, in which the leading role is the seaport. Where there is a seaport, it will be a city of economic, industrial and commercial development. The prosperous seaport, the stronger the sea economy. Seaport infrastructure has long been considered the backbone of shipping, especially since the arrival of containers and logistics. The seaport has become the center of connecting the national transportation network with the outside world, where the busy activities of multi-mode of transportation for which logistics is the driving force. According to statistics, each year over 16 million tons of goods in the Mekong Delta exported by sea. However, only 30% goes straight from the Mekong Delta ports by small barges. The remaining 70% must be transported to ports in the city. Ho Chi Minh City and Vung Tau. Every ton of export goods transports to TP. Ho Chi Minh to "piggyback" additional 7 USD cost. Commodities, agricultural products made by farmers thus reduce much competitiveness compared to other countries in the region due to the addition of transportation costs. Previously, to export, enterprises in the Mekong Delta had to transport bulk cargo by barges to HCMC. Ho Chi Minh City or Ba Ria - Vung Tau province and then close the container. Imports also have the same intermediate stage, wasting a lot of time and money. The opening of Tan Cang - Cai Cui port is an important milestone in connecting the Mekong Delta economic region with the regions. Currently, the volume of imported goods in Can Tho is stable at 60 TEU / shipment and 30 TEU / shipment at the end of the year is better than 60 TEU or more.

IV. CONCLUSION

Container vessels eliminate the individual hatches, holds and dividers of the traditional general cargo vessels. The hull of a typical container ship is a huge warehouse divided into cells by vertical guide rails. These cells are designed to hold cargo in pre-packed units – containers. Shipping containers are usually made of steel, but other materials like aluminum, fiberglass or plywood are also used. They are designed to be entirely transferred to and from smaller coastal carriers, trains, trucks or semi-trailers (and so are carried by different modes of transport during one voyage, thus giving the name intermodal transport). There are several types of containers and they are categorized according to their size and functions. Today, about 90% of non-bulk cargo worldwide is transported by container, and modern container ships can carry over 21,000 TEU. As a class, container ships now rival crude oil tankers and bulk carriers as the largest commercial vessels on the ocean. Although containerization caused a revolution in the world of shipping, its introduction did not have an easy passage. Ports, railway (railroad in the US) companies, and shippers were concerned about the huge costs of developing the ports and railway infrastructure needed to handle container ships, and for the movement of containers on land by rail and road. Trade unions were concerned about massive job loss among port and dock workers at ports, as containers were sure to eliminate several manual jobs of cargo handling at ports. It took ten years of legal battles before container ships would be pressed into international service. In 1966, a container liner service from the US to the Dutch city of Rotterdam commenced. Containerization changed not only the face of shipping, but it also revolutionized world trade as well. A container ship can be loaded and unloaded in a few hours compared to days in a traditional cargo vessel. This, besides cutting labor costs, has reduced shipping times between ports to a great extent; for example, it takes a few weeks instead of months for a consignment to be delivered from India to Europe and vice versa. It has also resulted in less breakage due to less handling; also, there is less danger of cargo shifting during a voyage. As containers are sealed and only opened at the destination, pilferage and theft levels have been greatly reduced.

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