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## Impact of the trend towards decentralization of international trade on shipping

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**WORLD MARITIME UNIVERSITY**

Malmö, Sweden

**Impact of the Trend towards Decentralization of  
International Trade on Shipping**

by

**Yuxu**

A dissertation submitted to the World Maritime University in partial

Fulfilment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

**In**

**MARITIME AFFAIRS**

**(Shipping safety & environment management )**

2020 year of graduation

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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Title of Dissertation: **Impact of the Trend towards Decentralization of International Trade on Shipping**

Degree: **Master of Science**

This paper is a study of international trade and the shipping industry. The shipping industry in the context of traditional international trade is compared to international trade and shipping in the context of the decentralization trend.

A definition of international trade is presented, taking into account the context of globalization. It summarizes the new functions of international trade in the context of globalization and discusses the impact of economic factors, technological factors, globalization factors and maritime factors on international trade. Trends in international trade are analysed.

The dialectical relationship between international trade and shipping is discussed. On the one hand, international trade plays a decisive role in shipping. On the other hand, shipping has a facilitating effect on trade. The two are considered to be mutually reinforcing.

The concept of decentralization is elaborated, followed by an analysis of developments and new developments in three areas: industry chains, trade in services and cross-border e-commerce. And the decentralization trend of international trade is outlined.

Finally, the impact of the decentralization trend of international trade on shipping and the corresponding feedback from shipping on the decentralization of international trade are elaborated. And recommendations for further research are made.

**KEYWORDS** : International trade, Shipping, Globalization, Decentralization.

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### **LIST OF ABBREVIATIONS**

BPO	Business Process outsourcing
CEE	Central and Eastern Europe
CFR	Cost and Freight
CIP	Carriage and Insurance Paid To
CIF	Cost,Insurance and Freight
CPT	Carriage paid to...(…named place of destination)
DAT	Delivered at terminal
DAP	Delivered at place
DAF	Delivered At Frontier
DES	Delivered Ex Ship
DEQ	Delivered EX Quay
DDP	Delivered Duty Paid
DDU	Delivered Duty Unpaid---named port of destination
DWT	Deadweight tonnage
EDI	Electronic data interchange
FAS	Free Alongside ship(... named port of shipment)
FCA	Free carrier
FOB	Free On Board
GDP	Gross Domestic Product
ITO	Information Technology Outsourcing
OFDI	Outward Foreign Direct Investment
SME	Small and medium enterprise
TUE	Twenty Equivalent Unit
TNC	Transnational Company

## **1. Overview of international trade**

### ***1.1 Definition of international trade***

International trade refers generally to the international exchange of goods and services (or goods, knowledge and services) and is the sum of the foreign trade of the countries of the world. International trade activities had been taking place as early as slave and feudal societies and had gradually expanded with the development of production. To date, international trade has developed on an unprecedented scale and is distinctly global in character. International trade reflects the economic interdependence of the various regions of the world and is an expression of the division of labour among the various regions of the world (Gao, 2002).

International trade is a commodity exchange between buyers and sellers in the world, , often with the cooperation of domestic and foreign transport, insurance, customs, inspection and quarantine and banking departments. The need for international trade subject to their supervision and regulation inevitably involves possible differences and conflicts between the legal systems and specific rules of the two countries or regions, which are subject to the foreign trade policies, measures and exchange controls of the countries concerned. Carelessness on the part of international trade practitioners can easily lead to losses or disputes, which often require arbitration or judicial proceedings.

There are many risk factors in international trade, including commercial risk, credit risk, exchange risk, price risk, transportation risk, and political risk (Wu, 2010). The number and amount of transactions in international trade are usually large. The time lag between the conclusion and performance of an international trade contract is long. The transport of goods from the exporting country to the importing country requires



long-distance transportation by various modes of transport (e.g. sea-land transport, river-sea transport, etc.). International trade has its own unique patterns and practices, as both buyers and sellers of international trade take far greater risks in the transaction process than domestic trade.

World trade is also affected by the political, economic, legal and other objective conditions of the countries where the parties to a transaction are located, and is therefore unstable. In the current volatile international situation and the intensification of trade conflicts, the difficulty of international trade is considered to be gradually increasing (Zhao, 2013).

## **1.2 New functions of international trade in the context of globalization**

A function is an objective function that arises from the intrinsic properties of the organism. International trade has created material conditions for the establishment and development of the capitalist mode of production and has brought all countries of the world into the capitalist system, promoting the internationalization of production and the internationalization of capital. Likewise, international trade has a tremendous role to play in the development of productive forces and the improvement of production relations in socialist countries (Huang, 2011).

With globalization and economic integration, the share of international trade in total national or regional economic growth has gradually increased. The new functions of international trade can perhaps be summarized as follows:

### **1.2.1 Enhancing overall national power**

The content of the integrated national capacity is generally considered to include, at a

minimum, the size of the country in terms of natural conditions, geographical location, population, resource stock and level of development, as well as military strength in terms of social conditions, economic strength, political influence, scientific, technical and cultural influence, strategic strategies for foreign economic and trade cooperation, and the share of the country in international trade as a whole. The strategic strategy of foreign economic and trade cooperation and its share in overall international trade, both of which are directly related to the growth of economic power, are of particular importance. If a country's strategy for foreign economic and trade cooperation is appropriate and its products and services account for a significant proportion of the international market, its actions will have a greater impact.

#### *1.2.2 Guiding industrial innovation*

The traditional theory of international trade has failed to break away from the classical and neoclassical constraints and has made overseas salesmen of their own products and services their main task. Such theories are not considered wrong in an era when the material economy is dominant, since material consumption dominates. However, in the age of the information economy, which is dominated by functional economies, consumption rises to the functional level.

Therefore, in the information economy era, international trade theory is no longer limited to market development, and it is considered important to provide market information to guide domestic enterprises to adjust or improve their production and operations in the light of domestic economic development strategies and overseas consumption needs.

### *1.2.3 Diffusion of technology*

Technology is considered to be characterized by the ability to flow from high level areas to low level areas, which is known as the gradient transfer of technology. The main reason driving this shift is its economics. The need for high technology in low-tech areas is due to the fact that high technology leads to higher returns. However, in cases where the technology gap is too large, the benefits are reduced by the difficulty of absorption. Therefore, technology transfer can only take place one step at a time, like a flight of stairs. Economic and technological development in different parts of the world is uneven, so the technological gradient is objective. With the rapid development of the technological revolution, new technologies are constantly being introduced and their life cycles are becoming shorter and shorter. Often, the results of new technologies developed with high inputs are quickly eliminated by the results of newer technologies. Technology owners, in order to recover their investment and make a profit, are also willing to transfer the results of the technology as soon as possible before it is phased out to generate the corresponding income. Since there are buyers and sellers, international trade in technology will be developed. In fact, the share of technology trade in international trade has been on the rise since the 1970s. The performance of this function is considered to have raised the level of technology in the world and to be a driving force for the progress of human civilization.

### *1.2.4 Protection of resources and the environment*

Traditional development theory holds that resource-rich developing countries can industrialize by selling their resources in exchange for the foreign exchange needed to develop their economy to import goods. Many developing countries have been

influenced by this theory to conduct resource auctions, which have not turned out as well as hoped. The developed countries have seized the opportunity of some developing countries to sell their resources cheaply, making full use of the cheap resources of other countries to develop their own economy. They prefer to preserve their own resources, so that when there is a shortage or high price of resources abroad, there are still resources available for exploitation at home and their economic development will not be jeopardized. Japan imports large amounts of timber from developing countries without harvesting indigenous forests can be cited as an example(Huang, 2011).

### **1.3 Analysis of trends in international trade**

#### **1.3.1 Influencing factors**

The development of international trade is the result of a complex combination of factors. International trade is subject to many complex and volatile factors. These factors are mainly natural, economic, political, legal, technological, and transportation factors. In this paper, economic, globalization, technology, and maritime factors will be highlighted.

##### **(1)Economic factors**

Among the various economic factors affecting international trade, those that are representative of trends in international trade are discussed in this paper.

##### **I. International division of labour**

The international division of labour refers to the division of labour among the countries of the world. It is the result of the development of the social division of labour to a certain stage, the internal division of labour within the national economy

beyond national boundaries, is the basis of international trade and the world market, its development changes have an important impact on the development of international trade, is the main driving force of contemporary international trade development. Looking at the development of the international division of labour, we can see that in the period of rapid development of the international division of labour, international trade is also developing more rapidly. Conversely, during a period when the international division of labour was developing more slowly, international trade was also developing more slowly or at a standstill. For example, after the Second World War, as the international division of labour deepened, international trade developed at a correspondingly faster rate than in previous periods, and at a faster rate than the growth of world production.

## II. Development of transnational corporations

The growth of international trade worldwide is directly related to the development of transnational corporations. According to United Nations statistics, in the 1980s, transnational corporations already accounted for four fifths of total world trade; today they control about 40 per cent of world GDP, about 50 per cent of trade and about 90 per cent of international investment. The development of transnational corporations, the expansion of OFDI and sales, will inevitably promote the growth of international trade. For example, Philips Electronics in the Netherlands, which used to buy parts and components and sell products mainly locally, has established 267 production bases in 25 countries and sales organizations in more than 60 countries, through which it sells its products to 150 countries and regions, with an annual freight demand of more than 100,000 TUE, thus contributing to a certain extent to the development of international shipping and international trade.

### (2) Globalization factors

With the development of capitalism, globalization, with the expansion of international trade as its main manifestation, began in order for more goods to be sold. Marx's elaboration on world markets could have addressed the nature of globalization earlier (N/A, 1995), while some scholars argue that globalization began after 15<sup>th</sup> century (Stavrianos, 1992.). Since the industrial revolution, capitalist countries need to expand their markets further and globalization is considered to be developing rapidly. Since then, globalization has gone through different stages of development, with significant progress in globalization, particularly economic globalization, after the 1950s. Economic globalization refers to the freer movement of factors of production around the world. Liberalism and protectionism have always gone hand in hand, and whenever the world economy booms, free trade prevails and economic globalization accelerates. And protectionism, populism, will rise in a world recession. The economy is cyclical and the current global economy is considered to be at a low point, but the trend of globalization has not been reversed.

### (3) Technology factors

The scientific and technological revolution is a fundamental driver of social production and international trade. From the steam age to the electrical age to the information age, the scientific and technological revolutions have greatly improved the efficiency of the social division of labour and promoted economic development: the first scientific and technological revolution is considered to have solved the problem of "energy power" for socialized production and ocean transportation, the comparative advantage has led to the spatial separation of production and consumption among countries, and the international division of production has been initially formed, but the nodes of the period have relatively independent production

chains, but the real global division of production has not been realized. The second scientific and technological revolution and the third scientific and technological revolution have led to the rapid development of transport and communication technologies, with global value chains, with the intra-product division of labour as the main form, becoming a typical feature of the global division of labour in production, and globalization achieving secondary development. At present, a new generation of technological innovation, represented by artificial intelligence, has been opened. Based on historical experience, artificial intelligence is bound to have a revolutionary and disruptive impact on social production and international trade.

#### (4) Maritime factors

Maritime transport is one of the most important modes of transport in the international exchange of commodities, with the share of goods transported in the total volume of international goods accounting for approximately 80 per cent or more. Marine transportation is carried out by natural navigation channels, which are not restricted by roads and tracks and have a greater capacity for passage. In modern societies, changes in the components of the trade environment, such as policy, economic and natural conditions, are considered to be accelerating and frequent. Therefore, shipping routes should be variable in order to adapt to the new conditions and accomplish the transportation tasks. With the development of the shipping industry and the advancement of modern shipbuilding technology, the trend towards larger ships is considered significant. In addition, with the natural formation of the maritime shipping lanes and port facilities generally built by governments, companies operating in the maritime sector can achieve significant savings in infrastructure investment. The large capacity, long service life, long transport mileage

and low unit transport costs of ships provide favourable conditions for the transport of low-value bulk goods.

While maritime transport generally involves individuals and organizations in different national regions, it is also subject to international law and regulation, as well as to the political and legal constraints and influences of States. Marine transport is the slowest of all means of transport, and it is also susceptible to natural conditions and climate, making it less accurate and more likely to be in distress.

### 1.3.2 Trends in international trade

#### (1) Trade liberalization

In recent decades, the trend towards liberalization of world trade has developed rapidly. The EU and the countries of the Asian Economic and Trade Area have demonstrated the great benefits of economic integration and open trade. Countries that have implemented import substitution (IS) strategies over the past decades (most notably in Latin America) have successively abandoned this model. In the case of Latin America, the international debt crisis of the 1980s proved that IS could not reduce its dependence on external finance. The trading systems of the Eastern European countries were liberalized after the collapse of the Soviet Union, and China and India opened their doors to international trade in order to promote development. In *The Monterrey Consensus*, international trade was given special attention because it had been recognized that in many cases it was the most important external resource for financing development.

In order to respond to the trend of world economic integration, on the basis of WTO principles, governments have actively and pragmatically taken a series of important trade liberalization steps and actively participated in international competition and



international cooperation. These trade liberalization steps include, inter alia, gradual tariff reductions and market access measures such as the reduction of non-tariff barriers. The above-mentioned measures have effectively lifted the obstacles limiting the development of international trade and have contributed significantly to the prosperity and development of the world economy. Under the general trend of trade and investment liberalization, countries are accelerating the process of market opening, taking the initiative to seek and open up new avenues of economic and trade cooperation and to occupy a larger market share in order to obtain more economic benefits. At the same time, the competition for the world market has become more intense and the contradictions have become more acute(Gao, 2002).

## (2) Emergence of trade in technology and services

The new technological revolution that emerged after the war was a key factor in driving the world economy. In the developed countries, the share of economic growth benefiting from the application of the fruits of the new technological revolution has reached 60 to 70 per cent, with a growing trend. The comprehensive practicalization of the new technology revolution has promoted the flourishing of high-tech industries in various countries, and the growing development of biotechnology, information technology, new material technology and other industries has become a strong driving force for economic growth.

New forms of trade and traded products, with the knowledge-based economy at their core, are on the rise and will be important elements of future trade. Contemporary developments in information technology have made e-commerce the new way of doing business. This approach is geographically and temporally independent and can be carried out 24/7, resulting in significant savings in trade costs. Electronic

commerce not only accelerates the speed of information feedback, reduces costs and improves the efficiency of trade operations, but also provides more favourable trading opportunities and conditions for enterprises in a highly competitive market. Information technology and information tools have become accelerators of world trade development and trade efficiency. Trade in information products, green products and services, characterized by the knowledge economy, will gradually become a major component of trade. Since the 1990s, exports of information products such as modern office equipment and telecommunications products have been strong, surpassing major products such as chemicals, automobiles, textiles and clothing. As people's awareness of environmental protection and sustainable development increases, green products are increasingly valued and pursued, and their share in the future trade will become larger and larger.

The development of the knowledge-based economy has led to the growth of trade in services, which has become increasingly important in global trade. Trade in services, as an integral part of world trade, is developing rapidly. Since the 1990s, trade in services has emerged as an independent and important mode of trade, from being complementary to trade in goods, and has become a new area of trade competition for all countries. According to the World Trade Organization, the total import and export of world trade in services was \$1,690.7 billion in 1991, rising to \$2,580 billion in 1998(Gao, 2002).

## **2. The decisive role of international trade in shipping**

International trade is considered to play a decisive role in shipping. Li Yongsheng believes that shipping, especially international shipping is the derivative of international trade demand, the development of international trade changes on the

development of the shipping industry to have a decisive impact(Li Yongsheng, 1998); Fan Wei believes that the development of international trade is the stable growth of the demand for shipping and the basis of mention(Fan Wei, 1998). The decisive role of international trade for shipping can perhaps be analysed in the following aspects:

### **2.1 Derivative nature of shipping**

"Derivative" usually refers to something in a subordinate position that is separated from the process of a subject matter. The derivative nature of international shipping is considered to have a historical basis. Most rivers and seas pass through densely populated areas. As far back as ancient times, humans learned to use waterways for commodity exchange. However, international trade was long limited to small-scale maritime transport between neighboring countries due to the low level of technology and the vulnerability of ships to risks at sea. With the budding of capitalism and the formation of the world market in the 14th century, international trade was considered to be growing at an astonishing rate. The expansion of capital placed high demands on capacity, and traditional land transport was deemed inadequate to meet its requirements. As a result, numerous routes were opened up and maritime transport replaced land transport as the primary means of international trade.

With the vigorous rise of the second industrial revolution in the mid-19th century, the steamship was invented and the trend towards larger and more automated ships was considered significant. However, by today's standards, ships were still small. As a result, a single owner's cargo could fill the holds of an average ship. Navigational risks were still considered large and professional carriers were rare. At this time, international shipping was not completely separated from international trade. The shipowner was usually also the cargo owner. With the development of social

productivity, the gradual increase in the size of ships and the rapid growth of trade, it is no longer possible for merchants to load and manage their own ships, and specialized personnel are needed for transport operations. In addition, as a result of scientific and technological development, the maritime navigation has become less and less dangerous, and the volume of trade has increased, and specialized production is being carried out in various parts of the world in accordance with their natural advantages, producing products that are marketed abroad by sea, requiring regular, frequent and continuous transportation of goods by ships. Under these circumstances, it was more difficult for merchants to operate their own shipping, so commerce and shipping began to separate, and the shipping industry became an independent material production sector of society, with the emergence of a truly international shipping industry. By the late eighteenth and early nineteenth centuries, the shipping industry gradually broke away from trade activities and became a separate industry, creating charterers of ships and shipowners who provided capacity. As they are engaged in ship chartering and trading, the maritime exchanges are considered to be the usual meeting places for such groups. These exchanges are considered to be the prototypes of shipping markets. The Baltic Shipping Exchange can serve as an illustrative case. This exchange was established in the 17th century and is considered to have the basic building blocks of a modern shipping market. Shipowners and agents were called by the exchange at a specific time. Subsequently, contracts of carriage were negotiated and signed, depending on the supply and demand of the volume. The above process makes commodities ready to be consumed as consumer goods. Therefore, shipping, especially international shipping, is considered to be inseparable from trade and is considered to be a derivative industry and market.(Gao, 2002).

## **2.2 Dependence of shipping on international trade**

Shipping is considered a derivative of international trade. Shipping therefore has a considerable degree of dependence on the international trade market. The dependence of world shipping on world trade is reflected in two aspects: first, the rise and fall of the world shipping market and the world trade market have been roughly the same; second, the evolution of international shipping centres has been largely synchronized with the shift of world trade centres(Wang, 2007).

An observation of the supply and demand conditions in the shipping market over several decades reveals that there are cyclical ups and downs. This rise and fall is roughly the same as the cycle of international trade, and the correlation between the two is significant. When international trade is in an upward phase, the growth in volume is rapid and the shipping market enters an upward phase as well. On the contrary, when the international trade development generation is slow or even stagnant, the overall demand for shipping will be reduced, so the shipping market will have a shortage of goods, excess capacity and other phenomena, the shipping market will enter a depression period. For example, the onset of the global financial crisis in 2008 severely hampered the development of international trade and posed serious challenges to the shipping industry. Shipping, especially in the Asia-Pacific region, has been in a subdued state. It can therefore be said that shipping is dependent on international trade and that changes in shipping volumes are closely linked to developments in international trade.

The dependence of shipping on international trade is also reflected in the spatial distribution, which is reflected in the fact that the change in international shipping centres has largely coincided with the shift in the world trade centres. The evolutionary trajectory of international shipping centres is consistent with the

direction of the World Trade Centre shift. Since the discovery of geography, as shown in table 1(Zhao, 2013), the world trade center has undergone three major shifts, from the Mediterranean Sea to the Atlantic Ocean and then to the Pacific Ocean(You, 2010), and thus formed three major trade centers in Western Europe, North America and East Asia; at the same time, the layout of international shipping center has also undergone three stages of "Western European plate", "North American plate" and "East Asian plate".(Wang, 2007) Since the 1980s, with the further shift of the center of gravity of world economic and trade to the Pacific region, a number of world economic and trade center cities have emerged along the Pacific Rim, such as Hong Kong, Singapore, Kobe, Kaohsiung, Busan, Shanghai and other cities have formed or are forming new international shipping centers(Zhao, 2013).

*Tab. 1 Transtion of international shipping center and world trade center table*

Emergence of trade-developed regions	Transfer of the World Economic and Trade Centre	Emergence of international shipping centres
The rise of the "Western European plate"	Movement of the International Economic and Trade Centre from the Mediterranean to the Atlantic	The British Industrial Revolution made London the number one port
"North American plate" replaces "Western European plate"	At the end of the 19th century, the centre of gravity of world economic growth shifted towards the West Atlantic	New York rises, Rotterdam overtakes New York to become world's number one port in 1965
"East Asian plate" replaces	In the 1980s, the focus of	Important port cities on

"North American plate"	world economic growth shifted from the Atlantic to the Pacific	the Pacific coast develop into international shipping centres
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*Source of table: Xueyu Zhao. 2013. A study on the relationship between world trade and world shipping based on coordination theory. Dalian Maritime University.*

### **2.3 Shipping demand forecasts**

According to Tsuyoshi Hashimoto, Vice President and Executive Director of Shokai Mitsui Co., Ltd, crude oil and refined oil will continue to grow in the next 5-10 years. Therefore, a strategy to support the LNG business more may be wise and should include the LNG business as a significant segment.

From a volume perspective, LNG is growing very fast, especially in recent years, more and more countries are involved in the production and consumption of LNG, which has also brought about changes in the global consumption structure of LNG products.

From a distance perspective, it can be seen that the actual average sea mileage of LNG in 2018 is 4,584 nautical miles. Because transportation doesn't always happen over the shortest distances and involves some long distances, it will grow to 4782 nautical miles in 2025 if all LNG sales and transportation are handled in an optimal manner.

In addition to the above-mentioned volumes and distances, the situation on the supply side is also considered to be in need of attention; in 2015-2019, the demand for DWT is increasing in each year, i.e. in fact on the freight side, but in terms of the total supply of ship capacity, such as the construction of new ships, it is outpacing the growth of cargo volumes (Tsuyoshi Hashimoto, 2019).

Therefore, how to understand the trade structure of each commodity and the factors influencing the growth of trade distance are important components of the analysis of shipping demand outlook. In addition, in order to better understand the trade flows of products, it would be efficient for shipping companies to enter upstream or downstream of the supply chain.

### **3. The trade facilitation role of shipping**

Shipping is considered to have a facilitating effect on international trade. According to Qian Yongchang, international trade is an important factor influencing world shipping, and at the same time, the shipping industry is a fundamental condition for global economic integration and plays an increasingly important role in promoting the development of border trade (Qian, 2008.); by comparing the interaction between shipping and international trade, Chen Guang concluded that the shipping industry is closely related to the development of international trade (Chen, 2011).

International shipping is not just subject to international trade; it is an important condition for international trade. Shipping, in a broad sense, is an important link in international trade. The implementation of transport and the quality of transport have a direct bearing on whether international trade can be achieved, and transport arrangements, as an important condition of trade negotiations, have a direct bearing on whether trade can be concluded (Gao, 2002). International shipping has a facilitating effect on international trade in the following aspects:

#### **3.1 Shipping as a determining factor in regional economic development**

The developed economies of many countries, both in the early days of capitalist



development and in contemporary societies, are inseparable from strong maritime transport. For example, London in the United Kingdom, the Baltic Sea Shipping Exchange was the world's first shipping market, as well as New York in the United States, Bergen in Norway, Gothenburg in Sweden, Rotterdam in the Netherlands, Tokyo in Japan, Shanghai and Hong Kong in China, the coastal cities that did a lot of shipping, initially became the hubs of the world's cargo flow by virtue of their excellent geographical location and natural conditions. With the increase in the flow of goods and the increase in the sources of goods, many enterprise structures and professionals engaged in international shipping and international trade have been attracted. The huge flow of goods through the shipping centre is accompanied by a huge flow of capital, so the shipping centre becomes a financial centre, information centre, around the port a number of markets, such as the shipping market, insurance market, trade market, financial market, etc., thus strengthening its status as a shipping centre. The gradual development of these areas from port cities to world trade and maritime centres has not only led to local economic prosperity, but also benefit to the economic development of the surrounding region and the whole country (Gao, 2002) .

Pinto-Orton, Nancy L (2001), in analyzing the history of early maritime trade, found that a number of small, functionally independent, free ports near the Arabian Sea, not subject to strong governmental control, contributed significantly to the formation of the original International Trade Centre during a period of high maritime trade. H.A. van Klink (1998) provides a detailed analysis of the establishment, development and role of Rotterdam as an international shipping centre from the perspective of function, spatial location and dynamic management. Masahisa Fujita and Tomoya Mori (1996) construct a dynamic model of spatial economic development that argues for the irreversibility of spatial economic development, i.e., that the port's economy

continues to prosper even when the city's initial entry point advantage becomes unimportant or unemphasized.

Kong Jiong Jiong(2019) believes that Shanghai's status as an international trade center and its status as a shipping center are mutually premised and influenced by each other. Based on the economic data of Shanghai since the 1990s, the interaction between the construction of the Shanghai International Trade Center and the International Shipping Center is examined by using the coordination test, VEC model and Granger causality test from the prerequisites for the construction of the International Trade Center. The results show that the conditions necessary for the construction of the ITC, such as economic strength, level of science and technology, financial services system and policy and regulatory environment have a long-term impact on shipping conditions. At the same time, both in the long and short term, the construction of an international shipping center in Shanghai has a significant contribution to the formation of its international trade center status, and the short-term impact outweighs the long-term impact. The Granger test found a two-way causal relationship between the International Shipping Centre and the construction of the International Trade Centre, thus quantitatively validating the inseparable interdependence between shipping and international trade.

### **3.2 Shipping as a major route for international trade**

Another important role of shipping is as the main means of international trade, so that the demand for international trade in terms of volume is met indefinitely. The world economy has not been considered fragmented for a long time. Firstly, resources are unevenly distributed across the globe. This includes natural resources such as soil, rainfall, freshwater and minerals, as well as social resources such as

population. Secondly, societies at different stages of productivity are at different levels. Finally, there are differences in the level of national consumption across countries. Imbalances create "movements" which, in the case of commodity "movements", enable people across countries and regions to reduce differences in their levels of productive development and raise economic levels across countries and regions. In real industry, interregional flows of resources are often expressed in the form of import and export trade between countries.

Such flows are considered to be necessary by means of transport or other carriers. Pipelines are a typical example of other carriers, but they are only suitable for one or a few resources. Therefore, transportation is considered the primary vehicle. Of the many modes of transport, ships are considered to carry more, over longer distances, and usually have the lowest freight per unit. Therefore, when it comes to the transport of bulk items, sea transportation is preferred. More than 80 per cent of the world's merchandise flows are carried by sea, with international shipping becoming the main vehicle for international trade. There can be no developed international trade without developed shipping, shipping plays an important role in a country's economy and in the global economy(Gao, 2002).

### **3.3 Shipping is the lifeblood of the physical industry**

Shipping has provided the world economy with a large amount of industrial raw materials and fuels and has become a lifeline for industrialized countries and large enterprises. The post-World War II technological innovations are considered the third scientific and technological revolution. This scientific and technological revolution has been carried out mainly in the three basic technological fields of electronics, energy and materials. It is widely recognized that only by mastering modern science

and technology and vigorously developing industrial production can we have a developed economy. Owing to the uneven distribution of natural resources across countries, many countries do not have the raw materials needed for industry, which requires significant imports from abroad, creating a demand for developed maritime transport(Gao, 2002).

### **3.4 Shipping as a bridge to world economic exchange**

International shipping is considered to be a bridge of technology, commerce and people-to-people contacts. It was once the main channel through which countries around the world connected with each other. Global economic entities such as manufacturers and retailers, manufacturers and consumers, and manufacturers and wholesalers were linked together in many ways. The globalization of national production and consumption through shipping has transformed the production and consumption of the vast majority of countries into a worldwide activity. Countries with high levels of economic development, whose links to the world economy are generally considered to be strong, and whose demand for shipping is considered to be strong. In addition, countries and regions with rapid economic development must also be developing international shipping at a high rate. The international shipping market plays an important role in communicating international contacts and promoting the development of a market economy worldwide. Shipping has given a strong impetus to the process of integration of the world economy and the internationalization of production, exchange and consumption on a global scale. In modern society, the exchange of industrial and agricultural products and commodities is increasing in scale. Although maritime transport, the material backbone of commodity exchange, cannot be defined as an absolute necessity for

international trade, large-scale international trade cannot be achieved without developed maritime transport.

#### **4. Overview of trends in the decentralization of international trade**

##### **4.1 Overview of "decentralization"**

"Decentralization" refers to an open, flat, egalitarian systemic phenomenon or structure.

In the process of transition from an agrarian to an industrial society, the world's central one-edge structure was generated. At present, humanity is in the process of transition from an industrial to a post-industrial society, a historical transition that has opened the way with the globalization movement, which has had a tremendous impact on the existing structures at the centre of the world and at the periphery, showing a tendency towards "decentralization". (Zhang Kangzhi, 2012.)

The innovation of information technology, known as the Fourth Industrial Revolution, triggered a qualitative leap in the socio-economic structure. Its manifestation at the turn of the century was the spread of the Internet and globalization. And the new direction of development that has followed is, reasonably, "decentralization".

In a typical decentralized system, each node is characterized by a high degree of autonomy. Nodes can be freely connected to each other to form new connecting units. Any one of the nodes may become the hub of the phase, but does not have mandatory central control functions. The influence of nodes to nodes passes through the network and a nonlinear causal relationship is formed(Reid, 1995).

In fact, this new trend can be seen everywhere in everyday life, with emerging social media such as Facebook, Tiktok and others offering services that are decentralized,

where any user can submit content and every internet user becomes a small and independent information provider, ultimately making the internet flatter and content production more diverse.

We can refer to an industry example: Xiaomi's products have more than 800 parts from more than 100 suppliers, including Qualcomm, Sharp, Sony and Huideng Technology(Xie, 2015). Xiaomi does not own all patents on its products, nor is it a mandatory control center. Each node in its industrial chain (i.e. component suppliers) has a high degree of autonomy, has its own patents, independent design and development. In fact, it's a typical decentralized system.

#### **4.2 Trends in the decentralization of international trade**

In the last three decades, the global trade landscape has undergone two dramatic changes: first, the share of intermediate goods in trade in goods has risen to over 70 per cent, and second, the share of trade in services in total trade has risen to over 30 per cent. This is seen as a result of the evolution of the horizontal and vertical division of labour in global manufacturing and the accelerated development of international trade. Changes in the entire productivity system are affecting and generating new international trade rules (Huang, 2019). The trend of decentralization of international trade can perhaps be observed from the decentralization of the industrial chain, the rapid development of trade in services, the decentralization of the international division of labor, the rapid development of cross-border e-commerce and other dimensions:

##### **4.2.1 Decentralization of global industry chains**

The commodity structure of international trade refers to the composition of the major categories of commodities or a particular commodity in the overall international trade over a certain period of time, that is, the share of the volume of trade in the major categories of commodities or a particular commodity in the overall world export trade. The structure of international trade reflects the comparative advantages of countries, the degree of industrialization of the world and the international division of labour is an important indicator of the quality of international trade. Factors affecting the structure of internationally traded commodities are productivity factors, production relations, natural resources, human and technical resources, etc.

The development of science and technology is considered to have introduced more and more integrated alternatives, the role of natural raw materials in international trade has declined significantly, the demand for some primary products on the world market has decreased, prices have fallen, and even the supply of primary products for trade has exceeded the demand of industrialized countries. This led to an increase in the share of semi-finished products in world trade and a decline in the share of primary products. Some developed countries, in particular, have been able to reduce the demand for resource-intensive products from developing countries by taking advantage of technological advantages. They have done so by reducing the share of primary products in total consumption; by reducing the consumption of resources and materials per unit of final product; and by increasing the share of value added in goods and services produced by new technologies. In addition, the success of the Uruguay Round negotiations and the acceleration of the trade liberalization process have led to a sharp reduction in the protection of semi-finished products in most industrialized countries, allowing for greater freedom of trade in semi-finished products than in primary products. Trade in semi-finished products has been allowed to develop freely and with almost no restrictions.

We can find the decentralization of the industrial chain revealed by the changes in the structure of international trade: in the 1980s, about 70 per cent of total international trade was in manufactured goods. By 2010, 60 per cent of total global trade was in intermediate products such as components and raw materials and 40 per cent in manufactured goods. So far in 2018, more than 70% of global trade is in intermediate products such as components and raw materials(Huang qifan, 2019). This reflects the phenomenon that the world's major traded goods are no longer produced by enterprises in a single country, in a single region, and that a product is often formed by the combination of thousands of parts and components produced by dozens of countries, hundreds of enterprises. Decentralization of the industrial chain by no means implies more than simple decentralization of manufacturing.

#### 4.2.2 The rapid growth of trade in services and its structural changes

Trade in intermediate goods has led to the rapid development of trade in services, including productive logistics, productive services, industrial chain finance, and various research and development, research and design.

Based on consultations among member countries, the WTO, in its 1991 GATT GNS/W/120 Directory, grouped trade in services into 12 sectors by activity characteristics: (1) business services; (2) communication services; (3) construction and related engineering services; (4) distribution services; (5) education services; (6) environmental services; (7) financial services; (8) health and social services; (9) tourism and related services; (10) cultural, recreational and sports services; (11) transport services; (12) other services not covered elsewhere.

With the development of economic globalization and regional integration, the demand for services by enterprises and individuals is considered to be on the rise,



and the international movement of services is gradually emerging, making trade in services a new growth point for trade. The growth rate of international exports of services has been higher than that of exports of goods, with an average annual growth rate of 7 per cent between 1990 and 2002, higher than the 6 per cent growth rate of exports of goods over the same period, and the size of services exports has reached one quarter (24.7 per cent) of the size of goods exports.

Trade in services is not only growing at an alarming rate and scale, but also involves a growing number of sectors and a wide range of areas. With the continuous development of the global wave of technology industrialization, high technology is widely used in the service industry, accounting, consulting and other professional services, architectural design services, computer information services and other emerging service industries continue to emerge and rapidly expand.

The decentralized nature of trade in services itself, in turn, deepens the decentralization of the entire industry chain. The rapid expansion of trade in services has been accompanied by changes in the commodity structure of trade in services, which are positively correlated with world economic development and the level of science and technology. After the Second World War, due to the Third Industrial Revolution, telecommunication finance and various information industries, the high-tech industry was able to rise rapidly and quickly enter the field of trade in services. As a result, the structure of world trade in services is constantly changing, with a declining share of transport services among the original transport, tourism and other services. In the early 1990s, financial and information services accounted for 38.5 per cent of international transport services and 28.2 per cent of international tourism in the new composition of world services trade. Other services accounted for 30.8 per cent. In recent years, in the composition of international trade in services, the share of traditional services trade, such as transport and tourism, has declined

relatively, while the share of new types of services trade, such as communications, insurance, advertising, leasing and management, has been increasing, especially in the case of services industries with higher knowledge content, such as intellectual property rights, technology transfer, data processing and consulting, which have developed more rapidly, shifting the structure of trade in services towards a knowledge-intensive one.

In addition, the international transfer of services has also become an important trend in the current development of trade in services. The impetus of TNCs is considered a key element and intrinsic motivation for their rapid growth. Human resources, the level of science and technology, changes in the structure of internationally traded commodities and the acceleration of the process of economic globalization are considered to be the external drivers of their development(Li, 2010.).

In recent years, even the international division of labour in the service sector has shown a trend towards decentralization. While the US, Europe and Japan remain the major outsourcing markets, mature ITO and BPO offshoring markets such as Australia, Ireland and India are losing their centrality, while China, the Philippines, Mexico and CEE countries are increasingly active in the services sector (Babic & Agic, 2010).

#### *4.2.3 The rapid growth of cross-border e-commerce*

Cross-border e-commerce refers to an international commercial activity in which the main body of the transaction belongs to different customs borders, reaches the transaction, makes payment and settlement through the e-commerce platform, and delivers the goods and completes the transaction through cross-border logistics.

Cross-border e-commerce was developed based on the web. Cyberspace is a new

space relative to physical space, a virtual but objectively existing world of URLs and passwords.

The unique value standards and behavioural patterns of cyberspace profoundly influence cross-border e-commerce, giving it its own characteristics that are different from traditional transaction methods.

Global Internet users accounted for one-third of the world's population in 2013, with nearly 1 billion people shopping online, mainly for clothing and accessories, books and travel (Wang, 2016). Global B2C e-commerce transactions reached \$1.3 trillion in 2013, up 18.3% year-on-year and already accounting for 5% of total global retail sales (Chen, 2019.). According to Forrester Research, the total value of B2B e-commerce transactions is more than double that of B2C e-commerce transactions.

The rapid development of cross-border e-commerce seems to make it the main mode of international trade in the future (Tan, 2016). In recent years, it is clear that an increasing number of people are choosing to purchase goods and services from national and even global suppliers via the Internet rather than going to shopping malls and other typically centralized commercial locations. The Internet without boundaries is inherently decentralized, so e-commerce, which relies on the Internet, is naturally decentralized as well.

## **5. Impact of the decentralization trend in international trade on shipping**

### ***5.1 Impact of chain decentralization on shipping***

While the world economy today is considered to have broken through the confines of industrial clusters, it is still not free from the boundaries of the nation-state. In this context, an international market, a regional common market, less bounded by

national boundaries, has rapidly developed.

Since the 1990s, as world economy and trade have moved towards regionalization and grouping, the structure of world trade, especially the commodity manufacturing process, has been further decentralized, production technologies and organizational forms have been continuously adjusted, regional markets have been concentrated and merged, and goods value of origin have been substantially added.

As a result of this factor, new changes in the structure, size and growth rate of cargo in the international maritime market are occurring and will lead to changes in the shipping industry, which are considered to be conducive to the sustainable development of the international container transport industry. Container traffic on the three major east-west liner routes (Pacific, Far East One Europe and Atlantic) is expected to continue to grow. Of the three regional common markets that currently have the greatest impact (European Common Market, North American Common Market, and Asia-Pacific Common Market), the Asia-Pacific region is the most visible. The region's gross national product and foreign trade are considered to be growing faster than the world average. APEC members account for 40 per cent of world exports. In the future, with the continued development of economic and trade activities in the Asia-Pacific region, its status as a world trade centre will be further strengthened. It is estimated that more than 50% of the growth in global trade in the 21st century will depend on the Asia-Pacific region, which provides excellent opportunities for the development of shipping and related industries such as shipbuilding and ports in the region. This development of regional trade and shipping has lowered the barriers to the movement of goods and factors of production within the region and has, to some extent, protected the economic interests of the member States in the region.

## **5.2 Impact of the development of trade in services on shipping**

The development of cross-border investment by manufacturing enterprises requires support from productive services such as trade, finance, insurance, telecommunications and logistics. Many manufacturing TNCs have moved to emerging economies, and the services firms that provide services to them in the countries from which they are transferred have followed, in order to be closer to users and provide more attentive and timely services. For example, in order to better serve manufacturing investments in China, HSBC moved its regional headquarters from Hong Kong to Shanghai in 2002, and moved its technical support centre to Shenzhen and call centre to Guangzhou and Shanghai.

With the rapid development of trade in services, the world has entered a new era of rapid information transmission, globalization of business competition, high-technology development. The development of trade in services has had a strong impact on existing production and lifestyles, and the impact on the demand for international shipping has been far-reaching. The impact of the development of trade in services on international shipping demand is mainly twofold. On the one hand, trade in services has brought about industrial restructuring, which has led to an increasing share of intangible goods in international trade, which has developed at a significantly faster rate than world trade in goods.

On the other hand, in the volume of seaborne trade in goods, as a result of the increasing scientific and technological content of commodities, goods are increasingly shifting in the direction of lighter weight, smaller size and higher value, and although the total value of world foreign trade exports is growing rapidly, the world seaborne volume is basically in a state of stagnation or upward and downward fluctuations, and the growth rate is slowing rapidly.

### **5.3 Impact of developments in e-commerce on shipping**

The ubiquity of the Internet allows marketing systems to reach any corner of the globe, capturing and exploring any new customer, need or change around the globe. The Internet, with its global, personalized, and instantaneous nature, is taking the customer base from reality to the web, appearing to manufacturers and exporters in virtual form. As a result, manufacturers have further increased their demand for global supply chains, and they often require carriers to be able to provide global coverage.

For shipping companies, this means that they need to reallocate their resources internally, moving from a route-based resource allocation model to a global carrier resource allocation model to form a globally integrated marketing system.

As a result of the development of information technology, the original borders and balances between national economies are constantly being disrupted. The general openness of the market economy of all countries has enabled the market competition mechanism to play a leading role in the world economic market, and the competitive nature of the international market of the world economy is constantly developing and strengthening. The shipping industry, which is the watchdog of world economy and trade development, is bound to face fierce competition.

This competition is manifested on the one hand by the fact that the shipping market has entered a mature stage, the ship supply market is already saturated, and enterprises with weak competitiveness will be eliminated. At the same time, cross-border e-commerce practitioners have put forward diversified, complex and strict requirements for the service quality of shipping companies, hoping that shipping companies can provide "door-to-door" complete system transportation

services. Shipping companies must constantly optimize their fleet structure, adjust their transportation organization, develop an integrated transportation network centered on multimodal transportation, and constantly introduce new products to meet their requirements in order to attract customers and remain competitive. On the other hand, given the importance of the shipping industry in national economies, countries are adopting supportive policies to further support their own shipping industries in the face of a highly competitive world shipping market. For example, the United States "Contingency Maintenance Plan", which aims to provide policy subsidies for maritime investment in order to enhance its ability to compete in the maritime market.

## **6. Feedback from shipping on the decentralization of international trade and possible trends**

### ***6.1 Feedback from shipping on the decentralization of international trade***

#### ***(1) Changes in trade terms***

International multimodal transport is a mode of transport that has emerged and developed on the basis of container transport. It connects oceans, rivers, roads, railways and even air for transportation, and is a much more complete mode of transportation than block transportation.

With the increasing pace of international trade, international multimodal transport began to become the development direction of international transport, because it has the advantages of safety, speed, simple procedures, reasonable transport, packaging economy and so on.

Some scholars believe that this change in the characteristics of international transport is vividly reflected in Incoterms@2010, "Adjustments to the classification system" and "Terminological changes in Group D"(Tan, 2012).

Incoterms® 2010 breaks the framework of Incoterms® 2000 into four groups of trade terms: E, F, C and D, divided by mode of transport: "Applicable to any mode of transport" (EXW, FCA, CPT, CIP, DAT, DAP, DDP) and "Applicable to sea and inland water transport" (FAS, FOB, CFR, CIF). This new classification is more concise, highlighting the predominance of maritime transport in international multimodal transport and facilitating the choice of the most appropriate mode of transport for the different characteristics of goods and the agreement on the corresponding obligations of both parties. As mentioned earlier, this is partly the result of an increase in the share of raw materials and semi-finished products in trade. Incoterms@2010 removes four of the five Incoterms2000 Group D terms (DAF, DES, DEQ and DDU) and adds two new terms, DAT and DAP, while retaining only DDP, where DAT (Delivered at terminal) and Incoterms2000 DEQ (Delivered Ex Quay) are essentially the same in terms of buyer's and seller's obligations, with the difference that "terminal" for DAT is not limited to "quay" for DEQ, but refers to a terminal under any mode of transport, such as a terminal, warehouse, container yard, or road, rail or air cargo terminal. This change suggests that international trade practitioners are beginning to favour more flexible logistics.

With the rise of electronic commerce on a global scale, international trade practices have begun to rely on the Internet, enterprise intranets and enterprise extranets to connect enterprises, customers, suppliers and trade needs with existing information technology systems to achieve cross-border information exchange, procurement, settlement, customs clearance and other information exchange, and to realize the global flow of information in the field of international trade.



## *(2) Platforms and the emergence of freelancers*

It is reported that Alibaba International Trade and Maersk Line, together with Maersk Line, broke the traditional booking rules and launched the logistics order direct to the shipping company's order trading platform product - Cabin Treasure for the most urgent needs of SMEs in the peak season at the end of the year (Duan, 2018).

The growing number of such distributed trading platforms is only a virtualized bilateral market from an economic point of view. With the introduction of blockchain technology, shipping e-commerce platforms can also be considered as online shipping exchanges. (Xu, 2016.)

However, the contract of carriage is no longer a contract between the carrier and the shipper, but between the platform and the shipper. We can boldly predict that freight forwarders, shipping brokers, maritime law attorneys, valuers, surveyors and other professionals will say goodbye to firms and small groups and become more focused, more detailed and better service quality freelancers who will continue to provide professional services or advice to ports and shipping industry on the platform.

## ***6.2 Possible relevant trends in the shipping industry***

### *(1) Developing integrated logistics*

APL (American President Lines, Inc.) has developed a plan for the development of maritime transportation in the 21st century, proposing the further development of the North American double-decker rail container complex delivery system and the company's strategy for growth abroad. The French national shipping company (CGM)

has set up a three-year development plan to strengthen market competition and market share through the creation of alliances and fleet alliances, as well as to reduce its staff significantly. Consolidate the development strategies of the world's 20 largest shipping lines, which, in order to maintain their competitive advantage, have adopted high-speed, large and automated liner shipping, and have implemented joint ventures and regrouping among liner companies to meet the requirements of integrated logistics trends. At present, more than 10 large shipping companies have monopolized routes through global alliances to improve their own competitiveness, while constantly adjusting capacity and opening up new routes.

## *(2) Transnational business practices of shipping groups*

With the development and application of science and technology, the competitive situation in the shipping market is also becoming more and more intense. The search for new modes of shipping development is both a need for economic development and a major choice for the shipping industry to enter the global market. With the development of containerized transport systems and the broadening of their functions, the growth of intra-sectoral trade, intra-economic trade blocs and the huge intercontinental transport that follows, transnational shipping blocs have emerged and are considered the main mode of future international shipping development. With the advent of the era of knowledge economy, with the establishment and development of cooperative business models and integrated transport systems for transnational shipping groups as the hallmark, and with the goal of enhancing the group advantages and comprehensive benefits of shipping enterprise groups, the direction of shipping operations will be towards the international grouping of "strong and powerful" and the integration of transport modes. At the same time, in order to

meet the requirements of modern shippers for integrated transport and to diversify business risks, the multinational shipping group is also engaged in diversified business related to the shipping industry, such as one ship and freight forwarding business, ship buying and selling business, land and sea transport business, sea transport broker business, port terminal business, cargo handling business and warehousing business. Shipping conglomeration, systematization of multimodal transport and diversification of cooperative management are considered to be the main business models.

### *(3) Modernization of shipping management.*

With computer technology and modern communication technology as the main means, and management information systems and decision support systems as the main channels, shipping companies are moving towards management modernization. In order to adapt to the rapid development of international trade, developed countries have established the International Electronic Data Interchange Network System (EDI). International shipping, agency, inland intermodal transport, banking, insurance, as well as consignment, receiving, customs and government departments, can be networked with EDI, each operating through computer terminals on the EDI network, to complete the exchange of information between each other, replacing the current manual work and paperwork, to improve the efficiency of various industries, to achieve freight automation services. At present, major ports around the world have adopted networked information systems, resulting in a rapid increase in port efficiency. In the face of international freight and port automation management systems, it is considered important for shipping companies to accelerate the process of modern management. Intelligent shipping is the call of the times of scientific and

technological progress and shipping development, in line with the requirements of international trade development, to meet the needs of multinational shipping groups. Shipping companies are able to provide modern service levels in order to be invincible in the competition.

## **7. The Situation in China and Possible Strategies**

In recent years, the global trade and shipping industry has faced challenges from both external and internal sources. At the same time, the decentralization of the manufacturing industry and the emergence of new businesses such as cross-border e-commerce and trade in services have provided the impetus for the shipping industry to break through innovation and move towards high-quality development. China is a key link in the global supply chain. It also plays a pivotal role in the international shipping and logistics industry, which serves the supply chain. China's shipping industry is considered to be at a critical point of development where many factors come together. Pioneering and innovation, cooperation and transformation are considered to be the inevitable requirements for the development of the shipping industry. China's specific situation and the strategies that can be adopted can perhaps be categorized into the following four areas.

### **(1) Transition from export-oriented to export-import-oriented**

On the one hand, with globalization and the fragmentation of manufacturing, China's position as a hub for certain manufacturing industries has been challenged. According to Zhang Guoqing, an expert from the China International Trade Association, "China's shipping industry has to make adjustments to survive and develop in the changing trade environment. The future trade environment is likely to be more severe, and the shipping industry needs to improve efficiency across the industry chain". On the other hand, China's foreign import and export trade volume is

growing with the advancement of building the "One Belt, One Road". In 2018, China's total import and export trade in goods with countries along the "Belt and Road" reached US\$1.3 trillion, an increase of 16.3%, 3.7 percentage points higher than the growth rate of foreign trade in the same period, accounting for 27.4% of the total foreign trade value(Li & Wang, 2019). According to IMO Ambassador Xu Zuyuan, "China's shipping industry is undergoing fundamental changes. China has gradually shifted from a focus on exports to a trade mode that places equal emphasis on exports and imports. Last year's Shanghai Import Expo, with a total turnover of 57.8 billion U.S. dollars, has played a supporting role in boosting the shipping industry. Foreign delegations to China will become the new normal for trade activities and provide new development opportunities for the shipping industry".

Therefore, the Chinese government should innovate its shipping and trade policy and implement a business strategy that emphasizes both import and export. Chinese shipping companies should improve their service, management, efficiency and international compliance capabilities to improve efficiency across the entire industry chain.

## (2) Changes in capacity

Over the past few decades, with the development of global seaborne trade, advances in shipbuilding technology, and the construction of global mainline and hub ports, the ship The process of large-scaleization is accelerating, and the proportion of large ships is increasing.

Over the past 50 years, the maximum container load capacity of container ships has increased from 188 TEUs in 1970 to 22,000 TEUs in 2018, and the number of individual ships has increased from 3,353 DWT to 217,000 DWT. and the number of individual ships increased from 3,353 DWT to 217,000 DWT. The driving force behind the move to larger ships is largely due to economies of scale(Xu Minjie,

2007). It is estimated that the cost per TEU of a 20,000 TEU container ship is about 2% lower than that of a 18,000 TEU container ship, and that a 25,000 TEU The cost per container of container ships is further reduced by about 5% than 20,000 TEU container ships. Driven by cost reduction, shipowners and shipping companies have to promote container ships to large.

And as globalization deepens, regional economies develop and manufacturing becomes decentralized. Fluctuations in maritime trade are seen as significant. For example, loading rates on the westbound route from Asia to Europe can be as high as 99%; however, loading rates on the eastbound route from Europe to Asia are often at 50%. around. Whereas very large container ships are considered extremely sensitive to fluctuations in seaborne trade, excessively low loading rates are likely to make it unprofitable for shipowners to even Losses emerged. Data shows that the global order book for 18,000 TEU and above very large containerships reached a record 61 in 2015, but the Orders, on the other hand, fell to zero in 2016. This shows that shipping companies are becoming more rational in their pursuit of mega container ships.

Therefore, Chinese shipping companies need to focus on customer demand, establish a standardized container service system, and speed up the logistics channel between ports Construction, tailor-made all kinds of containers, and promote the construction of container standardization and greening system. Instead of blindly promoting the process of large ships.

### (3) Exploration of shipping e-commerce

With the rapid development of service trade and cross-border e-commerce, shipping e-commerce platforms are becoming increasingly popular with capital and are considered a new direction for the transformation and upgrading of the traditional shipping industry. For example, in October 2018, E2Open, a supply chain software

service provider, acquired INTTRA, the world's largest shipping e-commerce platform. In February 2019, China's leading one-stop international logistics service platform - "transport to where" network completed tens of millions of dollars in B2 round of financing. Chu Bin, chairman of Tianjin Port (Group), said driverless electric container trucks, intelligent transformation of traditional artificial terminals and narrowband IOT demonstration projects will be integrated into the e-commerce platform at Tianjin Port.

Therefore, new ways of trade such as cross-border e-commerce, parallel imported cars, bonded logistics and international cruise distribution should be valued by Chinese shipping companies. Apps that allow shippers to clearly locate each of their orders and provide a full logistics experience should be actively developed. At the same time, providing data support and analysis for upstream and downstream customers and suppliers will help the shipping industry develop more rationally and healthily. In addition, it is considered necessary for the traditional international freight forwarding industry to carry out cross-border integration and realize digital transformation in the upstream and downstream of the chain. Finally, shipping e-commerce has the advantage of providing standardized operation methods. Chinese shipping e-commerce enterprises should consolidate their advantages through financial settlement and online payment.

#### (4) Impact and implications of the coronavirus epidemic.

In the face of the severe new coronavirus epidemic. China's international container liner shipping enterprises first of all implemented a large-scale suspension of traffic. In the first week after the Spring Festival, more than 50% of the capacity was suspended; in the second week, 40% of the capacity was suspended, and the statistics for the third and fourth weeks are still expected to be around 30%(Zheng Jingwen, 2020). In order to offset the huge economic losses caused by the capacity cuts, the

mainstream shipowners implemented a relatively firm tariff policy in February and announced a flat rate increase and higher fuel surcharges from March onwards. In addition, shipowners generally slowed down the speed, can reduce fuel consumption and other operating costs, but also to meet the North America and Australia and other countries for the 14-day quarantine period requirements. Finally, some shipowners are spreading their capacity to the neighboring Japanese, Korean and Southeast Asian markets to improve loading rates.

The Coronavirus outbreak has led Chinese international logistics companies to recognize the importance of deeply understanding and studying the changing needs of their customers, as well as focusing on strengthening their ability to apply digital, online and visual systems. With the quarantine of homes and the inability to work in the office, the shipping industry needs more remote communication tools, more robust and open IT systems. A further increase in paperlessness and automation across the industry is equally considered important.



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