Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/20131
DOI URL: http://dx.doi.org/10.21474/IJAR01/20131

RESEARCH ARTICLE

RESEARCH ON THE EXPORT OF GOODS TO THE US MARKET BY SEA TRANSPORT IN VIETNAM

Nguyen Thi Van Nga, Pham Minh Hanh, Nguyen Ba Hoai Vu and Nguyen Thi Thuy Trang
Thang Long University.

Manuscript Info

Manuscript History
Received: 25 October 2024
Final Accepted: 28 November 2024
Published: December 2024

Key words:-
Supply Chain, Export, Sea Transport, Economic, America, Vietnam

Abstract

This article comprehensively researches the export of goods to the US market by sea transport mode of Vietnam. Conducting research, collecting, analyzing and evaluating statistics related to the export of goods to the US market by Vietnam's sea transport mode. Thereby, clarifying the current situation, assessing strengths, weaknesses, challenges and opportunities to develop this activity in Vietnam. A few recommendations on the development of green logistics, digital transformation, and smart ports were made to promote the export of goods to the US market by Vietnam's sea transportation mode.

Introduction:-

In the context of increasing globalization, export activities have become one of the main driving forces for economic development of countries, especially Vietnam. Vietnam's export turnover of goods has grown sharply over the years. Vietnam's main export markets such as the US, EU, China... In particular, the US market has been the largest export market for many years. However, entering and maintaining exports to this market requires not only a deep understanding of trade regulations but also optimal modes of transportation. Among the existing modes of transportation, sea transportation plays an extremely important role in the export of goods to the US market in Vietnam, contributing to the economic efficiency and competitiveness of goods. According to the International Maritime Organization (IMO) Report 2023, about 80% of global cargo is transported by sea, which shows the key role of this mode of transportation in international trade. Moreover, compared to other modes of transportation such as air or road transportation, sea transportation has the ability to significantly reduce logistics costs. The cost of sea freight is usually only about 1/10 of that of air freight for the same volume of goods (IMO, 2023). In addition, in the context of increasing environmental threats, sea transport is also considered a more sustainable method, with a lower carbon footprint per tonne of goods transported than road and air transport. These factors not only affirm the important role of sea transport in the export of goods, but also indicate that in-depth research in this field is necessary to optimize the shipping process and improve business efficiency in the current era.

In recent years, the study of issues related to sea transportation or exporting goods to major markets of the world such as the US and Europe has been increasingly interested in both scientific researchers in the world and Vietnam. Typically, there are studies in the world such as the research of Sánchez et al. (2003), Warren B. Fitzgerald et al. (2011), Junwook Chi et al. (2016), Bao Jiang et al. (2018). The above studies focus on evaluating factors affecting the export of goods by sea transport such as freight rates, exchange rates; The current situation of green logistics of sea transport; seaport performance; Through these assessments, it helps to provide orientation for the export of goods by sea transportation, propose solutions to improve efficiency, optimize time and cost to develop this activity. In Vietnam, there are typically studies by Tran Nguyen Thanh (2017), Nguyen Thi Thu Ha (2021), Tran Viet An et al (2021), Nguyen Thi Binh (2022). These studies, in addition to raising the same issues as other studies in the

Corresponding Author:-Nguyen Thi Van Nga
Address:-Thang Long University.

world, also focus on specific issues that directly affect Vietnam's export of goods by different methods such as factors affecting container transportation from Vietnam to the US, the shortage of empty containers for Vietnam's export of goods by sea, opportunities, challenges and solutions to promote Vietnam's export of goods to the world. Previous studies in the world and in Vietnam have only focused on a certain aspect of exporting goods by sea transport, there has been no article to comprehensively study all aspects of the export of goods by sea transport of a country (including Vietnam) to major markets of the world such as the US. From there, it shows that the study of exporting goods by sea transport to the US market - one of the largest markets and economies in the world - is extremely urgent and highly practical. The study will focus on collecting data, analyzing and giving comprehensive assessments, strengths, weaknesses, challenges, and opportunities for Vietnam's export of goods to the US market by sea transportation. From the analysis and evaluation, the research provides solutions and recommendations to improve the efficiency and development of this activity of Vietnam in the future. The layout of the article includes Part 1 introduction; Part 2 on theoretical basis; Part 3 on analysis of the current situation of exporting goods to the US market by Vietnam's sea transport mode; Part 4 on solutions and recommendations.

Theoretical basis

In Vietnam, the transportation of goods by sea transport plays the most important role in maintaining and improving the quality of the supply chain. Not only does it have an economic impact, but the supply chain also contributes to promoting international inclusion and cooperation. Countries through supply chain linkages can learn and share experiences and technologies. This contributes to enhancing the competitiveness of countries and creating a boost for global economic development. The concept of supply chain began to emerge in the 1980s, when businesses began to realize the importance of partnering with suppliers and distributors to optimize operational efficiency. There has been a lot of research on supply chains such as Lambert, Stock & Ellram (1998), Ganeshan (1995), Mentzer et al. (2001), Chopra, Sunil, & Peter Meindl (2015). According to research by Ganeshan (1995), a supply chain is defined as a network of facilities and distribution plans that perform the functions of purchasing raw materials and converting them into semi-finished and finished products, and at the same time perform the functions of distribution to customers. Importantly, it is also the embodiment of the information systems needed to monitor all such activities (Quinn, 1997). Thereby creating a network of interrelated organizations, through supply or distribution relationships in different operational processes to create value in the form of products or services for consumers (Mentzer et al., 2001). Chain members include not only manufacturing, supply, and distribution companies, but also transportation companies, warehouses, retailers, and their customers (Chopra, Sunil, & Peter Meindl, 2015).

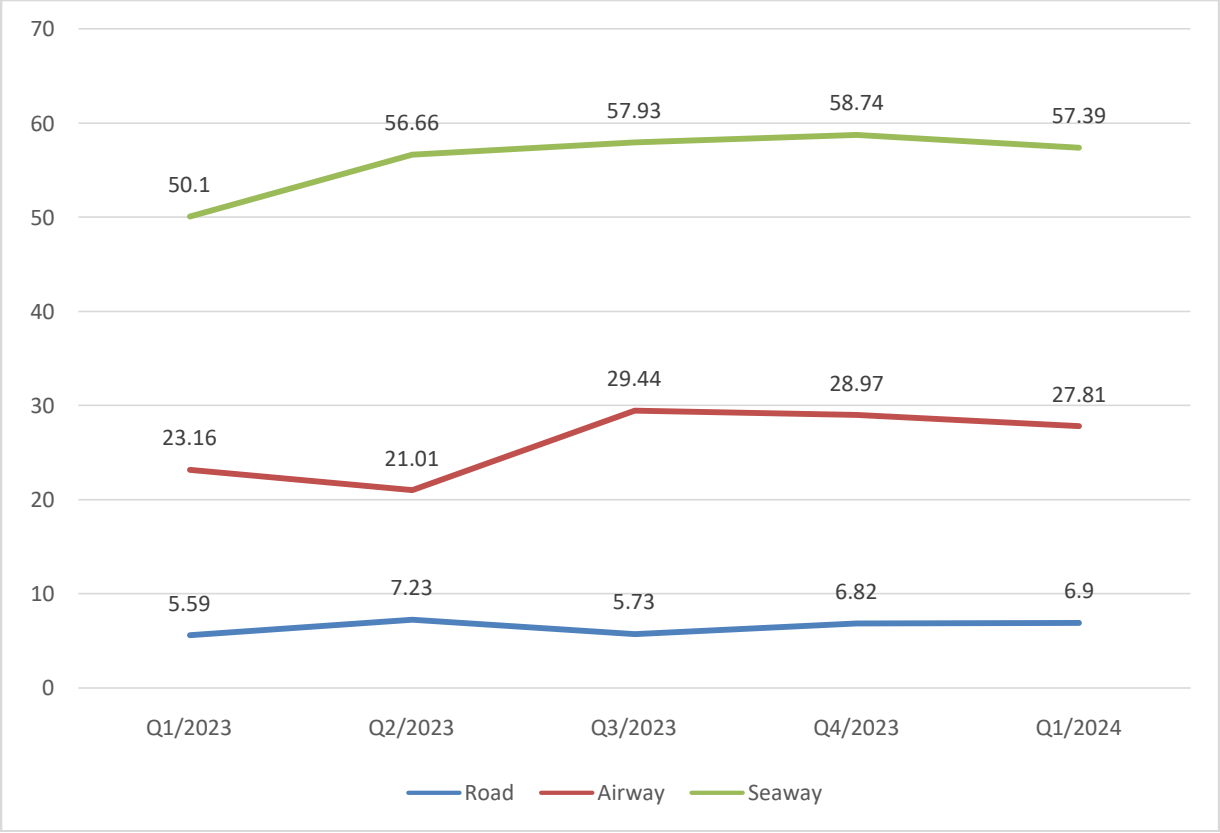
Until now, there have been many definitions of commodity exports, all of which show a close relationship between this activity and the supply chain, especially the global supply chain. According to the theory of classical international trade, when the social division of labor reaches a certain level, the specialization of production is carried out, allowing to create higher productivity, more and more goods not only fully meet the needs of domestic consumption but inevitably lead to the exchange of goods outside the national territory. Thus, in essence, exports are the exchange of goods between countries, also known as "international trade". According to the 2005 Commercial Law, "the export of goods is the fact that goods are taken out of the territory of Vietnam or brought into a special area located in the territory of Vietnam which is considered a separate customs area according to the provisions of law". The export of goods operated based on using currency as a means of payment, with the goal of profit. Exporting goods plays an extremely important role for the country's economy in the process of integration into the global supply chain. It creates job opportunities, improves trade balances, expands consumption markets, scales supply chains, and builds an international reputation for that country. Therefore, the government and businesses need to further promote the export of goods to contribute positively to the development of the supply chain and sustainable growth of the country. Exports are a popular internationalization strategy pursued by countries and are perhaps the most relevant component of international competitiveness (Morgan et al., 2012). Exports allow companies and countries to expand the market for their products beyond national borders and often lead to broader international commitments in the future (Salomon, 2006; Salomon and Shaver, 2005a). From there, it shows that a country's "export competitiveness" reflects that country's "global supply chain competitiveness". The stronger the exports, the larger the supply chain.

The mode of sea transportation is understood as the form of using ships and other sea infrastructure to transport goods (Nguyen Thi Binh, 2022). The mode of sea transport is playing the most important role in Vietnam's international trade activities. Sea freight is responsible for transporting 80% of the world's trade when measured by weight, and this proportion is even higher for many developing countries (UNCTAD, 2023). Sea transport has

affirmed its role because of its long history of development. Legally, a look at the system of maritime customs and international treaties related to maritime activities is enough to show the importance of this mode of transport. International cargo transportation by sea is the process of using ships to transport goods along fixed or non-fixed routes from one country to another (Nguyen Huu Nam, 2023). In a broad sense, international cargo transportation is a collection of economic, economic and technical factors in order to effectively exploit and transport by ship, import and export goods in international trade.

The current situation of exporting goods to the US market by sea transport in Vietnam
The situation of exporting goods to the US market by sea freight in Vietnam
Scale of operation
In which, in the first quarter of 2024, exports of goods by sea had the largest value in transportation methods, reaching 57.39 billion USD, up 14.54% compared to the first quarter of 2023, accounting for 61.79% of the total value.

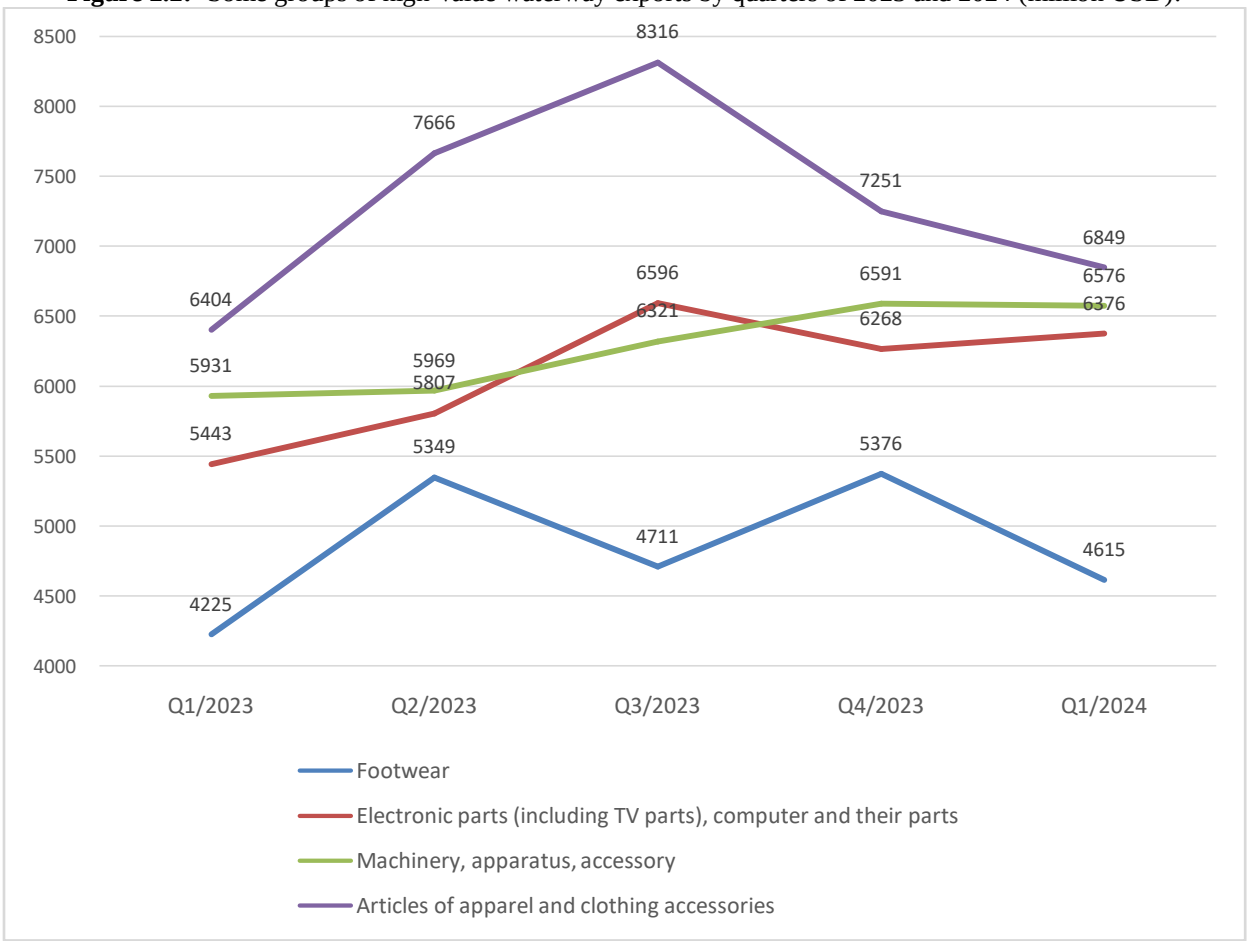
Figure 2.1:- Export value of goods from Vietnam by mode of transport by quarter of 2023 and 2024 (billion USD).



(Source: Calculated from statistics of the General Department of Customs)

The groups of goods transported by sea in the 1st quarter of 2024 with high value are textiles and garments with 6848.62 million USD, accounting for 11.93% of the total sea transport; other machinery, equipment, tools and spare parts with 6576.18 million USD, accounting for 11.46%; computers, electronic products and components with 6376.25 million USD, accounting for 11.11%; footwear of all kinds with 4615.4 million USD, accounting for 8.04%; other goods with 3468.13 million USD, accounting for 6.04%; followed by wood and wood products; means of transport and spare parts; iron and steel of all kinds; aquatic products; coffee; rice; plastic products.

Figure 2.2:- Some groups of high-value waterway exports by quarters of 2023 and 2024 (million USD).



(Source: Calculated from statistics of the General Department of Customs)

In 2023 and the first quarter of 2024, the United States will still be Vietnam's largest export market for goods by sea transportation. According to statistics from the American Business Association, the volume of goods exported by sea in Vietnam to the US market ranks 2nd in Asia (General Department of Customs, 2024). In terms of export markets in 2023, the United States is Vietnam's largest export market. According to data from Vietnam Customs, by the end of 2023, the total bilateral trade turnover between the two countries will reach 110.8 billion USD (down 10.5% compared to 2022), of which, Vietnam's exports to the United States will reach 97.0 billion USD, down 11.3% compared to 2022 and accounting for 27.3% of the country's total exports; imports from the United States reached 13.8 billion SSDs, down 4.5% compared to 2022 and accounting for 4.2% of the country's total imports. The trade surplus with the United States reached 83.2 billion USD, down 12.3% compared to 2022 (General Department of Customs, 2023). According to data from the US Bureau of Statistics, by the end of October 2023, Vietnam is the 10th largest trading partner (in the same period in 2022, Vietnam is the 7th largest trading partner) of the United States with a total import and export turnover of about 113.8 billion USD, down 12.1% over the same period in 2022. accounting for 2.4% of the total import and export turnover of the United States (General Department of Customs, 2023). Vietnam's exports to the US grew again through the first months of 2024, showing an expected improvement when the FED has reached the end of the interest rate hike cycle; The purchasing power and confidence of U.S. consumers are picking up again. Structure of goods exported to the US market by sea freight Most of Vietnam's exports to the US market are mainly by sea transportation. According to the table below, the 5 main products in 2023 and Q1/2024 are textiles; computers, electronic products and components; machinery, equipment, tools and other spare parts; footwear of all kinds; wood and wood products. In which, 2 particularly prominent items are textiles and computers, electronic products and components with growth.

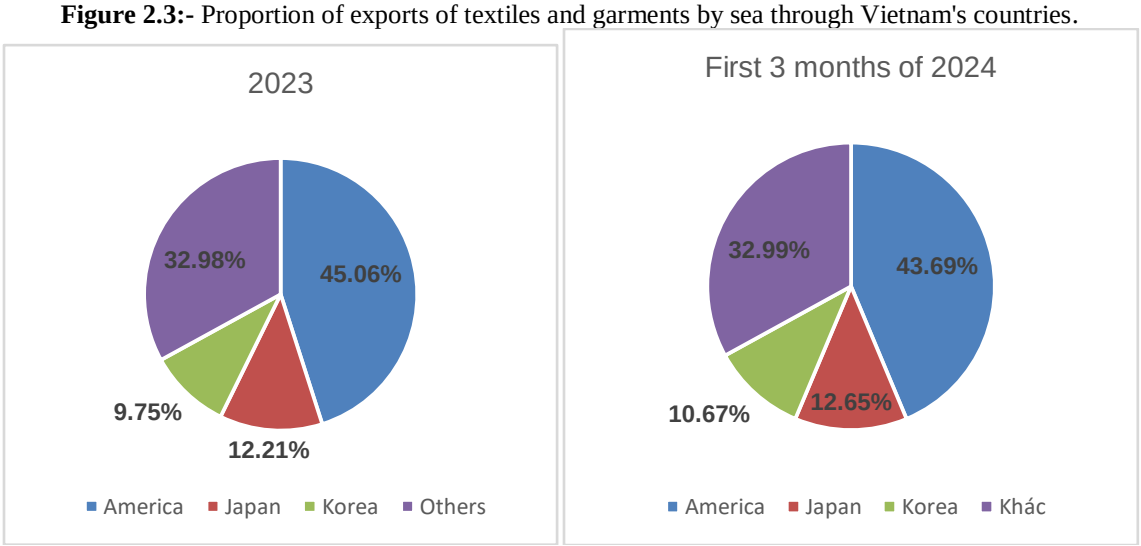
Table 2.1:- Top 5 items with the largest export value by sea freight to the US of Vietnam in 2023 and Q1/2024.

Commodity	2023		Q1/2024	
	Value (Mill. USD)	Percentage	Value (Mill. USD)	Percentage
Articles of apparel and clothing accessories	13354,48	45,06%	2992,16	43,69%
Electronic parts (including TV parts), mobile, computer and their parts	12196,52	50,65%	3183,66	49,93%
Machinery, apparatus, accessory	10402,88	42%	2630,48	40%
Footwear	6960	35,4%	1615,4	35%
Wood and articles of wood	7135,34	54%	1255,16	51%

(Source: Collected and calculated from statistics of the General Department of Customs)

In the first 3 months of 2024, Vietnam's textiles and garments were exported the most by waterway reaching 6,848.62 million USD, up 6.94% over the same period last year, accounting for 87.57% of the country's textile and garment export value. In 2023, the export value by waterway will reach 29.64 billion USD, accounting for 88.92% of the export value of textiles and garments of the country. The main export market by sea in the first 3 months of 2024 is the United States, accounting for 43.69% of the total value (45.06% in 2023); followed by Japan accounting for 12.65% (12.21% in 2023), South Korea accounting for 10.67% (9.75% in 2023), China accounting for 3.25% (3.21% in 2023), Canada accounting for 3.17% (3.17% in 2023,... Textiles and garments exported to the US market through Hai Phong port are mainly. In the first 3 months of 2024, textiles and garments through Hai Phong Port reached 871.16 million USD, up 18.94% over the same period last year, accounting for 11.14% of the export value of textiles and garments of the country. In 2023, the export value through Hai Phong Port will reach 3,392.2 million USD, accounting for 10.18% of the country's textile and garment export value. The main export market through Hai Phong Port in the first 3 months of 2024 is the United States, accounting for 45.91% of the total value (in 2023 is 49.08%); followed by Japan accounting for 8.64% (4.29% in 2023), Canada accounting for 7.08% (7.41% in 2023), China accounting for 4.49% (4.06% in 2023), and the Netherlands accounting for 4.22% (5.02% in 2023).

Figure 2.3:- Proportion of exports of textiles and garments by sea through Vietnam's countries.

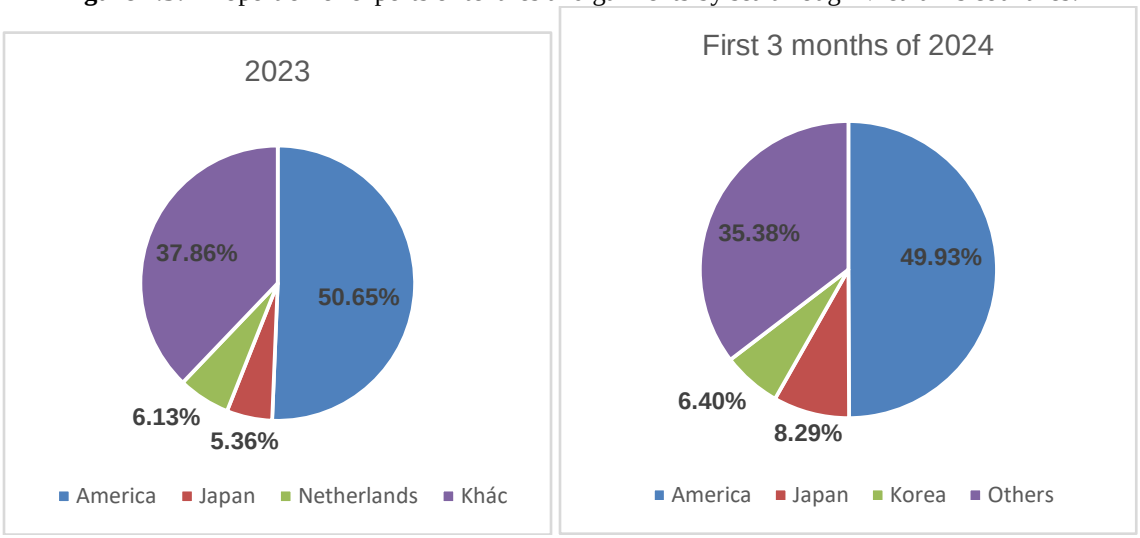


(Source: Compiled from Vietnam Logistics website)

For computers and electronic components, in the first 3 months of 2024, Vietnam exported the second most by sea (only by air) reaching 6,376.25 million USD, up 17.14% over the same period last year, accounting for 39.04% of the country's export value of computers, electronic products and components. In 2023, the export value by waterway will reach 24.08 billion USD, accounting for 42% of the country's export value of computers, electronic products and components. The main export market by sea in the first 3 months of 2024 is the United States, accounting for 49.93% of the total value (50.65% in 2023); followed by South Korea accounting for 8.29% (5.36% in 2023), the Netherlands accounting for 6.4% (6.13% in 2023), India accounting for 4.69% (5.68% in 2023), Slovakia accounting for 3.48% (2.6% in 2023). For computers, electronic products and components, they are exported to the

US market mainly through Nam Hai Dinh Vu port and Hai Phong Newport. For Nam Hai Dinh Vu port, in the first 3 months of 2024, computers, electronic products and components exported through Nam Hai Dinh Vu Port reached 754.08 million USD, up 69.26% over the same period last year, accounting for 4.62% of the export value of computers, electronic products and components of the country. The main export market through Nam Hai Dinh Vu Port in the first 3 months of 2024 is the United States, accounting for 62.59% of the total value (in 2023 is 56.42%); followed by India accounting for 10.26% (5.92% in 2023), the Netherlands accounting for 6.32% (4.98% in 2023), Thailand accounting for 3.02% (2.28% in 2023), China accounting for 2.91% (4.66% in 2023). In the first 3 months of 2024, computers, electronic products and components exported through Hai Phong Newport (Dinh Vu Newport) reached 586.33 million USD, down 8.97% over the same period last year, accounting for 3.59% of the export value of computers, electronic products and components of the country. The main export market through Hai Phong Newport (Dinh Vu Newport) in the first 3 months of 2024 is India, accounting for 17.74% of the total value (23.36% in 2023); followed by the United States accounting for 13.23% (28.64% in 2023), the Netherlands accounting for 9.79% (4.55% in 2023), South Korea accounting for 8.72% (4.97% in 2023), and the United Arab Emirates accounting for 5.65% (4.03% in 2023).

Figure 2.3:- Proportion of exports of textiles and garments by sea through Vietnam's countries.



(Source: Compiled from Vietnam Logistics website)

In addition to the above-mentioned key products, exports by sea freight to the US market in Vietnam also lead in value and proportion with other commodities such as iron and steel (the main export market by sea in the first 3 months of 2024 is the United States, accounting for 43.69% of the total value, in 2023 is 45.06%); fisheries; agricultural products.

Main routes, time, and transportation costs when exporting goods to the US market by sea freight in Vietnam

Main Routes

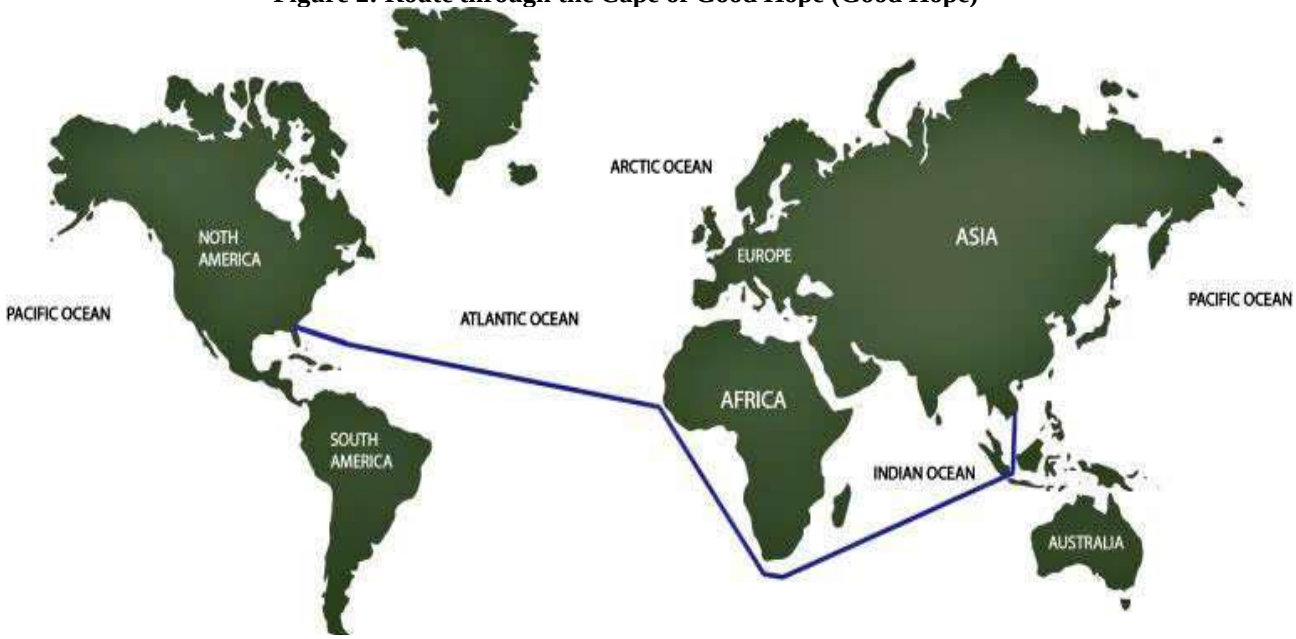
Currently, there are 3 main routes to transport goods from Vietnam to the US market, namely: the route through the Suez Canal; the route through the Cape of Good Hope (Good Hope); the trans-Pacific route and through the Panama Canal (Noble Network, 2021).

Figure 1:- Route through the Suez Canal.

(Source: Noble Network, 2021)

Starting from Vietnam, ships will run through the Singapore Strait, Malacca, divert to the south of Sri Lanka in the Indian Ocean, enter the Red Sea, pass through the Suez Canal, sail the Mediterranean Sea, cross the Strait of Gibraltar, cross the Atlantic Ocean to the United States and vice versa. The length of this route is about 11600 nautical miles. With this route, the ship will have to pass through part of the East Pacific coast, through the north of the Indian Ocean, the Red Sea, the Mediterranean and the Atlantic Ocean.

Figure 2: Route through the Cape of Good Hope (Good Hope)



(Source: Noble Network, 2021)

From Vietnam, ships will divert directly to Indonesia, cross the Jakacta Strait, cross the Indian Ocean to Cape of Good Hope (in South Africa). Then continue across the Atlantic Ocean to the United States and vice versa. The distance is about 13,000 nautical miles.

Figure 3:- The Trans-Pacific Route passes through the Panama Canal.

(Source: Noble Network, 2021)

From Vietnam to the east, through the Philippines, across the Pacific Ocean, and to the West Coast of the United States. If you want to go to East Coast ports, the ship will continue through the Panama Canal to reach the unloading port on the East Coast of the United States. If you go to the East Coast, the length of the distance is about 11,000 nautical miles.

Shipping time

Table 2.3:- The time to transport goods from Hai Phong port and Ho Chi Minh City. Ho Chi Minh City to ports in the United States (by the trans-Pacific route passing through the Panama Canal).

Port name	Shipping time from Hai Phong port (day)	Shipping time from Ho Chi Minh port (day)
Seattle	28	28
Portland	19	23
Oakland	23	26
Los Angeles	23	20
Long Beach	23	20
Houston	36	32
New Orleans	46	32
Miami	40	40
Norfolk	35	37
New York	33	29
Chicago	35	33

(Source: VN Express)

In general, the time to transport goods on a container ship from Vietnam to the US by sea will be quite long, taking about 20-40 days depending on each port of arrival (Los Angeles, Long Beach, New York, Houston, Oakland, Miami).

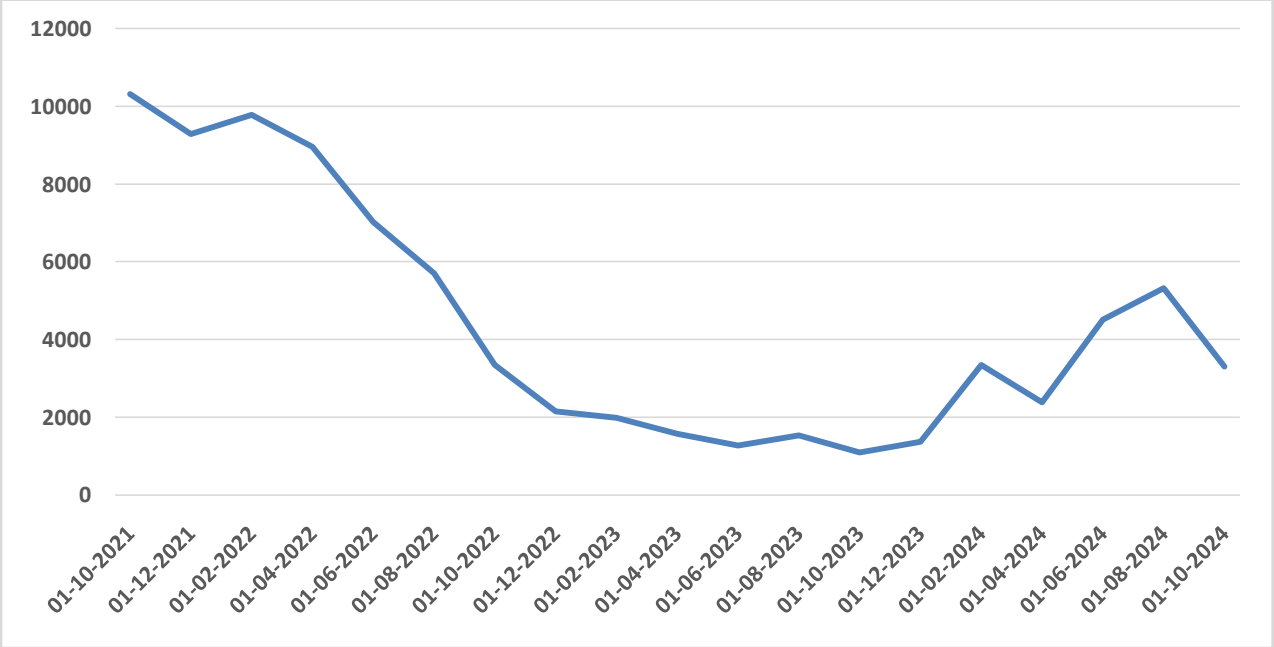
Shipping costs

The cost of sea freight from Vietnam to the US varies based on the speed of shipment (fast or economical), taxes, types of goods, service fees, shipping agents, container loads.

Freights

Freight rates are the transaction prices in the transportation of goods, while the cost of transportation is an important part of the total cost of trade. Therefore, freight rates have become an important indicator for international trade enterprises to determine trade orders and choose trading partners (Mendoza and Ventura, 2009, Thill and Lim, 2010, Wang and Sun, 2011, Alizadeh, 2013, Geetha and Uthayakumar, 2014).

Figure 2.5:- Global container freight rate fluctuations in the last 3 years (USD/40ft).



(Source: Compiled from Freightos)

Looking at the chart, it can be seen that global container freight rates peaked in Q3/2021, then continued to remain high until Q1/2022. Freight rates began to decline sharply until most of 2022 and fluctuated narrowly in 2023 but remained at a higher level than the pre-COVID level, especially reaching the bottom in the last 3 years in October 2023. This is a consequence of the high supply of ships in 2023 in the context of weak demand for goods. At the beginning of 2024, due to the impact of the Red Sea attacks, freight rates have increased sharply compared to the average in 2023. According to data from Freightos and Drewry, global container ship freight costs have decreased by 27.63% from the beginning of Q2 2024 to the beginning of Q4 2024 (from $4,716/40ft to $3,413.2/40ft) and are still on track to continue to decline, but not strongly. Although at the beginning of Q4 2024, sea freight rates tended to decrease compared to other times of the year, but compared to the same period last year, the time when global container freight rates bottomed out at 1,342 USD/40ft, increased nearly 3 times. Experts forecast that, in the last months of 2024, the peak time of sea freight, the container shipping market is expected to remain highly volatile and unpredictable.

Currently, according to the sea freight booking platform Freightos, in the week ending October 31, 2024, the average freight rates for Asian routes to the US are as follows:

- Freight rates from Asia to the West Coast of the US reached 5,294 USD/40ft, up nearly 2 times over the same period last year.
- Freight rates from Asia to the East Coast of the US reached $5,935/40ft, up about 117% year-on-year.

Table 2.4:- Sea freight rates for routes from Asia to the US in June-July in the last 5 years (USD/40ft).

Route	2020	2021	2022	2023	2024
From Asia to the West Coast of America	3057	18 346	2700	2780	5975
From Asia to the East Coast of America	4031	19630	5050	5080	7214

(Source: Compiled from Freightos, Phaata)

Looking at Table 2.4, we can see that the freight rates of Asian routes to the US have fluctuated very unpredictably in the last 5 years, these fare fluctuations clearly show the influence of global factors. 2021 saw a record increase, when rates for both Asian routes to the West Coast and East Coast of the United States soared over the same period last year, 6 times (from 3,047 USD to 18346 USD/40ft) and 5 times (from 4031 USD to 19630 USD/40ft), respectively. This comes from the strong impact of the Covid-19 pandemic, which disrupted the supply chain and increased demand for transportation, causing freight rates to peak, reflecting the scarcity of containers and congestion at ports. In the period of 2022 and 2023, there will be an imbalance between supply and demand when the amount of goods transported increases while the demand for use is weak, causing freight rates to drop sharply. By 2024, freight rates will begin to show signs of recovery, due to the impact of emerging geopolitical factors, typically the conflict in the Red Sea, increasing maritime security concerns and impacting global supply chains.

Table 2.5:- Sea freight rates for routes from Vietnam to the US (updated in October 2024).

Route	Best price(USD/40ft include HDF and insurance)
Hai Phong – New York	3824,6 USD
Hai Phong – Los Angeles	3892,2 USD
TPHCM – New York	3823 USD
TPHCM – Los Angeles	3491,85 USD

(Source: Compiled from Freightos)

Routes from Vietnam's ports to the West Coast and East Coast of the United States range from $3500 to $4000 for a 40ft container (including HDF and insurance). This price is said to have gradually stabilized again after bottoming out in October 2023 and peaking in Q3 2021. Compared to the beginning of 2024, freight rates to the West Coast of the United States will increase by about 21% (from 2900 USD to 3800 USD), on the contrary, freight rates to the East Coast of the United States will decrease by about 15% (from 4100-4500 USD to 3500-3900 USD). According to experts' forecasts, in the last months of 2024, freight rates from Vietnam to the US will tend to decrease but fluctuate narrowly and will remain at a fairly stable level.

Additional fee

In addition to sea freight, the surcharge accompanying the shipment also has extremely unpredictable developments. Starting from January 2024, a series of large carriers such as: Hapag Lloyd, Yang Ming Line, One, Evergreen Line, HMM, Maersk... announced that it will collect additional fees due to changes in the course of the Asia-North America, Asia-Europe routes, avoiding passing through the Suez Canal and the Red Sea area due to the impact of the Hamas-Israel conflict. Surcharges can be mentioned such as:

- GRI – General Rate Increase:

According to Phaata's data, starting from January 2024, Hapag-Lloyd shipping line – based in Hamburg – has announced the application of a general rate increase (GRI) from Asia (including Vietnam) to the West Coast of Latin America, Mexico, the Caribbean, Central America and the East Coast of Latin America. The new GRI will apply to goods transported in 20ft and 40ft dry containers, including 40ft tall container equipment (40ftHQ) and 40ft non-electric refrigerated containers 40ftNOR (non-operative reefers).

- THC - Terminal Handling Charge:

Since Circular 39/2023/TT-BGTVT of the Ministry of Transport decided to adjust the prices of pilotage, bridge, wharf, mooring buoys, container loading and unloading, and towing services issued on December 25, 2023 and effective from February 15, 2024, only from the beginning of February 2024, a series of foreign shipping lines have announced a 10-20% increase in THC (Terminal Handling Charge – port loading and unloading surcharge) for for each type of container service in Vietnam, from 180-190 USD to 200-210 USD with a standard 40-foot container. A 40-foot refrigerated container has a new price of $255-265. It is worth mentioning that this fee increase only applies to Vietnam, while other countries in the region have not made any moves to increase. Especially if considered in absolute value, the 10-20% increase in THC fees of shipping lines is 3 times higher than the adjustment of container loading and unloading prices at Vietnamese seaports.

- Carbon Emission Surcharge:

CMA CGM, Maersk and Hapag-Lloyd are shipping lines that are starting to implement fees to comply with new EU regulations with the goal of achieving carbon neutrality.

- Canal surcharge:

The Suez Canal Authority, one of the busiest canals in the world, announced an additional 5-15% increase in shipping fees from January 2024, of which the fee for transporting container ships through the canal will be 15%.
In addition to the above surcharges, some shipping lines also collect additional fees that are calculated as fees incurred in Vietnam and push Vietnamese shippers to pay such as Low Sulphur Surcharge (LSS), Container Imbalance Charge (CIC), etc container maintenance surcharge for textile and garment goods.

Special regulations when exporting goods to the US market by sea freight in Vietnam
Regulations on gas emissions of sea transport modes
According to studies by the International Maritime Organization, maritime transport is responsible for about 2.2%, 15%, and 5-8% of the world's carbon dioxide (CO2), nitrogen oxides (NOx), and sulfur oxides (SOx) emissions (Wang, et al., 2021). Given that more than 90% of global trade takes place in the ocean, reducing these emissions will have a major impact on reducing air pollution (Monacelli, 2017).

At its 76th session (from June 10-17, 2021), the Committee for the Protection of the Marine Environment (MEPC) of the International Maritime Organization (IMO) adopted Resolution MEPC.328(76) amending and supplementing Annex VI "Regulations on the Prevention of Air Pollution from Ships" of the International Convention for the Prevention of Pollution Caused by Ships (MARPOL), aims to reduce the intensity of carbon from shipping in line with the IMO's Initial Strategy on Greenhouse Gases.

Currently, countries around the world, especially countries in Europe and the United States, are having strict requirements on the emission index of ships when entering their waters. Ships must meet standard emission indicators to be allowed to move and transport goods into the waters of these countries. For example, regulatory actors have raised concerns about the impact of burning high-sulfur fuels at sea on nearby densely populated areas leading to the introduction of Emission Control Areas (ECAs), starting from the North American coast, The Baltic Sea and the English Channel. In these areas, vessels are required to switch to low-sulphur fuels (currently no more than 0.1% sulphur by weight instead of 3.5% outside the ECA, according to IMO Regulation 14). Other regulations include slowing down in coastal and port neighborhoods, using air purifiers, and switching to cleaner fuels such as diesel or liquefied natural gas (Zis et al., 2014).

Regulations on customs procedures:
- AMS – Automated Manifest System: AMS is an electronic transmission system to U.S. Customs before goods arrive in U.S. territory, effective from March 2004. AMS can be carried out by shipping lines or shipping line agents with the aim of pre-inspecting the cargo to avoid terrorism and tightening security measures. AMS is required to be declared and matched 48 hours before the mother ship departs for the US, only applicable to exports to the US by sea freight. Delayed AMS declaration will result in the shipment not being loaded on the mother ship, late delivery, incurring storage costs, and the person responsible for AMS declaration will be subject to a penalty fee of $5000 – $10000/bill.
- ISF – Import Security Filing: ISF is a declaration to U.S. Customs and Border Protection (CBP). ISF only applies to goods arriving in the U.S. by sea freight. ISF declaration can be made directly by the importer or through the tax declaration unit. The deadline for ISF declaration must be ensured 24 hours before loading on the ship departing for the US.
- ACI/E-manifest declaration: According to the new regulations of Canada Customs from 01/04/2021, all goods imported into Canada must declare E-manifest. The e-manifest must be declared to all issuing HBLs, and the issuer is responsible for the declaration, the shipping line does not declare it. Cargo transshipment or port call in Canada before entering the United States must be ACI filed 48 hours before the departure of the mother ship. Shipments directly to Canada must be e-manifested 48 hours before the departure of the mother ship.
- CET Exam (Contraband Enforcement Team): It is a process for inspecting goods by the United States Customs Department (CET) to make a decision when they have doubts about a shipment. U.S. Customs does not need to present the CET Exam reason to the customer. Cases that may be subject to the CET Exam can be mentioned such as: failure to declare AMS and ISF on time; there is no clear and specific name of the goods; food products that do not declare FDA; have had a shipment subject to CET before; import the first shipment to the US; Random CET. Goods subject to CET will have certain effects on both exporters and customers such as: slow time to receive goods (time to complete CET procedures from 5-7 days); Many costs are incurred, usually including from $2000 – $3000/container (unloading fees from containers, loading fees into containers, inspection fees, container storage fees, storage fees if any). Therefore, exporters in Vietnam need to comply

with and accurately and promptly implement US regulations when exporting goods to this country by sea transportation.

Regulations related to goods:

- FDA Certificate: For food items such as confectionery, milk tea, snacks, etc. FDA certification is required to be allowed to import into the US.
- FDA Number Registration: Food exporters to the U.S. need to register an FDA number and follow the FDA's Food Safety Modernization Act (FSMA) labeling regulations. Compliance with labeling regulations: Export products need to comply with new US labeling and labeling regulations.
- Cargo Weight Regulations: The weight of goods on HBL (which has been approved and confirmed by FMC for issuance) is subject to shipping line regulations. Main/direct ports: customers can pack according to the max payload level, or according to other regulations on the booking and confirmation of each shipping line. Domestic ports: customers must pack the goods in accordance with the provisions of US law, or according to other regulations on the booking and confirmation of each shipping line.
- In addition to the items allowed to be exported to the US, businesses need to pay attention to the types of goods that are not allowed to enter the US. Avoid the situation of not being accepted by customs and having to transfer the goods back to Vietnam, causing cost losses and time loss. Items not allowed to be exported to the US include alcoholic beverages, live animals, pharmaceuticals, processed foods, and electricity-related products,...

Agreements and policies to support the development of the export of goods to the US market by sea transport from Vietnam

Vietnam has been actively participating in free trade agreements (FTAs) and implementing supportive policies to promote the export of goods, especially exports of goods to the US by sea transport. Important agreements and policies can be mentioned such as:

- Vietnam-US Free Trade Agreement (VFTA): is a bilateral international treaty between the Socialist Republic of Vietnam and the United States of America on trade relations, signed in Washington D.C. on July 13, 2000. VFTA has removed most tariff barriers for goods exported from Vietnam to the US. The two sides agreed to cut tariffs and non-tariff barriers to trade in goods. Export and import quotas, licenses, and controls will be removed. After 2 years from the effective date of the Agreement, the two sides comply with WTO regulations on determining the value of customs duty, specifically using the transaction price to calculate customs duty rather than relying on the value of goods according to the country of origin or the price imposed without basis. In addition, this agreement also clearly stipulates the rules of origin, making it easier for Vietnamese businesses to prove the origin of goods to enjoy tariff incentives.
- Other free trade agreements: in addition to the Bilateral Free Trade Agreement with the US, Vietnam has also signed other free trade agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); Vietnam-EU Free Trade Agreement (EVFTA);... Agreements, whether directly or not directly related to the US, help improve the competitiveness of Vietnamese businesses, help them meet the high quality standards of the US market, thereby creating many new opportunities for Vietnamese goods to this market.
- Investment in seaport infrastructure and logistics development: Vietnam actively invests in upgrading and expanding international seaports, especially large-capacity ports, with direct shipping routes to the US. To invest in building and upgrading road, railway and air systems to connect production areas with seaports, develop modern logistics systems, including warehousing, transportation and customs clearanceto optimize costs and time. According to Decision No. 1579/QD-TT approving the master plan for the development of Vietnam's seaport system for the 2021-2030 period, with a vision to 2050, the investment capital for the seaport system by 2030 is estimated at VND 313,000 billion (only including ports providing cargo handling services) with priority investment projects such as:

+ Public maritime infrastructure: investing in upgrading the Cai Mep – Thi Vai fairway to serve ships up to 200,000 tons of load reduction (18,000 TEU); the project of channeling large-tonnage ships into the Hau River – phase 2 for ships up to 20,000 tons to reduce load; upgrading the channel to Nghi Son port, Chanh river channel, Cam Pha channel, Tho Quang channel and other fairways; sea lights on islands and archipelagos under Vietnam's sovereignty, infrastructure for maritime safety assurance.

+ Seaports: To invest in the next wharves in Lach Huyen wharf area; the wharf starts when Nam Do Son wharf (Hai Phong); main ports of class I seaports; international passenger terminals associated with tourism development dynamic regions; large-scale ports attached to coal, gas, petroleum and metallurgical power centers; wharves serving coastal economic zones; calling for investment in ports at potential seaports of Van Phong and Tran De.

- Applying environmental policies, towards sustainable development: In 2016, Vietnam issued Decision No. 795/QD-TT approving the Plan for the implementation of Appendices III, IV, V and VI of the International Convention on the Prevention of Pollution Caused by Ships. Accordingly, Vietnam sets a goal from 2016 to 2030 to focus on researching mechanisms and policies for investment in building and upgrading waste receiving systems at seaports in accordance with the provisions of Appendices IV, V and VI of the MARPOL Convention; to study and apply equipment for inspection and control of waste generated from ships, and at the same time to assess the current status of environmental pollution caused by ships, the situation of waste management at seaports and the level of compliance with the provisions of the MARPOL Convention; study, formulate and propose the establishment of environmental protection measures to prevent pollution caused by ships in Vietnamese waters for submission to the International Maritime Organization for approval. Strengthen cooperation with international organizations to exchange information, provide technical assistance, train public officials/managers, officers and crew members and transfer technology related to the implementation of the MARPOL Convention; promote bilateral cooperation with member countries of the Convention to refer to experiences and take advantage of the help and technical assistance of these countries (Environment Journal, 2022). This not only contributes to environmental protection, towards sustainable development, but also helps Vietnamese businesses meet strict requirements on emission indicators when ships transport goods to developed countries such as Europe and especially the US, where there are very strict regulations.

Solutions and recommendations to promote the export of goods to the US market by sea freight in Vietnam
Improving marine logistics and infrastructure
Focusing on infrastructure investment, improving modern equipment to enhance the quality of container transportation services both at seaports and inland, shortening the time of container turnover to and from are certainly the contents that need to be prioritized by port managers. warehouses in Vietnam.

Vietnam needs to invest in upgrading and expanding seaport systems, equipping modern equipment such as forklift cranes, smart port management systems to optimize the loading and unloading and storage of goods, ensure the ability to receive large ships and reduce waiting times. This helps to increase the efficiency of transportation and reduce logistics costs. Currently, the ports that receive super-heavy ships in Vietnam are very few. In parallel with upgrading seaports, Vietnam needs to upgrade its road and rail infrastructure (2 modes of transport regularly combined with sea transport) to ensure seamless connectivity from ports to production and consumption centers.

Supply Chain Optimization
In the politically unstable situation with conflicts and economic fluctuations, exporters themselves need to understand sea freight rates will have complex fluctuations and are difficult to predict. Therefore, the supply chain is not synchronized and easily interrupted by factors such as lack of containers and fluctuations in freight rates.

Exporters need to sign long-term contracts to ensure stable freight rates and limit risks from fluctuations in transport prices; proactively cooperate with large shipping lines to ensure sufficient containers and continuous transportation services, especially during peak times; at the same time, increase the use of management technologies, application of supply chain tracking software to monitor the status of goods and optimize transportation.

Solution to handle the problem of container backlog
Strengthen cargo management and control at seaports: The establishment of an effective cargo management system at seaports is necessary to minimize backlogs. The Vietnam Maritime Administration should implement measures such as using information technology to monitor. To closely monitor the status of each container from the moment they dock. This not only helps to detect problems early. This also facilitates the handling of backlogs of containers quickly and efficiently.

Building backlog container treatment funds: To have funds to handle backlog containers, it is necessary to set up a specialized treatment fund. This fund can be funded by shipping lines, shippers and from the state budget. Having a specialized fund will help to quickly solve outstanding problems. But it does not depend on temporary funding sources or situational solutions.

The solution comes from shipping lines

Faced with unstable freight rates, many isolated transport routes, or the problem of insufficient supply of containers and ships at the port of departure, too much inventory of containers and ships at the port of arrival, solutions are needed from shipping lines.

Some logistics service providers have put into use a number of other non-specialized ships and boats to carry containers, reducing the pressure on the current large number of containers. These types of ships have a transshipment role, instead of using container ships to make a long trip, calling at ports according to the route, transshipment ships help to carry goods directly in shorter distances.

In addition, shipping lines can also exploit new transport routes to help reduce costs and time.

Green logistics development

In the present and the future, green logistics will definitely be a top concern not only in sea transport but in all modes of transport. Green logistics will be an important factor determining the success and sustainable development of the export of goods by sea transportation.

We need to invest in ships that use clean fuels or emissions treatment technologies, build warehouses and seaports to use renewable energy, reduce the use of fossil fuels, and ensure that shipping vessels meet the stringent requirements of emission control areas (ECA).

Improve mechanisms and policies, create a favorable macro environment for goods exports

Developing, amending and supplementing economic and trade mechanisms and policies that need to be implemented synchronously and regularly. Review the system of legal documents and current mechanisms and policies to clarify contents that are not in accordance with international regulations and commitments in FTAs, thereby amending, supplementing and promulgating new legal documents accordingly. To consolidate the legal organizations of branches, localities and enterprises, to consolidate the system of economic, labor, administrative courts and arbitration institutions. Create a favorable, open and transparent business environment.

Improving the quality of labor in the field of sea transport

Improving the quality of labor in the shipping industry not only helps improve the operational efficiency of businesses but also contributes to improving the position of Vietnam's shipping industry in the international market. Close cooperation between the state, businesses and educational institutions is needed for effective implementation.

Vietnam needs to strengthen in-depth training in maritime engineering, maritime safety, and logistics management; encourage universities and colleges to cooperate with businesses in developing training and internship programs; strengthening international cooperation in training and developing human resources; have supporting policies in human resource training activities.

Promoting international cooperation

Vietnam needs to take advantage of free trade agreements (FTAs), take advantage of tax incentives and policies to enhance the competitiveness of Vietnamese goods in the US. In addition, it is necessary to strengthen cooperation with international businesses, participate in global supply chains to learn and improve the position of Vietnamese enterprises, and at the same time promote national brands, build the image of high-quality Vietnamese goods through marketing campaigns in the US market.

Increasing support from the government

Besides the solutions from the exporters themselves, the support from the government is also an effective solution. The Government needs to complete the legal framework, simplify regulations related to transport and export; implement projects to upgrade seaports and key navigational channels according to the planning; provide preferential loans or tax exemption policies for businesses investing in green technology or upgrading logistics.

Promoting digital transformation in logistics and port operation

To promote digital transformation in logistics and seaport operations, Vietnam needs to focus on three strategic solutions. First, it is necessary to implement a smart port management system that applies technologies such as artificial intelligence (AI), Internet of Things (IoT), and big data (Big Data) to optimize the process of loading,

unloading, storing, and transporting goods. Second, build a digital interconnection platform between seaports, logistics enterprises, and customs, to increase transparency, reduce document processing time, and improve supply chain efficiency. Finally, invest in training personnel specializing in digital technology, combined with international cooperation programs to receive knowledge and experience from advanced countries.

References:-

1.B. Huo, X. Zhao, H. Zhou. (2014), The effects of competitive environment on supply chain information sharing and performance: an empirical study in China. Production and Operations Management, 23(4), 552-569.
2. Ministry of Industry and Trade. (2024), Logistics Report in 2023.
3. Ministry of Industry and Trade. (2024), Information on logistics activities in exports in 2023 and the 1st quarter of 2024, in-depth analysis of some typical items.
4.Chopra, SunilM., Peter. (2016), Supply Chain Management strategy, planing, and operation.
5. Ministry of Industry and Trade.(2022), Vietnam's import and export strategy of goods to 2030.
Quyết định 493/QĐ-TTg 2022 Chiến lược xuất nhập khẩu hàng hóa đến 2030
6.Drewry. (2024) Drewry - Marine Research Products - Container Freight Rate Insights (Annual Subscription)
Drewry - Maritime Research Products - Container Freight Rate Insight (Annual Subscription)
7.DESCARTES Datamyne. (2023), Top 30 U.S. Port Report.
8.Di Giovanni, Julian and Andrei Levchenko. (2009), Trade openness and volatility, Review of Economics and Statistics, 91(3), 558-585.
9.Farinha et al. (2018), Understanding the foundations of global competitive advantage of nations. Competitiveness Review, 28(5), 502-517.
10.G.Vannoorenberghe. (2012), Firm-level volatility and exports. Journal of International Economics, 41(2), 527-543.
12.Lambert, Stock, Ellram. (1998), Fundamentals of Logistics Management.
13.Vietnam Confederation of Commerce and Industry. (2024), Increasing pressure on CO2 emissions of the global shipping industry.
TTWTO VCCI - (Tin tức) Áp lực tăng phí đối với lượng khí thải CO2 của ngành vận tải biển toàn cầu
14.Mentzer et al. (2001), Defining Supply chain management. Journal of Business Logistics, 22(2), 1-25.
15.Michael Hugos. (2018), Essentials of Supply Chain Management.
16.Morgan et al. (2018), Export marketing strategy implementation, export marketing capabilities, and export venture performance. Journal of the Academy of Marketing Science, 40(2), 271-289.
17. Nguyen Thi Binh. (2022), Factors affecting the cost of shipping containers from Vietnam to the US and some recommendations, America Today, no. 4, pp.48-59.
18. Nguyen Huu Nam. (2023), Law on contracts for international carriage of goods by sea in Vietnam, p.1-20.
19.Quinn et al. (1997), What's the buzz?. Logistics Management, Feb, 36(2), 43-46.
20.R.Ganeshan et al. (1995), An Introduction to Supply Chain Management. Supply Chain Management, 1, 1-8.
21.Salomon et al. (2006), The Curvillinear Relationship between Social Responsibility and Financial performance. Strategic Management Journal, 27(11), 1101-1122.
22.Sarah Audouin et al. (2018), Territory matters: Exploring the functioning of an innovation system through the filter of local territorial practices – the example of the adoption of cashew trees in Burkina Faso. Journal of Rural Studies, vol 63, 130-140.
23.Rodrik, Dani. (1998), Why do more open economies have bigger goverments? Journal of Political Economy, 106(5), 997-1032.
24. Tran Viet An et al. (2021), The Shortage of Empty Containers in the Shipping Industry: Causes and Solutions for Vietnam. Journal of Banking Science & Training, No. 228, pp.25-37.
25. The General Statistics Office. (2024), Vietnam Statistical Yearbook 2023.
26. Le Quoc Dat. (2024), Port & Shipping Industry Outlook 2024: Step by step recovery.Tien Phong Securities.
27. Vietstock (2024),Tình trạng tắc nghẽn vận chuyển hàng hóa đường biển lan rộng sang châu Á | acess on 20/12/2024
28. Chính phủ (2021),
Quyết định 1579/QĐ-TTg 2021 phê duyệt Quy hoạch tổng thể phát triển hệ thống cảng biển Việt Nam
29. Freightos. (2024) Freightos terminal - FBX
Freightos terminal - FBX, acess on 22/12/2024
30. Phaata. (2024), Giá cước vận tải biển từ Việt Nam đi Mỹ mới nhất | Container, acess on 24/12/2024
31. Tran Minh Hoang et al. (2024), Seaport Industry Report Q2/2024. Vietcombank Securities.

32. Vietstock (2024), Xuất khẩu Việt Nam sẽ đạt 618 tỷ USD vào năm 2030 với tốc độ tăng trưởng 7%/năm | Vietstock, acess on 10/12/2024.