ROLE OF LINER SHIPPING IN ASIAN COUNTRIES

Submitted to the School of Maritime Management, Indian Maritime University in partial fulfilment for the award of degree in MBA-International Transportation and Logistics Management

Submitted By

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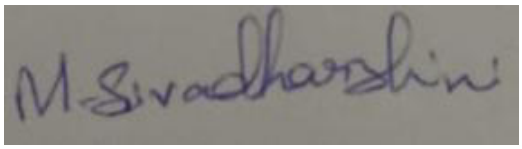
DECLARATION

I, **M.SIVADHARZHINI**, **Reg. No.2103305025** student of **School of Maritime Management**, **Indian Maritime University**, Pursuing **MBA in International Transportation and Logistics Management** hereby declare that this submission of this project report titled - **ROLE OF LINER SHIPPING IN ASIAN COUNTRIES** has been prepared by me towards the partial fulfilment of the Master of Business Administration in International Transportation and Logistics Management under the supervision of **Dr. B. Swaminathan** Associate Professor Head SMM, Indian Maritime University, Chennai Campus.



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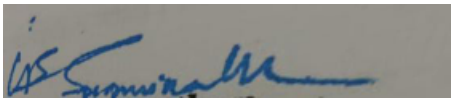
CERTIFICATE

This is to certify that this project report entitled "**ROLE OF LINER SHIPPING IN ASIAN COUNTRIES**" submitted to the School of Maritime Management, Indian Maritime University, Chennai Campus in partial fulfilment of the requirement for awarding the degree, MBA in International Transportation and Logistics Management is a genuine work of **M. SIVADHARZHINI (Reg no. 2103305025)**.



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CHAPTER I

INTRODUCTION

1.1. Background of the study

Looking back at the shipping industry, a lot has changed between its early days and modern shipping as we know it. From the design of the ships to how items are shipped as well as maritime safety. Drastic changes have been made over the decades, but amazingly, some processes are still intact.

The concept of shipping goods has been around for decades, some saying it has been practiced as far back as the 3rd century BC, mainly because it was safer, faster and cheaper. Goods were packed into sacks, barrels and crates, and loosely stored in tight spaces on ships. This often lead to ships spending more time at ports than at sea due to loading.

Improvements on the safety of crew members on board as well as preventative rules to avoid overloading were implemented in Venice, 1255. Official inspection rules were implemented in Genoa in 1330. In 1653 safety rules were put in place as to the seaworthiness of a vessel, and to latch cargo correctly. Minor additions and rules were added later and adjusted according to changes in the vessels.

It wasn't until 1965 that a big change in the shipping industry was made, when a man called Malcom McLean dec

ided to stack 58 metal containers on a ship, making it easier to load and unload cargo, as well as protecting the cargo.

From here changes happened fast, Standardised containers were made (the 20 ft container), a year later the first trans-Atlantic shipment was made, with Japan making the first container ship in 1968. This vessel could carry a total of 752 20ft containers, cutting shipping costs by 75%.

Since then container ships grew to the sizes we know today, with about 90% of all goods sent by sea. Ships have never been so technologically advanced, sophisticated and as safe as they are today.There is no form of transport that will ever match or replace maritime shipping. There are two main types of shipping services – Liner and Tramp A liner service works on a fixed route, period and rotation Liner Service may be defined as a service that operates on a schedule

with a fixed port rotation, fixed frequency (weekly, fortnightly, monthly) with published dates and sometimes named day of calls at the advertised ports.

1.2. Significance of the study

Shipping firms that provide liner services conduct liner shipping. In this case, the shipping corporation uses its fleet to transport cargo between ports on international waterways. The ships travel between ports on a predetermined timetable, such as weekly or every two weeks. Even if it is not fully loaded, the ship accepts the goods of their clients and departs the port on the scheduled day. Shipping firms require a fleet of ships to provide this kind of service in order to provide trustworthy services.

Liner shipping offers a robust, extremely effective, and reasonably priced network to transfer commodities from one location to another as compared to other forms of international commerce transportation. The advantages of shipping by liner are:

Efficiency:

Liner shipping is effective when it comes to moving products. A single huge containership can transport more than 200,000 container loads of cargo. The containerships' length and carrying capacity may differ. But the majority can transport about 10,000 containers in a single journey. Similar to how certain auto carriers can transport 7600 vehicles in a single voyage. In order to convey the same amount of cargo using other forms of transportation, it would take hundreds of freight planes, numerous truck fleets, and kilometres of rail cars.

Low environmental impact:

Shipping emits less grammes of emissions per kilogramme of cargo than other forms of freight transportation, such as air, rail, or road, and is therefore the most carbon-efficient. Additionally, strict guidelines regarding emissions of SOx, NOx, and other pollutants must be followed by vessels. They have to follow the International Maritime Organization's rules.

Global economy platform:

Trading between nations and continents, which was formerly impossible, is now possible because to liners. The liner shipping sector now handles around one-third of the overall value moved through international trade. Additionally, the international shipping sector plays a crucial role in maintaining millions of jobs and creating new ones. The liner shipping sector has a significant impact by significantly boosting global GDP and stock values.

Economic impact:

Liner shipping is a critical component of international trade, and a study on the industry in Asian countries can provide insights into its economic impact. Understanding the economic contribution of the liner shipping industry can inform policies that support trade and economic growth.

Trade flows:

Asian countries are major players in global trade, and a study on liner shipping can provide insights into trade flows and patterns. This understanding can inform policy decisions related to trade agreements, tariffs, and other trade policies.

Competitiveness:

The liner shipping industry is highly competitive, and a study on the industry in Asian countries can provide insights into the competitiveness of local players. This understanding can inform strategies for improving competitiveness and enhancing the industry's overall performance.

Innovation:

The liner shipping industry is undergoing significant technological changes, and a study on the industry in Asian countries can provide insights into the adoption and impact of new technologies. This understanding can inform policies and strategies to encourage innovation and improve efficiency in the industry.

Environmental impact:

The liner shipping industry has a significant impact on the environment, and a study on the industry in Asian countries can provide insights into the environmental impact of the industry. This understanding can inform policies and strategies to promote sustainability and reduce the industry's environmental footprint.

Global supply chains:

Liner shipping plays a critical role in global supply chains, and a study on the industry in Asian countries can provide insights into the challenges and opportunities of managing global supply chains. This understanding can inform strategies for improving supply chain management and enhancing overall supply chain performance.

Overall, a study on liner shipping in Asian countries can provide critical insights into the industry's current state and future prospects, informing policies and strategies that support trade, economic growth, competitiveness, innovation, sustainability, and supply chain management.

1.3 Objectives of the Study

a) To understanding the current state of the liner shipping industry in Asian countries
b) To identifying trends and patterns in the liner shipping industry in Asian countries
c) To assessing the economic impact of the liner shipping industry in Asian countries
d) Evaluating the competitiveness of the liner shipping industry in Asian countries

1.4. Research questions

1.What is the current state of the liner shipping industry in Asian countries, and what are the major trends and challenges facing the industry?

2. How has liner shipping impacted the economic development of Asian countries, and what role has it played in facilitating international trade and commerce?

3. What is the role of liner shipping in promoting sustainable development in Asian countries, and what initiatives and strategies are being pursued to reduce the environmental impact of the industry?

1.5 Limitation of the study

Incomplete data:

Secondary data sources may not provide a comprehensive view of the liner shipping industry in Asian countries. Data may be incomplete or outdated, and there may be gaps in the available information.

Lack of context:

Secondary data sources may lack the necessary context to fully understand the liner shipping industry in Asian countries. need to rely on assumptions or extrapolate data, which can lead to inaccurate conclusions.

Data reliability:

Secondary data sources may not be entirely reliable

Limited control:

limited control over the data they obtain through secondary sources. They may not have access to specific data points or may not be able to tailor the data to their research questions.

Biases:

Secondary data sources may contain biases, such as the data source's perspective or a particular viewpoint.

Difficulty in accessing unpublished data:

Secondary data sources may not include unpublished data, such as internal company records or unpublished research studies.

1.6. Structure of the Report

Organization of the study:

The chaptering of the study is made into 5 major divisions as follows:

Chapter one: introduction, background of the study, significance of the study, objectives of the study, Research questions, limitation of the study

Chapter Two: This chapter focuses on the literature review of the study. Services provided by liner shipping, shipping alliances and its forms, alliance formation, the development of shipping alliance, the maritime connectivity index, asian countries and container transportation, port calls fluctuate due to increased congestion and alterations in liner shipping connections, liner shipping connectivity.

Chapters three: Major trends and challenges facing the industry, liner shipping in Asian countries, Environmental regulations for reducing impact of shipping.

Chapters Four: Liner shipping impacted the economic development of asian countries and its role in facilitating international trade and commerce, Asia in maritime trade facilitation.

Chapter V- Conclusion and recommendation.

CHAPTER – II

REVIEW OF LITERATURE

The review of the literature would aim to provide insights into the industry's importance, challenges, and opportunities, as well as current trends and future prospects.

Some of the key aims of the literature review for this project could include:

To identify analyzes the key drivers of growth in the liner shipping industry in Asia, such as trade volumes, technological advancements, and infrastructure development.

To examine the impact of the liner shipping industry on economic development in Asia, including its contribution to job creation, income generation, and poverty reduction.

To assess the challenges facing the industry in Asia, including issues related to infrastructure development, regulatory frameworks, and competition.

To review the role of digital technologies in enhancing the efficiency and competitiveness of the liner shipping industry in Asia, including the use of blockchain, big data, and other emerging technologies.

To explore the potential for regional cooperation and integration in the liner shipping industry in Asia, including the role of multilateral institutions and agreements.

To identify future trends and prospects for the liner shipping industry in Asia, including the impact of changing trade patterns, geopolitical developments, and environmental sustainability considerations.

Overall, this review aims to provide a comprehensive understanding of the role of liner shipping in Asian countries and its impact on regional and global trade and economic development. It will also provide insights into the challenges and opportunities facing the industry and highlight potential strategies and policy options for advancing its growth and development in the region.

2.1 Services provided by liner shipping

Conference Service:

Shipowners who have joined forces to conduct trade operations along a predetermined trade route form a liner conference. There are a lot of operators for this kind of service. However, both the service's nature and its cost are comparable between them. This limits consumer options.

Independent service:

Individual service providers conduct their own business. They follow their own trading path and do not join an alliance or consortium. A successful independent service provider must deliver high-quality services at competitive pricing.

Consortia or Alliance Services:

There is no end in sight to the current container revolution, not even with the takeover by massive transport firms or conference programs. The expensive expense of ships was the key factor in the shift to employing containers. A container ship, however, may cost more than the conventional ships it is meant to replace.

More urgent is the problem of not having a single owner. Ships must have access to a steady stream of containers in order for shippers and consignees to use these containers. This would ensure a steady flow of customers while assisting them in controlling their inventories.

From the factory to the very end of the production line, liner ships must offer dependable service. This necessitates using bigger ships to transport goods. Such enormous ships are not accessible for trade from every owner in the sector. Consortia have been formed as a result of this.

Based on covered routes, liner shipping services include:

Round the world service:

In this kind of liner service, the ship keeps moving forward until it reaches its home port again. Over time, its importance has started to decline.

End-to-end service:

The Liner Operator starts the service from the starting point and covers different loading ports on the route. The Liner then returns back on the same route and reaches the starting point. Here

the operator has the choice to go with a single type of service or choose a combination of more than one.

Pendulum service:

A pendulum service moves cargo from one destination to another. It is a kind of RTW service. Because the vessels are so large, they would avoid the Panama Canal. The vessel will typically operate from the (ECUS) Eastern Seaboard of the USA to the Far East via Europe and vice versa. Due to the long transit time, this type of service is largely unsuitable for the transportation of cargo.

Hub & spoke service:

This type of service works between the hub port and the gateway port. The main ship will cover all the major ports in its route. These ports are called Hubs. Feeder services will connect such hubs with local areas. These are termed spokes. This kind of service connects the cargo service to the ports located in all four directions. All the major shipping companies in the market today follow this service. This plays a large role in increasing the accessibility of cargo across the ports.

2.2 Shipping Alliances and its forms

An ocean alliance, also known as a shipping alliance, is an agreement that a group of ocean carriers and draughts jointly. Through global cooperation between its members, this agreement covers a number of trade routes.

In order to serve the largest possible portion of the shipping industry, these cooperative groups of carriers agree to vessel-sharing contracts. In each alliance, carriers essentially combine their fleets of cargo ships. They now have access to other carriers' vessels as a result. Carriers frequently concur to transport containers for one another.

Carriers can monopolize the ocean shipping business with the use of shipping alliances. Together, the three largest alliances controlled 80% of the world's container market. Just 20% is left over for the other, more modest global/regional carriers.

The majority of shipping alliances operate in a similar manner. Stowage planning, vessel assignments, scheduling, and problem-solving are the key topics of information exchange and

contact between organizations. However, alliances differ from other types of partnerships in that they do not include joint sales, marketing, pricing, or asset ownership.

They openly talk about ways to control engine problems, operating efficiencies, environmental concerns, and fuel types. Capacity planning, the contribution of each individual carrier, and unique compensation are other components in each shipping alliance.

2.3Alliance formation

Operational, financial, and logistical alliances are the three basic types of maritime alliances. In general, the operational alliance. In fact, because the operation alliance is the primary form, the financial alliance and the logistical alliance frequently engage in cooperative activities and mutual interaction.

Operational Alliance

Operating partnerships can take many different forms, including collaborative ship operation, mutual ship chartering, exchange, or space sharing. These partnerships' primary goals are to raise service standards and cut back on capital expenditures. The amount of Service can be significantly enhanced without more funding. The alliance's members just need to complete their own long-term planning; they are not required to set joint objectives.

The most crucial component of a shipping alliance is its operating alliance, which is primarily comprised of box exchange, capacity sharing, and facility sharing. Maintaining the company's decision-making independence is crucial for the participating shipowners in the alliance. Each kind has its benefits and drawbacks in the operating partnership.

Financial Alliance

Financial alliance participants share a common objective: to keep the market stable. Its predecessor, the liner association, normally had a certain market share. In order to prevent having an excessive amount of transport capacity, which would cause an oversupply on the market, the financial alliance now also limits its own transport capacity. One could argue that keeping freight rates stable is the main driver for the formation of such coalitions. The deeper relationship in the shipping alliance is the financial one, and the parties have a solid foundation for ongoing collaboration.

Rate Agreement

The most crucial tool for limiting price competition and preserving freight stability is a freight agreement. Although price changes can occasionally be advantageous to liner carriers, long-term price stability is more significant than quick gains.

In order to reduce the risk of market price fluctuations, carriers might take advantage of the negotiated pricing through the alliance. However, joining the financial alliance frequently causes independent carriers to lose their independence.

Capital Alliance

Capital-based partnerships amongst shipowners are frequently formed for the purpose of buying ships and building wharves. Building infrastructure through capital alliances can lower investment and risk for the capital-intensive maritime sector. The construction of Haicang Wharf in Xiamen by Maersk, COSCO, and Dalian Flyboats, as well as Changming Wharf by the Sino-foreign Long Shipping Group and Yangming Sea Shipping Investment, are two examples of the many partnerships that are common in today's world. The benefit of ship owners purchasing new ships through capital alliances is that carriers can distribute larger tonnage boats to increase competitiveness while also lowering marginal costs thanks to the role of economies of scale.

Logistics Alliance

The frequency of start-ups and the ease of harbor gathering has become the shippers' two top demands for carriers since the advent of containers. The idea of door-to-door logistics is quite well-liked nowadays. The exporter's delivery to the plant of the importer has replaced the traditional shipping portion as the carrier's responsibility. As a result, the carrier has had to make significant investments in the sector of logistics, leading to the formation of a logistical alliance

Container Sharing

The operation cost of the container, which is the essential component of liner transportation, makes up the majority of the overall operation cost. It covers the price of empty containers as well as the price of buying or renting the containers, as well as the cost of maintenance and repairs. For unbalanced outbound and return traffic, the expense of empty container transportation is unavoidable. Liner owners are encouraged to join the alliance and share containers at the high expense of empty container transportation.

The extra boxes that shipowners spend time and money shipping back are likely what other shipowners need, they realize. Cooperation in the container industry also comes in a variety of forms, including subleasing, renting empty containers, and empty container exchange. Carriers frequently give precedence to swapping or subletting.

Information Sharing

The operational effectiveness and decision-making response time can both be enhanced by sharing logistics information systems. Internal office system sharing and external network sharing are two categories of information system sharing. Externally, it covers the shared supply chain upstream, which includes truck, rail, wharf, and even access to offices for shippers and customs declaration agencies, as well as the tracking system for shipper's boxes.

Sharing information is a must for ensuring the smooth operation of maritime alliances, but it can also result in the loss of information resources, the disclosure of trade secrets, and an increase in operational risks. If we guard information for the sole purpose of advancing our own interests, we will draw attention to the issue of information asymmetry and raise the alliance's operational risk.

2.4The Development of Shipping Alliance

The history

International shipping operators started looking for an organizational structure other than liner associations in the early 1990s in order to deal with the crisis of market elimination brought on by excessive competition and the environment of economic globalization and fierce competition in the shipping market. This was done in order to reduce their own operational

risks, look for the economic effects of integrating resources from the industry, and avoid their own economic effects. The formation of a shipping alliance has since emerged as a new option for shipping operators and, over time, has grown to be a significant method of collaboration among global shipping organizations.

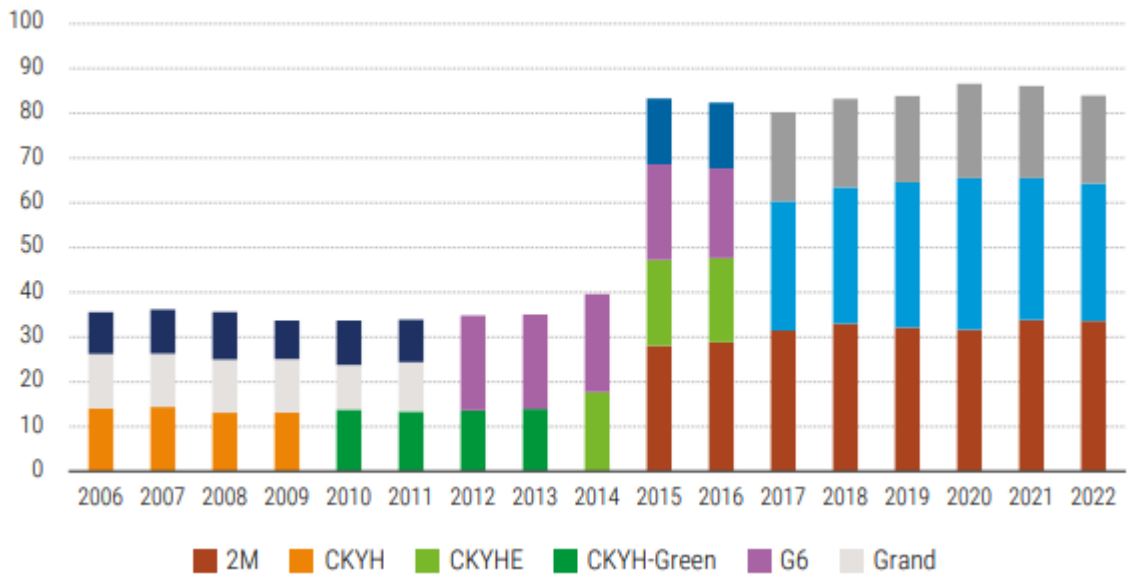
The destiny of the P3 Alliance, which included Maersk, Mediterranean, and CMA, was decided on June 17, 2014. After being successfully approved by the United States and the European Union, P3 suffered from Waterloo in China, deviating from the original European Union's sacrifice. China's Ministry of Commerce rejected the proposal because it "may have the effect of eliminating and restricting competition," according to the ministry. Even though the results were rather unexpected, the shipping firm handled it pretty coolly and even swiftly abandoned the P3 program. In that statement, Drewry noted that while the P3 Alliance's rejection could encourage the shipping sector's steady growth, the Super Shipping Alliance's rate of expansion would not slow down. The destiny of the P3 Alliance, which included Maersk, Mediterranean, and CMA, was decided on June 17, 2014. changed from the initial Euro. Maersk and the two largest shipping companies in the world came together on July 10 to form the 2M alliance. The filing was delivered by 2M to the US Federal Maritime Commission and the Chinese Ministry of Communications in the same month.

Traditional and modern shipping alliances are distinguished from one another (Agarwal, 2010). Opening up new markets with less risk and investment is the main motivation behind conventional joint ventures. The main motivation for entering contemporary Global joint ventures aim to lower costs and raise the service quality. The international shipping alliance has undergone a number of changes, including the establishment of five major alliances in 1996, the creation of four major alliances in 2001, the restructuring of four major alliances from 2007 to 2014, and the formation of the four major alliances (2M, O3, OCEAN, and THE Alliances) in 2015. Since January 2015, however, with the merger of 2M and O3 shipping alliances, the three major alliances (2M Alliance, OCEAN Alliance, and THE Alliance) have been in existence. They also support the transition from the old to the new form. Three shipping alliances, including OCEAN Alliance and THE Alliance, have developed a market pattern in the international shipping market since January 2015, when the 2M and O3 shipping alliances went into full operation. The entire market displays a centralized trend over time and becomes a monopolistic market structure over time.

Alliances

The most common form of collaboration between the major shipping lines for container transport services is strategic alliances. Since 2015, the proportion of global capacity controlled by such alliances has increased to more than 80 percent. Today, the top nine container operators organize their East-West services through three strategic alliances: Ocean, 2M, and THE Alliance.9 During the pandemic, this proportion fell slightly as non-alliance members entered the profitable Asia-North America route, but the three main alliances continued to control 84 percent of the market. These alliances do not include small carriers.

Fig: .2.1 Global alliances in deep-sea container shipping, market share, percentage



Source: UNCTAD, based on data provided by MDS transmodal

Shipping alliances bring economies of both scale and scope. Running a weekly liner service between several ports requires a set of ships, entailing high fixed costs – often beyond the financial capacity of a single shipping line. In 2022, of the 402 active deep-sea liner services, only 131 were provided by single carriers without vessel partners or slot charterers.

Vessel sharing mitigates risk and increases utilization. The incentive for such cooperation has intensified as ship sizes have increased faster than trade volumes. With the prospect of such agreements to boost utilization, carriers have invested in larger ships.

As part of alliances, shipping lines can spread the risks of investment and with ever-larger vessels achieve economies of scale that reduce shipping costs per container and improve fleet

utilization. By forming alliances with shipping lines in complementary regions, they can offer customers more comprehensive networks.

Shippers have a different perspective, worried about shrinking choice and lack of competition, with potentially abusive charging. They and regulators want the cost savings that accrue to the carrier to be passed on to clients.

2.5 The Maritime Connectivity Index:

The UNCTAD liner shipping connectivity index (LSCI) shows which nations' standing in marine transport networks have improved or deteriorated.

According to the rating, China has maintained its lead as the country with the finest marine connections to others. Since 2006, the country's LSCI has increased by 51%.

"A country's connectivity - its position in the global container shipping network - is an important determinant of its trade costs and competitiveness," said Jan Hoffmann, UNCTAD's chief of trade logistics.

According to the index's measures, five of the top ten best connected economies in 2019 are in Asia, with Singapore, Korea, Hong Kong (China), and Malaysia filling out the top five.

Small island developing states (SIDS) have experienced little progress, implying that trading in transported commodities remains troublesome in such nations, with economic consequences.

"We see a growing 'connectivity divide' between the best and worst connected countries," Mr. Hoffmann added.

New component;

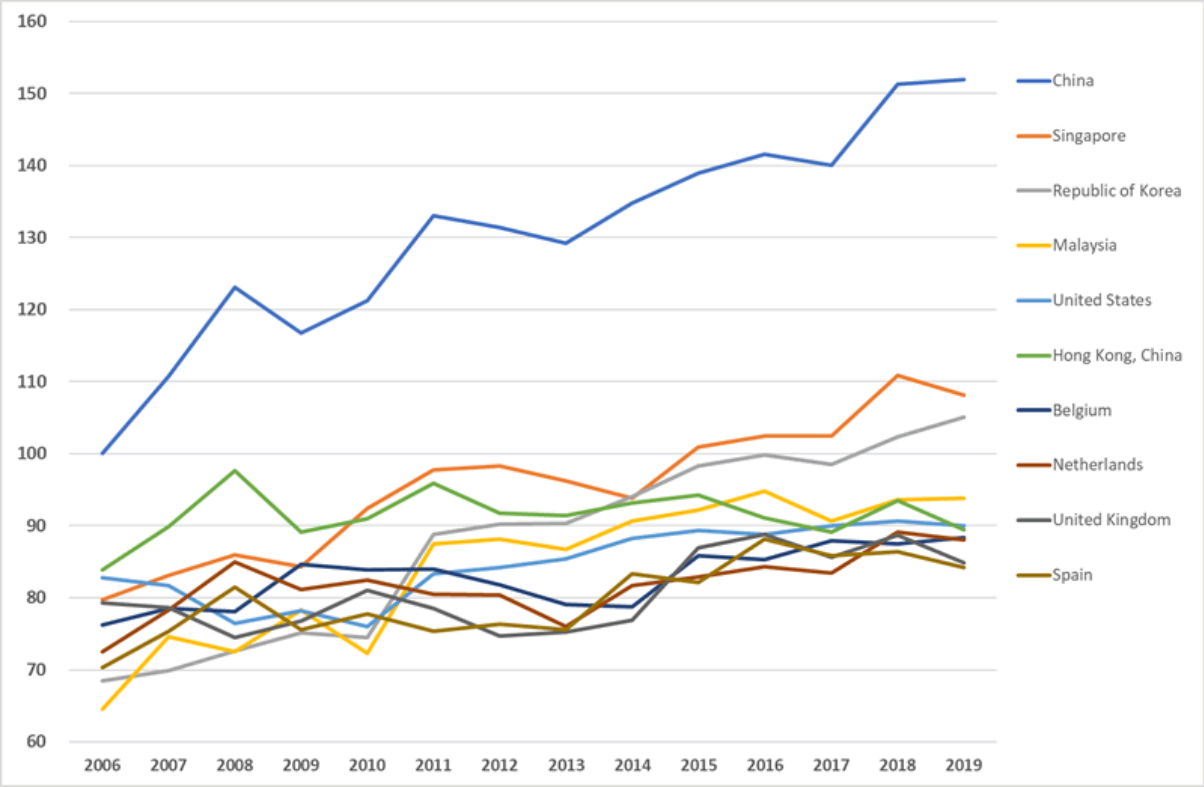
A new component of the index covers nations that can be accessed without the requirement for transhipment.

"Counting on a direct regular shipping connection has empirically been shown to help reduce trade costs and increase trade volumes," Mr. Hoffmann explained.

According to research, the lack of a direct connection is related with a 42% decrease in the value of bilateral exports.

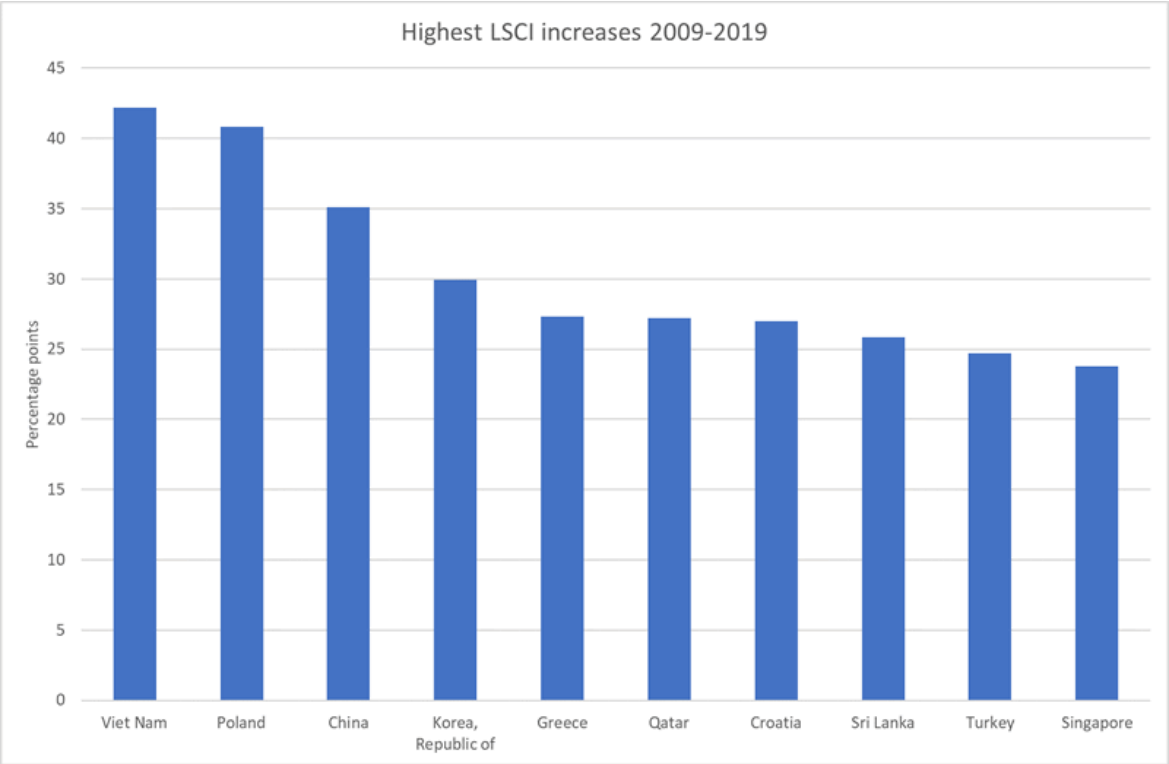
The index's other five components remain unchanged: the number of shipping firms, the number of services, the number of ships that call each month, the total deployed container-carrying capacity, and the size of the largest vessel.

Fig: 2.2 Liner Shipping Connectivity: top 10 countries, 2006-2019



Source: UNCTAD, based on data provided by MDS Transmodal

Fig: 2.3 Countries with the highest LSCI increases over the last 10 years



Source: UNCTAD, based on data provided by MDS Transmodal

2.6 Asian countries and container transportation:

The best-connected seaborne trading territories were all in Asia, with Singapore (2), the Republic of Korea (3), Hong Kong (China) (4), and Malaysia (5) filling out the Top 5. Each had a score of more than 100 based on the index's parameters.

Norfolk Island, Christmas Island, Cayman Islands, Bermuda, and Tuvalu were the worst-connected territories, implying that trading in transported commodities remained challenging, with knock-on economic implications.

The Top 5 territories that improved their index score in 2018 compared to the previous year did so at the following percentage growth rates.

• UAE (179%).

• The Maldives (125%).

• Mauritius (77%)

• Eritrea (73% of the population)

• Micronesia Federated States (69%)

• New Zealand (-43 percent)

• Northern Mariana Islands (35% decrease)

In comparison, the following economies saw the greatest percentage losses in the 2018 index as compared to 2017:

• Ukraine (-61 percent)

• Montenegro (-48%) • Albania (-49%)

• New Zealand (-43 percent)

• Northern Mariana Islands (35% decrease)

Concentrating cargo traffic in major global hubs is more cost effective for marine enterprises. Eastern Asia and North America (transpacific eastbound) and Eastern Asia to Northern Europe and the Mediterranean (westbound) are the most appealing marine routes.

Global maritime hubs are nations that take advantage of their location at the crossroads of key shipping routes by offering world-class logistics and transhipment services.

The LSCI measures a country's standing in the global liner shipping networks. It is derived from data on container ship deployment throughout the world, including the number of ships, their container carrying capacity, the number of services and companies, and the size of the largest ship.

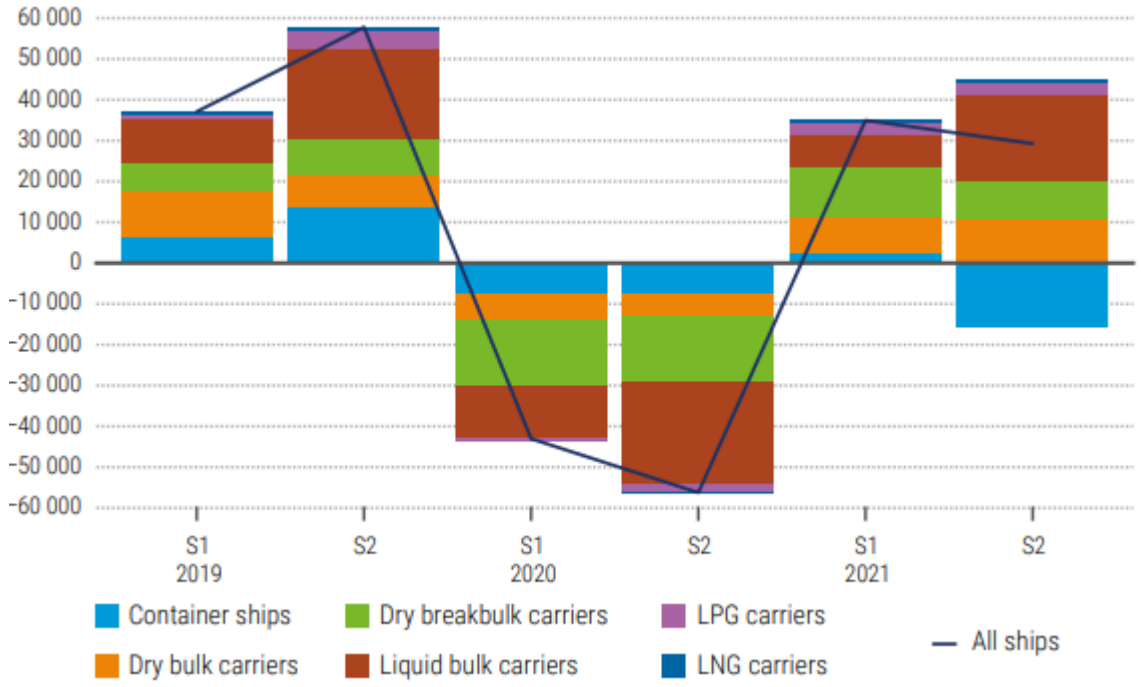
Morocco has had the largest LSCI growth among African nations since the index was originally released by UNCTAD, with its number jumping by 661% between 2004 and 2018. Viet Nam's LSCI number climbed by 435% in South-East Asia during the previous 15 years, the greatest growth rate in the area. Peru had the largest increase in Latin America, at 196%. Venezuela and Yemen saw the greatest fall in their LSCI levels during the previous 15 years.

2.7 Port calls fluctuate due to increased congestion and alterations in liner shipping connections:

Port calls, like maritime commerce, rebounded in 2021 amid unprecedented port congestion, with hotspots centred in the United States, Europe, and China. In Northern Europe, certain shipping companies are reducing the number of port calls every cycle in order to increase efficiency.

This increased the volume of goods exchanged every call, while also extending terminal work hours and putting strain on the key ports. Congestion and traffic jams had an impact on a variety of businesses, including automobile production, healthcare, and electronics, most notably a severe shortage of semiconductors.

Fig: 2.4 Changes in port calls per half year, world total First semester 2019–second semester 2021 (year-on-year differences)



Source: UNCTAD, based on data provided by Marine Traffic

Since the beginning of the logistical disruptions in late 2020, there has been a global reduction in liner shipping connectivity, albeit this varies by country. The world's most connected country, China, maintained its position. In addition, India expanded its regional links by increasing port

capacity. Similarly, in North Africa, continuing port infrastructure development helped reduce the pandemic's impact.

These improvements were countered by reductions in connection in other parts of the world, including major economies. Container port operational performance in the United States of America, for example, has been hampered by weakness in West Coast port infrastructure as a result of long-term underinvestment. However, the picture was considerably worse in certain developing countries: most of Africa, Latin America, and the Caribbean saw considerable declines in direct connections over this time period.

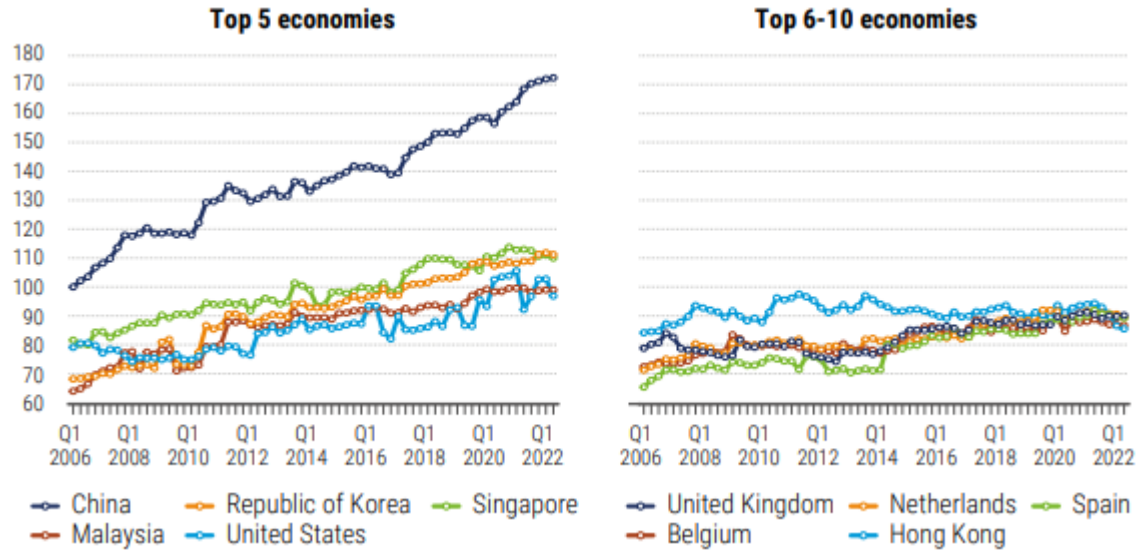
2.8 Liner Shipping Connectivity

This section focuses on port connectivity. In this regard, UNCTAD, in collaboration with MDS Trans modal, has prepared the liner shipping connectivity index (LSCI), which since 2020 has measured connectivity to the global liner shipping network at both port and country levels.

China widened its lead while most other economies lost connectivity:

In the second quarter of 2022, the four most-connected economies, with the highest LSCIs, were in Asia – China, Republic of Korea, Singapore, and Malaysia. China widened its lead as it deployed more vessel capacity to the United States trade routes. The United States, ranked fifth in the second quarter of 2022, had large fluctuations due to changes in maximum vessel size, but benefited from redeployment of vessels.

Fig: 2.5 Liner shipping connectivity index, top 10 economies, 2006–2022



Source: UNCTAD, based on data provided by MDS Transmodal.

CHAPTER III

CURRENT STATE OF THE LINER SHIPPING INDUSTRY IN ASIAN COUNTRIES

3.1 Major Trends and Challenges Facing the Industry

3.1.1Port infrastructure

Fig: 3.1 sustainability in port infrastructure.

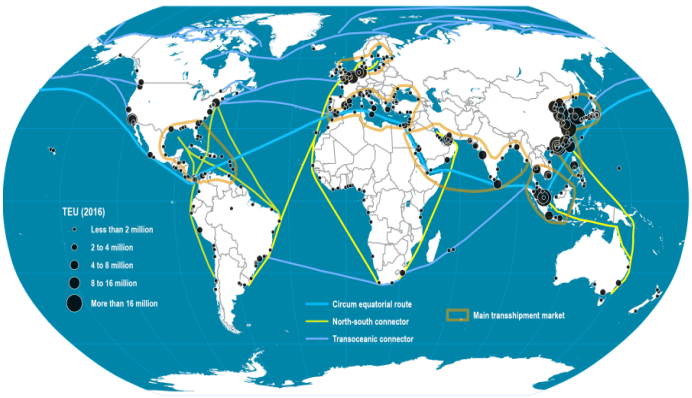
Source: marine insights.

One of the most important factors that determine the success of liner shipping in Asia is the quality and efficiency of port infrastructure. Ports are the vital hubs of the maritime industry, serving as the main points of entry and exit for ships and their cargoes. This highlights the need for modern and efficient port infrastructure, including deep-water berths, state-of-the-art container terminals, and advanced cargo-handling equipment. Inadequate or inefficient port infrastructure can result in congestion, delays, and increased costs, all of which can impact the competitiveness of liner shipping services.

Several Asian countries have made significant investments in port infrastructure in recent years. China, for example, has developed a vast network of container ports, including the ports of Shanghai, Ningbo, and Shenzhen, which are among the busiest in the world. In Southeast Asia, Singapore has established itself as a leading hub for transhipment, with its world-class port facilities and strategic location. The review emphasizes that the continued development of port infrastructure will be critical for the growth and competitiveness of the liner shipping industry in Asia.

3.1.2Trade flows

Fig: 3.2 Emerging Global Maritime Transport System



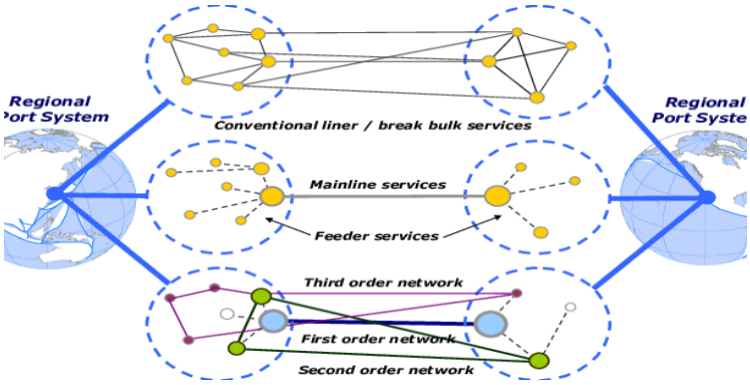
Source: port economics, management and policies

The growth of trade flows in Asia is a key factor driving the expansion of the liner shipping industry in the region. Asia is a major producer and consumer of goods, and intra-regional trade flows have grown significantly in recent years. This growth has led to an increase in demand for liner shipping services, with many companies introducing new routes and services to meet the growing demand.

The review highlights the importance of understanding trade flows in the context of liner shipping. Factors such as the types of goods being traded, the origins and destinations of cargoes, and the demand for shipping services can all impact the competitiveness of liner shipping companies. For example, some liner shipping companies have focused on developing specialized services for high-value or perishable goods, while others have focused on offering cost-efficient services for bulk commodities. Understanding the nuances of trade flows is crucial for companies seeking to develop effective strategies and remain competitive in the market.

3.1.3 Regulatory frameworks

Fig:3.3 liner shipping networks: variety of scales and services



Source: the dynamics of restructuring, " maritime policy and management

The regulatory frameworks governing the liner shipping industry in Asia can have a significant impact on the competitiveness of companies in the market. The review notes that policies such as subsidies, tax incentives, and protectionist measures can all affect the industry's development and competitiveness. For example, subsidies or tax incentives provided by governments can help to reduce the costs of liner shipping services, making them more competitive in the market. However, protectionist measures such as tariffs or trade restrictions can limit the opportunities for liner shipping companies to expand into new markets.

The review emphasizes the need for a level playing field in the liner shipping industry, with transparent and predictable regulatory frameworks that support competition and innovation. Harmonization of regulations across countries and regions can also help to reduce the administrative burden and costs associated with compliance, supporting the growth of liner shipping services in Asia.

3.1.4 Digitalization and technology:

Fig: 3.4 ESA signs MoI with One Sea Alliance to support maritime digitalisation and autonomous shipping technology.

Source: Ship-technology.

The increasing importance of digitalization and technology in the liner shipping industry is another key concept identified in the literature review. Advances in technology have enabled liner shipping companies to improve their operations, increase efficiency, and reduce costs. For example, digital platforms that allow shippers to track their cargo in real-time have become increasingly popular, providing greater visibility and transparency throughout the shipping process.

Other technological advancements, such as autonomous vessels, blockchain, and big data analytics, have the potential to transform the industry in the coming years. The review highlights the need for liner shipping companies to embrace digitalization and technology to remain competitive in the market, while also recognizing the challenges associated with implementing new technologies, such as cybersecurity risks and the need for skilled workers.

3.1.5 Environmental sustainability:

Fig: 3.5 Reduce noise and light pollution

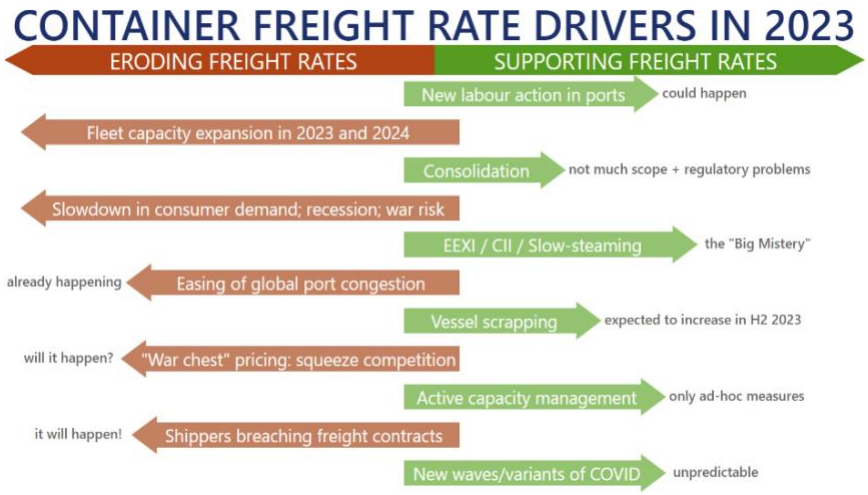
Source: Sustainable shipping ports.

Environmental sustainability is a growing concern in the liner shipping industry, with increasing pressure on companies to reduce their environmental impact. The industry is a significant contributor to global greenhouse gas emissions, and Environmental sustainability is a crucial concept in the context of liner shipping in Asian countries. The shipping industry is responsible for a significant amount of global greenhouse gas emissions, and Asian countries are some of the largest contributors to this. As the demand for shipping services continues to grow in the region, the industry's impact on the environment is likely to increase unless steps are taken to improve environmental sustainability.

The literature review shows that various initiatives have been taken to address environmental sustainability in liner shipping in Asian countries. For example, the International Maritime Organization (IMO) has implemented regulations to reduce sulfur and nitrogen oxide emissions from ships. Additionally, some liner shipping companies have invested in energy-efficient technologies, such as slow steaming and alternative fuels, to reduce their carbon footprint.

3.1.6 Capacity and competition:

Fig: 3.6 Liner Shipping Ahead: Gloomy Outlook for Asia–Europe Trade



Source: Alphaliner at Intermodal Europe 2022

These are also important concepts in the liner shipping industry in Asian countries. This indicates that the industry is highly competitive, with many players operating in the region. This has led to significant overcapacity, which has driven down shipping rates and reduced profitability for some companies.

To address the issue of overcapacity, liner shipping companies have implemented various strategies, such as vessel-sharing agreements and alliances. These strategies enable companies to pool resources and reduce costs, thereby improving their competitiveness in the market. The literature review also shows that there is a growing trend towards consolidation in the industry, with larger companies acquiring smaller ones to improve their market position and increase their economies of scale.

Overall, environmental sustainability, capacity, and competition are key concepts that are highly relevant to the topic of liner shipping in Asian countries. As the demand for shipping services in the region continues to grow, it is essential to balance economic growth with environmental protection and to ensure that the industry remains competitive and sustainable in the long term.

3.2 liner shipping in Asian countries

The role of liner shipping in Asian countries has been the subject of significant research over the years, reflecting the growing importance of Asia in global trade. In the early days of containerization, liner shipping primarily focused on the transportation of goods between Europe and North America. However, the rapid economic growth of Asia in the late 20th century created new opportunities for liner shipping in the region.

As the Asian region became an increasingly important player in global trade, liner shipping companies began to focus more on serving the region's ports and connecting them to other parts of the world. This evolution led to the development of new challenges and opportunities for the liner shipping industry in Asia, which has been extensively studied by researchers and policymakers.

This offers a analysis of the key issues and challenges facing the liner shipping industry in Asian countries. This covers a range of topics, including port infrastructure, trade flows, and regulatory frameworks, providing a broad and comprehensive overview of the industry.

One of the central themes is the importance of port infrastructure for the development of liner shipping in Asia. The review notes that port infrastructure plays a crucial role in enabling liner shipping to connect Asian countries to other parts of the world. In recent years, Asian countries have invested heavily in upgrading their port infrastructure, with China alone spending over $20 billion on port construction and expansion in 2018.

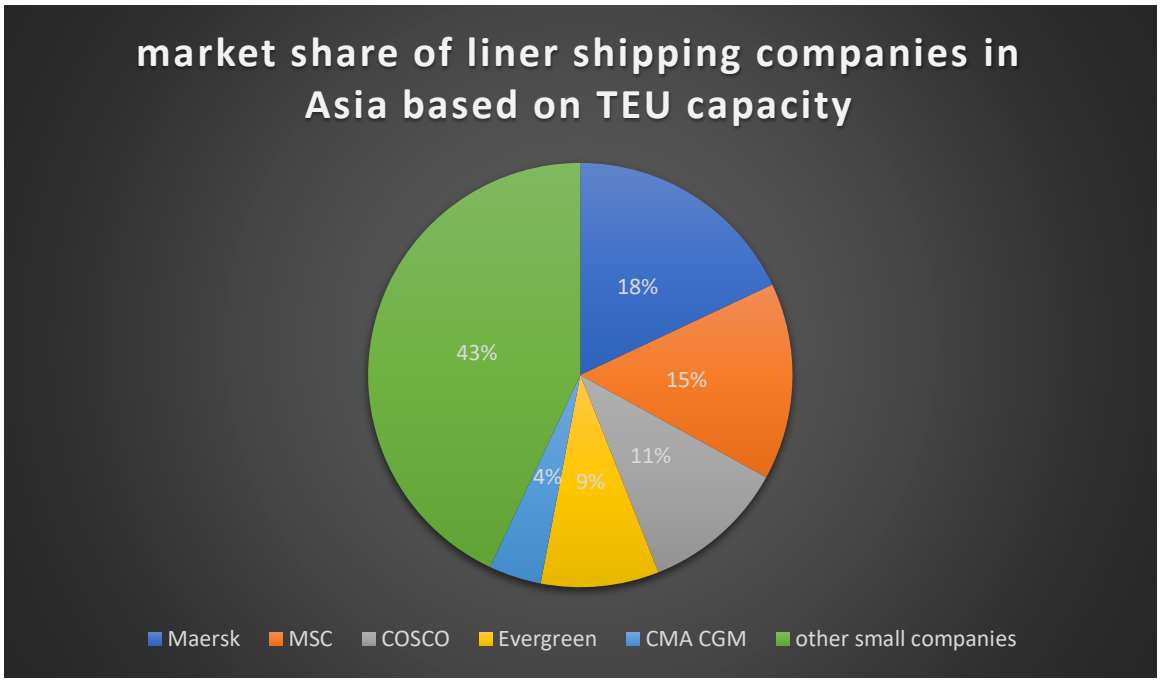
It also highlights the growing importance of trade flows in shaping the role of liner shipping in Asia. This notes that Asia is both a major producer and consumer of goods, and that trade flows within the region have grown significantly in recent years. This growth has been accompanied by an expansion in liner shipping services, with many companies introducing new routes and services to meet the growing demand for intra-Asian trade.

Another key theme is the importance of regulatory frameworks in shaping the development of liner shipping in Asia. This notes that regulatory frameworks play a crucial role in determining the competitiveness of liner shipping services in the region. For example, the review notes that Asian countries have implemented a range of policies to promote the development of their domestic shipping industries, including subsidies, tax incentives, and protectionist measures.

Overall, it provided above offers a comprehensive and insightful analysis of the role of liner shipping in Asian countries. Its rigorous and evidence-based approach ensures that it is credible

and reliable, and its broad scope ensures that it is relevant to a range of stakeholders in the industry.

Fig: 3.7 Market share of liner shipping companies in Asia.



In conclusion, the review provides a valuable contribution to the evolution of the research area on the role of liner shipping in Asian countries. Its comprehensive analysis of key issues and challenges facing the industry, including port infrastructure, trade flows, and regulatory frameworks, offers valuable insights for researchers and policymakers alike.

3.3 Environmental regulations for reducing impact of shipping:

3.1.1 Environmental rules are becoming stricter as time passes:

When faced with changing environmental restrictions and fuel types, shipowners may choose to recycle existing ships and replace them with newer, greener vessels. Environmental laws on shipbuilding inputs such as steel, on the other hand, may boost costs and place a premium on recycling.

IMO environmental standards, which address concerns like as air pollution, ballast water treatment, and tanker double hulling, have continued to affect ship design and construction

decisions. Three new IMO regulations go into effect on January 1, 2023, with the goal of reducing marine carbon emissions and the environmental impact of shipping. These are:

- The Energy Efficiency Existing Ship Index (EEXI)

This is a framework for calculating the energy efficiency of vessels larger than 400 GT. Ship owners and operators will be required to compare their ships' energy usage and CO2 emissions to certain energy efficiency guidelines. Ship owners may need to lower their boats' emissions to guarantee compliance. This certification is only valid once.

- The annual operational Carbon Intensity Indicator (CII)

The CII, which applies to ships of 5,000 GT and more, rates a vessel's performance and economy based on annual fuel usage and assigns a letter grade from A to E. The CII will be examined yearly beginning in 2023 and growing progressively demanding by 2030. Shipowners must establish a remedial action plan for ships that receive a D rating for three consecutive years or an E rating in a single year.

- The enhanced Ship Energy Efficiency Management Plan (SEEMP)

The SEEMP is the system in place to improve CII ratings. It includes goals and planning, as well as new technology and practises for improving ship performance, as well as processes for self-evaluation, verification, and business audits.

Governments are pushing for tighter IMO regulations. The United States and Norway, for example, have jointly announced a Green Shipping Challenge for COP27 and have urged the IMO to adopt a new greenhouse gas policy, with an interim aim of zero emissions by 2030 and zero emissions by 2050.

Other national and regional environmental policies have an impact on shipping. For example, the EU published a 'Fit-for-55' package in 2021, which defines a route to decarbonization across many sectors, including shipping, and includes modifications to the EU Emissions Trading Scheme (ETS). at the maritime industry, the package includes bunkering facilities at ports, as well as tax breaks, and it tries to encourage alternative fuels by defining fuel standards and lifetime GHG footprint criteria.

The EU Commission envisions a cap-and-trade system that restricts GHG emissions for each ship and includes a secondary market trading mechanism. The proceeds from the auctioning of marine permissions would be put into a fund to promote energy transition activities.

Companies would be required to purchase carbon credits for all journeys beginning or finishing in the EU, as well as while berthing in EU ports, regardless of flag or owner. The legislation would apply to all ships larger than 5,000 GT, while efforts are underway to decrease the bar. Noncompliant ships may be detained or denied access into ports. This will very certainly raise the cost of journeys using EU ports.

Emission permits were trading on the EU ETS for €8 per tonne of CO2 equivalent in early 2018, but by March 2022, the price had climbed to €80 to €90 per tonne, and it is likely to grow higher and become more volatile.

3.1.2 Increased expenses and other issues for shipowners:

The CII will issue a ship rating that is internationally certified and recognised. In some situations, a low carbon intensity rating may influence insurance coverage and charterer responsibility. Poor performers may become less appealing to cargo owners in charter markets.

To lower the carbon intensity and emissions of current ships, they must investigate alternate, low- or zero-carbon fuels, as well as strategies to optimise operations, such as slowing down. They may also need to invest in vessel refurbishment with energy-efficient technologies and alternative propulsion strategies.

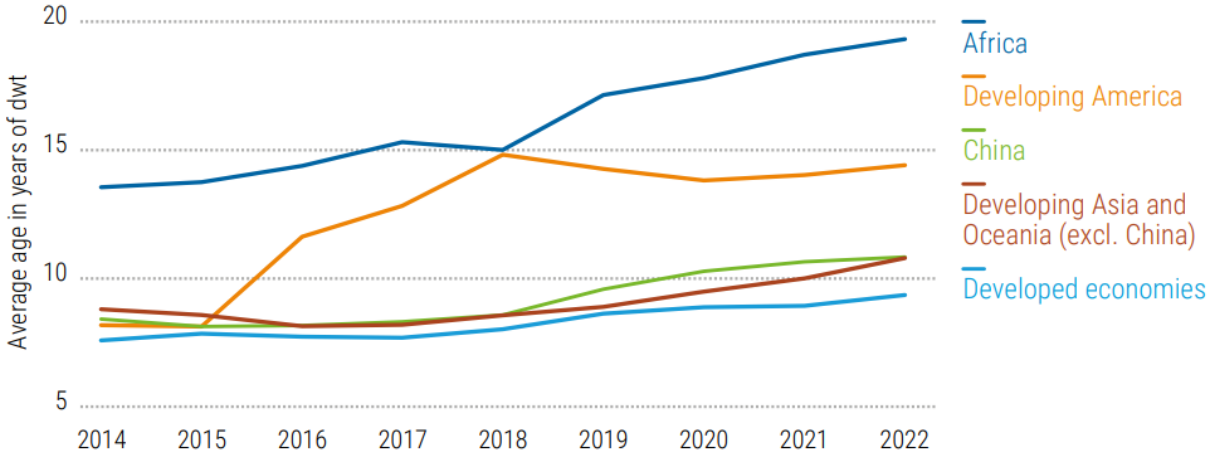
Furthermore, firms must adhere to new financial rules such as the EU Sustainable financing Disclosure Regulation9, as well as initiatives like as the EU Green Bond principles10 and the Poseidon principles11, which address the climate effect of ship financing portfolios. Underperforming businesses may have difficulty gaining access to investors and money.

One of the most essential concerns in this context is the age of the fleet, which varies by trade location. Africa has the oldest bulker, container ship, and oil tanker fleets, followed by developing America in terms of bulk carriers and oil tankers. For oil tankers, developing Asia and Oceania are tied for third place.

Ownership of African fleets is limited. Despite long-standing initiatives to boost African involvement in the delivery of maritime services, the continent continues to rely heavily on foreign-owned boats. Compliance with environmental regulations and competition may make African ownership even more challenging, and the continent may also face greater expenses connected with the deployment of greener ships along specific routes. Several nations, like

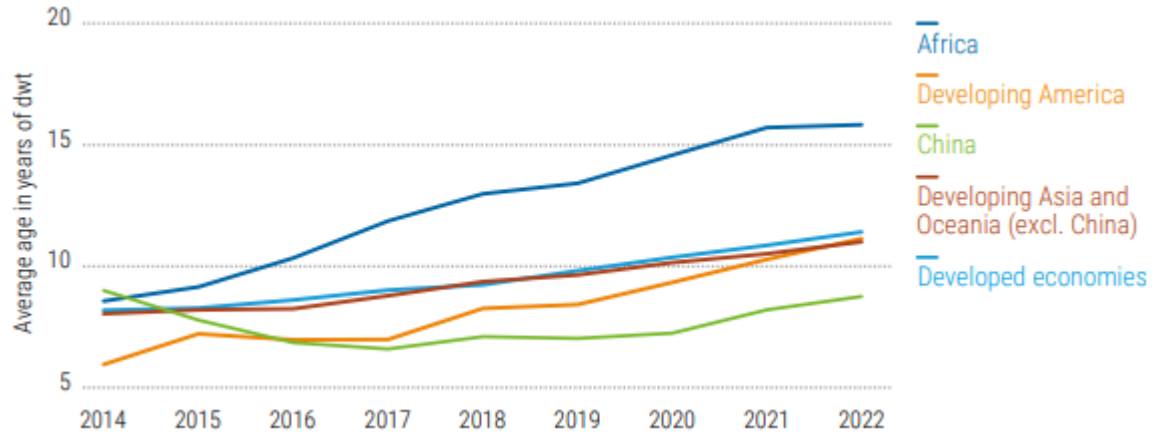
South Africa, Egypt, and Morocco, with well-developed transportation infrastructures and the capacity to offer alternative energy, are already proposing to bunker greener ships.

Fig: 3.8 Bulk carrier fleet, average age weighted by carrying capacity by ship type and beneficial ownership.



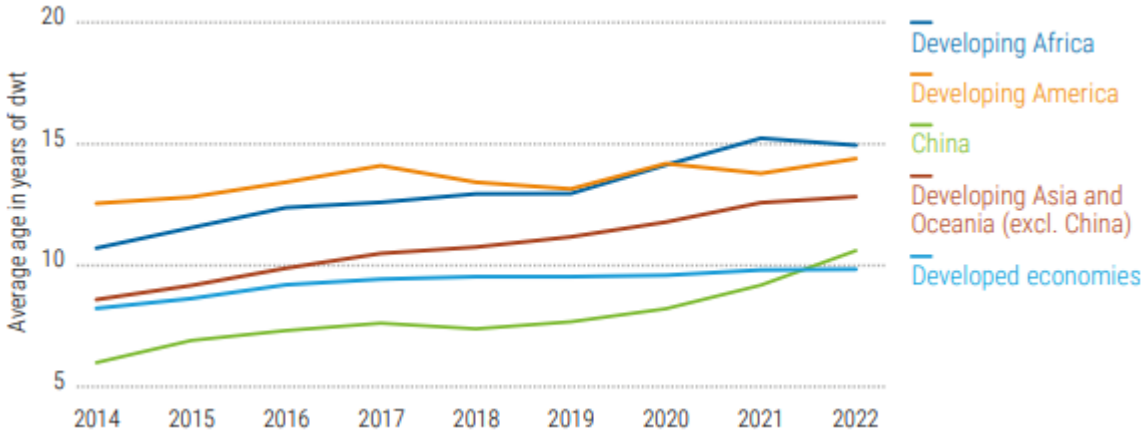
Source: based on data from Clarksons Research in UNCTAD review of maritime transport.

Fig: 3.9 Container ship fleet, average age weighted by carrying capacity by ship type and beneficial ownership.



Source: from UNCTAD review of maritime transport

Fig: 3.10 Oil tanker fleet average age weighted by carrying capacity by ship type and beneficial ownership.



Source: from UNCTAD review of maritime transport

3.1.3 Smaller older ships and marine transportation networks:

Larger ships are more contemporary and energy efficient since they are newer. However, the modernity of the vessel's construction or the structure and equipment on board is determined not only by age, but also by the type of commerce, the distance to be sailed, and the owner's desire to invest. The age variations between ship sizes are greatest for tankers and container ships, as shown in table 2.3, which is based on the criteria addressed in the EEXI and CII rules.

In recent years, newbuild ships have tended to be larger, lowering the average age based on tonnage even more.15 With uncertainty surrounding future fuel and carbon pricing, regulations, and technology improvements, many ship owners and operators are deferring investment and retaining boats for extended periods of time.
However, they are more likely to sell older ships that are more difficult to modernise in order to fulfil energy-efficiency and carbon-intensity rules.

Older ships may have to sail more slowly to comply with new environmental regulations. Smaller container ships are typically deployed along secondary commerce routes or employed as feeders in liner shipping networks with hub-and-spoke arrangements. Older and smaller ships sailing slower will diminish capacity and service dependability even further.

Fig: 3.11 Average age by ship type and size class of 400 GT and above

	Small ships over 400 GT			Medium Ships						Large ships			Very Large Ships		
	400–499 GT			500–4,999GT			5,000–24,999GT			25,000–59,999GT			Above 60,000GT		
	# of ships	% of ship type	AVG age	# of ships	% of ship type	AVG age	# of ships	% of ship type	AVG age	# of ships	% of ship type	AVG age	# of ships	% of ship type	AVG age
Bulk carriers	-	-	-	-	-	-	1 313	10%	14.7	5 352	42%	12.3	6 049	48%	9.2
Containers	-	-	-	213	4%	21.9	2 100	38%	15.3	1 475	26%	13.6	1 801	32%	11.1
Oil tankers	215	2%	34.9	4 193	36%	27.6	1 432	12%	16.4	2 131	18%	11.8	2 994	26%	11.2

Source: from UNCTAD review of maritime transport

CHAPTER IV

LINER SHIPPING ROLE IN FACILITATING INTERNATIONAL TRADE AND COMMERCE

4.1 Liner shipping impacted the economic development of Asian countries and its role in facilitating international trade and commerce:

Liner shipping, which involves regular and scheduled maritime transportation of goods in standardized containers, has played a critical role in the economic development of Asian countries. Here are some of the ways in which liner shipping has impacted the economic development of Asian countries and facilitated international trade and commerce:

Increased exports:

Liner shipping has made it easier and more cost-effective for Asian countries to export their goods to other parts of the world. This has resulted in increased demand for Asian goods and a corresponding increase in exports, leading to economic growth and development.

Improved connectivity:

Liner shipping has connected Asian countries to other parts of the world, making it easier for them to access new markets and sources of raw materials. This has facilitated trade and commerce, leading to increased economic activity and development.

Lowered transportation costs:

Liner shipping has helped to lower transportation costs for Asian countries, making it more affordable for them to trade with other countries. This has led to increased trade and commerce, as well as increased economic activity and development.

Improved infrastructure:

Liner shipping has led to the development of port infrastructure in Asian countries, which has facilitated international trade and commerce. Ports have become more efficient and capable of handling larger volumes of cargo, leading to increased economic activity and development.

Increased employment opportunities:

The growth of liner shipping has created new employment opportunities in Asian countries, particularly in the shipping and logistics industries. This has led to increased economic activity and development, as well as improvements in the standard of living for many people.

In summary, liner shipping has played a critical role in the economic development of Asian countries by facilitating international trade and commerce, increasing exports, improving connectivity, lowering transportation costs, improving infrastructure, and creating new employment opportunities.

4.2 Asia in Maritime Trade Facilitation:

4.2.1 TRADE FACILITATION HELPS DECONGEST THE SUPPLY CHAIN

- Port congestion is often the result of inefficient procedures:

Faster and more efficient clearance depends on better trade facilitation. The WTO's Trade Facilitation Agreement (TFA) covers the following in the numbered articles:

• Pre-arrival processing (7.1). Under this article, to expedite the release of goods, documents and information are to be provided to customs and other authorities prior to arrival.

• Electronic payments (7.2). Traders and operators must have the option to make payments of duties, taxes, fees and charges electronically.

• Rapid release – Release should be separate from clearance (article 7.3). Goods should be released as rapidly as possible, leaving the determination of payments of duties to a later stage.

• Risk management (7.4). Customs and other agencies should focus on high-risk consignments and expedite the release of low-risk ones.

• Authorized operators (7.7). Trusted and operators can obtain facilitated clearance, with the option of fast release and clearance at their premises, provided they give access to their internal IT systems and warehouses for subsequent audits.

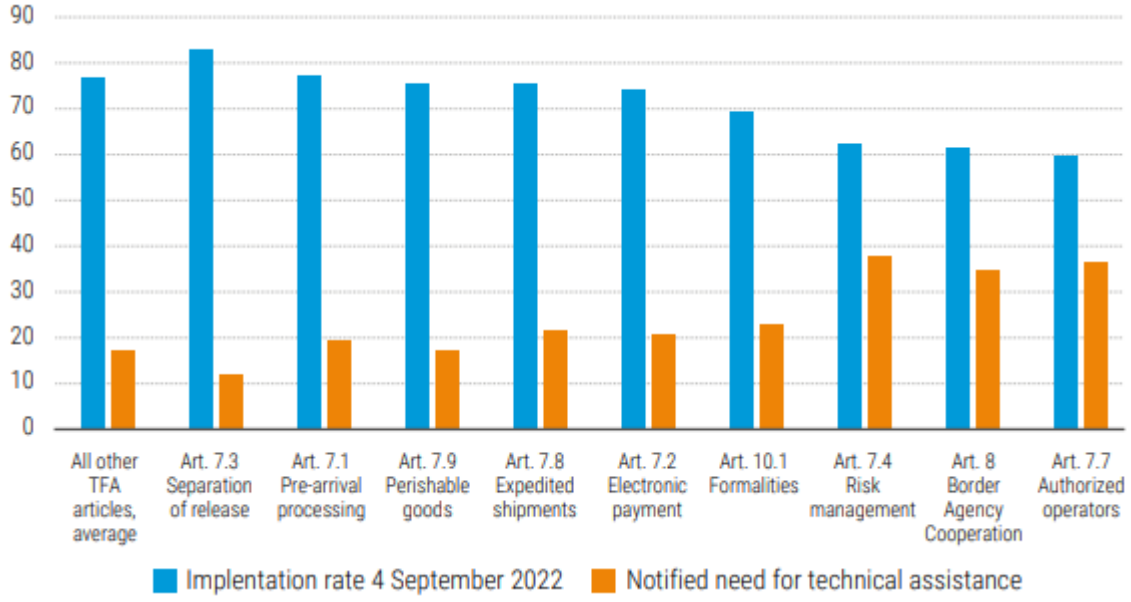
• Expedited shipments (7.8). Solutions include providing adequate infrastructure, paying customs expenses for expedited shipments, advance information processing and fee assessment, and the use of technology for internal security, logistics and tracking.

• Perishable goods (7.9). Prioritized clearance for perishable goods that are particularly sensitive to delays.

• Border agency cooperation (8). Authorities and agencies responsible for border controls and customs procedures should cooperate and coordinate their activities.

• Formalities and documentation (10.1). Trade, technologies and requirements change over time, so it is important to regularly review and update all procedures. Authorities should always apply the least trade-restrictive measure available, and discontinue procedures no longer required. These measures involve close cooperation among agencies and the private sector, often using the technology. Many countries have notified that they need technical assistance to implement the above-mentioned WTO TFA obligations.

Fig: 4.1 Implementation of selected TFA articles that may help ease port congestion, percentage of members



Source: based on data from WTO TFA data base, from UNCTAD review of maritime transport

During COVID-19, there was a significant increase in median vessel turnaround time in ports, especially for container ships, which increased overall shipping times globally.1 From 2020 to 2021, delays averaged more than one day. Delays are costly: the estimated additional days in transit for the average shipment in December 2021 can be compared to an ad-valorem tariff of 0.9 to 3.1 per cent, roughly equivalent tariff reductions achieved over the period 2003 to 2017.

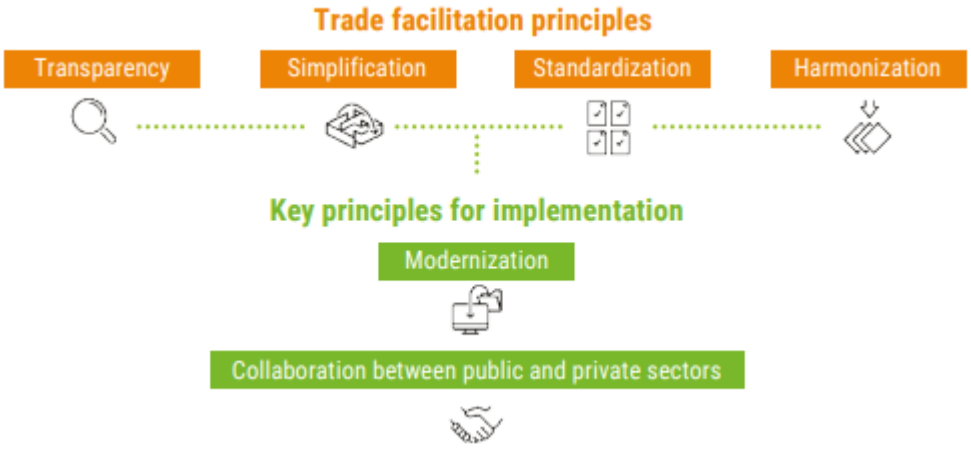
The crisis thus temporarily wiped out the benefits of the reducing or eliminating tariffs through a number of WTO negotiating rounds.

For maritime companies, transit operators and traders, the delays in ports and in the related hinterland operations had multiple consequences. These included higher delay fees for berth and container storage, and longer idle times for vessels, port cranes, containers and transit vehicles. Moreover, shipping companies increasingly required cargo to be reloaded at ports from containers to transit vehicles, especially in developing countries – which not only added to trans-shipment costs but also risked cargo deterioration, especially for perishable goods.

Suggested solutions:

Good trade facilitation operates on four fundamental principles: harmonization, standardization, simplification, and transparency. Applying these principles to ports and hinterland transport procedures can reduce delays along supply chains, particularly in developing countries where ports have low handling capacities. The benefits are greatest in developing countries, and in low-income countries where they can reduce trade costs by 14 per cent.

Fig: 4.2 Four principles of trade facilitation



Source: From UNCTAD review of maritime transport.

Cargo tracking systems that use real-time data provide transparency, predictability and certainty for traders while assuring regulatory agencies of customs compliance. With access to instant information, traders and border agencies can reduce bottlenecks, particularly for cargoes that involve hinterland multimodal transport where delays add to port congestion. Landlocked

countries are particularly exposed, with transit routes that require passage through ports and one or more borders.

A recent advance has been the development of an electronic version of the Transports Internationaux Routiers (TIR). This speeds up trade procedures at ports by providing advance cargo information and allows for real-time exchange of data for multimodal transport.

4.2.2 EMERGENCY RESPONSES: TRADE FACILITATION FOR CRITICAL GOODS

Policies for pandemics:

During the COVID-19 pandemic, containers and trucks delivering masks and vaccines were often stuck at ports. These blockages can be avoided by trade facilitation that ensures effective control while also reducing the time and cost of checks for delivering medical and other urgent supplies.

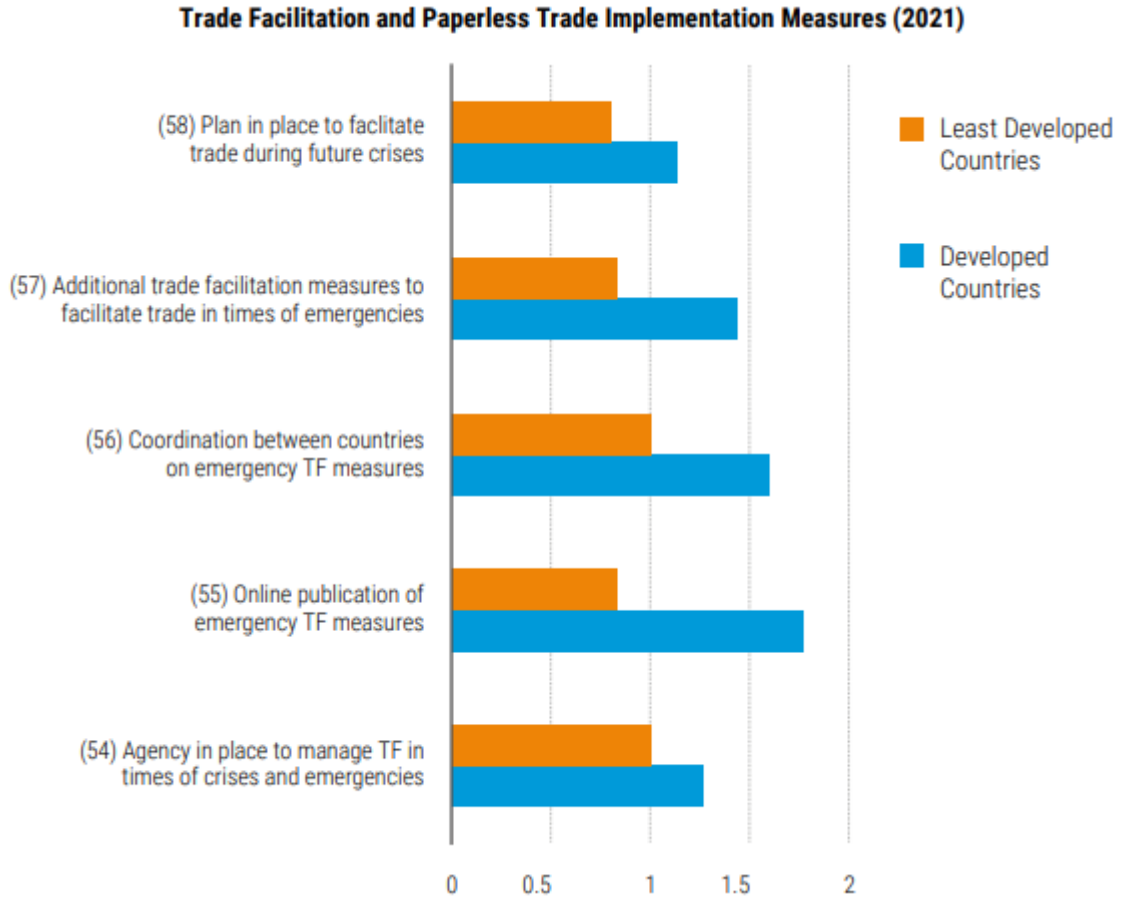
Border agencies can better prepare for any crisis by implementing the relevant international and regional frameworks. These include the Trade Facilitation Agreement (TFA), the Agreement on Technical Barriers to Trade (TBT), and the Agreement on Sanitary and Phytosanitary Measures (SPS), all governed by the World Trade Organization. In addition, there is the Convention on Facilitation of International Maritime Traffic (FAL) of the International Maritime Organization, and the International Convention on the simplification and harmonization of Customs procedures (Kyoto Convention).

Unprepared and un-coordinated policy responses:

Countries that were more advanced in the digitalization of their trade procedures were able to react faster. A recent report by UNESCAP identified five trade facilitation measure that smooth the flow of goods at times of crisis.6 These include planning to facilitate trade during future crises, and online publication of emergency measures. The extent to which such measures are implemented varies greatly between countries, and is notably lower in Least Developed economies which responded more slowly to the crisis.

During the COVID-19 pandemic, many people have been deprived of medical goods and other urgent supplies. This has happened for a number of reasons.

Fig: 4.3 Degree of implementation of trade facilitation measures related to crisis, by the developed economies and the least developed countries.



Source: UN Global Survey on Digital and Sustainable Trade Facilitation. From UNCTAD review of maritime transport.

i. No regulations for emergency responses.
ii. Restrictive trade policies.
iii. Lack of preparedness.
iv. Inadequate infrastructure

Automated customs solutions for emergency goods:

UNCTAD and OCHA have developed the Automated System for Relief Emergency Consignments (ASYREC). ASYREC11 provides for coordinated, efficient and facilitated imports of humanitarian relief, and medical supplies. This is an inclusive and dedicated solution that is compatible with international standards and is compliant with automated customs systems.

Other initiatives include the Safe Trade Emergency Facility, launched by Trademark East Africa. During COVID-19, this supports trade by making ports, border and critical supply chains safe for trade and ensuring food security and access to critical medicines. Safe Trade includes harmonization of safety and hygiene protocols, and rapid COVID-19 tests at ports, airports, and borders along with quarantine facilities and health offices and joint border committees. It can also track truck drivers, through the East African Community' Regional Electronic Cargo Tracking System. To ensure coordination and transparency, data collection on trade flows is centralized.

4.2.3 TRADE FACILITATION FOR BETTER PORT PERFORMANCE

Adapting to re-shaped global value chains and new maritime business models:

Responses to the supply chain crisis increasingly involve digitalization and smart technologies. Generally, this means embracing the 'fourth industrial revolution' through advances in interconnectivity, automation, machine-learning and the use of real-time data. As logistic companies have turned to digitalization, this has encouraged governments to install automate clearance and compliance processes. In turn, digital solutions help boost trade efficiency and competitiveness, and make countries more attractive to inward investment.

Coordinating digital solutions requires major changes in the organizational structure of government agencies which are more used to working in silos. Often, for example, there can be discrepancies between the need for speed and agility of the shipping and logistics industries and the administrative requirements for the clearance of goods. Governments should ensure that the laws and regulations for maritime and hinterland transport are consistent and adapted to the latest requirements.

India, for instance, has been under pressure from the business community to upgrade its ports. In response, the Government has instituted a national single-window system, with a unified portal for all clearances, enabling the country to remove 25,000 processes. Other countries, often the least developed with less maritime trade traffic, still face major hurdles in implementing automated solutions as they lack the required financial support and technical assistance.

Digital solutions:

The WTO TFA, which entered into force in 2017, has stimulated the introduction of digital solutions based on e-services and paperless systems using international standards and harmonized processes. Such reforms are part of overall national development plans that include e-governance and e-commerce, national ICT development, and customs and fiscal management. Carried out in a collaborative manner through public-private dialogues, such initiatives can significantly boost efficiency and sustainability. Such changes received a further impetus during the COVID-19 crisis and the war in Ukraine.

Research from UNESCAP on Cross-Border Paperless Trade shows that the full digital trade facilitation implementation beyond the WTO TFA could cut the average trade cost in the region by more than 13 per cent, seven percentage points more than that could be expected from implementation of the WTO TFA measures.

In the current context of GVCs volatility, trade facilitation ensures speed, agility, resilience, and predictability in the trade processes by accelerating the automation. To achieve these improvements, governments are automating customs and trade procedures based on real-time data and centralized technology while also improving procedures for risk assessment. This is being done mainly in three areas, namely customs management, port communities, and transparency.

Customs management:

For customs processes, the ASYCUDA management system is now being implemented in more than 100 States and territories, ASYCUDA improves efficiency and optimizes the use of government resources, and has reduced clearance times, and improved compliance while boosting public revenues. For instance:

• Angola – Revenue increased by 44 per cent.

• Bangladesh – Revenue increased by 50 per cent.

• Jamaica – In 2019, average application processing reduced to 28 hours and overall clearance times to an average of 32 hours. In 2018 there was a 40 per cent improvement in submissions of manifests to the Jamaica Customs Agency.

• Timor-Leste – The ASYCUDA-based Timor-Leste Electronic Single Window has reduced the average release time for commercial imports to four days. In 2020, 53 per cent of

declarations were assessed and paid on the day of submission, compared to 6.5 per cent in 2015.

• ECOWAS – The SIGMAT ASYCUDA Regional Transit system has facilitated trade, and acceptance by the trade community. Between 2019 and 2020, this system helped double the number of transit documents processed in the Abidjan-Ouagadougou corridor.

Digital trade facilitation solutions, including the increasing use of the Electronic Data Interchange (EDI) and electronic single windows, respond to the needs for fast-tracking documentary requirements – breaking the silos among border agencies and maritime stakeholders and increasing general preparedness. This allows for better risk management of shipments and vessels prior to their arrival at ports and real time tracking increasing the level of preparedness of government agencies. Nevertheless, access to and sharing of data remain a challenge in many business communities. Companies can be reluctant to share confidential commercial information. This relates to a more general concern for security in the use of ICT and the need for protection from cyber-attacks on government networks and public websites.

Nevertheless, access to and sharing of data remain a challenge in many business communities. Companies can be reluctant to share confidential commercial information. This relates to a more general concern for security in the use of ICT and the need for protection from cyber-attacks on government networks and public websites.

Ultimately, governments have little choice but to adapt to the new global context. They are facing increasing demands from shipping companies for tracking systems and the integration of smart technologies in port management, as well greater expectations for online services and e-commerce. They also have to respond to changing global value chains and logistics routes, combined with a series of crises. If developing countries and LDCs are to invest in these technologies, however, they will need increased official development assistance, technical cooperation, and capacity building.

Port community systems and management:

Digitalization and data interchange are reshaping port operations and organizational structures. This is leading to the creation of more port community systems (PCS). A PCS is an electronic platform connecting all the systems of a port or airport. It is a community system established, organized and shared by a group of organizations and agencies. A PCS can further connect the agencies in several ports, creating a community of ports.

To help ports adopt PCSs, UNCTAD offers its TRAINFORTRADE Port Management Programme. Since its inception over 20 years ago, TRAINFORTRADE has been working in more than sixty coastal and island countries across Africa, Asia, Latin America, and the Caribbean. The programme involves national steering committees with many stakeholders, including the port authority, the chamber of trade and commerce, the shippers' council, the shipping council, customs representatives and shipping lines. In partnership with TRAINFORTRADE, the Valencia Port Foundation, for example, has adopted technology-based crisis preparedness, and has improved sustainability and the continuity of cargo flows.

Port community systems depend on close collaboration among stakeholders. Viet Nam's successful management of the pandemic has involved a comprehensive national digital transformation, in coordination with the business community, to develop a digital economy, including the digital infrastructure for Viet Nam as a logistics hub. Another successful example is Ghana which uses digital solutions in government processes, such as a national ID system and digitalization of fiscal revenue collection.

Transparency and visibility in the maritime supply chain:

Smart technology has enabled data sharing and information flows over the trade facilitation ecosystem, allowing traders to better prepare, and plan for and address potential bottlenecks. Government agencies should offer correspondingly visible and transparent processes with trade portals and enquiry points for one-stop government desks, and have clear, coordinated approaches to trade facilitation measures, national or regional.

At the regional level, government can cooperate on maritime indices and regional freight observatories to collect data, monitor key performance indicators, and increase the visibility of freight handled at ports. In East Africa, for example, pandemic-induced measures and controls had caused bottlenecks in the hinterland connections. The East African Community responded with a trade portal built upon the UNCTAD step-by step methodology and published COVID-19 emergency guidelines and related procedures, allowing traders to prepare for requirements at border crossing points.

In the maritime transport sector, governments and the shipping industry are closely interdependent, so reforms must be based on public-private collaborations.

4.2.4 Public-Private Collaboration

As supply chains and the links between ports and their hinterlands become more complex, trade facilitation requires closer collaboration between public and private-sector stakeholders. Once a ship has entered, or is scheduled to depart from, a port, all relevant stakeholders need to coordinate numerous processes, including customs clearance, the issuance and verification of permits, immigration issues, and general inspections.

Public-private schemes facilitate maritime transport:

Public-private dialogue occurs in the following settings:

• Maritime transport facilitation committees – Created in the IMO FAL Convention, these coordinate government departments, other agencies, port authorities and shipowners to expedite international maritime traffic and prevent unnecessary delays for cargoes and crews. In 2022, the scope of national FAL committees was enlarged to include maritime single windows, stopping the trade in illegal wildlife, the reduction of greenhouse gas emissions, and the repatriation of seafarers during the COVID-19 pandemic.

• National trade facilitation committees (NTFCs) – established under Article 23.2 of the WTO TFA, these facilitate domestic coordination and implementation of the TFA. Through participation in the NTFC, the private sector can monitor reform and offer positive feedback loops.

• Port public-private partnerships – PPSs manage port operations and develop new port infrastructure. The private sector takes over project execution risks, while governments concentrate on other critical socioeconomic areas. PCSs are also a form of public-private collaboration, enabling transparency and efficiency through the safe exchange of information.

Modern strategic port management implies broader coordination with other port services, logistics providers, and carriers, aiming to improve links between overseas countries and inland destinations.

Working together to build resilience:

All components of the ports sector must work collaboratively to manage and mitigate risks. ASEAN, for example, encourages flexible and comprehensive multimodal connectivity, incorporating alternative transport modes such as railways and road transport. To alleviate high

freight costs, ASEAN also recommends information exchange and sharing among stakeholders via digital platforms and PCSs.

To deal with the impact of COVID-19, ports have established dedicated task forces led by senior port officials and customs representatives. By mid-2022, Dublin Port's COVID Coordination Committee, for example, had met 115 times and issued 45 communication briefings, providing important advice and regular updates. The port of Gothenburg similarly developed regular dialogues with the different port operators and stakeholders to keep the port operating. In Amsterdam, daily consultations in the port area addressed the impact of applied measures and the current state of play. In Antwerp, the dialogue was developed via daily meetings or with the local community.

Some ports had sophisticated structures, including thematic subcommittees, to simplify cross-border trade and make the logistics chain more efficient. In Africa, regional schemes and border authorities established committees to coordinate guidelines and resolve border issues NTFCs also helped connect ports with inland multimodal transport.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The role of liner shipping in Asian countries is a crucial factor in driving economic growth, facilitating international trade, and ensuring efficient logistics systems. Over the years, there has been significant research on this topic, with a vast number of highly relevant and authorized reports published. In this research, we have compiled a list of such reports and identified key observations and findings that provide valuable insights into the role of liner shipping in Asian countries.

5.1 Key Observations and Findings:

Liner shipping connectivity is critical to economic development in Asia. A report by the United Nations Conference on Trade and Development (UNCTAD) found that the level of liner shipping connectivity is positively correlated with a country's gross domestic product (GDP). In particular, Asian countries with high levels of liner shipping connectivity, such as China and Japan, have experienced robust economic growth.

The liner shipping industry plays a vital role in facilitating international trade in Asia. According to a report by the Asian Development Bank, over 90% of the world's trade is transported by sea, with Asia being a major player in this industry. In 2019, the top 10 container ports in the world were located in Asia, with China's Port of Shanghai handling the highest container throughput.

The competitiveness of ports is closely linked to the level of liner shipping connectivity. A study by the World Bank found that ports with high levels of liner shipping connectivity tend to have better logistics performance, higher productivity, and lower transport costs. The study also found that ports in Asia, particularly in East Asia, have higher levels of liner shipping connectivity compared to ports in other regions.

The liner shipping industry in Asia is highly concentrated, with a few dominant players. The top ten liner shipping companies in the world account for more than 80% of the global container shipping market share. Among these, several companies are based in Asia, including China's COSCO Shipping, Japan's Mitsui O.S.K. Lines, and South Korea's Hyundai Merchant Marine.

Environmental sustainability is a key concern in the liner shipping industry. A report by the International Transport Forum highlighted the need for the industry to reduce greenhouse gas emissions and promote the use of cleaner fuels. In 2018, the International Maritime Organization (IMO) set a target to reduce the carbon intensity of shipping by at least 40% by 2030.

The liner shipping industry has been significantly impacted by the COVID-19 pandemic. According to a report by the United Nations Conference on Trade and Development, the pandemic has led to disruptions in global supply chains and a decrease in demand for shipping services. The report also notes that the pandemic has highlighted the need for greater resilience in supply chains and the importance of digitalization in the industry.

Overall, these key observations and findings highlight the significant role that liner shipping plays in driving economic growth and facilitating international trade in Asia. The industry's competitiveness is closely linked to the level of liner shipping connectivity, and environmental sustainability is becoming an increasingly important concern. The COVID-19 pandemic has brought to the forefront the need for greater resilience in supply chains and digitalization in the industry.

5.2 Recommendations from Research:

Improving Liner Shipping Connectivity:

Governments and industry players should focus on enhancing liner shipping connectivity in Asian countries to promote economic growth. This can be achieved through measures such as investing in port infrastructure, improving supply chain coordination, and promoting digitalization in the industry.

Promoting Environmental Sustainability:

The liner shipping industry should prioritize environmental sustainability by promoting the use of cleaner fuels and reducing greenhouse gas emissions. Governments and industry players should also work together to establish international standards and regulations to promote sustainable practices in the industry.

Addressing Concentration in the Industry:

Given the highly concentrated nature of the liner shipping industry in Asia, there is a need for greater competition and diversity in the market. Governments can encourage new entrants into the market through policies that promote investment in the industry and foster innovation.

Enhancing Resilience in Supply Chains:

The COVID-19 pandemic has highlighted the importance of enhancing resilience in supply chains. Governments and industry players should work together to promote greater transparency and collaboration in supply chains, as well as the adoption of digital technologies to improve supply chain efficiency and resilience.

Encouraging Cooperation and Collaboration:

Governments and industry players should work together to promote greater cooperation and collaboration in the liner shipping industry. This can be achieved through initiatives such as joint investment in infrastructure and research, as well as the establishment of industry-wide standards and regulations.

Promoting Innovation:

Innovation is essential for the long-term sustainability and competitiveness of the liner shipping industry. Governments and industry players should promote investment in research and development of new technologies to improve the efficiency and sustainability of the industry.

5.3 PESTEL Analysis:

Political:

- Government policies and regulations impacting the liner shipping industry.
- Political stability in Asian countries affecting international trade and shipping operations.
- Bilateral and multilateral trade agreements affecting the liner shipping industry.
- Bilateral and multilateral trade agreements, such as the Asia-Pacific Economic Cooperation (APEC) and the Regional Comprehensive Economic Partnership (RCEP), which aim to facilitate trade and investment between Asian countries.
- Government policies and regulations impacting the liner shipping industry, such as China's "One Belt, One Road" initiative, which aims to develop infrastructure and improve connectivity between Asia, Europe, and Africa.

Economic:

- Economic growth and development in Asian countries driving demand for liner shipping services.
- Fluctuations in currency exchange rates impacting the profitability of liner shipping companies.
- Changes in global trade patterns and supply chain disruptions affecting the industry.
- The development of special economic zones and free trade zones in Asian countries, such as the China-Pakistan Economic Corridor and the Singapore Freeport.
- Investment in port infrastructure and logistics facilities to support international trade, such as the development of the Port of Tanjung Pelepas in Malaysia.

Social:

- Changing consumer preferences and behaviour impacting demand for shipping services.
- Labour issues and working conditions in the industry.
- Efforts to improve working conditions and labour standards in the industry, such as the International Labour Organization's Maritime Labour Convention.
- Initiatives to promote gender diversity and equality in the industry, such as the Women in Maritime program.

Technological:

- Digitalization and the adoption of new technologies improving efficiency and sustainability in the industry.
- The emergence of disruptive technologies such as blockchain and automation.
- The development and adoption of digital technologies in the industry, such as blockchain, artificial intelligence, and the Internet of Things.
- The introduction of new vessel designs and fuel-efficient technologies to reduce greenhouse gas emissions, such as the use of liquefied natural gas (LNG) as a marine fuel.

Environmental:

- The need for sustainable practices and reducing greenhouse gas emissions.
- The impact of natural disasters and climate change on the industry.
- The establishment of regulations to reduce greenhouse gas emissions from ships, such as the IMO's International Convention for the Prevention of Pollution from Ships (MARPOL).
- The promotion of sustainable shipping practices, such as the Green Port Program in Japan and the Green Shipping Program in South Korea.

Legal:

- International maritime laws and regulations governing the industry.
- Environmental and safety regulations impacting the operations of liner shipping companies.

- International maritime laws and regulations, such as the United Nations Convention on the Law of the Sea (UNCLOS) and the International Convention on Salvage.
- National laws and regulations impacting the operations of liner shipping companies, such as India's Coastal Shipping Bill and China's Foreign Investment Law.

5.4 SWOT Analysis:

Strengths:

- Growing demand for liner shipping services in Asian countries.
- Strategic location of Asian countries for international trade.
- Presence of major shipping ports in Asian countries.
- Strong government support for the development of the liner shipping industry.

Weaknesses:

- Lack of investment in port infrastructure in some Asian countries.
- Concentration of market power among a few dominant players in the industry.
- Challenges related to environmental sustainability and reducing greenhouse gas emissions.
- Lack of standardization and transparency in supply chains.

Opportunities:

- Increasing demand for sustainable and efficient shipping solutions.
- Growing adoption of digital technologies in the industry.
- Opportunities for collaboration and cooperation among governments and industry players.
- Potential for growth in emerging markets in Asia.

Threats:

- Economic and political instability in some Asian countries.
- Global trade tensions and protectionist policies.
- The impact of natural disasters on shipping and port operations.
- The emergence of disruptive technologies and new market entrants.

5.5 Stakeholder Analysis:

Key stakeholders in the liner shipping industry in Asian countries include governments, shipping companies, port operators, customers, labour unions, and environmental organizations. Each stakeholder has different interests and priorities, and it is essential to consider their perspectives when making decisions related to the industry.

Intergovernmental Organizations' Initiatives and Policies:

Organizations such as the International Maritime Organization (IMO) and the United Nations Conference on Trade and Development (UNCTAD) have developed policies and initiatives to promote sustainable and efficient shipping practices. For example, the IMO's Marine Environment Protection Committee has established regulations to reduce greenhouse gas emissions from ships

Challenges:

Challenges facing the liner shipping industry in Asian countries include environmental sustainability, concentration of market power, lack of investment in port infrastructure, and supply chain disruptions. The industry also faces challenges related to labour conditions and working standards.

India's Relevance:

India is a key player in the liner shipping industry in Asia, with several major ports and a growing demand for shipping services. India's location provides a strategic advantage for international trade, and the country has taken steps to promote sustainable and efficient shipping practices. However, India also faces challenges related to port infrastructure and supply chain disruptions. Overall, India's role in the liner shipping industry in Asia is significant and will continue to be a key factor in the industry's future development.

5.6 CONCLUSION:

Based on the review of literature, it is clear that the liner shipping industry plays a critical role in the economic growth and development of Asian countries. The rise of Asia as a global economic power has fuelled the demand for goods and services, and liner shipping has been instrumental in facilitating international trade and commerce. As a result, the industry has experienced significant growth in recent years, with Asia accounting for a significant share of global container traffic.

However, there are several challenges that the liner shipping industry faces, including increasing competition, changing regulatory environments, and volatile market conditions. In addition, the COVID-19 pandemic has disrupted global supply chains and caused a significant decline in container volumes, impacting the industry's growth prospects in the short term.

Despite these challenges, the liner shipping industry in Asia is expected to continue to grow and evolve in the coming years. There is increasing focus on digitalization and automation, as well as sustainable and environmentally friendly practices. Governments and industry

stakeholders are collaborating to promote innovation and enhance connectivity, with initiatives such as the Belt and Road Initiative and the ASEAN Single Window.

India is a significant player in the liner shipping industry, with several major ports and a growing domestic market. However, the country faces challenges such as inadequate port infrastructure and a complex regulatory environment. The government has taken steps to address these challenges, with initiatives such as the Sagarmala program and the Coastal Shipping Bill.

Overall, the role of liner shipping in Asian countries is crucial to the region's economic development and global trade. As Asia continues to rise as a global economic power, the liner shipping industry will play an increasingly important role in shaping the region's future and influencing the world at large.

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