

MARITIME TRANSPORT & LOGISTICS

AN OVERVIEW OF ASPECTS, TRENDS, CHALLENGES & CONTRIBUTIONS



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Executive summary

Transport is a service industry, an activity without which it would be impossible for a country to trade. Maritime transport is the most vital international mode of freight transport, accounting for 80% of world trade by quantity and more than 70% by cost. Maritime transport services are motivated directly by worldwide economic growth and the need for international carriage of products, and are therefore subject to changes in the global economy. Often referred to as 'maritime logistics', the maritime transport system that is deeply involved in the entire logistics flow. Maritime logistics plays a very prominent role in the logistics sector due to the globalization of the economy and is considered to be crucial for international trading. Global economic growth directly affects international trade, which in turn directly affects transportation services, and hence, the world's seaborne trade volumes (as a measure of shipping, port, and logistics demand). In this context, multiple information is provided and evaluated on global trade and international maritime trade.

Following the global financial crisis at the end of 2008, the economy saw the worst worldwide recession in more than seven decades since the Second World War. Global GDP shrank by 2.2%, with a decrease of roughly 13% in the worldwide trade volume in 2009 and an increase of only 1.8% in worldwide economic production between 2007 and 2010. Imports and exports from emerging market economies exceeded their pre-crisis rates by 26% and 22%, respectively.

The global economy is still struggling to return to a powerful position. World production growth in 2012 was only 2.2%, which stayed roughly the same in 2013, with 3% anticipated in 2014. In addition, the complete export quantity of merchandise fell seven times faster than global GDP. These changes were linked to globalized manufacturing procedures, enhanced trade in parts and components, deepening and expanding worldwide supply chains, falling demand for consumer products and durables, and restricted trade finance.

A global recovery was achieved by the beginning of 2010, with an expansion of 4.1% of GDP and a development of 9.5% of the complete amount of trade based on projections from 180 countries around the globe by the World Trade Organization.

The annual rise in exports from developed economies was around 13 percent in terms of quantity in 2010, while the annual rise in shipments from developing economies, particularly Asian nations (14.7 percent) and China (29.1 percent) grew by 16 percent as the world emerged from the recession.

This recovery has played a vital part in expanding global trade overall volume and improving the global economy. The global recovery, however, was slower than prior post-recession recoveries and the annual rise in exports from advanced economies fell to 0.4% in volume terms in 2012, while that of emerging economies (Asian nations 1.5%, China 7.2%) increased 3.6% (UNCTAD, 2013).

Despite these difficult events, container shipping and domestic maritime trade had begun to recover from the 2010 downturn in the global economy. Gradual growth had appeared by mid-2010, and rises in total volumes of trade had begun to be recorded, particularly in and out of China. By the beginning of 2010, the global merchant fleet had expanded to 1,276 billion deadweight tons (dwt) by an impressive 7 percent. Furthermore, world container performance decreased by around 9 percent to 465 million TEU in 2009, while complete container trade in world seaborne trade was forecast to boost by 11.5 percent by the end of 2010.

2017 saw a tiny increase in the development of the world fleet after five years of decelerating development. A total of 42 million gross tons have been added to worldwide tonnage over the year, corresponding to a growth rate of 3.3 percent. Global seaborne trade is doing well, backed by the worldwide economy's upswing in 2017.

Expanding at 4%, the highest development in five years, worldwide maritime trade has gained momentum and increased interest in the shipping sector. Total volumes reached 10.7 billion tons, reflecting a further 411 million tons of dry bulk commodities, approximately half of which were produced. Global containerized trade grew by 6.4 percent, following the two prior years' historical lows. Dry bulk cargo risen by 4.0%, up from 1.7% in 2016, while growth in crude petroleum deliveries fell to 2.4%. Seaborne trade prospects are positive;

Ship supply capability expansion has been exceeded by quicker development in seaborne trade volumes, changing the market equilibrium and promoting enhanced freight and income rates. In 2018, UNCTAD projects increased their quantity by 4 percent, a rate equal to 2017. UNCTAD is forecasting a compound annual growth rate of 3.8 percent between 2018 and 2023, contingent on continuing positive developments in the global economy.

Volumes are set to expand across all sections, with containerized and dry bulk commodities anticipated to record the highest development at the cost of volumes of tankers.

Seaborne trade improved from 2005 to 2017 at an average annual pace of 3.5 percent.

Connectivity in transport is the primary determinant of countries' access to world markets, particularly with regard to periodic shipping facilities for the import and export of manufactured goods.

Also affecting the growth of liner shipping networks is the demand for containerized transport. The routing of containerized trade flows relies on shipping companies' policies and shippers' demand for particular service features. The position of a port or region within the international liner shipping network is, therefore, determined by the density of trade flows from and to a particular port or area (Wilmsmeier and Notteboom, 2009b).

With regard to the shipping value chain, Greek shipping is still first in terms of tonnage and Germany remained the largest container shipowning country, although it lost some ground in 2017. More than 90% of shipbuilding activity happened in China, Japan, and the Republic of Korea, while 79% of ship demolitions are happening in South Asia, particularly in Bangladesh, India, and Pakistan.

Digital techniques like 3D printing, IoT, AI and Blockchain are continuing to reshape global commerce. Several estimates from various international organizations reveal the notable effect of emerging technologies on national and international trade.

As a key integrated element of worldwide logistics systems, maritime transport is forced to provide more efficiently and effectively not only transport-related services but also other associated and broader logistics services. Despite the weaker development outlook for 2018 and 2019, it is still possible to look favorably at the future of global trade.

Despite the rampant uncertainty about how world trade will progress in the coming years, one thing is certain: in order to resume and succeed in trade and global collaboration, governments should seek to promote an economic agenda that is not only outward-looking but also honest and equitable. Maximizing the value of maritime logistics and incorporating its significance effectively into worldwide logistics thus becomes the maritime industry's critical strategic goals.

Key Findings

- **Growth in world fleet capacity:** The active fleet grew by 1.1 percent, if measured by ability, during the first four months of 2019. A demolished ship's average capacity in 2019 is 2,179 TEUs per vessel, up from 1,790 TEUs in 2018, highlighting the industry's poor beginning to the year. The fleet is now expected to expand by 3.1% in 2019.
- **TEU:** The twenty-foot equivalent unit (often TEU or teu) is an inaccurate unit of freight capacity often used to describe container vessels and container terminals' capacity. It is based on the quantity of an intermodal 20-foot (6.1 m) container, a standard metal box that can be readily transported between various transport modes, such as ships.
- **Consolidation industrywide will continue affect supply-chain operations:** We may see further contracts between carriers on the sharing of vessels. Although we do not anticipate any significant merger in 2019, in the near future there will be a complete merger between carriers.
- **Liner shipping:** Liner shipping is the service of transportation of products through high-capacity, ocean-going vessels that travel on set schedules on periodic paths. Today, about 400 liner facilities are in operation, most of which provide weekly departures from all the ports that each service calls.
- **Types of Maritime Cargo:** There are several categories of cargo transported by sea, each requiring the use of specialized vessels. General and bulk cargo are the two primary categories. General cargo is unitized while bulk cargo is loose (carried in any amount).
- **Cargo ships:** More than 50,000 merchant vessels are trading globally, carrying all kinds of cargo.
- **Largest merchant fleet:** Greece. In 2015, with a total DWT of 334,649,089 tons and a fleet of 5,226 Greek-owned vessels, the Greek Merchant Navy controlled the world's largest merchant fleet in terms of tonnage. Greece is also highly ranked for all ship types, including first for tankers and bulk carriers.
- **Total seaborne trade 2019:** Total seaborne trade is forecast to exceed 12 billion tons in 2019: around 1.6 tonnes of seaborne trade.
- **Average annual growth rate of shipping:** Prediction of the world's average annual shipping growth rate depending on the distinct kinds of cargo for 2017-2022: Transport by sea (3.2), Transport by container (5.0), Dry Bulk (5.6), Crude Oil (1.2), Refined oil and gas (1.7). Over the next years, tonnage will receive a boost of 3.2 percent annually. The biggest rise in dry bulk will be 5.6%, followed by container transport at 5%. The rise for fluid bulk will stay comparatively small for crude oil and refined petroleum, and gas at 1.2 percent and 1.7 percent, respectively.

- **Innovative technologies and blockchain will grow in use:** In 2019, the use of the blockchain will expand further. We've already seen some advances, using blockchain in loan letters and other regions. The general adoption of shipping technology will accelerate as numerous advances are ongoing by established industry players as well as new start-ups.
- **Better Customer demands:** Some sea carriers have begun providing premium services such as guaranteed loading, quicker unloading and guaranteed transit times to keep up with enhanced demand for better service.
- **Door to Door delivery:** The most popular and convenient way of shipping for the client is door-to-door delivery. In this situation, the client is exempt from all arrangements linked to the container delivery of sea freight. Global Freight Forwarding 2019 also looks at market size and growth rates, concluding that the worldwide forwarding industry in 2018 actually increased by 3.9 percent.
- **Global container fleet capacity:** according to the Alphaliner, global fleet capacity is booming as more container ships are delivered in 2018. This year, container fleet capacity will grow by 5.6 percent, according to scheduled newbuild deliveries of 1.49m TEU, and scraps are expected to reach around 350,000 TEU.

Structure of the report

The report is made up of six (6) sections each focusing on different aspects of Maritime Transport and Logistics. The first section "*Maritime Transport & Logistics overview*" introduces the topics of international maritime transport and Logistics industries and builds a background to the interaction between transport and Logistics within the global economy. It also introduces the role of Maritime Transport as a trade facilitator and explores the maritime logistics performance with the general characteristics of the scheme implemented. Based on this overview, the first section further elaborates on Maritime Transport and Logistics convergence issues and provide information about their key instruments, market, as well as significant developments in global trade. With regards to this purpose, the section defines the shipping cycle in the international container market and then describes the Porter's model five forces analysis and the specific impacts on Maritime transport on international trade.

The second section provides a precise understanding of the "*Maritime transport and logistics landscape*" and discusses the container market and their service capabilities. This section addresses issues as the New Merging Markets and the significance of their impact on trade. Moreover, the section presents the challenges in sea freight transport.

Objectives and study scope

The third section of the report deals with the operating environment and focuses on the analysis of the freight rates in line with the maritime transport costs and their capital. It also covers the revenue volatility and maritime logistics systems and the strategic implications the industries of maritime. Transport and logistics urged in order to modernize business models. Furthermore, innovation policies, governments and international trade rules are going to be discussed.

Section 4, covers the competitive landscape, globalization of sea freight, and their Market Share Concentration. It also focuses on the competitive dimensions, Key Players and Mergers & Acquisitions (M & A) in Maritime transport and Logistics.

Section 5 "Evolving themes" analyzes and discusses the workforce dynamics, cost of turnover, and the skills and training of the future workforce projection. This section also specifies the digital transformation, the key trends, and challenges in order to meet customer Expectations.

Finally, Section 6, "Shaping the future", covers a glimpse at the future in relation to the report's findings. The purpose of the overall report is to help develop a wider picture proposing recommendations and the best practices of the sector of maritime logistics. This section also includes some suggestions for the wave of sustainable growth and making a conclusion.

The overarching objective of this report is to investigate the role of logistics service quality in the context of maritime transportation. Maritime transport is one of the most globalized industries and is a crucial underpinning of economy. Maritime transport is the dominant mode for international trade in terms of tonnage as the shipping industry handles the carriage of around 90% of world trade. Logistics on the other hand, is a fundamental part of supply chain management. The maritime transportation includes ports, shipping companies, and the logistics encompasses warehousing, purchasing, production, distribution, and freight forwarding. *Maritime logistics networks face several challenges in the supply chains they serve. As the shipping industry evolves towards an integrated, multimodal, door-to-door logistics approach, such knowledge becomes increasingly important. In order to examine the causal relationship between maritime transport and logistics based on an international trade, we will focus in the following objectives:*

- **Definition of maritime logistics**
- **The key instruments of maritime logistics**
- **Position international and maritime trade within logistics**
- **The importance of maritime transport throughout the logistic system**
- **Incorporate global economic growth with maritime trade**
- **Advance international trade volumes**
- **Review international maritime trade networks**
- **Describe maritime logistics value and its significance**
- **Strategic consequences for maritime logistics operators**



PROVIDING AN OVERVIEW OF MARITIME LOGISTICS

The report provides a comprehensive overview of the current global condition, as well as opportunities, trends, and challenges. The Maritime logistics splits between the maritime transport and logistics taking into account the global picture of containers available in the ports and the demand for sea trade.

EXPLAINING KEY MARITIME LOGISTICS FACTORS

The Maritime Logistics is driven by a range of factors from both industries (Maritime transport & Logistics); from both the supply and demand side. Innovative technologies, globalization, utilization of truck mode and ports infrastructure are key factors for this market.



UNDERSTANDING MARITIME LOGISTICS TRENDS INSIGHTS INTO INNOVATIVE TECHNOLOGIES AND DIGITALIZATION

The maritime transport and logistics industries are still in the early stages of digitalization but it's necessary to adopt emerging technologies in container shipping in order to provide seamless services.

M&A AND VALUATIONS

Sea freight is recognized as a key element of international trade and economic development. There are strategic players, high assets (vessels) and we review the current M&A and investment activity.

VIEW OF THE FUTURE

We provide our thoughts and recommendations deriving from our findings.

Note on research process & methodology

Our clients use our insights, critical analysis, statistics and forecasts to help make strategic business decisions and grow their organizations. Our research collection offers unique industry perspective, qualitative and quantitative focus. A qualitative evaluation, based on literature review, stakeholder contributions and case studies, reinforces the quantitative analysis as a means to explore and illustrate the current situation and the market's development opportunities. We use comprehensive main studies, our database of contacts, company expertise and interactions with sector. Furthermore, we rely on available data sources and methods to profile developments. We use computerized data mining methods and analytical techniques to identify patterns from publicly available online information on enterprise websites, including cluster and regression modeling. Historical, qualitative and quantitative information is obtained primarily from confidential and proprietary sources, professional networks, annual reports, presentations of investor relationships and expert interviews on key factors such as recent trends in industry performance and factors underlying those trends- drivers, restraints, opportunities, and challenges influencing the growth of the market, for both, the supply and demand sides.



In addition to our own desk research, various secondary sources, such as Hoovers, Dun & Bradstreet, Bloomberg BusinessWeek, Statista, are referred to identify key players in the industry, supply chain and market size, percentage shares, splits, and breakdowns into segments and subsegments with respect to individual growth trends, prospects, and contribution to the total market.



SECTION | 1

Maritime Transport
& Logistics Overview



TECHNICAL »

IT help logistics and transportation experts know a variety of distinct IT technologies that can be used in their operation and provide practical guidance to assist them in selecting and executing a system.

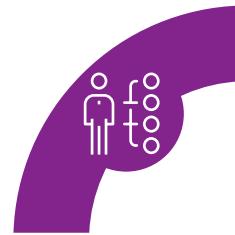
Companies use everything from barcodes to Global Positioning System (GPS) receivers to maintain track of trailers, trucks, rail vehicles, and other mobile assets and their contents. All these methods have consequences for cybersecurity. By incorporating their systems and those of their clients and vendors, as businesses make their activities more effective, they also increase cybersecurity issues.

¹⁴² Psaraftis N. Harilaos. (2016). Green maritime logistics: the quest for win-win solutions, 6th Transport Research Arena April 18-21, 2016

¹⁴⁴ International Maritime Organization. (2019). A concept of a Sustainable Maritime Transportation System

¹⁴³ Lee PT-W, Kwon OK and Ruan X (2019). Sustainability Challenges in Maritime Transport and Logistics Industry and Its Way Ahead. *Sustainability*. 11(5):1331.

ORGANIZATIONAL »



Organizational behaviour analyzes how employees affect each other and how the workforce is influenced by an organization. There are several variables motivating employees. All these variables, however, seek to meet changing customer requirements, improve economic and operational efficiency, quality of service and environmental performance, development, and corporate responsibility.



WORKFORCE »

Recent maritime logistics restore the image of maritime logistics professions and raise the public attraction of careers at sea with the growth of new techniques, as the multi-faceted maritime logistics sector provides a variety of distinct employment in various sectors.

6.3 RIDING THE WAVE OF SUSTAINABLE GROWTH

Sustainability issues in the field of maritime logistics industry is very crucial as the environmental consequences of international trade and transportation have gained importance. Maritime transport has an important role in delivering on the global sustainability imperative. Although shipping is considered the most environmentally friendly among all modes of transport, a sustainable maritime transport network must mitigate the shipping and maritime industries' environmental impact due to the amount of emissions from the sector is increasing.

The environmental focus on maritime logistics, known as "green maritime logistics" attempts to address the issue of the environmental dimension into the supply chain. Green maritime logistics is an attempt to attain an acceptable environmental performance in the maritime transport supply chain, while at the same time respecting traditional economic performance criteria.¹⁴²

The International Maritime Organization (IMO) has adopted several protocols and regulations in association with the United Nations Convention on the Law of the Sea (UNCLOS), such as the London Convention and Protocol (LC/LP), the Hong Kong Ship Recycling Convention and Annex VI Prevention of Air Pollution from Ships (entered into force 19 May 2005) of the International Convention for the Prevention of Pollution from Ships (MARPOL). In particular, thanks to "the 2030 Agenda for Sustainable Development" with 17 Sustainable Development Goals (SDGs) adopted by the UN on September 2015, the

IMO, as a part of the UN, has developed several important regulations related to the SDGs as listed above.¹⁴³

Furthermore, maritime transport will be indispensable in a sustainable future global economy as it is the most environmentally sound means of mass transport, both in terms of energy efficiency as well as with regards to the prevention of pollution. These environmental, social and economic dimensions of maritime transport are equally important and should be fully recognized in any strategy, policy, regulatory framework or action.¹⁴⁴

IMO has developed a concept of a Sustainable Maritime Transportation System, which includes a set of goals and actions, to highlight the importance of maritime transportation by focusing on:

- ***Safety Culture and Environmental Stewardship***
- ***Education and training in maritime professions, and support for seafarers***
- ***Energy efficiency and ship-port interface***
- ***Energy supply for ships***
- ***Maritime traffic support and advisory systems***
- ***Maritime Security***
- ***Technical co-operation***
- ***New technology and innovation***
- ***Finance, liability and insurance mechanisms***
- ***Ocean Governance.***



With more than 80% of world merchandise transported by sea, and shipping and ports being an integral part of any door-to-door transportation solution, the strategic importance of maritime transportation and its potential to support more sustainable economies and societies cannot be overemphasized. Increasing the sustainability of the maritime transport industry is essential to attaining the agenda and objectives for 2030 as well as the Paris Agreement.

The application of a sustainability filter can be a significant strategic instrument for optimizing resource utilization and improving efficiency gains. To promote more effective, competitive and eco-friendlier, and less energy-intensive maritime transport systems, tailored and targeted policies, laws, incentives and enabling programs are needed. Implementing sustainable alternatives for maritime transport involves certain cost consequences and additional resources. Therefore, it is essential to increase investment, including through new sources and processes, and to encourage higher participation of the private sector.



The maritime industry is at the crossroads of new developments, especially when it comes to the growth of digital technologies and innovations. Many of these innovations and technological developments are at an early stage, but the pace at which they evolve underlines the sector's urgent need to prepare and adopt their possibly transformative impacts. A significant factor in this respect is the potential of new technologies and innovations to help the industry meet the needs of the global sustainability agenda while remaining competitive and reacting to the increasing global economy and trade demands.

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