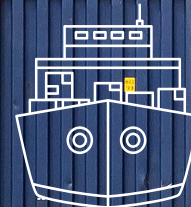


MARITIME TRANSPORT & LOGISTICS

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.

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.

Objectives and study scope

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

Section 1 | Maritime Transportation & Logistics Overview

1.1 Maritime transportation & Logistics structure

Transport and Logistics industries and related subsectors promote international trade and play a significant role in economic growth and development. Transport, playing a vital role in logistics and supply chain management activities, also has a crucial place within the international trade as trade cannot get into action without the movement of goods from one point to another.¹ Transport is the most expensive element of trade logistics and it requires appropriate infrastructure to facilitate transportation. Transport and Logistics service is a central component of the economy and a varied one. It involves the whole range of transportation infrastructure (terminal facilities, storage warehouses) and seaport services as integrated logistics centers. One well-known connection between transport and logistics and national development is the facilitation of international trade, which, under appropriate circumstances, delivers several other beneficial economic and social outcomes.² These industries, under economic globalization, are becoming more incorporated and this association of transport and logistics, can lead to direct developments outcomes.

1.1.1 INTRODUCTION

The overarching objective of this report is to investigate the role of logistics service quality in the context of maritime transportation by also emphasizing global trade trends. Maritime transport (shipping and ports) is one of the most globalized industries and is a crucial underpinning economy. The role of maritime transport in international trade is regarded as vital. Maritime transportation is at the core of global freight distribution in terms of its unparalleled physical capacity and ability to carry freight over long distances and at low costs.³ 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. The world merchant fleet has grown spectacularly since 1970, with a doubling in tonnage that has led to excess capacity afloat and a consequent large-scale lay-up of vessels, as well as the retirement of many more.⁴

In addition to being widely traded, maritime transport services are also intermediate services at the heart of latest innovations in worldwide value chains and just-in-time inventory management, with

¹ Yercan Funda, Yildiz Turkay, 2012, International maritime trade and logistics, 10.13140/RG.2.1.2455.7608.

² World Trade Organization, World Trade Report 2013- Factors shaping the future of world trade, 2013, Switzerland, World Trade Organization

³ Rodrigue Jean-Paul, Browne Michael, 20, International Maritime Freight transport and Logistics

⁴ Economic Commission for Latin America and the Caribbean United Nations, 1987, Basic concepts of maritime transport and its present status in Latin America and the Caribbean, United Nations

the associated demand for door-to-door services. Developments in the maritime transport industry will impact merchandise trading opportunities. As the shipping industry evolves towards an integrated, multimodal, door – to – door logistics approach, such knowledge becomes increasingly important.

Nowadays, with the rapid evolution of new technologies, stakeholders need to understand all aspects of activities to improve the framework for transport logistics operations so as to become more flexible and reliable. This report provides a general overview of maritime logistics and summarizes the challenges and emerging trends in the maritime transport industry taking into account that logistic services are confronting a volatile global economy.

It may be helpful to consider the fundamental scope and features of the overlapping terms Maritime Transport, Logistics and Maritime Logistics in an attempt to obtain a better knowledge of such issues. Obviously, they are not the same thing, but transport is just a logistics component. Logistics requires planning of a long process of different tasks, maritime transportation is just the way to carry out the planning. Maritime transport, one of the main parts of the logistics scheme, is accountable for transporting and managing cargo across the sea and provides wide-spread connections between the consignor and the consignee.

Specifically, maritime transportation can be realized as the shipment of goods (cargo), people, and animals between two or more seaports by sea. Maritime transport services are directly driven by the global economic growth and the need to carry goods

⁵ Caliskan Aylin, Ozturkoglu Yucel, 2016, Ch. 19 Maritime logistics

⁶ Yercan Funda, Yildiz Turkay, 2012, International maritime trade and logistics, 10.13140/RG.2.1.2455.7608.

1.1.2

DEFINITION OF MARITIME TRANSPORTATION AND LOGISTICS

within international trade and remain subject to developments in the global economy.⁶ Maritime transportation has always been connected with trade and performs a key function in linking the unlike import and export markets. The demands and challenges of maritime transport are distinct from those of general transport. Globalization and transport revolution, logistics integration, and the consequent expansion of the

Figure 1.1⁵: Definition of Maritime Transport compared with Maritime Logistics

	Maritime Transportation	Maritime Logistics
Concept	The process of carrying and handling cargoes across the ocean.	The process of planning, implementing and managing the movement of goods and information involved in ocean carriage.
Focusing point	Maritime transportation emphasizes individual functions relating to sea transportation. Each function	Maritime logistics is concerned with not only individual functions relating to sea transportation, but also an effective logistics
	pursues its own aims or competitiveness.	flow as a systematic entity of the logistics integration system.
Managerial function	Sea transportation activities: contracting, shipping, sea voyage, moving cargo, and loading/unloading.	Sea transportation activities: Contracting, shipping, sea voyage, moving cargo, and loading/unloading. Additional logistics services: Stripping/stuffing, storage, warehousing, offering a distribution center, quality control, testing, assembly, packaging, repacking, repairing, inland connection, and re-use

Source: Caliskan Aylin, Ozturkoglu Yucel

maritime industry have redefined the functional role of shipping and ports in global logistics and supply chains and have generated a new pattern of freight distribution.

The rapid increase in world trade in the past decade has restructured the global maritime industry bringing about new developments, deregulation, liberalization, and increased competition.

There have been dramatic changes in the mode of world trade and cargo transportation, characterized by the prevalence of business -to- business and integrated supply chains. These changes have been embodied by the increasing demand for value-added logistics services and the integration of various transportation modes such as inter- or multimodal transport systems.⁷

It is impossible to speak of shipping without referring to ports, an essential element in moving goods by sea. Port operations are a necessary tool to enable

maritime trade between trading partners.

Since shipping is a two-ended activity, the ports of loading and destination are necessarily interdependent.⁸ In addition to their role as the traditional sea/land interface, ports are a great place for value-added logistics.

Currently, seaports have become a key part of the supply chain network. Seaports are important economic spaces, which provide a wide range of services and serve a wide range of customers including shippers, forwarders, transport companies, and logistics operators. One of their main tasks is to facilitate the domestic and international trade of goods, often on a large scale. Seaport is a socio-economic space with the multi-faceted impact on

the environment combining the processes of transport – thanks to the technical and technological equipment – between the sea and the mainland, which are interpenetrating, interdependent and interrelated, and which provide objective and spatial functions related to the trade and movement of people† (Montwill, 2011).⁹

Logistics is a long process of services including the planning and implementation of all kinds of products, organizing, management, and information flow in the supply chain, from the starting point like purchasing, production and warehousing, to the end point which is to added value services and distribution in order to meet customer's needs. Both inner and external distribution networks are involved in logistics. The logistics is the bridge between suppliers and customers.

The importance of logistics has been elevated enormously in the globalized economy as it

⁷ Song Dong-Wook, Panayides M. Photis, 2015, *Maritime Logistics- A guide to contemporary shipping and port management*, 2nd Edition, edited by Dong- Wook Song, Photis M. Panayides , Chapter 1, Introduction to maritime logistics

⁸ Economic Commission for Latin America and the Caribbean United Nations, 1987, Basic concepts of maritime transport and its present status in Latin America and the Caribbean, United Nations.

⁹ Montwill Andrzej, 2014, The role of seaports as logistics centers in the modelling of the sustainable system for distribution of goods in urban areas, 1st International Conference Green Cities 2014 – *Green Logistics for Greener Cities*, Maritime University in Szczecin, Wa-y Chrobrego Str 1-2, Szczecin 70-500, Poland



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