The Theoretical and Statistical Frameworks of Container Trade Analysis in Shipping Industry Based on SSMR Reports

Mesbah Sayehbani¹, Mehdi Pourahmadi², Gholam Reza Emad³

¹Maritime engineering, Amirkabir University of Technology; msaybani@aut.ac.ir
²PhD student in Marine Engineering, Amirkabir University of Technology; m.mit.pourahmadi@aut.ac.ir
³Maritime engineering, Chabahar maritime university; emad@cmu.ac.ir

Abstract
Increase in container trade volume requires building a structural and management strategy for ports and terminal which aims at increasing the ports' efficiency and reducing the stoppage time of container ships. The emergence of new global economy has led to great proliferation of container trades volume. According to the statistics published by UN Infrastructure Services Unit (ISL), the eastern Asian countries played the most important role in increasing the container traffic worldwide and Iran needs to develop and equip its container ports in order to gain a competitive advantage and economic growth in the region. The current study aimed to by investigating the effects of container shipping, provide a outlook of container shipping industry in Persian Gulf region. Also, it proceeds by assessing the theoretical and statistic frameworks based on SSMR¹’s information and analyzing the ever-growing container trade.

Keywords: container, efficiency of container terminal, logistics

Introduction
Considering the increase in economic trades worldwide, the container shipping has experienced a phenomenal growth in the last two decades. In this regard, in order to meet the demand growth, the global network of shipping and ports should be able to cope with the massive volume of demands. This constant and rapid demand growth, in turn, puts additional pressure on container ports for increasing the capacity of port operations. As a result, the ports should reduce their costs to survive in the competitive market. Container shipping has enjoyed excessive interest from the global merchants especially in the last 20 years due to its multi-modal state and ever-growing expansion of goods transportation by container. Moreover, safety and protection of the goods and acceptable rate for container movement, especially in combined transportation, has accelerated the use of containers as most of the transportation experts believe that future belongs to container shipping. However, the container terminal development in Iran, compared to the leading countries in this industry, is in its earliest stages. Lack of concept of logistic chain and mechanization of container handling equipment in Iran has led the great market of transit of goods in Persian Gulf to be actually controlled by foreign competitors. However, the emergence of new economies such as China, India, and Brazil led to great proliferation of container trade volume during the last years.

The maritime container transportation can be divided into a major global and regional transportation network. In the world ports, the container terminals connect with the international transportation lines for accomplishing port and logistics services and complete a multi-modal and global transportation network by providing these services. Hub container terminals in maritime transportation play an important role in logistic operations with a capacity of higher than 5,000,000TEU². Most of these multi-modal terminals are set up and controlled by GTO³. Using the containers is deemed by the goods owners and ship owners as one of the safest, fastest, and most reliable ways of maritime trade, thus the goods trade has significantly grew up to more than 60% in the last decades.

As it is shown in Figure 1, the container efficiency of global ports has enjoyed a 10% growth in 2010 and the ports evacuate and load near 530 million TEU. However the container trade volume will exceed 1billion containers in 2024. This great volume of container operations and traffic has led most of the ports worldwide to invest in container terminal [1].

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¹ ISL Shipping Statistics and Market Review
² Twenty foot Equivalent Unit
³ Global Terminal Operator
Investigation of development of the global fleet of container

In the first decade of 2000’s, though the fleet of container-carrier ships in the world still faced with excessive capacity and freight rates fell, from the first half of 2011, the maritime transportation improved and the rates increased to earlier state. With the overall market downturn, only large companies and ships survived and small vessels lost their economic advantage and faced trouble. During the 60’s and 70’s decades and also in 20th century and early 21st century, other incidences happened in the area of maritime transportation of which the most important is increase of number and size of economic ships as the ships length increased from 135m to 400m in the recent years, i.e. container ships with 500TEU during those years have promoted to 18000TEU in the recent years. The container-carrier ships share from total ship worldwide increased from 2% in 1980 to 13% in 2010. Large shipping companies such as Maersk and M.S.C own the world’s highest capacity container lines. With the increase in capacity of these big transportation companies’ ships, the shipping lines’ capacity has increased to 4,000,000TEU. Also, it is predicted that until 2015, more than 52% of world’s container ships have a capacity of higher than 5000TEU [2]. In 2011, about 12,000,000TEU have been added to the capacity of global fleet, from which 6,000,000 belongs to large ships of Post Panamax. As it is indicated in Figure 2, the tonnage changes in the early 2012 have enjoyed a 8.7% increase on container fleet compared to the previous year.

As it was mentioned, the container transportation share has drastically increased and reached from 102 million tons to 1.3 billion tons (about 13 times increase). During the same period, the ever-growing increase in container ships fleet share in total global fleet from 11 million to 169 million (DWT) is indicative of a 15-time growth. The container ships size and shipbuilding orders for big container ships up to 18000TEU are increasing. The development order of global container fleet in the recent years is indicated in figure 3, in which from early 2008 to early 2011, the container fleet enjoyed an average 9.2% growth in terms of TEU units quantity yearly, and 4.1% in terms of the number ships, yearly. During 2007 to 2011, 1570 container-carrier ships with 656 million TEU capacity and 80.1 million tons deadweight

\[\text{Figure 1: The volume of container handling in the ports of the world [1]}\]

\[\text{Figure 2: the tonnage changes of global container fleet from 1998 January 1st to 2012 January 1st [3]}\]

\[\text{\textsuperscript{4} Mediterranean Shipping Company}\]
were added to economic fleet. During the same period, at least 412 container-carrier ships with 0.7 million TEU and 11 million dead weight have been out of fleet. 109 ships out of 194 ships delivered in 2011 belonged to Post Panamax and from these ships also 46 were ULCC\(^5\) ships with 10,000TEU capacity [3].

![Figure 3: the additional and reduced tonnage of global fleet of containers during 1997-2011 [3]](image)

**The size of global fleet of container ships**

In the last decade, opening of the China market has played a key role in development of business and consequently development of transportation market. Due to this fact, the total capacity of container transportation has enjoyed a 10% growth. As a consequent, the transportation companies were obliged to use ships with high container capacity considering the great demands, which resulted to increase of ships capacities from 11,000TEU to 13,000TEU [4].

![Figure 4: the increasing order of container ships size [4]](image)

The container ships size increase has been continued in 2011. The average capacity of 194 new delivered ships equals 6,340TEU which indicates a 22% increase compared to 2010. The average size of container ships in 2012 orders equals 6,900TEU [3]. However, recently we have witnessed the entrance of container ships with 20,000TEU in maritime transportation. Although technically there is no limit for passing this limit, the only problem is high stoppages in the ports and lack of port and inland infrastructures for evacuation and loading these ships. Yet, it is expected the container-carrier capacity will reach 24,000TEU in 2016. Today, the biggest container-carrier with 19,224TEU capacity belongs to MSC Company and in the most of the sea lines we can observe passing of several container-carriers with 18,000TEU capacity.

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\(^5\) Ultra Large Crude Carrier
Container Trade Growth

An economic hypothesis for assessing the container trade growth is that until at least 10 years later, there won’t happen a basic connection between container trade growth and economic growth. As a result, we can completely obtain container trade growth from economic growth.

Economic growth in several time periods has a specific rises and falls flow and by analyzing it, we can predict the future economic growth in several regions. The diagram 7 has been obtained using information resources from several countries and international organizations [4]. Based on the conducted studies by World Bank, the highest growth is observed in countries with average and low income.

According to the prediction made by World Bank, the Middle East enjoys a proper economic growth, though high fluctuations are observed.
In the next stage, using the obtained data from economic growth predictions and achieving the proper pattern, the growth of container trade has been predicted [5].

Traffic in Container Ports of the World
According to the information published by ISL, the global container traffic has reached to 564TEU in 2011 which is indicative of a 8.9% increase. According to this report, the China’s ports have undergone the highest growth and out of the 10 ports with highest traffic throughout the world, 6 ports are located in China. China’s ports totally constitute 29% of global traffic. 31% of global traffic also belongs to other ports in Asia [5].
The Outlook of Demands for Container Ports in Middle East and South Asia

During the last years, the demands for development of container ports in Middle East and Southern Asia have been greatly accelerated. This is due to high price of oil, privatization, and investments in Indian Peninsula and joining of this region to the very large trade market of East-west. In spite of the great demands in India, the capacity of its ports and terminals is still limited and their connection with the great market of inside India face problems. On the contrary, in the Middle East, by directing the wealth made of selling oil to infrastructure projects, investment in container equipment is done with a high rate [6]. The statistics indicate that the capacity of container ports in Middle East during 1995-2006 has reached 21,99TEU with a 291% growth. Also, in 2006 the Persian Gulf ports have had the highest share in the region’s market with a 68.2 growth. The goods transship has raised the Aden Gulf/ Arabian Sea’s share to 13.7% and it has revived the markets in Red Sea ports since 2004 and reaching 18% market share. The container ports capacity of southern Asia has reached 11.81 million TEU during 1995-2006 with 261% growth. The diagrams 11 and 12 indicate the predictions based on above studies [6].

![Diagram 11: demands for container ports until 2020 in Middle East and Southern Asia](image1)

![Diagram 12: demands for container ports until 2020 in Middle East and Southern Asia with Increased-Risk Case](image2)

In this regard, reaching the requirement of the country’s ports development vision on achieving the first position among the region’s ports seems difficult, while only in the countries of Persian Gulf region, it is aimed to reach 46.5 billion dollars and container transportation of 24,000,000TEU and our country’s share from this investment is only 450 million dollars. In the diagram 13is indicated the container operations inside Asia and the critical and poor position of Iran with a 0.5% share from total container operations worldwide. Also, at the same time period, the Persian Gulf region has constituted 5% of container operations activities and the remaining significant volume belongs to other ports in the world [6].
The predictions on container transportation trade is indicative of a 33% share out of total volume of this trade allocated to inside Asia market until 2016, while the container trade share in Asia-America path and Asia-Europe path will be 17% and 18% up to that time, respectively.

Conclusion
The maritime trade volume is ever increasing as nowadays it exceeds 6.5 billion tons. Despite the challenges in 2005, the assessments are indicative of proper growth of maritime transportation industry, as the lowest growth belonged to crude oil transportation and the highest growth belonged to container transportation. This in turn led to higher fees for container transportation which reaches its highest rate in the main container transportation paths such as Oceania, the Atlantic, Asia, and Europe. Based on the conducted studies on several industries, the booms and downturns that industries face are manifested more than anything else and receive much analysis. However, it is definite that this trend is rising in most of the cases for maritime transportation industry. Thus, it can be concluded this industry has a rising and climbing consequence, be the other industries rising or falling.

References
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