THE ROLE OF INTERMODAL TRANSPORTATION AND LOGISTICS DISTRIBUTION CENTERS IN INTERNATIONAL TRADE: THE CASE OF TURKISH SMES

AHMET SEREN SUNGUR

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Ahmet Seren Sungur

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The thesis of Ahmet Seren Sungur

has been approved by

Assist. Prof. Elif Alakavuk _____

(Thesis Advisor)

Assist. Prof. Ayfer Hortaçsu _____

Assist. Prof Hande Kumoğlu _____

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Thesis Abstract

Ahmet Seren Sungur, “The Role of Intermodal Transportation and Logistics Distribution Centers in International Trade: The Case of Turkish SMEs”

Logistics and trade has a strong positive relationship. Through ever-increasing of globalization, this correlation increases more day by day. Turkish logistics industry tries to adopt new technologies in terms of logistics, however, state officials seem to be unsure of what to implement. This is mainly because of the lack of a master plan in logistics industry. Lacking a master plan in logistics, state officials try to apply intermodal transportation mode through logistic distribution centers however, possibly the most valuable customers of these logistic distribution centers; SMEs have not been asked to stress their opinions and problems in terms of both logistics and trade. Therefore, any logistic solution that is said to be done for SMEs has no chance to be successful if the base lacks the opinions of SMEs. Thus, the main objective of this study is to request the opinions of SMEs in terms of logistics and discover their problems related to foreign trade activities. Furthermore, a guide is tried to be provided for state officials, SMEs, and logistics professional by suggesting possible locations to built logistic distribution centers in Turkey and stating the services that should be provided in those distribution centers. Data collected from 322 SMEs from Ankara, Denizli, and Manisa was analyzed by using descriptive, ANOVA, and t-tests. Findings reveal that, exporting SMEs and non-exporting SMEs are unsatisfied from high logistics costs regardless of their locations. They are expecting alternative transportation methods to road transportation mode since they are unhappy of being far from seaports. Finally, regarding the problems and demands of SMEs, three different locations are suggested for building logistic distribution centers and the services that should be provided in these distribution centers.

Tez Özeti

Ahmet Seren Sungur, "İnter model Taşımacılık ve Lojistik Dağıtım Merkezlerinin Uluslararası Ticaretteki Rolü: Türkiye Kobileri Üzerine Bir Çalışma"

Lojistik ve ticaret güçlü bir doğru orantıya sahiptir. Bu ilişki her geçen gün artan küreselleşmeyle daha da güçlenmektedir. Türk taşımacılık sektörü de küresel lojistik alanındaki yeni teknolojileri kendine adapte etmeye çalışmaktadır fakat bu konuda yetkili olan devlet kurumlarının ne yapacaklarının bilemediği görülmektedir. Bu durumun temel nedeni Türk lojistik sisteminin bir temel uygulama planının bulunmamasıdır. Uygulanacak bir temel plan olmamasına rağmen, devlet yetkilileri Türkiye'de lojistik dağıtım merkezleri vasıtasıyla intermodal taşımacılığı oturtmaya çalışmaktadır. Fakat bu sistemi en çok kullanacak olan KOBIlerin gerek dış ticaret gerek de lojistik konularında herhangi bir şekilde fikir ve önerilerinin alınmadığı fark edilmiştir. Bu yüzden, uygulanacak lojistik bir uygulamanın KOBIlerin fikirleri alınmadığı için başarılı olma olasılığı çok düşüktür. Bu çalışmanın esas amacı, lojistik konusunda KOBIlerin fikirlerini almak ve dış ticaret işlemleri sırasında karşılaştıkları sorunları keşfetmektir. Ayrıca, devlet yetkilileri, lojistik şirketleri ve KOBIler için lojistik dağıtım merkezlerinin kurulabileceği muhtemel yerlerin önerildiği ve içinde KOBIlerin istek ve sorunları doğrultusunda sunulması uygun olan hizmetlerin yer aldığı bir rehber kaynak olması amaçlanmıştır. Anket çalışması vasıtasıyla 322 KOBIden geri dönüş alınmıştır ve bu veriler ANOVA ve t-testler ile sınanarak yorumlanmıştır. Elde edilen veriler doğrultusunda, bulundukları şehirden bağımsız olarak, ihracat yapan ve yapmayan KOBIlerin ortak sorunu olarak yüksek lojistik maliyetlerin ortaya çıktığını gözlemlemekteyiz. Ayrıca bu firmaların limanlara uzak olmalarından dolayı karayoluna alternatif olabilecek taşımacılık yollarının olmamasından rahatsızlık duydukları anlaşılmıştır. Son olarak, yapılması muhtemel üç lojistik dağıtım merkezi için muhtemel üç bölge ve bu merkezlerde sunulması gereken hizmetler belirtilmiştir.

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CHAPTER 1

INTRODUCTION

Trade and logistics are closely linked to each other that any change of one directly affects the other. A corner stone for the world history, Industrial Revolution rooted from the invention of steam power used for trains and ships basically. This relationship gets stronger as the globalization increases. Through globalization, customers get the opportunities to reach many options for the demanded products or services in a cheaper and more efficient way. Increasing quality and number of demands set off a reaction which is the severe global competition.

Severe competition leads the manufacturers to invent new production methods or discover new resources which will decrease the cost of production. Logistics is one of these resources that are to be discovered.

Before the Industrial Revolution, the invention of steam-power ships and trains were welcomed as the keys to reach farther markets which will increase the economic developments. However, especially after the World War II, the increasing level of using road transportation shattered the objectives and improving railway and sea transportation modes became of secondary importance. The popularity of the road transportation has been such a pitch that it shattered the records of transportation all around the world. However, especially since 1970s, developed countries have been spelling the importance of intermodal transportation as the transportation mode of the future. Bearing this opinion in their minds, those countries and some developing countries such as Bangladesh and Thailand have been trying to settle intermodal transportation as the primary transportation mode in their country.

Intermodal transportation which means using more than one mode successively sealed under one bill of lading is the most efficient when used together with the logistic distribution centers. Entitled by various names such as logistic village or logistic hub, logistic distribution centers are the main transaction points for the intermodal transportation where goods are carried to these centers by one mode and exported or imported by another mode.

In case of Turkey, intermodal transportation is a newborn concept. It is spelled together with logistic distribution centers. However, there is not a master plan prepared for transportation industry in Turkey; thus, state officials are unsure what to do about these new concepts.

SMEs are the major part of industries in Turkey. Therefore, there are many countless SMEs exporting Turkish products all around the world. Although this is an obvious indicator, SMEs have never been requested to stress their opinions about the intermodal transportation and logistic distribution centers. Thus, they feel that they cannot benefit from the future plans of the state in terms of logistics.

In these terms, this study mainly aims to;

- Investigate the problems and discover the needs of SMEs in Turkey in terms of exporting primarily,
- Introduce the new logistics concepts to SMEs,
- Provide a guideline for state, SMEs and logistics professional related to intermodal transportation and logistic distribution centers and,
- Offer implications about where and how to build those distribution centers.

CHAPTER 2

WHAT IS LOGISTICS?

Logistics throughout the History

Literally, the concept of logistics stem from the Greek word "logistikos" which means to reason logically, the word has more than one meaning. Logistics activity is plainly, a thousand-year old, dating back to the earliest forms of organized trade. As an area of study, however, it first began to gain attention in the 19th century (Lambert et al, 1998). Henry Adams, the president of Yale University in 1850, made the first study about logistics under the title of "Railway Economy" (Orhan, 2003).

"*Logistics known as physical distribution, first appeared in the academic literature in the early 1900s.*" (Kent and Flint, 1997) During these years, the agriculture industry was ahead in comparison with other industries. In order to transport agricultural products to the point of consumption, manufacturers needed a strong logistics lines. Therefore, it is possible to say that the need for logistics firstly came from agriculture (Lambert et al, 1998). At that time, the attention centered on transporting products from the farm to the point of sale. Hence, until World War II, agricultural economics had the greatest deal of influence on logistics (Kent and Flint, 1997).

In terms of the military concepts; logistics means the art of combining all means of transport, arranging, and sheltering of troops. According to authorities, military logistics is the design and integration of all aspects for the operational capability of the military forces whether deployed or in garrison, and their equipment to ensure readiness, reliability, and efficiency (Coyle et al, 2003). The biggest war of the world

had been not only in frontiers but also in logistics arena. During the World War II, military forces made effective use of logistics models and forms of systems analysis to ensure that materials were at the proper place when needed (Wood et al, 1998). The best case in point is the Gulf War. In this war the US has showed the importance of logistics in the times of war. The world was given a dramatic example of the importance of logistics. As a forerunner for Gulf War it had been necessary for the United States and its allies to move huge amounts of materials great distances in what were thought to be hopelessly short time frames (Christopher, 1998).

However, the attention of business area to logistics has been fresher in comparison with military and agriculture. This attention occurred between 1950 and 1960 and the cause of this recognition was shown as the bottleneck in markets. The Council of Logistics Management (formerly the National Council of Physical Distribution Management) was formed in 1963 in order to develop the theory and understanding of the logistics process, manage the systems exclusively without profit and in cooperation with other organizations and institutions (Lambert and Stock, 1993).

Beginning in the late 1970s and continuing throughout the 1980s, logistics management was significantly affected by deregulation of the transportation industry (Lambert and Stock, 1993). Widespread reductions in the economic regulation commonly referred to as deregulation, relaxed government control of carriers' rates and fares, entry and exit, mergers and acquisitions and more (Murphy and Wood, 2004). As a result, carriers become more flexible, customer-oriented, and competitive in order to succeed. Shippers now can focus on negotiation of the rates, terms, and services with their overall attention directed toward getting the best transportation contract (Lambert et al, 1998). During 1970s, with rising interest rates and increasing energy costs,

logistics received more attention as a major cost driver. Logistics costs became a more critical issue for many organizations because of the globalization of industry. During the same years, with the development of information technologies (IT) and technological advances in computer hardware, software and capacity gave organizations ability to make faster, more informed and more accurate decisions. The shifting of channel power from manufacturers to retailers, wholesalers, and distributors has also an impact on the logistics. This power shift is relevant since a number of these retailers have recognized logistics as an essential component of their corporate strategies (Murphy and Wood, 2004). Since the beginning of the 1970s, global competition has developed rapidly and then accelerated in the 1990s. Firms have increasingly become more international, such as increasing sourcing of raw materials, component parts, sub-assemblies, and labor force and further, have penetrated new markets throughout the world (Lambert and Stock, 1993). Through the globalization of the trade, logistics has started providing to be a source of sustainable competitive advantage for firms competing in the global arena.

With the rapid increase of non-military transportation and the need for developments in transportation, today, the term, logistics refers to the set of operations required for goods to be made available on any markets or to specific destinations. According to the definition made by Council of Supply Chain Management Professionals (CSCMP) which was formed in 1962 as the Council of Logistics Management (CLM) and then named as Council of Supply Chain Management Professionals in 2005 (CSCMP), logistics is the process of supplying any kind of product, service, and information flow; tracking and controlling the supply chain movements starting from the admittance of the raw material to the arrival to the end users (CSCMP, 2009).

According to Rodrigue (2008),

> Physical distribution is the collective term for the range of activities involved in the movement of goods from points of production to final points of sale and consumption. It must insure that the mobility requirements of supply chains are entirely met.

Rodrigue (2008) states his ideas on logistics by talking about the physical distribution of the goods. Physical distribution is not much different than the term logistics. It includes all the functions of movement and handling of goods, besides transportation services (trucking, freight rail, air freight, inland waterways, marine shipping, and pipelines), transshipment and warehousing services (e.g. consignment, storage, inventory management), trade, wholesale and, in principle, retail. Logistics additionally, involves a wide set of activities dedicated to the transformation and distribution of goods, from raw material sourcing to final market distribution as well as the related information flows. Frequently, logistics is confused with transportation; however, transportation is also a huge concept which is blended with the concept of logistics in terms of physical movement of goods and services (Erdal, 2005). Broadly, transportation covers; movements of goods and services, any kind of infrastructure and superstructure investments and logistics additionally, has the legal framework in order to create and stabilize the coordinative-functioning process of transportation.

A new point of consideration for Turkey, a global necessity for the whole world market; logistics is one of the 14 industries which will rise to the top in Turkey according to Independent Industrialists and Businessmen's Association of Turkey (MUSIAD, 2008). Furthermore, a globally 10 percent increase in the annual total volume of logistics is estimated through analysis of Zarzoso (2003). Logistics is regarded as one of the most competitive businesses in the future (UNCTAD, 2007).

Tongzon (2007) made a proving point for this analysis, claiming that the estimated growth of the global logistics market will be an average of 10 percent annually until 2012. Tongzon (2007) further claims that day by day more countries in Asia are positioning themselves to become the logistics hubs in the region.

Parallel to the ever-increasing global competition of trade, the logistics demanders ask for more about the logistics services. In order to supply the necessary logistics, national and international transportation and warehouse activities of the goods, customs, and insurance utilities should be blended with experience, market knowledge and capital management (Erdal, 2005). Regarding these, it is possible to classify the necessary integrations under three dimensions which are; geographical, industrial and functional integration (Rodrigue, 2008).

Geographical integration is about upgrading the local dimension of logistics to the global level. Through globalization, the world becomes the largest village where the world seems as a giant whole entity for a trader while it is too small that any location is possible to reach any moment. This inevitable liberalization leads countries to protect themselves against the changing commercial environment and benefit more from these changes on the other hand (Erdal, 2005). In order to achieve this, mutual or multilateral trade agreements have been signed as time goes by. Increasing demands of the end user for lower costs cause the producers to find more efficient locations and/or dividing the production phases into locations which also increase the flow of goods and services internally (Rodrigue, 2008).

Regarding the second type of integration; industrial integration escorts the different industries to mingle with each other in order to serve better solutions for different customers (Rodrigue, 2008). Furthermore, functional integration incorporates

the different stages of foreign trade into logistics. In today's world, the exporter acquires the transportation and logistics costs from a logistics company and includes those costs to his products value. However, when the trade is actualized, the exporter does nothing but to produce the product and to get in touch with the logistics company in order to get the produced product delivered to the consignee. In this point, both the exporter and the importer benefit by the global competition of logistics which increases the value of service for the exporter and decreases the price for the importer by decreasing the cost of the service.

The Broad Definitions of Logistics

The term logistics has a long development process which is still ongoing. Hence, in this process, logistics has had different names, which had the same meaning. According to Lambert et al (1998) and Rodrigue (2008), logistics has been called by many names, including the following;

- Logistics,
- Logistical Management,
- Business Logistics,
- Distribution,
- Material Management,
- Physical Distribution,
- Channel Management,
- Industrial Logistics,

However, it will be useful to indicate the difference between logistics and physical distribution. Logistics include all the processes from the supply of materials up until to the customer satisfaction. On the other hand, physical distribution is only about the distribution of end products. So, logistics management is composed of material requirement management, physical life cycle, and physical distribution (Sezen and Gök, 2004). Murphy and Wood (2004) state that each of the terms have slightly different

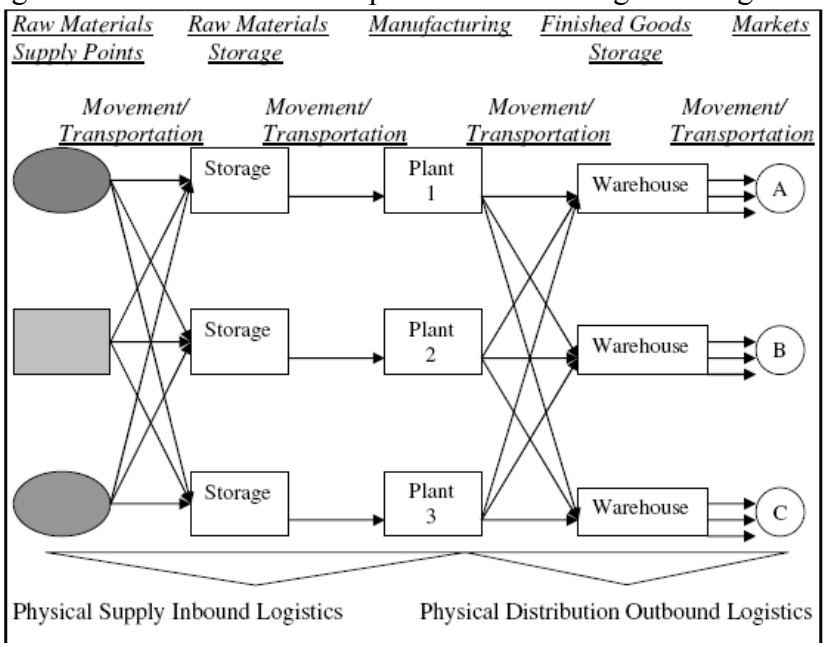
meanings. In essence, each of the terms is associated with managing the flow of goods and information from a point of origin to a point of consumption (Murphy and Wood, 2004).

As a result; logistics is a process that includes all the activities that have an impact on making goods and also services available to customers when and where they wish to acquire them. (Ballou, 2004) Logistics concept looks at the material flow process as a complete system, from initial need for materials to delivery of finished products or service to the customers (Leenders et al., 2002).

The Economic Importance of Logistics

The demand for transportation is derived from the demand for the goods that are carried (Kotler, 2002). The value of a commodity can be perpetually increased by its transportation. For instance, coal is a product which has no value until it is mined and transported to a buyer who needs heat. Furthermore, if the transportation of goods becomes cheaper through economies of scale, then it will be feasible to carry coal in large bulks between far continents at a price that can compete with coal mined domestically (Aygüler, 2007). This is an example of decreasing cost of transportation which can increase the demand for transportation, although it will not necessarily mean that there is an increase in the demand for coal. Specialized transportation for such commodities as exotic foods and fruits can however increase the demand for both goods and transportation.

Figure 1. The Phases of Transportation in an Integrated Logistics System



Source: Bloomberg et al, 2002

As seen in Figure 1 above, from the raw material to the end customer, the concept of transportation plays a critic role. If any delay happens, it creates a chain of reaction. Since it is like a single-lane road, any delay or a problem on the lane causes all the traffic to stop. According Rodrigue (2008), whether in the form of materials, processing, or finished goods, the basic value provided by transportation is to move the inventory to the next stage of the business process. Therefore, the performance of transportation is vital for supplying, manufacturing, and distribution to markets.

The transportation industry is a vital part of an economy. Railway was the heart of transportation in the earlier stages of transportation economy; therefore, the early literature suggests that railroads are one of the most necessary industries to be invested in for the growth of an economy. Moreover, introduction of modern transportation methods contribute more to economic growth through lowering transportation costs. According to Boske and Cuttino (2003), there is a causal linkage between low-cost

transportation and economic development; the industrial revolution was successful because of prior revolution in transport technology.

When a transport system works efficiently, economic and social opportunities and benefits are provided such as better accessibility to markets and additional investments (Rodrigue, 2008). Furthermore, if there is inefficiency in terms of logistics, they can have economic costs such as reduced or missed opportunities. Furthermore, transportation also carries a significant environmental load which cannot be neglected. Thus, from a general view, the economic impacts of transportation can be divided into two which are direct and indirect. Direct impacts are related to accessibility change where transport enables larger markets and enables to save time and cost. On the other hand, indirect impacts are related to the economic multiplier effect where the price of commodities or services drop and/or their variety increases (Erdal, 2005).

The economic significance of the transportation industry can thus be assessed from a microeconomic and macroeconomic perspective. At the microeconomic level which is the importance of transportation for specific parts of the economy, the transportation is linked to the manufacturer, consumer, and production costs. The importance of specific transport activities and infrastructure can thus be assessed for each branch of the economy. At the macroeconomic level which implies the importance of the transportation for the whole economy, the transportation and the mobility it presents are linked to a level of output, employment, and income within a national economy. In many developed countries, transportation accounts between 6 to 12 percent of the GDP (Erdal, 2005).

Transportation links together the factors of production in a complex web of relationships between producers and consumers. The outcome is commonly a more

efficient division of production by exploitation of geographical comparative advantages, as well as the means to develop economies of scale and scope (Boske and Cuttino, 2003). The productivity of space, capital, and labor is thus enhanced with the efficiency of distribution and it is acknowledged that economic growth is increasingly linked with transport developments.

Recent Modes of Transportation

Transportation modes are an essential component of logistics systems since they are the means by which mobility is supported. According to Keeling (2008); geographers consider a wide range of modes that may be grouped into three broad categories based on the medium they exploit: land, water, and air. Each mode has its own requirements and features, and is adapted to serve the specific demands of freight traffic. Recently, there is a trend towards integrating the modes through intermodality and linking the modes more into production and distribution activities.

There are basically, five different transportation modes in today's world. These modes are;

- Road Transportation
- Railway Transportation
- Sea Transportation (Maritime Transportation)
- Airway Transportation
- Pipeline Transportation

Regarding the year 2004 road transportation has the highest global amount that earned 796 billion US Dollars in one year. Considering the total of railway and maritime transportation, those two modes together acquired 814 billion US Dollars which seems to slightly surpass the road transportation (See Table 1).

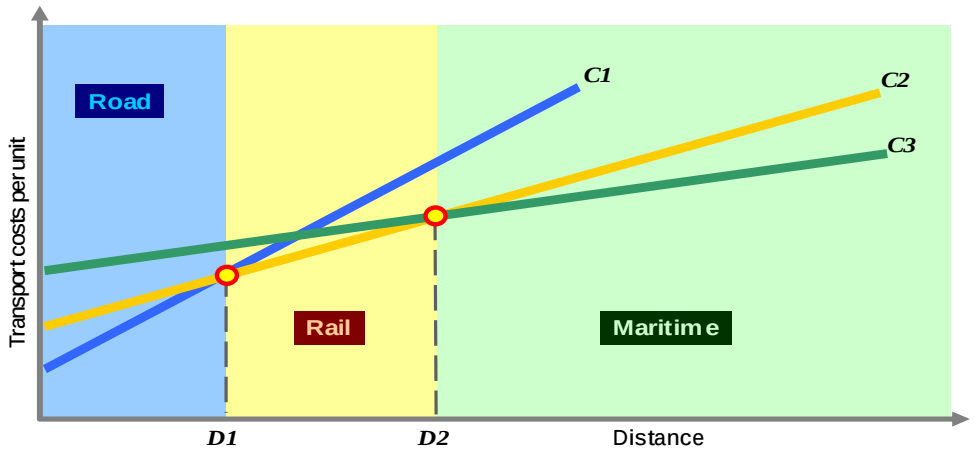
Table 1. Load of the Global Transportation by Modes

	Tons	Tons-km	Revenue ($)
Road	-	6000 to 8500 billion tons-km	796 billion
Railway	8.9 billion tons	7773 billion tons-km	330 billion
Maritime	6.75 billion tons (loaded) 6.78 billion tons (unloaded)	44474 billion tons-km	484 billion

Source: UNCTAD and International Railway Association

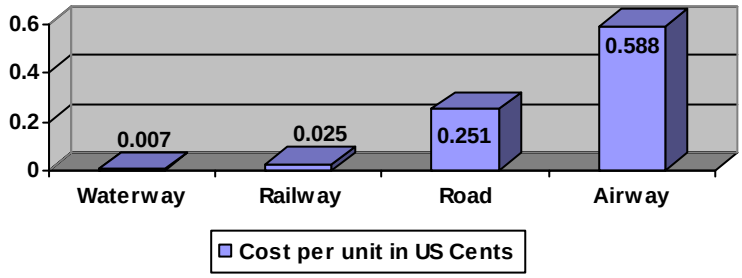
Furthermore, as seen from the Figure 2, road transportation is the cheapest when the sender needs to transport his cargo to a close distance. However, as the distance increases, road transportation seems more costly than railway and maritime transportation where maritime is the cheapest for the long-distance transportation. Mostly the senders prefer airway for small amounts and maritime for large amounts of cargoes when the target location has some distance (See Figure 2 and Figure 3).

Figure 2. Distance and Transportation Cost in terms of Modes



Source: Rodrigue, 2008

Figure 3. Freight Cost per Unit in US Cents by Modes

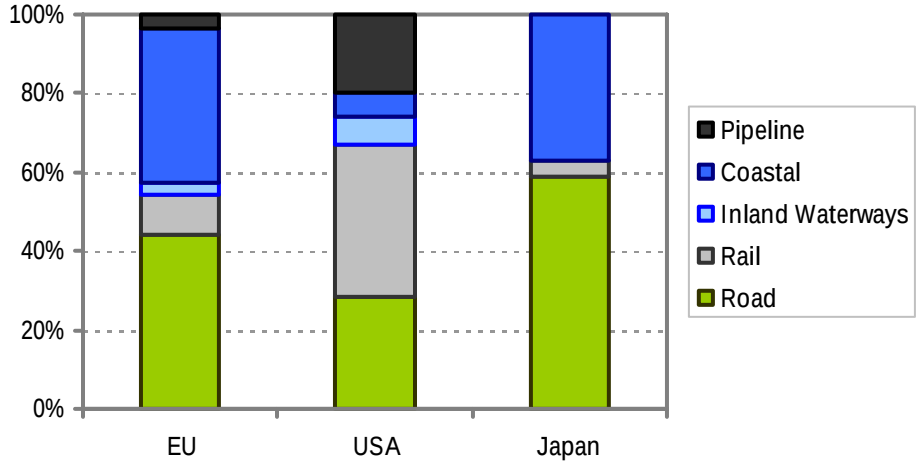


Source: Ballou, 2004

Road Transportation

Among the modes of transportation, the most flexible and popular mode is the road transportation. Around the world, many companies especially within the borders of the European Union are choosing the road transportation because of its advantages in comparison with other modes (See Figure 4). The main benefit of road transportation is flexibility, being able to visit almost any location. Even though there is a speed limitation on highways, road transportation's ability to give a door-to-door service brings many advantages such as time (Waters, 2003).

Figure 4. Modal Split in EU, USA and Japan in 2006 (in % of ton-km)



Source: Eurostat; Japanese Ministry of Land, Infrastructure, Transport and Tourism; and US Ministry of Transport

Since the end of the World War II, road transportation has increased rapidly (Kumcuoğlu, 2006). After the war, the existence of huge demand and the increase of economic power especially in the USA created a big market in the world especially in Europe. Thus, trades among countries have increased gradually. At the time of warfare, there were no sea ports and airports enough to use for trade. Therefore, road transportation took the initiative in trade (Bowersox et al, 2002).

There are many competitors in road transportation industry and that amount of competitors is more than any other types of transportation (Bloomberg et al, 2002). The average of road transportation is 804.67 kilometers according to Hummels (1999). However, with the new technologies and regulations this rate is growing up gradually. Another advantage of this mode is its networks. There are many alternative ways road transportation uses. Therefore, planners can regulate or draw their lines according to their strategies. As long as it can provide fast, efficient service at rates between those offered by rail and air, the motor carrier industry will continue to prosper according to Lambert (et al, 1998).

On the negative side, the road transportation industry has problems mainly on environment and people. In other words, environment and safety are the most important reasons of why authorities want to increase the share of other modes such as European Union's Marco Polo Program which promotes the shift from road transportation to railway and waterway transportation. In developed countries, firms and governments have special policies about these problems since the pollution and accidents create huge costs for both governments and firms (Erdal, 2005).

Railway Transportation

Although primitive rail systems existed by the 17th century to move materials in quarries and mines, it is not until the early 19th century that the first real rail transportation systems came into existence (Erdal, 2005). Rail transportation has been the product of the industrial era, playing a major role in the economic development of Western Europe, North America, and Japan (Rodrigue, 2008). It represented a major improvement in land transportation technology and has obviously introduced important changes in the movement of freight. This was not necessarily because of heavy loads, since maritime transportation excelled at doing so, but because of the time element. Railway transportation systems dramatically improved the schedules that could be included in the planning of economic activities such as production and distribution. Thus the coherence of economic activities and social interactions was substantially improved.

Rail transportation is characterized by a high level of economic and territorial control since most rail companies are operating in situation of monopoly, as in Europe, or oligopoly, as in North America (Rodrigue, 2008). Rail transportation, like roads, has an important relationship with space, since it is the transport mode the most constrained by the relations with geography (Keeling, 2008).

According to Rodrigue (2008), there are basic components for this relation such as:

- Space consumption where rail transportation has low level of space consumption along lines, but its terminals are important consumers of space, especially in urban areas. This increases operation costs substantially.
- In terms of gradient and turns. Rail transportation can support a gradient of up to 4 percent which is approximately 40 meters per kilometer, but freight trains rarely tolerate

more than 1 percent. This implies that an operational freight rail line requires 50 kilometers to climb 500 meters. For turns, the minimal curvature radius is 100 meters, but radiuses of 1 km for a speed of 150 km/hr and 4 km for a speed of 300 km/hr are needed.

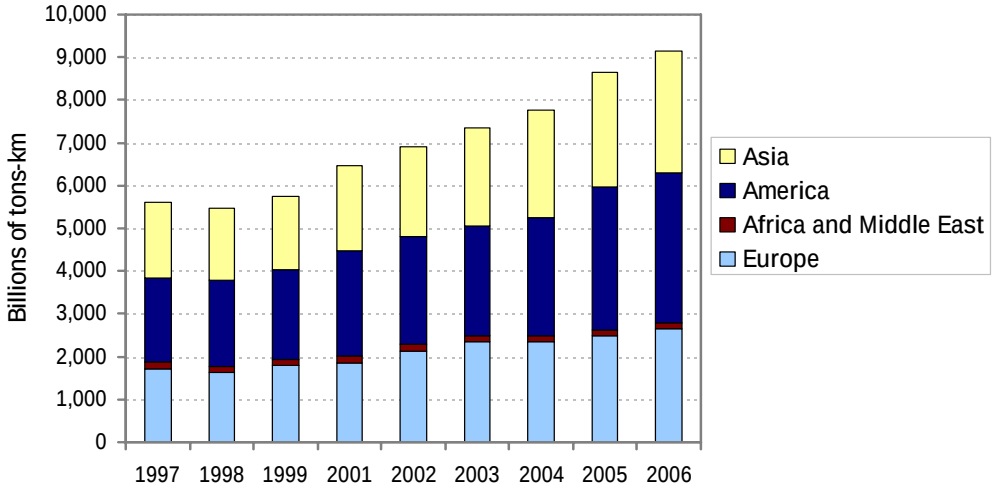
▪ The most important component of the railways is its vehicles. Rail transportation is very flexible in terms of vehicles and there is a wide variety of them filling different purposes. The locomotive technology ranges from steam, to diesel (mainly for freight in the United States) and electric (mainly for passengers in Europe). The recent trend has been a specialization of freight wagons, such as hopper-tank wagons (grain, potash and fertilizers), triple hopper wagons (sand, gravel, sulfur and coal), flat wagons (wood, agricultural equipment, manufactured goods, containers) (Güvenler, 2009), tanker wagons (petrochemical products), box wagons (livestock, paper, manufactured goods) and car wagons (Aksaylı, 2009).

▪ The standard gauge of 1.4351 meters has been adopted in many parts of the world, across North America and most of Western Europe for example. But other gauges have been adopted in other areas, such as the broad gauge (1.520 meters) in China. This makes integration of rail services very difficult, since both freight and passengers are required to change from one railway system to the other. As attempts are being made to extend rail services across continents and regions, this is an important obstacle, as for example between France and Spain, Eastern and Western Europe, and between Russia and China. The potential of the Eurasian land bridge is limited in part by these gauge differences.

There are particular problems for the European Union for instance, where the lack of "interoperability" of the rail systems between the member states is a factor that limits the wider use of the rail mode. It is often possible to combine rail transportation with

road transportation, simply by carrying trailers. This is called "piggy back" (Güvenler, 2009) and it is increasingly used to efficiently combine the inland potentials of rail and road transportation. The most flexible is obviously the RO-RO (Roll On - Roll Off) method where the tractor and the trailer are directly loaded on a rail platform (Erdal, 2005) where the driver usually rolls in with an outbound carriage and rolls out with an inbound carriage. Overall, rail transportation is more efficient than road transportation, although its main drawback is flexibility as traffic must follow fixed routes and transshipment must be done at terminals.

Figure 5. World Railway Freight Transportation 1980-2006



Source: International Union of Railways, 2008

The ability of trains to haul large quantities of goods and over long distances is the modes primary asset. Once the cars have been assembled or the passengers have boarded, trains can offer a high capacity service at a reasonable speed. Regarding the Figure 5, it is obviously seen that in Asia where mostly developing or under developed countries exist, railway transportation for freight carriages increases continuously. Whereas in Europe, since they accommodated railway transportation earlier, the amount mostly stays the same within 27 years although the intermodal activities have increased

to a great extent. (See Figure 5) With containerized unit trains, economies of scale can be readily been achieved while road accounts for no such advantage. Each additional container being carried by road involves the same marginal price increase (Ballou, 2004). Freight traffic is dominated by bulk cargo shipments, agricultural and industrial raw materials in particular (Erdal, 2005). Rail transportation is a green system, in that its consumption of energy per unit load per km is lower than road modes (EU Marco Polo Project).

Even if rail transportation was primarily developed to service national economies, globalization is having significant impacts on rail freight systems and these impacts are scale specific according to Rodrigue (2008):

- At the macro scale, new long distance alternatives are emerging in the form of land bridges in North America and between Europe and Asia. In North America, rail has been very successful at servicing long distance intermodal markets, underlining the efficiency of rail over long distance and high volume flows.
- At the meso-scale, the growing integration of rail and maritime transport systems takes attention. Thus Rail transportation has become the extension of maritime supply chains.
- At the micro scale, recent tendencies notably reveal a shift of certain types of commodities from railway to the seaway or road networks. Railways which are servicing ports tend more to concentrate on the movement of container traffic. This strategy followed by rail transportation industry increases the delivery of goods in the industry, and the establishment of door-to-door services through a better distribution of goods among different transportation modes (Erdal, 2005).

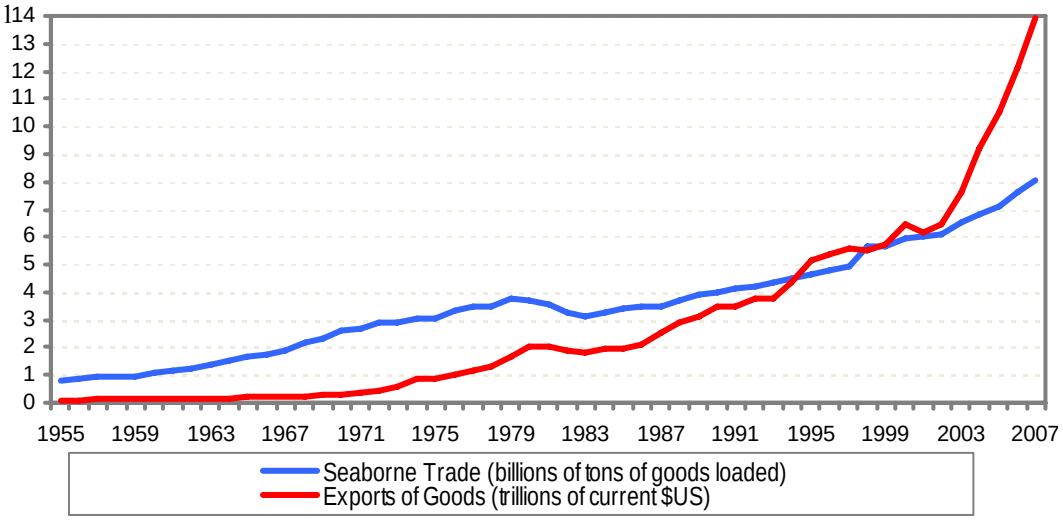
Maritime Transportation (Sea Transportation)

Maritime transportation, like all transportation, is a "derived demand", too (Kotler, 2002). Regarding 2008, maritime trade accounted for 89.6 percent of global trade in terms of volume and 70.1 percent in terms of value (Çancı, 2009). Maritime transportation, similar to land and air modes, operates on its own space, which is at the same time geographical by its physical attributes, strategic by its control and commercial by its usage (Erdal, 2005). The physiography (Rodrigue, 2008) of maritime transportation is composed of two major elements, which are rivers and oceans. Although they are connected to each other, they individually represent specific domains of maritime circulation. Maritime routes are obligatory points of passage, which are strategic places, of physical constraints and political borders (Panayides, 2005). As a result, maritime routes draw curves on the earth water surface as intercontinental maritime transportation tries to follow the great circle distance.

The most recent technological transformations affecting waterway transportation have concentrated on modifying water canals, and on increasing the size and the specialization of vessels (e.g. container ships, tanker, and bulk carrier). These transformations partially explain the development of maritime traffic that has been adapting to the increasing energy demand, the movements of raw materials, and the location of major markets (Azaklı, 2009).

The importance of maritime industry has changed with economic development and technical improvements. For instance, containerization changed the configuration of freight routes with innovative services (Islam, 2005). Prior to containerization, loading or unloading a ship was a very expensive and time consuming task and a cargo ship typically spent more time docked than at sea (Jennings et al, 1996).

Figure 6. International Maritime Trade and Export of Goods 1955-2007



Source: Directly retrieved from WTO. United Nations, Review of Maritime Transport on 24 April 2009

Maritime traffic is dominantly focused on freight. The systematic growth of maritime freight traffic has been fueled by: certain benchmarks (see Figure 6). For instance, increase in energy and mineral cargoes are obtained from a growing demand of developed economies such as North America, Europe, and Japan where huge amounts are needed to be carried. Economies of scale permitted maritime transportation to remain a low cost mode, a trend which has been strengthened by containerization. Globalization, on the other hand, increased the amount through an international division of the production and trade liberalization (Rodrigue, 2008).

Maritime traffic is commonly measured in deadweight tones (DWT), which refers to the amount of cargo that can be loaded on an "empty" ship, without exceeding its operational design limits. This limit is often identified as a load line, which is the maximum draft (or draught) which means depth or height of the submerge part of a ship; distance from the keel to the waterline as measured at the forward and aft ends of the ship. Maritime freight is conventionally considered in two categories: bulk cargo and break-bulk cargo according to Azaklı (2009).

Bulk cargo which refers to freight, either dry or liquid, that is not packaged such as minerals (oil, coal, and iron ore) and grains. It often requires the use of specialized ships such as oil tankers as well as specialized transshipment and storage facilities. Conventionally, this cargo has single origin and destination (Azaklı, 2009). It is also prone to economies of scale. Break-bulk cargo, on the other hand, refers to general cargo that has been packaged in some way with the use of bags or boxes. This cargo tends to have numerous origins and destinations. Before containerization, economies of scale were difficult to achieve with break-bulk cargo as the loading and unloading process was very labor and time consuming (Panayides, 2005).

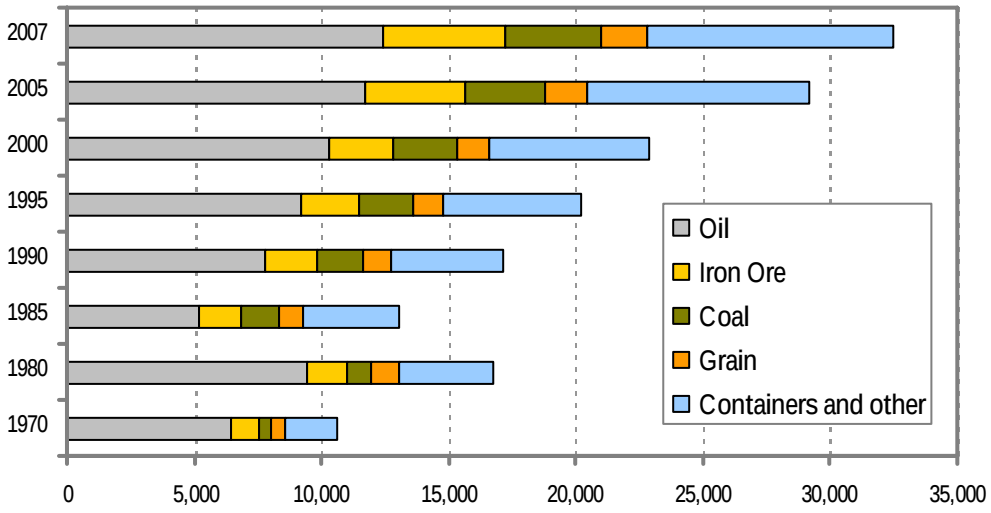
The global maritime shipping industry is serviced by about 22,000 vessels. There are four broad types of ships employed around the world:

- Passenger vessels can be further divided into two categories: passenger ferries, where people are carried across relatively short bodies of water in a shuttle-type service, and cruise ships, where passengers are taken on vacation trips of various durations, usually over several days. The former tend to be smaller and faster vessels, the latter are usually very large capacity ships having a full range of amenities. In 2005, about 11 million passengers were serviced by cruise ships, underlining an industry with much growth potential (Rodrigue, 2008).
- Bulk carriers are ships designed to carry specific commodities, and are differentiated into liquid bulk and dry bulk vessels. They include the largest vessels afloat. The largest tankers, the Ultra Large Crude Carriers (ULCC) are up to 500,000 deadweight tones (dwt), with the more typical size being between 250,000 and 350,000 dwt; the largest dry bulk carriers are around 350,000 dwt, while the more typical size is between 100,000 and 150,000 dwt. The emergence of liquefied natural gas technology enabled the maritime trade of natural gas with specialized ships (Azaklı, 2009).

• General cargo ships are vessels designed to carry non-bulk cargoes. The traditional ships were less than 10,000 dwt, because of extremely slow loading and off-loading. More recently these vessels have been replaced by container ships that because they can be loaded more efficiently are becoming much larger (See Figure7).

• Roll on-Roll off (RORO) vessels, which are designed to allow cars, trucks, and trains to be loaded directly on board. Originally appearing as ferries, these vessels are used on deep-sea trades and are much larger than the typical a ferry. The largest are the car carriers that transport vehicles from assembly plants to the main markets (Sügen, 2000).

Figure 7. Ton-Miles Shipped by Maritime Transportation between 1970 and 2007



Source: UNCTAD Review of Maritime Transport, various years. http://www.unctad.org/

According to Rodrigue (2008), shipping has traditionally faced two drawbacks. It is slow, with speeds at sea averaging 15 knots (26 Km/hr). Secondly, delays are encountered in ports where loading and unloading takes place. The latter may involve several days of handling when break-bulk cargo was concerned (Sügen, 2000). These drawbacks are particularly affects the distance of the voyage or the necessity of the shippers for rapid service deliveries such as barging or supply for the ship.

Geographically, maritime transportation has evolved considerably over the last decades. By establishing commercial linkages between continents, maritime transportation supports a considerable traffic that covers 90 percent of the intercontinental transportation demand of freight (Rodrigue, 2008). The strength of maritime transport lies on its capacity and on the continuity of its traffic. Railway and road transportation are simply not able to support that traffic at such a geographical scale and intensity. Heavy industrial activities that use bulk raw materials are generally near port sites, benefiting from load breaks (Sügen, 2000).

Maritime shipping has seen several major technical innovations aiming at improving the performance of ships or their access to port facilities, notably in the 20th century. The last century has seen a growth of the number of ships as well as their average size (Panayides, 2005). Although the minimum size for cost effective bulk handling is estimated to be around 1,000 deadweight tons, economies of scale have pushed for larger ship sizes to service transportation demand (Sanchez et al, 2003). The only remaining constraints in ship size are now the capacity of ports, harbors, and canals to accommodate them (Veldman and Bückmann, 2003).

Furthermore, economies of scales are often linked with specialization and both components have significantly modified maritime transportation. In time, ships became increasingly specialized to include general cargo ships, tankers, grain carriers, barges, mineral carriers, bulk carriers, Liquefied Natural Gas (LNG) carriers, RO-RO ships (roll-on roll off; for vehicles), and container ships (Sügen, 2000).

Airway Transportation

Theoretically, air transport enjoys greater freedom of route choice than most other modes. While it is true that the mode is less restricted than land transport to specific

rights of way, it is nevertheless, more constrained than what might be supposed. Early in the history of aviation, physical obstacles such as mountains and oceans limited the air transport networks. While those limitations have fallen, physical geography still affects the geography of intercity air transportation (Rodrigue, 2008). Aircraft seeks, for instance, to exploit (or avoid) upper atmospheric winds, in particular the jet stream, to enhance speed and reduce fuel consumption.

Strategic and political factors have also influenced route choice (Notteboom, 2006). For instance, the flights of South African Airways were not allowed to over-fly many African nations during the apartheid period, and Cubana Airlines has been routinely prohibited from over-flying the US. Even more significant was the opening up of Siberian airspace to Western airlines after the Cold War (Rodrigue, 2008). After its immaturity, air transportation was then seen as a public service and as an industry that should be regulated and protected. In many parts of the world, government intervention in the industry took the form of state-owned airlines.

As the early 1970s, Air Canada, Air France, British Airways, Japan Airlines, Turkish Airlines, and most other flag carriers throughout the world were fully state-owned while, surprisingly in the US, the government did not own any airlines but it did strongly affect the industry's development via regulation of fares, in-flight service, routes, and mergers (Rodrigue, 2008). Beginning in the 1970s, the relationship between the airline industry and the state changed, although the timing of liberalization and its extent has varied among the world's main markets. Across the globe, dozens of airlines have been at least partially privatized, and many airline markets have been deregulated (Erdal, 2005).

A final important aspect of airline networks is the emergence of separate air cargo services. Traditionally, cargo was carried in the passenger airplanes, and provided

supplementary income for airline companies (Erdal, 2005). However, since passengers always had the priority when a plane was overloaded, air freight services tended to be unreliable. Moreover, passenger aircraft are operated on routes that make sense for passengers, but may not attract much cargo (Brueckner and Spiller, 1994). Today, about half of all air cargo is carried in dedicated freighters.

Although have more space than other modes, for air transportation, finding a substitute for oil-based fuels is more difficult than in ground transportation since the economic viability of flight depends on the use of a concentrated form of explosive energy (Brueckner and Spiller, 1994) and there is no easy substitute in this regard. Still, the fuel efficiency of air transport has substantially improved in recent decades, as high as 70 percent between 1960 and 2000, and possible future reductions are expected to take place at a rate of 1 to 2 percent per year (Rodrigue, 2008).

Another threat and actually the most recognized is security which gained importance with terrorism. Terrorism which is directed against civil aviation threatens the confidence of ordinary travelers in addition to impose additional security constraints for passengers where delays occur (Erdal, 2005). The attacks of September 11, were unprecedented not only in their scale but also in their geography. Although American carriers had been targeted before, no major terrorism incident against the airline industry had occurred in the US previously. Instead, earlier attacks against aircraft and airports and airlines had been concentrated in Europe and the Middle East (Rodrigue, 2008).

CHAPTER 3

TURKISH FOREIGN TRADE

Economic History of Turkey

What Were Inherited From the Ottoman Empire?

The statistical records of the Turkish Economy for the first quarter of the 20th century clearly reflect the underdeveloped characteristics of the Ottoman Empire (Ahmad, 1993). The economy of the early republic was in a state of underdevelopment and the population was predominantly agrarian. During long-lasting war years, Ottoman Empire almost collapsed economically since the human power needed by agriculture was at war, and few of them were coming back for production. Eighty percent of the population was employed in agriculture however; the cultivation methods used were not state-of-art techniques and used for small-sized farms therefore, Toynbee (1971) claims the unfortunate situation of the Turkish economy where a national revolution also was needed in terms of economy.

In the Ottoman economy, the relative shares of the industry and commerce were very low. According to the 1915 survey;

– The manufacturing industry, including the handicrafts, accounted for about 7 percent of GNP,
– There was an industrial work force of about 14,000 concentrated in textiles (wool, cotton, and silk) and other activities such as tobacco processing,
– There were only two industrial ventures which had employed more than 200 workers (Kumcuoglu, 2006).

Germany and the Ottoman Empire were on the Central Powers Side on World War 1. Compared to these statistics above, however; other part of the team; Germany had 370,000 people served for show-making processes in 1907 and, most of the output was produces in the larger plants employed more than 10 workers. In 1913, no less than a million and quarter men in Britain, where the number was 800,000 for Germany in 1907, processed the coal that kept the economies of the world going (Kumcuoglu, 2006).

The industrial production capacity was unevenly distributed; more than fifty percent of the existing firms were located in Istanbul. The common share of Istanbul and Izmir was more than 70 percent. Since most of the population was absorbed by agriculture, few of them were in trade business and largely they were non-Muslim ownerships that caused the trade industry to collapse in Turkey after the World War I (Oran, 2003). The relative distribution of industrial ownership was as follows; Turks: 15 percent, Greeks: 50 percent, Armenians: 20 percent, Jews: 5 percent and, other foreigners: 10 percent (Kumcuoğlu, 2006).

Before the Republican Era, foreign-owned banks were dominating the economy. The most notable ones were the Ottoman Bank, the Credit Lyonnais, the Deutsche Bank, and the Deutsche Orient Bank. These banks were mainly, acting as fiscal agents to raise loans for the central government and their activities were limited to certain big cities. The only significant national bank was the Ziraat Bankası which was practically established in 1888 (www.ziraat.com.tr). During the first half of the 19th century, with the adoption of western models at the trade and finance, foreign banks began their activities in the Ottoman Empire. At that period, the national banking system was insufficient in lending capital that led any Ottoman citizen to mention about the

impossibility of the existence of national banks as a source of capital. This situation was harmful especially on farmers since they had the majority in the population, and since they lacked any institutional financial structure to apply, they had to borrow money from the illegal "tefeci"s (usurers) with high interest rates. Compared to Agricultural Bank, the Mitsui Bank of Japan had been established 200 hundred years earlier in 1683. Scarcity of capital is also related to the foreign debt and capitulations which were the privileges given to foreign states only (Nebioğlu, 1986).

The underdeveloped economic structure had its repercussions on foreign trade in Ottoman Era. Turkey has been effectively reduced to the role of primary producer, exporting wool, cotton, tobacco, and dried fruits in return for manufactured goods. For instance, in 1913, the Empire exported about 80 percent of its production of raw cotton while on the other hand, imported the same amount of its consumption of cotton thread and 90 percent of its cotton textiles (Pamuk, 1995).

Re-Construction Period

One of the most significant events of the Turkish economic history was the Economic Congress of Izmir held in Izmir in February 1923. This gathering was the first of its kind in Turkish history. 1135 delegates including, farmers, artisans, merchants, industrialists, bankers and workers assembled in Izmir for this Congress (Kumcuoglu, 2006). According to many historians, this event was the first sign of westernization, since it was held just before the second phase of the Lausanne peace negotiations which was to resume six weeks after the congress. This gathering was also a step towards democratization since it was a political decision made by the Turkish Grand National Assembly. This congress was aimed at formulating the essentials of the economic policy which would be pursued by the new regime (Savaş, 1986).

The radical reforms in the reconstruction period altered the institutions of the state and forced people in a new direction (Kumcuoglu, 2006). It was believed by Ataturk and his staff officers that the reforms would not last long if they were not supported by a revolutionary leap forward in the economy. For a viable and fast developing economy there were two important conditions which were stability and financial funds to invest. In order to achieve this, the first condition was to have balanced government budgets (Savaş, 1986).

In terms of import–export balance, the new state was believed to walk through industrialization. Thus, in 1925 a second bank, the Industry and Mining Bank of Turkey was established (Kumcuoglu, 2006). The main focus was the industry investment for this new bank though there was a variety of privately-run enterprises in the field of textiles, ceramics, rice processing, sugar production, power generation, and new harbors. By 1930, its total industrial investment has reached to TL 6.4 million. These two banks' efforts of industrialization were also supported by the industrial encouragement law enacted in 1927 (Savaş, 2006).

Since the years of Independence War and the very beginning of the Republic, Turkey has had policies or strategies that have been kept basically in the same way with the relations to foreign countries. In terms of politics; for instance, Turkey was having negotiations with the Western Countries after the Independence War while being in touch with the Soviet Government (Oran, 2003). Proving this point, Turkish governments have tried to apply balance of politics in relations to different parties of the international arena. The situation was not the same in terms of economics and foreign trade as it has been in politics. The governments did not have continuous foreign trade and therefore export strategies until 1980 (Ege, 2008). Statist economic policies were

adopted in this period mainly while during the periods of 1923-28 and 1950-54 (Oran, 2003) liberal economic policies were tried to be adopted because of the changes in policies and strategies in terms of governance and also because of the Lausanne Treaty (Belgenet Website, 2009).

It is obvious to realize that the period until 1960's planned economy years was ruled and governed by the formers of the Republic. Although namely liberal economy or legally "mixed economic system" (Kumcuoğlu, 2006), the economy was severely dominated by the state monopoly in those years. With the planned economy policies, "import substitution strategy" was adopted which was the first almost-planned legal strategy in terms of exports. However, pretending to be long-term export strategies, those policies were adopted in order to cure the ongoing economic problems of those days (BYGM, 2004). However, the foreign trade strategies applied in the Post-1980 Era have aimed to establish a long-term stable trade structure in the economy. Strategies basically aimed to improve the economy but not the international trade and to keep the exports under control in order not to cause domestic scarcity of supply of goods traded internationally. Regarding this issue, except the loans given in order to finance the investments abroad, Turkey was not involved into world economics much (CIA).

The Turning Point: January 24th 1980

Besides its political importance, 1980 was a year which was a turning point for Turkish economy. Through the January 24th Decisions in 1980, Turkey abandoned the import substitution strategy and adopted an export promotion strategy which gave a boost to the international trade of Turkey. The main aim of these radical changes which are still valid today is to create the necessary conditions for a rapid promotion in terms of development (Kumcuoglu, 2006). This strategy of promotion through economic

liberalization and industrialization, more or less, has been applied by all governments including the current one.

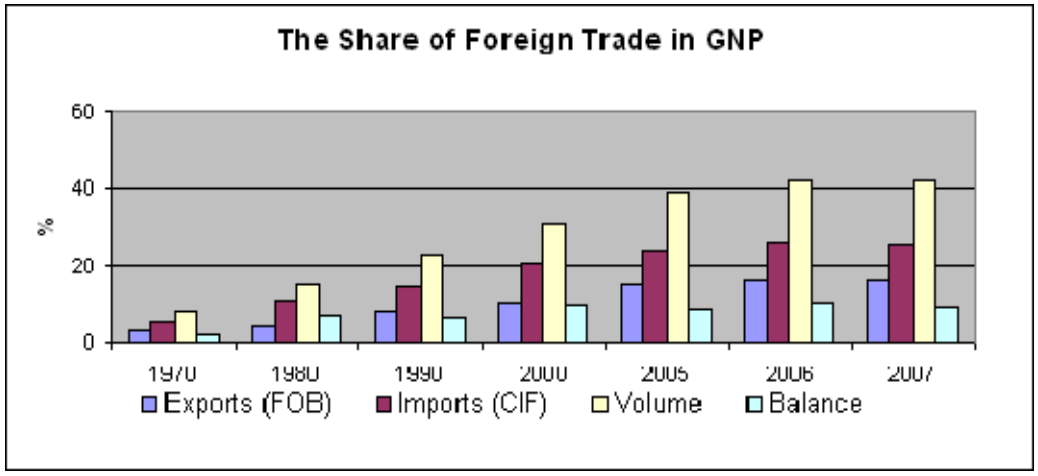
The target was only reached for the short term economic conditions which started to fail in the mid-1990s (Kum, 1994) however; foreign trade has been the most benefited branch of the Turkish Economy. Starting with the January 24 Decisions, the convertibility of Turkish Lira has been increased, Public Economic Enterprises (PEE) have been privatized and agricultural supports and subsidies (except for fertilizer, energy, and transportation) were limited in order to encourage the industrialization and shift the exports from agricultural items to industrial ones (Kumcuoglu, 2006). Significant bureaucratic obstacles were eliminated to a great extent, which were discouraging the foreign investors and domestic exporters with the Decree No. 30 regarding the Protection of Turkish Lira's Value, further liberalization efforts took place in foreign exchange and imports of foreign exchange were permitted (Savaş, 2006). In 1990, Turkish Lira was further strengthened by making it more convertible and with the amendment in the Law on Turkish Lira's value protection by the Decree no. 32; exports and imports with Turkish Lira was allowed (DTM, 2009). Turkish Lira was devaluated by 49% against US Dollar (Sabah, 2005), and the exchange rates started to be announced daily as a signal of the current situation of TL against foreign currencies. Devaluation was aimed to limit domestic demand and attract potential foreign buyers in order to increase exports. Furthermore, fixed exchange rate policy was turned into flexible exchange rate policy and in 1987, in order to support Turkish exporters Turkish Eximbank was established (Undersecretaries of Foreign Trade).

Through January 24th Decisions, Foreign trade was given a boost and accelerated (Kum, 1994). In order to keep this acceleration alive, incentives were shifted to foreign

capital investments, profit transfers were eased, exports were promoted via tax rebates, low-interest credits, customs duty exemptions for manufacturers of exports for imported inputs as the bureaucratic obstacles (Undersecretaries of Foreign Trade) were eliminated as stated above. After shifting the strategy from import substitution to export promotional strategy, the barriers over imports were eliminated gradually (CIA, 1995).

As a result of the January 24th Decisions in 1980, the volume of foreign trade has increased rapidly and the share of exports in Turkey's GNP increased starting from the very beginning; 1980 (See Figure 8). The share of foreign trade in GNP of Turkey was 4.17 percent in 1980 while it became 6.46 percent and passed the double in 1982 when compared to 1980 as being reached to 8.93 percent (IMF, 2005-2006-2007).

Figure 8. The Share of Foreign Trade in GNP



Source: DTM, 2008

The results obtained in the short-run through the January 24 Resolutions were: an economic structure which could deal with foreign competition Through an outward perspective, Turkish government achieved to find out comparative advantages in the international arena that increased the exports through the increasing share of industrial

goods in exports (Kumcuoglu, 2006). The utilization rates rose notably; subsequently, textile, construction, and light industry became the leading industries of imports. The stock exchange improved and inflation started to decrease when the controls over gold and foreign exchange were abolished (Kum, 1994).

The industrial development efforts of the new republic were based on import substitution strategy. Before 1923, textile products and sugar had accounted almost 50 % of the total imports while this ratio was 35 % in 1930 (DTM, 2009). Furthermore, in a decisive surge in sugar production during the reconstruction period, the domestic sugar industry became able to produce 8 % of the total consumption in 1927, and this ratio grew to 49 % in 1932 (See Table 2).

Table 2. Improvements in the Selected Manufactured Goods

	1923		1932	
	Imports	Domestic Production	Imports	Domestic Production
Cotton Textiles	20,500	3,700	13,432	9,055
Wool Textiles	1,242	400	452	1,695
Silk Textiles	17	6	2	91
Leather	1,851	1,974	-	4,105
Sugar	46,049	-	29,332	27,549
Cement	65,000	24,000	2,300	129,000
Coal	-	592,499	-	1,593,510

Source: Kumcuoğlu, 2006

Progress in Turkey's Transportation Industry in Historic Process

There has never been a master plan for transportation in both Ottoman Empire and Turkish Republic, even today. The policy concerned with arteries of commerce conducted by Anatolian Seljuk Empire is carried on by Ottoman Empire. The system set on these arteries of commerce that contributed high returns to the treasury and established the spine of the Ottoman economy has deteriorated gradually. Concrete indicators related to deteriorated road transportation may be defined as declining safety of voyage because of increasing level of banditry (Baer, 2007) and in turn declining

mobility of people and goods and as a result of increasing level of transportation costs (Kumcuoglu, 2006). In addition, the lack of significance given to public services such as road and vessel construction by the central authority is the other deficiency related to that period. The truth of the matter is, road construction in the Ottoman was connected to military purposes. The principal target for the central authority was to reach to the borders rapidly and to provide construction and maintenance of the main arteries extending to strategic castles (Şen, 2003). Only in the last years of the empire some importance is attached to transportation. In the period of administrative reforms (1839 Tanzimat) a series of legal arrangements has taken place and road problem is fixed to a program. In this program it was also anticipated that provision of transportation vehicles in order to operate resources in the country and railroading country on a basis of linking efficient regions in agriculture among themselves and connect them to seaports (Quataert, 1977). After the second constitutional monarchy called II Mesrutiyet, legislation related to construct a broad road network of total 30,000 km within the country in eight years is enacted, but because of the breaking out of the fist world war this program has stayed limited with 400 km road construction. Consequently, as a result of the endeavor beginning in 1850s towards road construction, the Turkish Republic inherited 18,335 km road of which 4,450 km was dirt road and 13,885 was ruined and in need of repair (Ergün, 1985).

Transportation policy between the period of Turkish War of Independence and Second World War denotes a reasonably homogenous character focused on railways. At Izmir Economic Congress, Mustafa Kemal has stated that it is a necessity to build a cobweb of railways and highways throughout the country on which trains and cars would run all the time. However, at the first years of Turkish Republic, the main problem in terms of transportation was the physical integrity within the country (Ergün,

1985). Within the borders, it was not possible to reach every corner of the country. Railways are seen doubtless as the most mandatory tool for national defense and integrity of the country. The function of the railways differs from that had been in the empire period. Though the priority is given to national defense in the reconstruction of the railways in the first years of the republic, this stress is shifted to economic based railway policy beginning from the 1930's (Şen, 2003).

Main motives behind the railway policy of this period were to reach nationwide resources, connect consumption centers with the production centers, and establish links between ports and their hinterlands, spreading economic development in the country base and being able to reach to less developed regions had been. Policy transformation towards nationalization of railways started in 24 May 1924 by giving authority to the government in order to purchase the Haydarpasa Port and Anatolian Railways Corporation. Nationalization process of railways has continued until 1948 and at the end of this process 4,060 km of railways belonging to foreigners have been transferred to the state. In addition to nationalization process, the republic also got into a fast working railway investment by laying down 3,383 km railway over the period 1924-1945. Thereby, the length of railways has reached to 7521 km (Tekeli et al., 2004). With regard to road construction in that period, the length of highways increased from 18,225 km to 43,463 km, but they considered road construction as being complementary to the railways (Aktan et al., 2002).

After the Second World War, a milestone in Turkey's transportation policy stands out. Pre-war railway development policy replaces highways (Şen, 2003, p.45). At the end of the 1940s road transport in Turkey was relatively primitive considering

international standards. Table 3 shows this situation apparently in terms of amount of road in meters per kilometer[2].

Table 3. International Comparison of Road Lengths in 1948

Country	Road length Per km^2 (meter)
Turkey	17
Greece	170
Bulgaria	340
Romania	580
Afghanistan	12

Source: Ergün, 1985

Leaving aside developed countries, Turkey takes place far beyond its neighboring countries in terms of road length. Nevertheless, an interesting point in the table is that even Afghanistan, being a country enclosed with mountains and therefore being inconvenient for establishing a transport network, has had a road length close to Turkey. This is an important indicator showing the seriousness of the situation in Turkey in the post-war period.

Furthermore, duration of the bus voyages at the end of 1940's are nearly three times of today's duration which proves the inefficiency of transportation infrastructure of the young Republic (See Table 4)

Table 4. Duration of Voyages in 1948

Route	Duration of the Bus Voyage (hours)
Ankara – Kayseri	11
Ankara – İstanbul	18
Ankara – Zonguldak	14
Ankara - Samsun	20

Source: Ergun, 1985

As a result of the fragmented economic activity within political borders of the Turkey in the late 1940s, it was inevitable to connect local market and resources to each

another in order to perform economic and social development. Accordingly, Turkish agriculture needed to be opened to the market and agricultural production needed to be increased. In order to achieve this, agricultural mechanization and highway construction were given priority (Kepenek, 2003). In 1947, according to the report prepared by American Federal Bureau of Roads and presented to the Ministry of Public Works, fundamentals of new highway policy are stated. Based upon this report Turkey prepared a nine-year report by fixing a 23,000 km state highway network and leaved the construction of these highways to the General Directorate of Highways founded in 1950 (Tekeli et al., 2004). Highways are developed by state enterprises and foreign technical assistance. As a result of these investments, the length of motorways that are hard surfaced and available to use each season has risen from 1,700 km in 1950 to 3,500 km in 1955 and 10,750 km in 1965. Over the same period the length of state highways increased approximately from 24,000 to 35,000 (Kepenek, 2003).

According to Kumcuoglu (2006), between 1950 and 1960, the production of;

- Cereals have increased from 9.4 million to 15 million tons,
- Sugar beets from 855,000 to 4.2 million tons,
- Electricity from 789.6 kw/hrs to 2,886 kw/hrs
- Iron and steel from 310,200 to 530,900 tons,
- Lignite from 971,000 to 2.8 million tons and,
- Cement from 395,000 to 2 million tons.

As seen from above figures, the new government gave priority to the production of agricultural goods and minerals, as well as creating an infrastructure which would facilitate the exportation of these products. Because there was a high demand for those goods in European market which was undergoing a sizable economic recovery.

Therefore, Democratic Party government focused on a new transportation policy. The immediate outcome of the new transportation policy was the expansion of the network of roads which opened up the villages of Anatolia for the first time and exposed peasants to the alien world of towns and cities. Supported by the US financial and technical assistance, surfaced roads capable of carrying heavy vehicles increased from 1,642 km in 1950 to 7,049 km in 1960 (Kepenek, 2003). Road construction was matched by mushrooming bus and transportation companies which had the effect of creating a national market. The total motor vehicle park increased from 53,000 in 1950 to 137,000 in 1960 (Kumcuoglu, 2006).

Promoting only road transport in the post 1948 period increased the share of road in passenger and freight transportation. Accordingly, focusing on road transport prevented the development of railways. In 1950, 46 percent of passenger and 17 percent of freight was transported by road. In 1960 these shares increased to 67 percent and 37 percent respectively (Kepenek, 2003, p.117). In the period of planned economy, the share of transportation within the fix capital investments has increased continuously. In the 1st development plan period this share was 15.6 percent, in the 2nd plan period it was 16 percent and in the 3rd plan period it was 20.6 percent. It is also worth expressing that within the transportation infrastructure investments road transport investments have taken the greatest share (Ergün, 1985).

Table 5. The Share of Transportation Modes Investments in Fixed Capital Investments (%)

Mode of Transportation	1st Development Plan (1963-67)	2nd Development Plan (1968-72)	3rd Development Plan (1973-77)	4th Development Plan (1978-82)
Road	72	73	52	60.7
Railway	17	19	22	24.6
Maritime	9	5	12	10.2
Air	2	3	14	4.5

Source: Ergün, 1985, p.83

It is obvious that Turkey's transportation development after 1960s displays that road transport gradually becomes dominant on passenger and freight transportation against other modes. The quick development of road transportation revealed some structural changes. Number of motor vehicles swiftly increased. The number of cars being 13,405 in 1950 increased to 45,767 in 1960, 137,771 in 1970, 742,252 in 1980, and 1,649,879 in 1990. The number of buses and minibuses also showed the same trend (TURKSTAT, 2008).

Giving all importance to road transportation by ignoring other modes had had also different effects on social structure and other industries. Since road transportation has higher unit costs relative to other modes, this has led to centralization around production regions which in turn caused imbalances and differences in production and consumption among regions of the country (Kumcuoglu, 2006). Increasing demand of private car ownership caused congestion in big cities and related problems as car accidents, parking area deficiencies, consumption of fuel, environmental impacts, etc. Besides this, as a result of this development automotive industry and related industries have developed (Kepenek, 2003).

Recent Situation of Transportation in Turkey

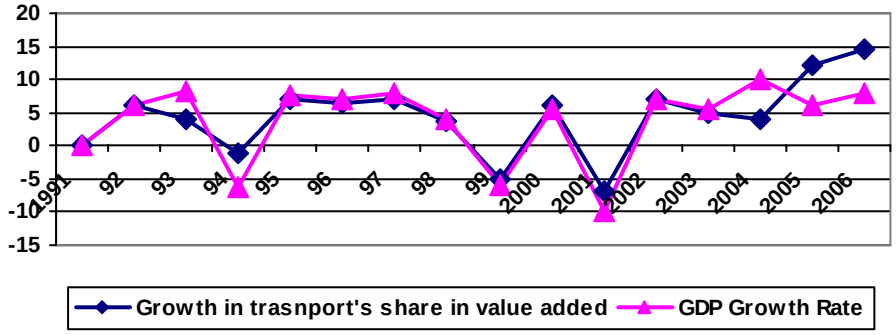
In today's global world developments being experienced in each field had also embodied the importance of transportation industry. This industry is vital and a catalyst for increasing international trade in accordance with rising demands of the global economy. Beginning from the early 1990s large trade areas formed related to policies towards eliminating barriers against free trade, dissolution of Union of Soviet Socialist

Republics, foundation of World Trade Organization (WTO), membership of People's Republic of China to WTO, EU's transition to common currency and enlargement process increased the significance of transportation industry (TUSIAD, 2007). Transportation being an important tool in ensuring the demand of people also takes its place in input costs. Due to the transportation costs engaging significantly within total costs, the importance of transportation in competition has increased. Countries which are excelling in the transportation of raw materials, intermediate or final goods have been more successful in international trade which in turn affects national income and development (TUSIAD, 2007). In this sense, transportation is an integral part of economic prosperity for Turkey and other countries as well. Furthermore, Turkey having a strategic position between Asia and Europe has been an intersection point of road networks. Related to increasing trade volumes from Asia to Europe the share of transportation corridors in the direction of east-west had also gained importance. West European countries willing to reach to Caucasus and Central Asia abounding in natural resources have agreed on expanding their transportation and energy corridors towards this direction. Turkey, being both a transition country between east-west countries, both having common cultural values with Central Asia countries and both having relatively more stable economy and politics, takes place in the center of these international corridors (ASAM, 2009). Especially in the context EU, European transportation networks, corridors, and projects offer significant opportunities to Turkey (TUSIAD, 2007).

3.3.1 Importance of Transportation Industry in the Turkish Economy

The contribution of Turkish transportation when annual growth rate of GDP and the rate of increase of transportation's share in total value added is analyzed, same trend in both series is observed.

Table 6. Share of Transportation in GDP Growth 1990-2006



Source: Turkstat, GDP Data

The share of transportation in total employment is relatively low compared to its contribution to total value added. In 1980's this share is around 3.7 % while it moves around 5 % in 1990's (Erdal, 2005). In 2005 the share of transportation within total employment is realized as 5.2 % (TURKSTAT).

Considering the productivity of the industry as the ratio of share of the industry in total value added (TVA) to the share of that industry in total employment, the industry is said to be productive. As it fluctuates, labor contributes more than its share in total employment to the value added (Tansu, 2009) (See Table 7).

Table 7. Employment in Turkish Transportation Industry

Years	Total Employment (thousands)	Transport Sector (thousands)	Share of Transport Sector in Total Employment (%)	Sectoral Productivity (% of transport in TVA / % of transport in employment)	Sectoral Employment Growth Rate	Annual GDP Growth Rate
1990	18.559	816	4,401532	3,035068	-0,01568	9,4
1991	19.288	821	4,256533	3,10581405	0,006127	0,3
1992	19.459	975	5,010535	2,69232727	0,187576	6,4
1993	18.499	932	5,03811	2,76889548	-0,0441	8
1994	20.006	894	4,468659	3,18440051	-0,04077	-6,1
1995	20.586	878	4,265034	3,28719537	-0,0179	8
1996	21.194	907	4,279513	3,29944065	0,03303	7,1
1997	21.204	907	4,277495	3,3103487	0	8,3
1998	21.778	968	4,444853	3,2374524	0,067255	3,9
1999	22.048	952	4,317852	3,42531425	-0,01653	6,1
2000	21.581	1068	4,948798	2,96031481	0,121849	6,1
2001	20.704	1004	4,849304	3,07054373	-0,05993	-9,4
2002	21.658	1000	4,617232	3,17939406	-0,00398	7,8
2003	20.811	1062	5,10307	2,96684153	0,062	5,9
2004	21.87	1161	5,308642	2,81616278	0,09322	9,9
2005	21.928	1141	5,203393	2,91348357	-0,01723	7,6

Source: TUSIAD 2008

The fixed capital investments in transportation industry, public investments arise to be greater than private investments until 2003 (See Table 8). In the crisis periods, in 1994 and 2001, the shares of both investment decline. The share of transportation as a whole in total fixed capital investments also keep in step with the general conjuncture of the economy (Demir, 2005).

Table 8. Fixed Capital Investments in Turkish Transportation Industry

Years	Fixed capital investment of transportation sector by years	Fixed capital investment of transportation sector by years	Fixed capital investment of transportation sector by years
	(Public %)	(Private%)	(Total%)
1980	20,8	9,7	14,2
1981	19,7	15,3	17,3
1982	21,3	16,2	18,4
1983	23,5	16,9	19,8
1984	25	17,2	20,4
1985	28	17	22
1986	29,3	13,8	20,8
1987	33,9	11,7	20,7
1988	29,7	9,1	16,1
1989	30,1	8,8	15,9
1990	34	10,7	17,9
1991	36,6	10,8	19
1992	36,5	14,7	21,5
1993	42,6	18,8	25,3
1994	38,4	11,5	16,9
1995	30,2	16,4	18,8
1996	34,7	17,4	20,9
1997	34,8	21,6	24,6
1998	34,1	20,7	24,1
1999	36,9	20	25,1
2000	35,2	27,9	30,1
2001	27,1	23,6	24,8
2002	27,5	26	26,6
2003	27,3	31,7	30,5

Source: TUSIAD, 2008

When the modal split of investments in transportation industry between 1999 and 2005 regarding values is considered, it is observed that a positive trend in each sub-industry (Demir, 2005, p.111). However, except railway industry, in 2004 there is a decline in investments in each sub-industry. And the other point which needs to be spotlighted is the amount of investments directed to road transportation. It keeps on attracting the biggest share of investments within all modes (See Table 9).

Table 9. Modal Split of Transportation Investments (Thousand TRY)

	1999	2000	2001	2002	2003	2004	2005
Highways	501.585	843.973	715	1.120.000	1.478.350	1.455.224	2.573.429
Airway	114.5	181.5	253.8	332.65	338.55	321.75	653.54
Railway	53	88	134	230	444	788.3	1.252.000
Sea Route	30.395	62.6	62.9	89.67	102.625	95.302	96.634
Pipe lines	168	250	377.75	560.18	508.325	425.97	450
Total	867.48	1.426.073	1.343.450	2.532.500	2.871.850	3.086.546	5.025.603

Source: TUSIAD, 2007

Transportation has a vital role in foreign trade. In ton-based evaluation maritime transportation has a great share in foreign trade transports being 87.4 % in 2004. 78.1 % of exports and 92.3 of imports are transported by sea routes (See Table 11). Road transportation is ranked as second in foreign trade transportation having a share of 10.3 % in 2004. 20.3 % of exports and 5.1 % of imports are transported by road in 2004 (See Table 10).

Table 10. Modal Split in External Trade Transportations (%)

Years	Sea Route	Railway	Highways	Airway	Others
1995	91,1	0,8	7,7	0,2	0,2
1996	84,8	0,3	11,4	0,8	2,7
1997	85,5	0,3	12,5	0,4	1,3
1998	88,1	0,6	9,1	0,3	2
1999	88,9	0,5	8,7	0,2	1,8
2000	88,6	0,5	8,6	0,2	2,1
2001	87,1	0,6	10,6	0,2	1,6
2002	87,3	0,7	9,7	0,2	2,1
2003	87,6	0,8	10,5	0,1	1
2004	87,4	1,2	10,3	0,1	1

Source: TUSIAD, 2008

In 2004, the maritime transportation has a share of 48.9 % in exports and 58.3 % in imports in the base of value while road transportation accounts for 42.9 % and 24.5 % respectively.

Table 11. Foreign Trade Transportation Modes (tons) (2004)

	Export	Share(%)	Import	Share(%)	Export+Import	Share(%)
Sea Route	47.058.104	78,1	104.697.120	92,3	151.755.314	87,4
Highways	12.212.365	20,3	5.714.149	5,1	17.927.415	10,3
Railway	795.793	1,3	1.215.727	1,1	1.051.701	1,2
Airway	139.125	0,2	102.386	0,1	241.511	0,2
Others	14.944	0,1	1.630.287	1,4	1.645.231	0,9
Total	60.220.603	100	113.400.671	100	173.621.273	100

Source: TUSIAD, 2007

Turkish Transportation Industry In Line with EU Acquis

Transportation Policy takes place as 14th and "Trans-European Networks" takes place as 21st negotiation chapter within the 35 negotiation chapters in the negotiation process between Turkey and EU (Secretary of EU-Turkey Relations). Transportation policy taking place in the screening period of EU includes: Maritime Transportation, Galileo, Inland waterways; Land Transport/Rail, Intermodal Transportation, Introduction to Transportation Acquis Land Transport/Road, State Aid/Air Transportation with respect to presentation topics (EU Progress Report). Turkish authorities have presented topics in question between the dates 25-28 September 2006 and "Trans-European Networks" chapter on September 29th, 2006 to EU authorities as a detailed report. Current situation in accession negotiations regarding transportation is that screening reports of these two chapters have not been drafted yet. After draft screening reports are to be approved at the Council of European Union, intergovernmental conference convenes and passes to the opening of negotiation chapters unanimously (IKV, 2008).

Turkey has not had a master plan for the transportation industry yet, including transportation costs, traffic safety, environmental effects, and accessibility. The only

plan prepared for transportation industry thus far is Transportation Master Plan comprising the years between 1983- 1993 which in effect is not precisely executed. In addition, the development plans prepared by the State Planning Organization are also swept aside and instead yearly and politically dominant plans are preferred. But, as a natural consequence, there has been significant imbalances between modes in favor of road transportation which in turn leading to dominance of this industry over other modes, congestion, and extremely increasing unsafe situations on roads. In order to bring away this negativity, to sustain balance between modes and to satisfy the need for a transportation plan, Transportation Master Plan Strategy is prepared in December 2003 (Ministry of Transport). It is completed in February 2005 and a final report is published. The part of this report related to road transportation deals with upgrading the situation of highways, increasing the services of maintenance and repair, completing the project of dual carriageway, increasing traffic safety standards consistent with EU Acquis (KGM, 2008).

In the framework of National Program for the Adoption of the Acquis (2003), Turkey has prepared a list of priorities related to four sub-industries in order to transfer EU Acquis to Turkish legislation and adopt a harmonization program for implementing the Acquis (Secretary of EU-Turkey Relations).

The 9th Development Plan (2007-2013), Medium Term Program, and Annual Program were prepared in accordance with the full membership vision care alignment with the EU Acquis. Strategic goal expressed in 9th Development Plan for transportation is the establishment of rapid and safe transportation infrastructure that will increase the competitive power of the country. Transportation policy thematic subjects are establishment of an efficient transportation system, improved safety, and

security, integration with Europe and neighboring economies and environmental and financial sustainability (Secretary of EU-Turkey Relations).

Medium Term Program transportation objectives are;

- developing financing models that increase the participation of the private industry,
- accelerating efforts for integrating Turkey's transportation network, which links EU countries with Caucasian countries, the Central Asia, South Asia and the Middle East Countries, to TEN-T Network,
- Improving the existing highway infrastructure by the completion of the ongoing dual carriageway projects and by upgrading their standards,
- Increasing traffic safety in highways,
- Increasing the share of maritime and railways in freight transportation,
- Putting high-speed passenger trains into service,
- Restructuring Turkish State Railways in order to increase the quality of service and railways' share in the industry and to reduce its financial burden on the Public,
- Developing ports as logistics centers where combined transportation is realized and increasing port capacities,
- Increasing capacity in congested airports,
- Improving regional air transportation (Secretary of EU-Turkey Relations).

Turkey has prepared a Program for the Alignment with the Acquis (2007-2013) including all negotiation chapters that need to be adjusted after the screening period. In this program, legal arrangements, secondary arrangements and necessary strategies and political documents take place. In addition responsible authority and calendar of the related arrangement is also stated in this program.

Road Transportation in Turkey

In his famous speech "Nutuk", Ataturk emphasizes the importance of the railway construction, however; especially after 1950's, road transportation has experienced significant developments, and the mode is determined as the dominant transport mode of Turkey. Failing to construct the necessary infrastructure for railway and maritime transportation compatible with increasing transport demand and, in the name of road transportation, being the most proper mode for door-to-door transportation have given rise to concentration of freight and passenger transport on highway network (Erdal, 2005). In 2004, 95 % of passenger transport and 90 % of freight transport are realized by highways in Turkey (TURKSTAT, 2008). For the same year these shares are 85 % and 44.3 % respectively for EU-25 (Eurostat, 2008).

Current Situation of Road Network

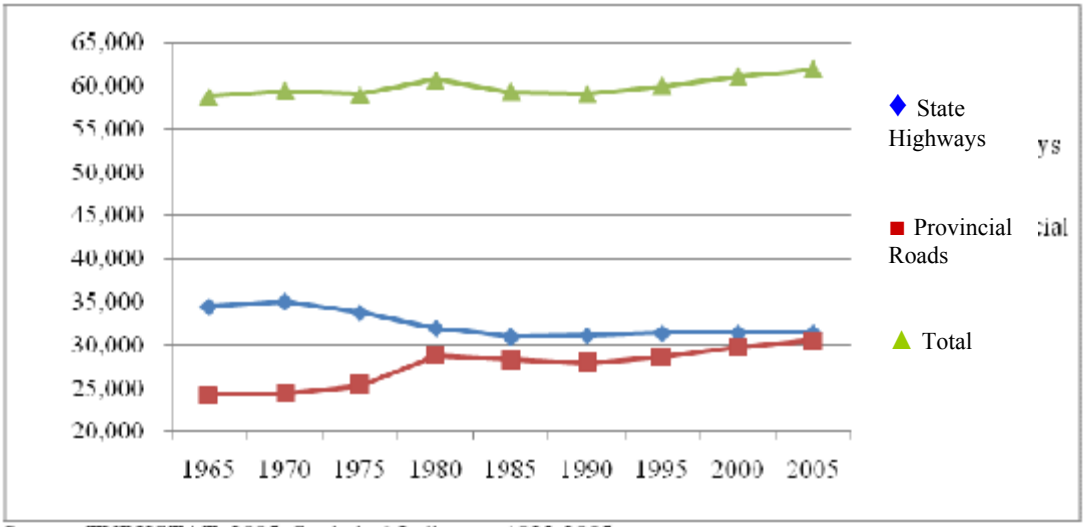
The development of the road network in Turkey over the period 1965-2005 is given in the Figure 9. Turkey has a 31,371 km long state highways, 30,568 km long provincial roads, and 285,632 km long village roads. This value aggregately equals to 349,346 km for 2005. (See Table 12)

Table 12. Current Situation of Road Network (km)

	Hot-Mix Asphalted Concrete	Surface Treatment	Stone Paved	Stabilized Earth	Soil	Impassable	TOTAL
Motorways	1,775	-	-	-	-	-	1,775
State Highways	6,199	24,541	42	254	86	249	31,371
Provincial Roads	881	25,761	91	1,953	1,243	639	30,568
Village Roads	-	-	-	168,347	117,210	75	285,632
TOTAL	8,855	50,302	133	2,207	1,329	888	349,346

Source: SPO, 2008

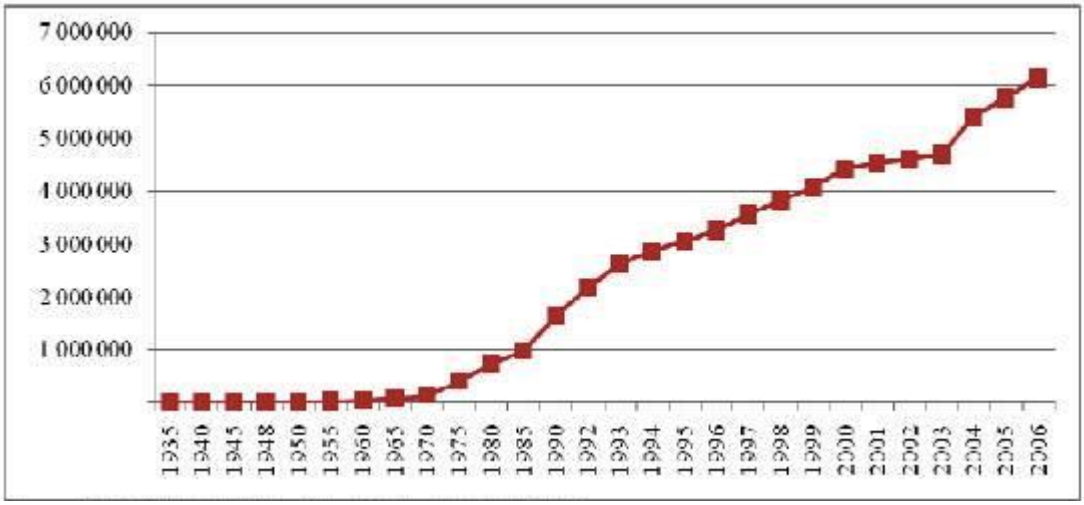
Figure 9. Road Network of Turkey between 1965 and 2005



Source: TURKSTAT, 2008

Regarding this data, total numbers of registered motor vehicles through years are: 10,236,357 in 2004; 11,145,826 in 2005; 12,227,393 in 2006; 13,022,945 in 2007 and 13,765,395 in 2008 (TURKSTAT). Though this continuous increase is evaluated as the sign of exhibitionism and self-indulgent (see Figure 10), in terms of transportation modes, this is a sign of our addiction to road transportation.

Figure 10. Number of Cars in Turkey 1935 - 2006



Source: TURKSTAT 2008, Road Motor Vehicle Statistics

If existing transportation infrastructure density is to be analyzed it is observed that Turkey has quite low density of highway, motorway and railway network below EU-25 average (See Table 13).

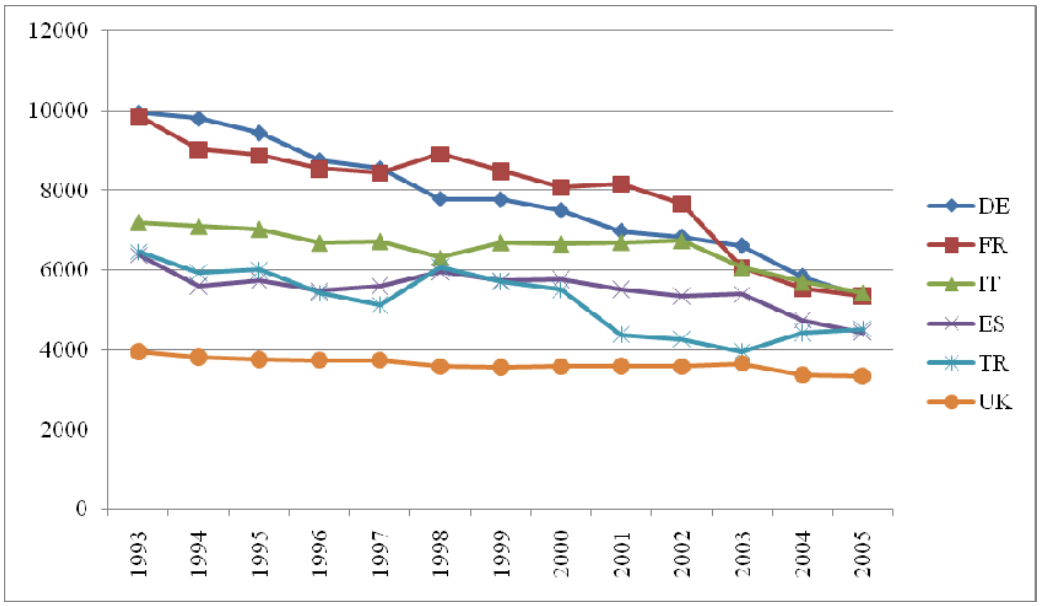
Table 13. Comparison of Transportation by Country

Countries	Highway Density	Motorway Density	Railway Density	Airway Passenger Traffic
	Km/Km²	Km/Km²	Km/Km²	(1.000 item)
	2003	2003	2003	2004
Czech Republic	0.703	0.007	122	9950
France	0.724	0.019	54	102.453
Germany	0.648	0.034	101	135.85
Belgium	0.511	0.057	115	17.409
Austria	0.417	0.019	69	10.297
EU-25	0.474	0.015	50	650.425
Turkey	0.201	0.002	11	44.789

Source: SPO, 2008

Since 90 percent of the freight transportation is materialized via highways, heavy commercial vehicle traffic on highways is increasing while reducing the safety of roads. High density of heavy vehicle traffic leads to quicker deterioration of the road structure (Erdal, 2005). Although it is very much stated that the number of fatalities in Turkey is three times larger than the EU-25 average, it is not a correct comparison, since there are many countries in EU which have small population sizes and in turn relatively low rates of fatalities. But if the numbers of fatalities on roads with the selected countries in EU which have similar demographic structures with Turkey are compared – Germany (82.5 million), France (61.3 million), Italy (59.5 million), Spain (45 million), and United Kingdom (60.3 million) – it is realized that the situation is not encouraging in EU scale, as well (See Figure 11).

Figure 11. Comparison of Road Fatalities in Turkey and in Selected EU Countries



Source: Eurostat and TURKSTAT 2008

Furthermore, the dominance of road transport causes increases in traffic volumes, especially in heavy vehicle traffic. High density of heavy vehicles and their nonstandard freight haulages cause roads to be distorted rapidly which in turn threatens road safety. Road safety keeps on being the greatest headache of the road transport in Turkey. When compared with EU averages, it is found to be three times larger. But, despite this situation Turkey does not have a particular plan regarding road safety in order to reduce losses of life on the roads. The remarkable side of the Figure 11 is that the decreasing rate of the fatalities is higher in EU countries compared to Turkey. And United Kingdom has lowest level of fatalities in absolute terms. In addition to this, road network available for heavy vehicle transport is only 8855 km.

Passenger and freight transportation

In Turkey, both passenger and freight transportations are dominated by road transport as seen in the Table 14. Since the table excludes external trade transports by sea, road transport hauls approximately 90 percent of the freight in the domestic market

constantly over the period 2001-2005. Starting from 2005, the investment amounts for transportation modes have increased enormously, not only for the road transportation but also for the other modes (See Table 9 in economic history of Turkey section). Until 2005, road transportation increased its carriage amount percentage from 49 percent to 90.3 percent between 1983 and 2005. In the same period, railways decreased its percentage from 7.1 to 4.9 percent, maritime industry decreased from 3.4 to 3.3 percent, airway increased from 0.1 to 0.2 percent and transportation via pipelines decreased from 40.3 percent to 1.3 percent. It is obvious that, road transportation stole the share of pipelines mostly while the other modes mostly stayed the same.

Table 14. Freight transport by transport modes (million) and modal split (%) in Turkey 1983-2005

Years	Road		Railway		Maritime		Air transport		Pipeline		Grand Total
	ton- km	%	ton-km	%	ton-km	%	ton-km	%	ton-km	%	
1983	42,189	49	6,124	7.1	2,934	3.4	57	0.1	34,592	40.3	85,896
1984	43,878	43	7,532	7.4	7,719	7.6	63	0.1	41,921	41.5	101,113
1985	45,634	43	7,747	7.3	4,504	4.2	59	0.1	48,463	45.5	106,413
1986	54,018	47	7,219	6.3	4,682	4.1	64	0.1	48,831	42.5	114,814
1987	58,832	44.7	7,259	5.5	4,541	3.5	79	0.1	60,871	46.3	131,582
1988	65,459	40.2	8,006	4.9	9,454	5.8	88	0.1	79,753	49.0	162,760
1989	68,239	40.8	7,571	4.5	7,152	4.3	95	0.1	84,217	50.3	167,274
1990	65,710	51	7,915	6.1	7,234	5.6	107	0.1	47,833	37.1	128,799
1991	61,969	81.7	7,995	10.5	2,780	3.7	76	0.1	3,076	4.1	75,896
1992	67,704	83.8	8,246	10.2	1,756	2.2	102	0.1	3,013	3.7	80,821
1993	97,843	88.6	8,410	7.6	901	0.8	152	0.1	3,104	2.8	110,420
1994	95,020	88.6	8,215	7.7	587	0.5	198	0.2	3,251	3.0	107,271
1995	112,515	90.2	8,516	6.8	276	0.2	231	0.2	3,219	2.6	124,757
1996	135,781	91.2	8,914	6	-	-	240	0.2	4,022	2.7	148,957
1997	139,789	81.9	9,614	5.6	-	-	263	0.2	21,064	12.3	170,730
1998	152,210	75.8	8,376	4.2	-	-	274	0.1	39,813	19.8	200,673
1999	150,974	71.4	8,237	3.9	8,200	3.9	286	0.1	43,609	20.6	211,306
2000	161,552	73.1	9,761	4.4	7,900	3.6	310	0.1	41,432	18.8	220,955
2001	151,421	75.2	7,486	3.7	8,100	4	285	0.1	33,969	16.9	201,265
2002	150,912	79.9	7,169	3.8	5,738	3	275	0.1	24,733	13.1	188,827
2003	152,163	85.9	8,615	4.9	5,400	3	276	0.2	10,670	6.0	177,124
2004	156,853	92.9	9,334	5.5	-	-	321	0.2	2,390	1.4	168,898
2005	166,831	90.3	9,078	4.9	6,158	3,3	392	0.2	2,379	1.3	184,837

Source: Turkish State Railways Annual Statistics 2001-2006

Passenger transport is also dominated by road transport having a constant share of 95 percent over the same period (See Table 15).

Table 15. Passenger Transport By Transport Modes (million) and Modal Split (%) in Turkey 1983-2005

Years	Road		Railway		Maritime		Air transport		Grand Total
	Passenger - km	%	Passenger - km	%	Passenger - km	%	Passenger - km	%	
1983	83,690	96	3,024	3.5	121	0.1	713	0.8	87,548
1984	87,539	95	3,489	3.8	120	0.1	864	0.9	92,012
1985	91,566	95	3,555	3.7	131	0.1	718	0.7	95,970
1986	93,587	96	3,248	3.3	139	0.1	785	0.8	97,759
1987	112,034	96	3,343	2.9	157	0.1	945	0.8	116,479
1988	128,202	96	3,802	2.9	186	0.1	991	0.7	133,181
1989	133,833	96	3,681	2.7	171	0.1	1,079	0.8	138,764
1990	134,991	97	3,479	2.5	127	0.1	1,208	0.9	139,805
1991	131,029	97	3,200	2.4	92	0.1	845	0.6	135,166
1992	142,173	97	3,456	2.4	58	0.04	1,138	0.8	146,825
1993	146,029	96	4,102	2.7	53	0.03	1,721	1.1	151,905
1994	140,743	96	3,941	2.7	47	0.03	2,268	1.5	146,999
1995	155,202	96	3,700	2.3	61	0.04	2,666	1.6	161,629
1996	167,871	97	3,215	1.8	58	0.03	2,754	1.6	173,898
1997	180,967	96	3,662	2	49	0.03	3,007	1.6	187,685
1998	186,159	96	3,972	2.1	54	0.03	3,243	1.7	193,428
1999	175,236	96	4,263	2.3	34	0.02	3,349	1.8	182,882
2000	185,681	96	4,240	2.2	30	0.02	3,555	1.8	193,506
2001	168,211	96	4,213	2.4	31	0.02	2,859	1.6	175,314
2002	163,327	96	3,939	2.3	21	0.01	2,706	1.6	169,993
2003	164,311	96	4,583	2.7	22	0.01	2,752	1.6	171,668
2004	174,312	96	3,835	2.1	-	-	3,223	1.8	181,370
2005	182,152	96	3,661	1.9	-	-	3,992	2.1	189,805

Source: Turkish State Railways Annual Statistics 2001-2006

Major Investment Projects

9th development plan of Turkey contemplates to improve existing road infrastructure, especially the roads having daily heavy vehicle traffic more than 1000 vehicles will be tried to make bituminous coated (SPO, 2008). Another policy in the plan was that the integration of national transport network to Trans-European network would be accelerated by through EU funding. Also it is predicted that the share of road transportation within public investments will be decreased from 32 percent to 26 percent (9^{th} Development Plan). It can be concluded that, Turkish road transportation industry

portrays a figure that its standards and legislation has not constituted yet. Road transportation displays a problematic structure as a result of distorted development of Turkish transport policy beginning from 1950's (Erdal, 2005). Investments on road transportation have been accused by being higher than it should be (Kumcuoglu, 2006). However, the main problem in the industry is not the high level of road investments. Since the railways seem to be having the highest attention currently, the actual problem is promoting road transportation against other modes and allowing for imbalances in modal split. Considering the potential of Turkey to become a logistics hub, as it is in Thailand road transport must be put in a position that will not compete but cooperate with other modes (Kunadhamraks and Hanaoka, 2007).

Turkey, by having a strategic position between the continents Asia and Europe, has been an intersection point of road networks with different directions and features. Parallel to the increasing trade volumes routed from Asia to Europe, the role of east-west direction transport corridors in transportation became important (Erdal, 2005). Furthermore, according to Tangzon (2007), the global logistics market will grow annually by 10 percent average until 2012 and this increase will be mainly based on the trade to and from Asia. In this way, Western European countries willing to attain to Caucasus and Central Asia countries expanded their transport networks towards this direction. There are five major axes to connect EU with its neighbors (Keeling, 2008). These are: Motorways of the Sea, Northern Axis, Central Axis, South Western Axis, and South Eastern Axis in which Turkey takes place. The South Eastern axis links the EU through the Balkans and Turkey to the Caucasus and the Caspian Sea as well as to Egypt and the Red Sea (Dağdemir, 2008).Pan-European Transport Corridor and Transport Corridor Europe-Caucasus- Asia (TRACECA) formed by European Union and transportation projects focused on road and rail transport supported by United

Nations Economic Commission for Europe (UNECE) are the most important transport corridors connecting Europe and Asia also by enclosing Turkey (UNECE Transport review 2008 and TRACECA, p.4). Turkey takes place in the road corridor IV of the Pan-European corridor. Corridor IV is a multi-modal Northwest - Southeast transport link running from Dresden/Nuremberg (Germany), via Prague (Czech Republic), Vienna (Austria)/Bratislava (Slovakia), Budapest (Hungary) to Romania (Erdal, 2005). In Romania, Corridor IV divides into two branches. The northern branch runs from Arad via Bucharest to Constantza at the Black Sea, the southern branch from Arad via Craiova to Sofia (Bulgaria) and divides again. One branch is running further to Thessalonica (Greece) and the other to Istanbul (Turkey). (Guvenler, 2009)

Legal Framework of Turkish Road Transport Industry

Turkish road transport industry is governed by many laws and by-laws concerning market access, safety conditions, prices and fiscal conditions, technical conditions, transportable pressure equipment and social conditions. The legislation on road transportation may be regarded as the most harmonized one with the EU *Acquis*, relatively. Directive related to access to the profession of and access to the market for operators are engaged in national and/or international road haulage. With the introduction of licensing system 247,772 licenses are issued and roughly 90 percent of commercial road vehicles registered in domestic freight transport and 1406 licenses are issued in international freight transport which is almost 100 percent of commercial road vehicles registered (EU Progress Report 2007). Real and legal persons who are not Turkish citizens and request to perform transport activities in Turkey can also obtain an operating license if they comply with the provisions of the “Direct Foreign Investments Law” as well as the conditions specified in the By-Law on Road Transport for resident

haulers (ABGS, 2006d). As stated in the 13th article of Law on Road Transport, foreign–registered vehicles may not perform transport between two points within the borders of Turkey. Foreign vehicles transporting to/from/through Turkish territory require permit, unless exempted by bilateral agreements. In other words, cabotage operations are not permitted by Turkish legislation:

> Goods coming to Turkey by seaway, railway, or airway and carried to third countries from the point of arrival can only be transported by Turkish haulers. For foreign–registered motor vehicles a special permission is required from MoT (Article 12-13 of Law on Road Transport quoted in Directorate General Of European Union Affairs, p.21).

Turkey is a contracting party of Convention for the International Carriage of Goods by Road (CMR) which standardizes the conditions governing the contract for the international carriage of goods by road, particularly with respect to the documents used for such carriage and to the carrier's liability (Erdal, 2005). In terms of passenger transportation, Agreement on the International Carriage of Passengers by Road by means of Occasional Coach and Bus Services (ASOR) is an international agreement that Turkey is a contracting party also (TUSIAD, 2007). In the same context, Turkey has signed another agreement on the international occasional carriage of passengers by coach and bus which is known as Interbus Agreement in 2001.The Agreement applies to the international carriage of passengers, of any nationality, and to unlade journeys of the buses and coaches concerned with these services on the territory of the European Union (EU), and in Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Romania, and Turkey (EU Interbus Agreement).

Because ASOR Agreement was close to participation of other countries, Interbus Agreement is signed as being available to the participation of other contracting parties. The Interbus Agreement hence incorporates most of the liberalization measures

of the ASOR Agreement while adding social, fiscal and technical measures based on the principle of non-discrimination between the various contracting parties (Ministry of Transport, MoT).

Considering the progress in topics related to safety conditions, European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) was ratified by the Parliament and entered into force in December 2005. By-Law on Transport of Dangerous Goods by Road which is compatible with 94/55 EU directive is published in official gazette as of 31-March-2007 and in force since 01.01.2009 (Official Gazette).

Road transportation industry is one of the biggest sub-industries of the services industry which both considered for goods and passenger transportation for both domestic and international shipments and trips. Unfortunately, the situation is not different in Turkey where road transportation is the first choice to be evaluated. In addition to this, it is not foreseen that, road transportation will lose its huge share and all modes become balanced for both transportation of goods and passengers.

According to Erdal (2005), Turkey should not be overconfident of having 30,000 trailers and 600,000 trucks for transportation but instead should evaluate subsidy programs such as Marco Polo Program of European Union. The reason behind is that road transportation is a kind of mode which is neither the cheapest nor the fastest. Therefore, within time, the firms will loose their strength in competition against other countries which support the infrastructure of intermodal transportation or simply railway or maritime transportation.

Furthermore, government should stop giving subsidies for the logistics companies in order to buy more trucks and trailers. The more the trucks Turkey has, the more pollution and the more loss of financial sources because of being spent on unnecessary truck purchasing (Erdal, 2005).

Rail Transportation in Turkey

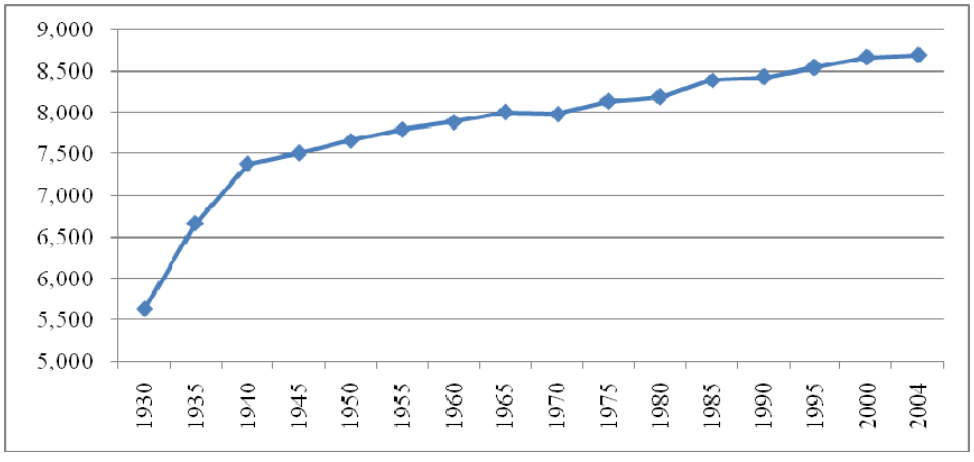
The history of rail transportation in Turkey begins with the construction of first railway line (Izmir-Aydin) in 1856 by British. Railways, being constructed by foreign capital in direction with their interests until the foundation of Turkish Republic, were configured in accordance with the national interests aiming to create a national economy in the post republic period. Railway investments had been given great importance in transportation policy unlike today's transportation policies (Kumcuoglu, 2006). In fact, despite too much scarcity of funds, railway construction was carried on enormously until the World War II, however, because of the war it slowed down after 1940. Until 1950, highways are seen as complementary systems that support railways (Oran, 2003).

Beginning from the 1850's railway construction has accelerated around the world. For the industrialized countries seeking cheap raw materials for their developed industries, Ottoman Empire had been a charming place with its sources of mine, crude oil, and water. In this context foreign states contended with each other in order to construct railways in Ottoman territories. Ottoman Empire, considering railways as the key device for economic development through opening of agricultural production to the market, has granted many privileges to attract foreign capital (Şen, 2003). The most important development in the last period of the empire in transportation field is railways that are realized largely by foreign capital. In this period German capital was dominant

with a share of 57 % followed by French and English capital having shares of 23.5 % and 20 %, respectively.

Turkish Republic inherited a 4,240 km of single track railway network which concentrated on the western parts of the country and was completely foreign owned and operated. The railways were at the top of investment list of the new state. After 1923, the government began a massive extension of the railway network, aimed at joining Ankara with Sivas and Erzurum, and Diyarbakir with Fevzipasa on the prewar Baghdad line. In 1924, it was decided to nationalize the foreign owned and controlled the railway system. In 1926, the General Directorate of Railways and Ports was established. By 1930, about 3,000 km of the line had been nationalized and transferred to the state railway system. By 1937, there was 6,737 km of railway in the country all of which state owned (Savaş). In 1923, there was a web of 14,450 km of stone paved, and 14,450 km of rough earth road in the country. By 1941, these figures were 18,378 km and 23,112 km respectively (Kumcuoğlu, 2006).

Figure 13. Length of railway lines (km) 1930-2004



Source: TURKSTAT Statistical Indicators (1923-2004)

Nevermore, together with the Marshall Aid, railways were almost completely ignored against road construction. During the planned economy period, railway

investments had always fallen behind road investments as it is today (Kumcuoglu, 2006). To be precise; between the period 1950-1997 the length of highways increased by 80 % while the length of rail lines increased only by 11 % (TCDD, 2009).

Table 16. Length of railway, train kilometer, and freight transportation

	2001	2002	2003	2004	2005	2006	2007
Length of railway (km) (1)	8671	8671	8697	8697	8697	8697	8697
Electrified lines	1752	1752	1752	1920	1920	1920	1920
Main line	1479	1479	1479	1564	1564	1564	1564
Double and more	273	273	273	356	356	356	356
Lines not electrified	6919	6919	6945	6777	6777	6777	6777
Main line	6778	6778	6778	6693	6693	6693	6693
Double and more	141	141	167	84	84	84	84
Train kilometer (,000)	41372	38791	41810	45873	45395	44206	43102
Freight train kilometer	13954	13795	15846	18764	18129	17714	17230
Goods traffic (,000 tons) (2)	14362	14424	15755	17708	18945	19745	20849
Agriculture products	225	176	213	132	124	50	126
Livestock	4	3	2	1	1	-	-
Minerals and ores	7343	7294	7975	8697	8711	8822	8530
Fuel oil, Pitch, Tar	164	151	198	200	252	327	274
Timber	22	14	13	6	17	35	76
Agricultural machines	43	36	38	28	21	26	18
Chemical & nitrogenous fertilizers	406	516	485	278	215	210	276
Oilcake & livestock food	14	8	1	12	9	52	28
Others	5214	4925	5115	6054	6689	7220	8421
International	927	1301	1715	2300	2906	3003	3100
Ports & piers	34612	36252	41509	46698	44649	45364	36560
Loading	18176	17882	18992	20547	19904	21463	16941
Unloading	16436	18370	22517	26151	24745	23901	19619
(1) Lines of shunting and stations are not covered.							
(2) Express parcel luggage and departmental are excluded.							

Source: TCDD, 2009

Current Situation of Railways

Infrastructure

According to 2007 data acquired from TCDD, total railway network of Turkey is 10984 km. and only 27 percent of the total network is supported through electrification and 28 % of the lines are signalized (See Table 17). 35 % of the current

network has not been modified for at least 20 years. Because of the old-fashioned and deformed infrastructure, geographical conditions of Turkey and even, because of the geometric structure of land, the trains have to perform low-speed voyages. Therefore, 4500 km of the current network needs urgent restoration and modification according to TCDD (2007). Single track train operations are dominant as 95 % of the network.

Table 17. Current Railway Network

	2002	2003	2004	2005	2006
Electric Train	8826	8862	8679	8648	8648
Non-electric Train	2122	2122	2305	2336	2336
TOTAL	10984	10984	10984	10984	10984

Source: TCDD, 2008

Figure 13. Current Railway Network

Source: TCDD, 2009

Table 18. International Comparison of Transport Lines

Country	Road Per 1000 km^2	Railway Per 1000 km^2	Road Per Railway Km	Road Per 10,000 Person	Railway Per 10,000 Person	Traveling Frequency of People by Railway
TURKEY	552.2	11.2	49.3	58.8	1.2	1.1
U.K.	2528.2	67.4	37.5	103.1	2.7	17.5
Luxembourg	124066.7	91.7	1353.5	7444	5.5	27.4
Greece	886.4	18.6	47.8	105.4	2.2	0.9
Ireland	1367.1	27.4	49.9	233.4	4.7	8.4
Portugal	787	31	25.4	68.3	2.7	12.6
Germany	1803.9	97.3	18.5	78.1	4.2	20.5
Denmark	1665.1	51.4	32.4	132.6	4.1	27.9
Italy	1588.4	53.8	29.5	81.7	2.8	9.5
Netherlands	3068.3	68.6	44.8	77.2	1.7	19
Spain	1314.2	28.4	46.3	153.2	3.3	13.5
Belgium	4829	114.1	42.3	142.6	3.4	17
France	1614.5	53	30.5	146.8	4.8	15.3
Switzerland	1736.6	82.4	-	96.2	4.6	36.9
Norway	283.6	12.6	22.5	199.8	8.9	10.1
Austria	1591.7	68.6	23.2	163	7	23.4
Sweden	476.7	22	21.7	238.3	11	3.9
Finland	230.7	16.9	13.6	150.4	11	11.6
Czech Rep.	1616.5	120.4	13.4	125.2	9.3	17.5
Slovakia	875.5	74.7	11.7	79.4	6.8	9.3
Hungary	1706.5	83.1	20.5	157.1	7.7	12.5
Bulgaria	918.9	38.4	23.9	132.5	5.5	5
Croatia	500	47.8	10.5	64.8	6.2	8.4
Romania	831.8	45.4	18.3	92	5	4.6

Source: TCDD, 2008

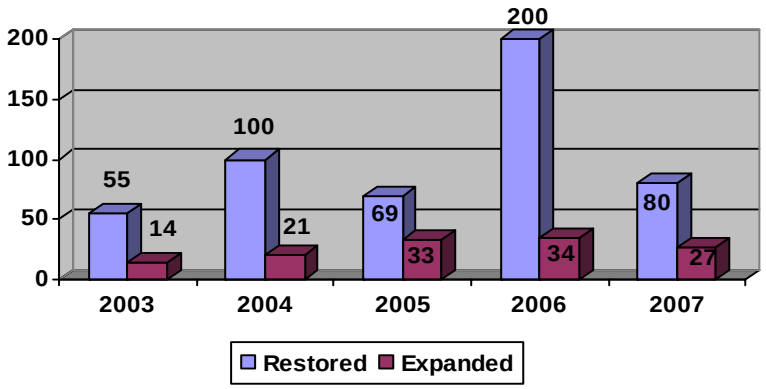
International comparison of transportation networks is given in the table above (See Table 18). As seen in the table, railway per kilometre² is far below the European Countries. Even when compared to Greece, a 131,957 km²-land state, has 18.6 km railway per 1000 km² (Greek Ministry of Culture, 2009) while Turkey, a 780,576 km²-land state(IVDB, 2009), has 11.2 km railway per 1000 km² This is largely due to deficiencies in technologic renovation owing to financial bottlenecks and difficulties in obtaining outward oriented replacement parts (TUSIAD, 2007). Just like the infrastructure, superstructure standards of tracks are substantially out of international standards as indicated in by Güvenler (2009). Through this international comparison, it is observed that railway statistics always take place below the international statistics.

For instance when the railway per 1000 km² is analyzed, it is observed that, Turkey has the lowest value being 11.2 km followed by Norway with 12.6 km.

Furthermore, in terms of passenger transportation, railway per 1000 person takes the smallest value for Turkey. Unfortunately, the scale is in favor of road transportation in Turkey since the increasing passenger and freight transportation is directed to the highways. As a result of this situation, a large portion of the investments have been allocated for this industry flows to the road transportation. When compared with the population and the area of the country, it is seen that the length of the railway network is extremely insufficient, and this is insufficient network is the main reason why road transportation is preferred (Guvenler, 2009).

Although in small amounts, TCDD tries to restore and modify the current network especially after 2002 with the new government's support. (See Figure 14) This political support increased the fund left for railway investments as 458 % in 2003 to 1,145,700,000 TRY. After this huge increase, the share of railway investment funds in 2007 was 42 % of the total transportation infrastructure investment funds while it was only 9.7 % in 2002.

Figure 14. Total Km of Restored and Expanded Railway Network (2003-2007)



Source: UTIKAD, 2008

In addition to the values in the table above, TCDD plans to apply 4500 km restoration in 6 years starting from 2008 and 800km of this amount is planned to be held through private investments. In terms of network expansion with new routes, Ministry of Transportation plans to build 1938 km long railway until 2013. (UTIKAD, 2009)

Railway projects; Ankara-Istanbul and Ankara-Konya are under construction which will have 463 km long duplex line, and furthermore; 192 km-long conventional line is under construction, too, according to TCDD's Annual Report (2008). Moreover, 37 km-long Menemen-Aliaga (in Izmir), 27 km-long Kemalpasa (Izmir)-Turgutlu (Manisa) and Tekirdag- Muratli (Tekirdag) line is almost completed.

International railway connections are tried to be improved, also. 230 km-long Bulgaria- Ambarli (Istanbul) high standard railway constructions continues which will connect Europe to Caucasus and Middle Asia through Ankara-Sivas high standard railway connection which will reach to Tbilisi through Kars-Tbilisi line (Turkish Ministry of Transport, 2007).

Table 19. Wagon Features of TCDD in 2007

Age Groups	Distribution by Wagon Types				Total Quantity Of Wagon	Total Capacity (ton)
	Covered	Open	Flat	Tank		
50+	7	29	74	117	227	8649
40-49	27	99	3	15	144	5775
30-39	502	1365	699	192	2758	99288
20-29	2551	1169	1789	139	5648	191,461
10-19	767	2975	964	0	4706	201,417
0-9	899	1209	709	20	2837	157,738
Total Wagon	4753	6846	4238	483	16,320	-
Total Capacity (ton)	157,313	316,331	165,495	25,189	-	664,328

Source: TCDD, 2008

As seen on the Table 19, TCDD needs to rejuvenate its current fleet. In terms of these necessity of rejuvenation, TCDD plans to construct or buy 1700 new wagons annually until 2011 (UTIKAD, 2009).

Passenger and Freight Transportation

The share of railways in passenger transportation is only 5.5 % in 2007 (TCDD, 2008). Although Mustafa Kemal foresaw the importance of the railway network, road transportation in Turkey is dominant with share of 96 or 97 % for the last twenty years in passenger transportation and railways have been loosing share gradually despite the increase of the total number. As an evident indicator of the government policies of the last 50 years, current railway network does not have connection branches in 37 city centers out of 81 (TCDD, 2008). Considering the population of these centers, 28 % of the total population can not profit from railway services (TUSIAD, 2007).

Table 20. TCDD Railway Transportation Values (tones) 2003-2008

	2003	2004	2005	2006	2007	2008*
DOMESTIC	14,040,113	15,408,261	16,039,202	16,742,374	17,748,790	18,401,375
INTERNATIONAL	1,714,823	2,299,893	2,906,496	3,002,951	13,099,870	3,031,482
Import	1,006,268	1,303,349	1,698,796	1,577,186	1,511,991	1,330,687
Export	692,033	922,912	1,159,383	1,396,485	1,547,546	1,656,623
Transit	16,522	73,632	48,317	29,280	40,332	44,172
TOTAL	15,754,936	17,708,154	18,945,698	19,745,325	20,848,660	21,432,857
*2008 values includes the first 11 months						

Source: TCDD, 2009

Although a railway culture is not adopted much in Turkey (Azakli, 2009), compared to 2003 total values, in 2007 the total value increased by 32.3 % and reached to 20,848,660 tones (See Table 20). Even for the 2008 where month December is not included, the values increased and reached to 21,432,857 tones. However, only 3,031,482 tons of the total value in 2008 which constitutes 14.14 % of the total share is international railway transportation (TCDD, 2009). In addition to this, latest 20 % tax increases for the railway transportation in Turkey within the global crisis of 2009 while in the same period only 9 % increase in Russia, 10 % in the Balkans and no increase in the Continental Europe (Guvenler, 2009). Guvenler (2009) further claims that, according to the new regulation in law, TCDD workers are not supposed to work

overtime which causes the cargoes to get stuck in the stations. Therefore, exporters do not prefer railway transportation.

Regarding the freight transportation, railways haul 5.5 % (including multi-modal transportation) of total freight within other modes (see Table 21). However, railway freight transportation has slightly increased its share recently among the other modes (see Table 21). The major reason of this low share in railway freight transportation is the incapability of connection with the ports where the heart of trade beats.

The lack of railway connection especially in Trabzon, Antalya and Tekirdag ports has the highways as the alternative to haul freight (Guvenler, 2009). Bursa, which has a significant share in export also, does not have any railway connection to important ports. Such as Haydarpasa (Istanbul) and Alsancak (Izmir), TCDD ports receive approximately 50 percent of the container traffic; however, surprisingly just about 5 percent of this freight has been carried via railway transportation to these ports. (Guvenler, 2009) In addition to this, within TCDD ports, only Samsun port is not parallel with the statistics in terms of freight transportation that railways haul – 67.3 percent of the freight that arrives by railways at Samsun port. Shares in other TCDD ports are as follows: Derince 18.3 percent, Iskenderun 12.4 percent, Bandırma 7.2 percent, Izmir 4.4 percent, Mersin 0.9 percent and Haydarpasa 0.5 percent. Whereas the last three ports are the most export performed ports they are not fed by railways and as a result traffic problem arises in the residential areas around these ports (TUSIAD, 2007).

Another improvement for the railway cargo transportation; through bloc train transportation 18 % of energy-saving achieved and cargoes started to be carried faster (Turkish Ministry of Transport, 2008). 1000 of monthly 4000 bloc trains operate internationally. Besides, Halkali – Genk (Belgium) and Halkali – Budapest (Hungary)

lines were added to 7 bloc train lines between Turkey and Europe. Moreover, lines between Turkey and Syria, Iran and Iraq were established in order to carry petroleum and industry products. This is a significant declaration since exports made with Middle Eastern Countries are evaluated as the most possible cure for the 2008 global crisis from Turkish exporters' perspective (Ersel, 2009). Regarding October and November 2008, total Turkish exports decreased by 10.8 percent while the amount of exports made through Near and Middle Eastern Countries increased by 17,8 percent corresponds to18.9 percent of the total exports in 2008 (TURKSTAT, 2009).

Administrative and Legal Structure of the Railways

Turkish railway transportation is mainly administered by the Turkish State Railways (TCDD). It is a State Economic Enterprise whose capital is paid by the state and serves under the Ministry of Transportation. Under TCDD there are also 3 affiliated companies to TCDD: TÜLOMSAS (locomotive, motor, and freight wagons), TÜVASAS (passenger cars), and TÜDEMSAS (railway machines and freight wagons). As told before, TCDD owns and utilizes its own ports – Derince, Bandırma, Samsun, Mersin, Haydarpasa, Izmir and Iskenderun- and Van Lake Ferry service while some of them are considered for privatization such as the newly achieved privatization of the Alsancak Port of Izmir. TCDD benefits from monopoly rights concerning the operation of railway services in Turkey.

In 2006, 33,064 workers are employed at TCDD (TURKSTAT). Making another international comparison; shares of staff in railway administrations per km railway line regarding the year 2006 are; 10.46 in Belgium, 9.88 in Austria, 9.08 in Holland, 6.59 in Germany, 4.85 in France 3.63 and 3.01 in Turkey (TURKSTAT, 2009). Besides TCDD, the other responsible authority in rail transportation industry is General Directorate of

Railways, Harbors, and Airports Construction (DLH). This authority is mostly responsible from the infrastructure issues such as construction of new railway lines and preparation of the plans and programs of the railways and the necessary facilities and equipments.

Recent legal improvements and the enterprise of the private sector to the railway industry obviously improve the quality of the railway industry in Turkey. However, private sector companies have not reached what they predicted yet, since, the dominance of TCDD prevents them to operate functionally. In order to abolish this monopoly, a law on railway administration is being expected (Aksayli, 2009).

International Dimension and Major Investments for Turkish Railways

European Railway Networks Passing Through Turkey

E-Railway Project (AGC-The European Agreement on Main International Railway Lines) of 1985 provides the legal and technical framework for the development of a coherent international rail network in Europe *(Lehmacher, 1998, pp.2-3).* .

> It identifies the rail lines of major international importance, the E rail network, and defines the infrastructure parameters to which they should conform. It has undergone a major revision in recent years in order to also include the international rail networks of the Caucasus and Central Asian countries (UNECE, p.1).

E-Railway network which passes through Turkey overlaps with Trans-European Railway network to a large extent. E-Railways in Turkey include; E 70 Svilengrad-Kapikule-Istanbul-Haydarpasa-Ankara, E 702 Ankara-Kapikoy-Razi (Iran), E 704 Ankara-Nusaybin-[Kamichli (Syria)-Tel Kotchek (Iraq) lines (AGC).

Trans-European Railway Project (TER) of 1990 is a sub-regional co-operation established in 1990 by the Governments of the Central, Eastern, and South Eastern European countries. The main objectives of the project are the improvement of the quality and efficiency of transportation operations, the assistance of the integration process of European Transport Infrastructure systems and the development of coherent and efficient international railway and combined transportation system in the region, in accordance with the UNECE Pan-European infrastructure agreements which are AGC and AGTC (UNECE). Total length of TER lines in Turkey are 3985 km and pass along the north-south direction through E 97 (Samsun-Mersin) and along the west-east direction through E 70 (Kapikule) and E 74 (Eskisehir-Izmir) lines.

TRACECA as mentioned before is a transport corridor among Europe, Caucasus, and Asia. Rail transportation is the key element of transportation system among TRACECA countries (Rodrigue, 2008). It has many advantages over other modes such that being a transportation mode which is environment friendly, energy efficient, safe, etc. Railway projects in TRACECA program aim to develop regional railway network (TRACECA, 2009).

Major Investments

Table 21. Investment Payments in Railways

Years	Share of Transportation among others (%)	Railway share in transport (%)	Investment Amount (million TRY)		
			TCDD	DLH	TCDD+DLH
2000	18	6	75	13	88
2001	17	9	110	24	134
2002	17	10	190	40	230
2003	23	16	205	239	444
2004	27	28	675	238	913
2005	31	25	820	460	1280
2006	32	27	1127	500	1627

Source: Bolat, and updated through DTM Statistics, 2008

Though there is not a master plan within the transport policy of Turkey, there is a tendency towards improving railways which can obviously realized from the Table 21. In terms of internationalization, railways have gained importance in the transportation policy of EU and revitalization of lines has been one of the major concerns of the White Paper prepared by European Commission. It is concentrated on ensuring balance among different types of modes by shifting density in road transportation towards other modes (Marco Polo Project, 2009). Transposition and implementation of the EU *Acquis* in the area of rail transportation takes place in the short and medium-run objectives of the Accession Partnership Document (EU Official Website).

In the scope of EU-Turkey Financial Cooperation and in the framework of technical assistance program which was initiated on 10 March 2003 a Gap Analysis was performed with the aim of determining legal differences between Railway Framework Law and EU legislation, structural and administrative differences in Turkish railway industry and infrastructure needs of Turkish railway system. An Action Plan covering 2003-2008, based on Gap Analysis, was prepared and named "*Turkish Rail Industry Restructuring and Strengthening Project*" (Directorate General of EU, 2003).

Beginning from the 1995, there has been an effort for restructuring Turkish railways. In order to improve the financial performance of TCDD the World Bank supported a restructuring study in 1995/96 (World Bank, 2008). In 2004 within the context of World Bank's Country Assistance Strategy (CAS) CANAC International Inc. Performed feasibility and design studies on the "design of TCDD employment" in the framework of "Railways Restructuring Project". World Bank's investment lending support for Turkey's railway restructuring program consists of a two-phased Adaptable Program Loan (APL) (World Bank, 2008).

High Speed Line Investments

In the 9TH Development Plan, it was decided as a policy to make widespread of speed train lines and to initiate passenger transportation via high speed trains on a core network which is formed by the following corridors while Ankara is the center;

ANKARA - ISTANBUL

ANKARA - KONYA

ISTANBUL – ANKARA - SIVAS

ANKARA - AFYON – IZMIR

Under the framework of this policy, construction works of these projects are going on (MoT).

Figure 15. Major High Speed Lines Projects in Turkey

Source: Bolat, 2006

Through Ankara-Eskisehir-Afyon Corridor the current railway between Ankara and Konya, which is 687 km, will decrease to 306 km and travel time between Ankara-Konya will decrease from 10 hour 30 minutes to 1 hour 15 minutes. This will be a cost and time-reducing for the manufacturing companies (TCDD, 2009).

The distance between Ankara and Izmir is 824 km and it takes 14 hours via train in current conditions. The Ankara-Afyon-Izmir High-Speed Train Project aims to connect the Aegean Region to Central Anatolia, Eastern Anatolia and South Eastern Anatolia with a high standard railway line. Through this Project, Ankara-Izmir route through Manisa will be 658 km and 3 hours and 50 minutes or through Kemalpasa 621 km and 3 hours and 20 minutes.

In order to increase the capacity of cargo transportation on the Ankara-Sivas route, the survey project was completed in 2004 however; construction is still waiting to be performed. Improvement of its standards and a 136 km decrease of the current line of Ankara-Sivas route constitute an important ring of East-West Corridor. Through this Project, the distance between Ankara-Sivas will decrease from 602 km to 466 km.

The Marmaray Project will ensure a fundamental solution for the traffic congestion that is the most vital problem of Istanbul today. The project will provide a 76.3 km long surface subway network integrated with other transportation modes on the East-West direction (Istanbul Municipality, 2009). After the construction of there will be both a tube tunnel for passage of passengers and a tube tunnel for the passage of vehicles with tire wheels for cargo transportation.

The Kars-Tbilisi Railway Project, which will constitute a direct railway line between Turkey, Georgia, and Azerbaijan, is planned after reaching an agreement with Georgia and Azerbaijan. 76 km of the Project will be constructed inside Turkey borders and 29 km will be in the Georgia. With construction of a direct railway line between Turkey, Georgia, and Azerbaijan, easy access to the Central Asia and China will be possible. The tender process of the 76 km line in our borders was completed in 2008. Georgia is also opened tender of its 20 km line alongside with Turkey.

Railways, owing to the lack of investment, were unable to renew themselves for 60 years, in some lines for 100 years (Guvenler, 2009). This situation necessitated a decrease in the speed of the trains. For this reason, renewal works of the railways is as important as fast train projects. After the renewal works, speed of the trains will increase approximately from 55 km to 100 kilometers. Starting from the year 2003, Ankara-Istanbul, Bandirma-Izmir and Adana-Mersin railway lines have been upgraded (TCDD, 2009).

The Eurasia Block Container Train Project is one of the crucial developments for the Turkish railway freight transportation.The railways administrations of the countries on South Eurasia corridor (Turkey, Iran, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan), have come together under the umbrella of Economic Cooperation Organization (ECO) and prepared a container train project to serve between "Almaty - Tashkent - Tehran - Istanbul" for the purpose of creating a modern, fast, and secure railroad service for cargo transportation by taking the existing administrative potential into consideration (TCDD, 2009).

In 2003, Turkey started bloc train administration which is described as an implementation that enables the freight transportation activity without waiting between departure and arrival stations. Significant amount of time savings have been achieved, namely the transportation duration between Soma-Erzurum has decreased from 15 days to 3 days. In addition, the amount of freight transportation increased 20 %, while the revenues increased 26 %. Costs have also declined significantly. Furthermore, in international freight transportation, block train runs has been started. Reciprocal block train runs are being performed from Turkey to Germany, Hungary, Austria, Holland, Slovenia, Iran, Syria, Iraq, Turkmenistan, and Kazakhstan. (TCDD, 2009)

3.6.2.3. Alignment with the EU Acquis

Within the framework of Twinning Project with German Railways, technical studies on forming legislative basis for the rail industry in Turkey, in compliance with the *Acquis* are going on. It is predicted that Draft of General Railway Framework Law and Draft of TCDD Law will become law in the late 2009 legislative period (Directorate General for EU, 2008)

The General Railway Framework Law establishes;

- The railway authority for supervising the railway companies and infrastructure manager (DG Railway Transportation) dealing with safety issues, licensing and interoperability
- The infrastructure manager
- The accident investigating authority and,
- Regulatory Body for free access to infrastructure.

Structural changes coming with these draft laws are the forms of the new organization that arise under Ministry of Transportation (MoT) and TCDD (Guvenler, 2009). Directorate General of Railway Transportation (Railway Authority) and Railway Research and Accident Investigation Department (DAKIK) are the two organizations under MoT. Under the new TCDD Organization in compliance with EU *Acquis,* Business Units of Infrastructure and Operations will be separate Directorates General covered under the unique structure with autonomous accounting systems, namely infrastructure (network and rolling- Stocks) and operations (passenger and freight) accounting systems (EUROMED, 2009).

Secondary legislative arrangements related to railway industry are envisaged to be laid down and connected with General Railway Framework Law mainly in 2009, only except the by-law on Transportation of Dangerous Goods by Rail (Guvenler, 2009). National legislation concerning rail transportation of dangerous goods is Internal Operational Instruction on Carriage of Dangerous Goods by Rail, issued by TCDD, No 505 dated April 28th, 2005, in compliance with European Law; Regulations Concerning the International Transport of Dangerous Goods by Rail (RID) (Guvenler, 2009). TCDD as a carrier, has its staff specialized only for carriage of dangerous goods, but does not have any specialized staff for regulatory and supervisory activities as emphasized by the Railway Director of Balnak Logistics, Aydin Güvenler.

Regarding the railway safety issue, TCDD sets and enforces the safety rules in relation to the construction, maintenance, and management of the railways which have been made public. In 2009, it is foreseen that draft by-law on Railway Safety will be laid down in compliance with the EU directive in question (Directorate General for EU, 2008).

Regarding the interoperability, various operational instructions which have been prepared under the responsibility of the corresponding departments at TCDD however, a national implementation plan for the Technical Specifications for Interoperability (TSIs) has not been drawn up yet. Future plans in this area including the examination of TSIs in terms of preparing National Safety Rules, translating TSIs to Turkish and training the staff responsible for interoperability.

Maritime Transport in Turkey

Though has not reached the position it deserves yet, maritime transportation is the most vital part of global trade. 86 percent of external trade goes by sea in Turkey whereas this share goes up to 90 percent in EU (DTO, 2008). In accordance with increasing trade volumes all over the world this industry has had many developments in terms of increasing capacity of merchant fleet and deadweight tonnages.

International maritime freight transportation continuously increased its growth starting from 2002 until 2008 world economic crisis. For the year 2007, though it is left behind the 5-year growth rates, the increase in maritime freight transportation was 7 percent, compared to 2006 (UTIKAD, 2008). Average growth rate of maritime transportation in Turkey was 13 percent between 2002 and 2006, while the peak was 20 percent which was in 2005 (DTO, 2007). Moreover, the sum of exported and imported goods via maritime transportation between 2002 and 2007 has increased by 73.2 percent. This increase has been 69 percent for exported goods and, 75 percent for the imported goods (UTIKAD, 2007). According to Azakli (2009), there is a hidden obstacle against Turkish maritime industry. Importing foreigners used to insist on carrying their cargo via their own ships, however, Turkish importers, vice versa, could not insist on carrying their cargo via Turkish-flag ships. Therefore Turkish ship owners could not profit much, though Turkish exports and imports boomed. The status quo is still alive however; there are improvements for the good of both Turkish ship owners and foreign traders. Table 22 proves that, the Turkish-flag vessels appear more on the international arena.

Table 22. The Growth of Turkish-Flag-Shipments via Maritime Transportation

Years	Export	Change in %	Import	Change in %	Total	Change in %
2002	39,065,012	-	86,179,840	-	125,244,852	-
2003	41,476,801	6	98,673,637	14	140,150,438	12
2004	47,058,194	13	104,697,120	6	151,755,314	8
2005	54,509,720	16	127,075,174	21	181,584,894	20
2006	62,915,898	15	139,855,928	10	202,771,826	12
2007	66,061,692	5	150,884,308	8	216,946,000	7

Source: UTIKAD, 2008

Maritime Transport Infrastructure

Maritime transportation can be classified in many ways such as; internal, external and transit transport; short sea shipping and long sea shipping; or as scheduled and non-scheduled shipping. Infrastructure elements in maritime transport must be configured according to the developments and needs of these systems. In this part, it will be better to group the components of the infrastructure under ports and vessels.

Current Situation of Turkish Merchant Fleet

Turkish merchant fleet was 2 million DWT in 1980 that ranked Turkey at 35th place. However, the fleet expanded more than three times and reached to 7.6 million DWT in 2005 and ranked Turkey at 24th place (See Table 23). There are two different declining periods in Turkish fleet history after 1980 which were between 1985 and 1988, and between 1998 and 2002, however, these periods were because of national economic crisis and global freight crisis (UTIKAD, 2008).

In 1996 Turkish merchant fleet has increased to 16th position in world fleet rankings (see Table 24). However, from 1996, stagnation in Turkish fleet and ship losses has caused to decline for Turkey in world ranking. After the upswings in 1996 and 1999, the DWT carrying capacity declines constantly (See Table 23).

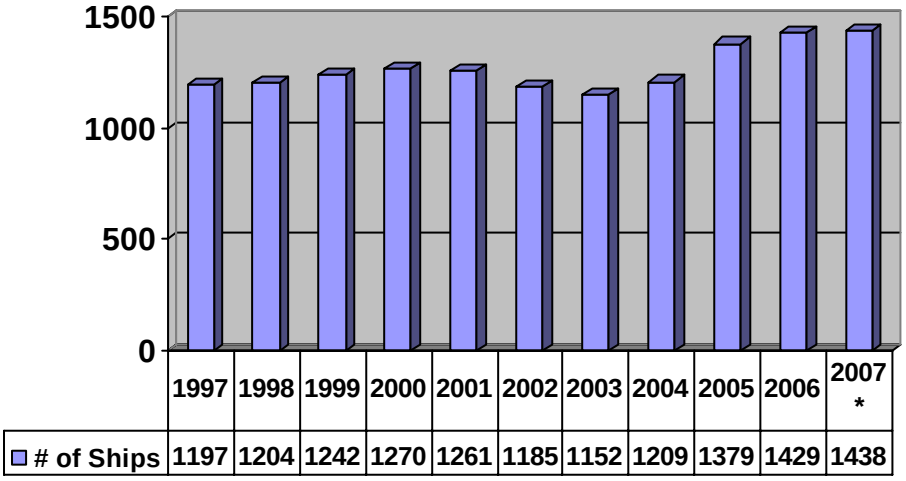
Table 23. Evolution of Turkish Merchant Fleet (1980-2007)

YEARS	# of Ships	DWT (1000)	Change %	GRT (1000)	Change %	World Rank
1995	1,143	10,310	20.7	6,239	22.5	17
1996	1,179	10,893	5.6	6,622	6.1	16
1997	1,197	10,563	-3	6,525	-1.5	17
1998	1,204	9,760	-7.6	6,463	-1	17
1999	1,242	10,322	5.8	6,778	4.9	18
2000	1,270	9,489	-8.1	6,044	-10.8	18
2001	1,261	9,307	-1.9	6,002	-0.7	20
2002	1,185	8,666	-6.9	5,736	-4.4	19
2003	1,152	7,627	-12	5,113	-10.9	20
2004	1,209	7.055	-7.5	4,772	-7.1	23
2005	1,379	7,603	7.2	5,229	9.6	24
2006	1,429	7,271	-4.4	5,083	-2.8	25
2007*	1,438	7,212	-	5,060	-	26
*2007 values are the numbers until April month						

Source: DTO, 2008

Regarding a unit-based analysis, the majority of the 1379 units of the total Turkish fleet in 2005 were composed of dry cargo ships with a share of 29.66 percent, followed by fishing vessels with 11.6 percent, oil tankers with 8.63 percent, bulk carriers with 8.19 percent and tugboats with 7.32 percent share. Other types of ships makes up the rest 34 percent share (DTO, 2008). If the DWT capacity is considered, the majority of the 7.6 million DWT of fleet is composed of as follows respectively: 53.17 percent bulk carriers, 17.02 percent dry cargo, 16.06 percent oil tankers. The DWT share of the other ships is 13.21 percent (DTO, 2008). After considering the peak season of Turkey (2005), in terms of units of 2007, 29.97 percent of total 1438 ships are dry bulk carriers, 11.89 percent of them are fishing boats, and 9.04 percent of them are liquid petroleum tankers. (DTO, 2009) In terms of deadweight, bulk carriers have 46.98 percent of the total DWT, while dry bulk carriers have 19.39 percent and, liquid petroleum tankers 18.13 percent of total share. And lastly, in terms of gross tonnage (GRT) bulk carriers have 39.3.6 percent of the total share while, dry bulk carriers have 17.42 percent, liquid petroleum tankers have 13.94 percent and RO-RO ships have the 7.2 percent of total share. (DTO, 2007)

Figure 16. Turkish Merchant Fleet (1997 – 2007)



*2007 values only include the number until April, 2007
Source: DTO, 2008

In order to accelerate the progress of Turkish marine industry and increase its contribution to the economy, Turkish International Ship Registry (TISR) has been effectuated on December 16th, 1999 and put into force on 21 December 1999. The aim of the law is easing the procurement and the operation of the ships registered to TISR and commercial yachts that are registered in the inventories of tourism companies (Ministry of Justice, 2008).

In terms of national and international ship registries of Turkish merchant fleet, 702 of 1379 ships are registered in national (50.9 percent) and the remaining 677 ships are rolled under international registries (49.1 percent). Evaluating vessels in deadweight (DWT), 11.2 percent of the fleet is registered in national and the remaining 88.8 percent is registered in international ship registries. In terms of GRT, these shares are 15.6 percent and 84.4 percent for national and international ship registries, respectively (DTO, 2008) Assuming that ships over 1500 DWT are available for international transport 96.73 percent of the total DWT of the fleet is capable of transporting internationally. When registry distribution is analyzed for ships over 1500 DWT, it is observed that large tonnage ships prefer international registries.

Table 24. World Merchant Fleet Rankings January 2007

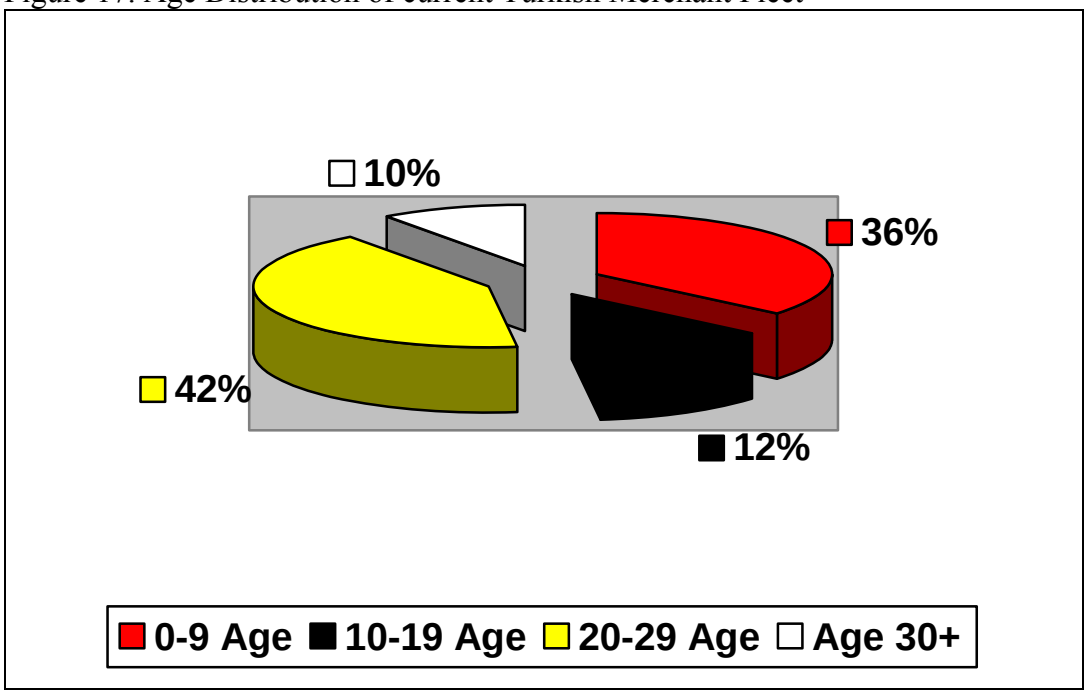
Rank	Flag	# of Ships	GRT (1000)	DWT (1000)	TEU (1000)	% in World Fleet	Annual Change %
1	Panama	6015	153425	230506	2128	22.8	9.6
2	Liberia	1804	67067	103068	1803	10.2	13.2
3	Greece	1091	32193	54829	227	5.4	4.5
4	Hong Kong	1081	32736	54776	527	5.4	8
5	M. Islands	840	32134	53431	450	5.3	11.9
6	Bahamas	1221	39087	52427	371	5.2	5.8
7	Singapore	1196	31148	49587	453	4.9	4.5
8	Malta	1235	24603	40102	216	4	8.5
9	China	2364	22026	33440	344	3.3	4.7
10	S. Cyprus	883	19082	60233	382	3	0.3
11	U.K.	862	19750	26030	578	2.6	3.8
12	Norway	979	16908	23010	101	2.3	405
13	S. Korea	1008	9577	15450	109	1.5	11.3
14	Japan	2557	11478	14048	35	1.4	0.3
15	India	429	7900	13527	18	1.3	5.2
16	Italy	776	12367	13234	138	1.3	12.5
17	Germany	455	11167	13164	90	1.3	-1.8
18	U.S.A.	515	9910	1164	277	1.2	-1.6
19	Denmark	378	8400	10241	407	1	7.3
20	A Barbuda	1043	7783	10233	625	1	8.8
21	Iran	218	5069	8858	48	0.9	-1
22	St. Vincent	667	5779	8664	82	0.9	3.6
23	Bermuda	135	8012	8568	64	0.8	3.7
24	Malaysia	442	5791	7897	66	0.8	5.6
25	France	228	5686	7343	146	0.7	9.2
26	TURKEY	848	4770	7239	54	0.7	-4.4

Source: ISL, 2008

According to the world ranking in 2007, Turkish merchant fleet is on the 26th place. As seen on Table 24, Panama has the peak position in ranking with 22.8 percent, Liberia is the runner up having 10.2 percent, and Greece has the 5.4 percent of the total share which brings the third place. Panama and Liberia are the first two countries in rankings however this is because they are called “tax haven” countries. Taxes are less than other countries’, bureaucratic applications finalize quicker and flag state necessities are more ship owner-friendly than other countries’. Moreover, there are countries such as Antigua Barbuda, Marshall Islands, Bahamas, and Saint Vincent which are called “tax haven” countries (Lakeway, 2009). In order to pay less tax for the ship owner and gain money from maritime industry, countries which do not have any connection to any seas, such as Mongolia, has ships registered to their account (Azakli, 2009).

Regarding the average age of the total fleet over 150 GRT, the average age of the 1379 ships is 21.13. With respect to DWT capacity, 36 percent of the Turkish fleet takes place in “zero to nine” age group, 12 percent in “ten to nineteen” age group, 42 percent in “twenty to twenty nine” age group, and the remaining 10 percent is located under “thirty and over” age group. (See Figure 17)

Figure 17. Age Distribution of current Turkish Merchant Fleet



Source: DTO, 2008

Furthermore, it is observed that the oldest types of ships are dry cargo ships and bulk carriers. Regarding that the commercial life of ships is about 25 years, 43 percent of dry cargo ships, and 57 percent of bulk carriers will be to the end of their lives within 5 years in Turkish fleet (DTO, 2007). Under international carriage agreements and contracts, age of 20 is regarded as the limit and the older ones are told to be excessively obsolete (Azakli, 2009). Turkish ship owners experience difficulties in making bids for international transports since their aging fleet brings technical deficiencies and

difficulties in implementing technological innovations to these ships; hence, they are not preferred (DTO, 2006).

From this point of view, it is obvious that new ship building and modernization of the existing fleet is necessary for Turkish merchant fleet. As of 01 January 2006, world fleet (over 200 GRT) consists of 41,110 ships composed of almost 945 million DWT. The position of Turkish merchant fleet in world fleet has deteriorated from 16th order in 1996 to 24th order in 2006 (see Table 24), and constitutes 0.8 percent of the world fleet. Neighboring country Greece took place in the 3rd order in world ranking with a share of 5.6 percent (DTO, 2007). Turkish merchant fleet may be regarded as insufficient in haulage demands. Main ship types are also insufficient in terms of number and capacity. And approximately 50 percent of the total merchant fleet is aged. Turkish merchant fleet should be renewed by taking into account transport demand.

Current Situation of Ports

Ports may be defined as the bases of entry and exit of goods to the economy that are subject to trade (Boske and Cuttino, 2003). A port is significant component for the integration of economy with the rest of the world and they provide effective and active operation of maritime transport operations. As a global fact, great share of international trade is realized by sea routes in Turkey, namely 86 percent (DTO, 2008). Though Turkey is located in the center of world sea routes, it is difficult to play a significant role in transit transport because of difficulties in adjusting technological progress, deficiencies in infrastructure and inefficiencies in railway connections which will provide integration with ports to inner cities (Parola and Sciomachen, 2004).

According to Turkish Private Port Administration Foundation, total Turkish shoreline is 8333 km and there are 165 ports on those shores where ships , over 500 GRT, can berth and where can be used for cargo transportation (TURKLIM, 2008).

As declared by the Undersecretaries of Maritime Affairs, total freight handled in 2005 is decomposed as: 25,5 percent of exports, 59,5 percent imports, 13,2 percent cabotage and 1,8 percent transit (DTO, 2006). Turkish ports have freight handling capacity of 350 million ton/year. In terms of freight capacity, these shares are 91 million ton/year general cargo, 128 million ton/year bulk freight, 122 million ton/year liquid, 4.6 million TEU containers. In 2006 243.6 million ton freight is handled. 31.5 million tons of that is crude oil, 4 million tons is liquefied gas (LPG/LNG) and quantity of handled container is 4 million TEU (Virahaber, 2009).

Based on these data above, it seems that Turkey uses roughly 70 percent of its freight handling capacity in general but still considering the capacity utilization rate of 2005 (59 percent), it has shown progress. But this is not valid for container transport which has a capacity utilization rate of 87 percent (Virahaber, 2009). This situation points to the inefficient utilization of port capacity.

In fact, ports in Turkey display a problematic structure since port capacities are insufficient (Virahaber, 2009). Only 165 of 400 ports are able to handle over 500 GRT ships. Their superstructure and infrastructure are old-fashioned and there is not much effort for modernization as shown for road transportation's. Furthermore, if the ports are not connected to their hinterlands by railways the problem of congestion remains constant around ports, which points out the significance of the intermodal compatibility within maritime transport (Azakli, 2009).

Figure 18. Main Ports in Turkey Administered by Private and Public Administration

Source: UTIKAD, 2009

As seen on the Figure 18, Turkish ports are clustered in certain locations especially in Aliaga in Aegean Region, Iskenderun and its surrounding in Mediterranean Region and, Izmit and Ambarli (Istanbul) in Marmara Region.

Public ports are operated by TCDD in Turkey which owns 7 ports (Haydarpasa, Izmir, Mersin, Samsun, Bandirma, Derince, and Iskenderun) that have connections with railways. Privatization process for TCDD ports are still going on in different phases of bidding. In addition to this, in the scope of privatization, 13 ports are privatized currently (TDI, 2008).

Table 25. Capacity and Physical Conditions of TCDD Ports

Ports	H.Pasa	Izmir	Samsun	Bandirma	Derince	Iskenderun	TOTAL
Total Length of Dock (m)	2765	2959	1756	2788	1092	1426	17390
Port Area (1000m²)	320	902	588	246	312	750	4110
Maximum Draft	12	13	12	12	15	12	-
Annual Ship Berthing Capacity	2651	3640	1130	4280	862	640	17890
Total Handling Capacity (1000 ton / year)	5427	6419	2380	2771	2288	3247	28663
Total Dock Capacity (1000ton/year)	8558	11100	4300	7008	2991	6097	51000
Container Handling Capacity (1000ton/year)	354	549	40	40	40	20	1362
Container Storing Capacity (1000ton/year)	269	343	50	50	100	146	1330
General Cargo Storing Capacity (1000ton/year)	689	884	6866	2013	2984	9286	31220

Source: TCDD, 2008

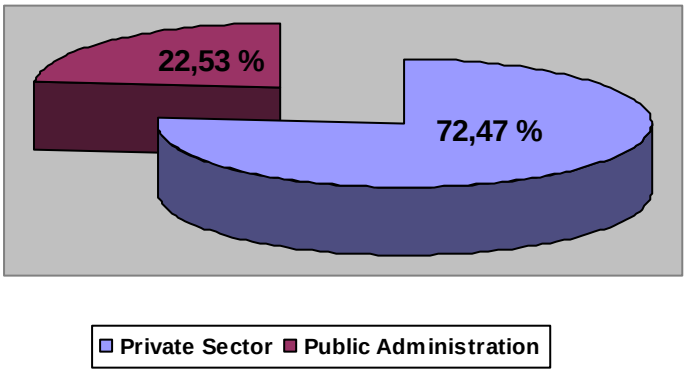
Main aims of the privatization are the low tariff structure, increase in efficiency, developing trade, and decreasing state dependence on investments (Erdal, 2005). However, privatization process of ports has been commenced without an efficient model of privatization and thus this process is still incomplete (Azakli, 2009). This situation is an outcome of the Turkish transportation system which still has not had a master plan.

Table 26. Cargo Types Handled in Turkish Ports in 2007

	2004	2005	2006	2007
Container (TEU)	3,081,351	3,301,140	3,822,727	4,708,160
General Cargo& Dry Bulk (Tone)	58,595,690	66,369,580	76,682,873	93,538,405
Liquid Bulk (Tone)	12,630,464	12,328,127	11,447,348	14,399,177
Vehicles	-	-	716,041	1,014,808

Source: TURKLIM, 2008

Figure 19. Shares in Cargo Handlings in Turkish Ports



Source: UTIKAD, 2008

In the Terminal Operations Conference and Exhibition (TOC) Europe 2007, which is realized in Istanbul in June 2007, an expectation of 100 % growth in world container market in 2020 was expected. If this growth rate is realized it is also foreseen that world container traffic will be seven times of today's values. In this perspective, Turkey need to take advantage of this trend by investing in ports in accordance with intermodal transport by providing transport corridors in east-west and south-north direction (Virahaber). Besides the monopoly of general cargo handling in Turkish ports, Container traffic in Turkey has also an increasing trend as shown in the Table 27.

Table 27. Container traffic in Turkish ports (TEUs)

	2003	%	2004	%	2005	%	2006	%
TURKLIM Members	1,061,479	2.52	1,400,285	5.44	1,567,142	7.47	1,884,635	9.30
TCDD Ports	1,416,054	6.72	1,656,696	3.77	1,721,845	2.16	1,892,403	9.50
Others	18,857	76	24,370	79	12,153	0.37	45,689	0.20
TOTAL	2,496,390	100	3,081,351	100	3,301,140	100	3,822,727	100

Source: TURKLIM, 2008

Based on the forecast on container handling between years 2010 and 2020 in Turkey, yet in the pessimistic scenario it is expected to double itself and reach to 8,552.63 TEUs in 2020. With the optimistic scenario it is expected to reach to 12,349,609 TEUs. If these governmental forecasts become true, current ports will be insufficient and new investments will be mandatory (TUSIAD, 2007).

According to Ferrari (et al, 2006), Ambarli which is located on the north shores of the Sea of Marmara, 34 km away from Istanbul, is one of the five ports in South Mediterranean that significant developments are underway, The port strategies for Ambarli aim to further strengthen the competitive position and turn the port into a more modern and efficient container-handling center. Private entrepreneurships are giving boost to the port such as Armaport, the second largest container terminal in Ambarli, such as Marport which is a joint venture formed by the Arkas Shipping subsidiary, Limar, and the MSC (Aksayli, 2009).

Furthermore, some covered storage areas are said to be under construction (Ferrari et al., 2006). Mersin, moreover, can count on a free trade zone, established in 1986 within the port domain. There are various services supplied in this port which are mainly; warehousing and, manufacturing, banking, insurance, packing-repacking, labeling, assembly-disassembly, and maintenance.

According to Demirtaş, president of the Izmir Chamber of Trade, current capacity of Turkish ports cannot handle the increasing trade volume in the future (Kobifinans). On the other hand, according to a study prepared by TURKLIM, with the current and future plans and strategies; Turkish ports' container handling will be 13.2 million TEUs, general cargo and dry bulk cargo capacity will be 187 million tons, liquid bulk cargo capacity will be 29.2 million tons and vehicle handling capacity will be 2.9 million units in 2015 (UTIKAD, 2008). This analysis will be meaningful with another study of TURKLIM which claims again for 2015 that, container handling will be 6,527,000 TEUs in a pessimistic scenario and 10,100,000 TEUs in an optimistic scenario. However, these studies do not mean that there will not be scarcity of handling capacity; instead they postpone the capacity crisis to 2021. Furthermore, handling capacity will be adequate for the ports in Marmara Region while on the other hand; there will be scarcity in capacity in Aegean and Mediterranean Regions in regard of 2015. The situation of crisis for all types of goods causes an urgent port expansion in Aegean and Mediterranean regions according to Demirtaş (Kobifinans, 2008).

Sea Transportation

International Maritime Transportation

Turkey's international maritime transports include export and import freights loaded and unloaded in Turkish ports as well as transit freights of other countries that are also loaded and unloaded in Turkish ports. Exported and imported goods' transportation of Turkey is increasing continuously beginning from 1996 while share of Turkish fleet is declining for the same period. Regarding 2005, only 43,068,271 tones out of 181,684,894-total freight are transported by Turkish fleet. Whereas, in the same period, the total transport volume has doubled itself in Turkey (See Table 28).

Table 28. Export and Import Transports of Maritime Industry 1996-2005 (tones)

Years	Total	Export	Import	Turkish flag	Turkish flag (%)	Foreign flag (%)
1996	91,680,312	18,846,074	72,834,074	36,057,963	39.3	60.7
1997	112,373,431	37,009,695	75,363,736	32,935,901	29.3	70.7
1998	104,076,233	24,773,274	79,302,959	33,856,861	32.5	67.5
1999	110,901,420	32,923,267	77,978,153	31,792,427	28.7	71.3
2000	118,248,056	32,291,101	85,956,955	36,082,371	30.5	69.5
2001	113,414,358	40,633,756	72,780,602	35,196,754	31	69
2002	125,244,852	39,065,012	86,179,840	41,178,590	32.9	67.1
2003	140,150,438	41,476,801	98,673,637	39,745,043	24.8	75.2
2004	151,755,314	47,058,194	104,697,120	34,918,160	23	77
2005	181,584,894	54,509,720	127,075,174	43,068,271	23.7	76.3

Source: DTO, 2008

When the share of Turkish flagged ships in export and import transports are analyzed, it seems that both shares are in decline. In 2005 25.1 % of imports and 20.4 % of exports are transported by Turkish flags. This situation might be evaluated as a consequence of high detention rates of Turkish flags in recent years. Although Turkey has moved from “high risk” to “medium to high risk”’ list in 2005 (see Table 32), this situation did not affected external trade transports. Yet, this is an important progress for Turkish maritime industry. Though, the amount of goods transported by Turkish flagged vessels has increased in external trade transports, the share remains in decline for years (See Table 28).

Table 29. Share of Turkish and foreign ships in external trade

Years	Turkish				Foreign			
	Import (tones)	%	Export (tones)	%	Import (tones)	%	Export (tones)	%
1996	28,615,896	39.3	7,442,071	39.4	44,218,178	60.7	11,404,167	60.5
1997	24,732,557	32.8	8,103,344	21.9	50,631,179	67.2	28,906,351	78.1
1998	26,674,042	33.6	7,182,819	29	52,628,917	66.4	17,590,455	71
1999	24,290,639	31.2	7,501,788	22.8	53,687,514	68.8	25,421,479	77.2
2000	27,565,778	32.1	8,517,593	26.4	58,391,177	67.9	23,774,508	73.6
2001	25,174,302	34.6	10,022,452	24.7	47,606,300	65.4	30,611,304	75.3
2002	31,096,923	36.1	10,081,667	25.8	55,082,917	63.9	28,983,345	74.2
2003	29,946,962	30.3	9,798,081	23.6	68,726,675	69.6	31,678,720	76.4
2004	26,452,733	25.3	8,465,427	18	78,244,387	74.7	38,592,767	82
2005	31,929,338	25.1	11,138,933	20.4	95,145,837	74.9	43,370,786	79.6

Source: DTO, 2008

Types of freight preferred for the foreign trade have crucial impact on the importance of the goods transported while analyzing the international maritime transportation. Recently, being in parallel with increasing trade volumes, a variety in ship types and specialization in sea transport is observed (See Table 30). The largest shares of exports by sea which is 54.5 million tons due to freight types are as follows: 17.7 percent iron-steel products, 11 percent petroleum products, 8.2 percent cement. In 2005 imports by sea are realized as 127 million tons of which 25 percent constitutes crude oil products, 14.9 percent coal, 14 percent scrap iron/iron ore (DTO, 2008).

According to the statistics of Turkish Chamber of Shipping which has the latest update of the year 2007; 11.8 percent, 7 percent, and 6.56 percent of 62.9 million tone Turkish maritime exports were construction steel, feldspar, and BOTAS raw petroleum respectively. On the other side, 15.75 percent, 15.51 percent, and 10.82 percent of 139.8 million tone Turkish maritime imports were raw petroleum, coal and scrap steel respectively (See Table 30).

Table 30. Main Exported & Imported Items in Turkish Maritime Transport

Exported Goods	Amount (tone)	%	Imported Goods	Amount (tone)	%
Const. Steel	7,473,233	11.9	Raw Petroleum	21,953,414	15.7
Feldspar	4,405,155	7	Coal	21,694,748	15,5
Raw Petroleum	4,126,000	6.6	Scrap Steel	15,137,666	10,8
Cement	2,913,753	4,6	Steel Roll	7,745,957	5.5
Fuel Oil	2,619,110	4.2	Iron Ore	5,968,193	4.3
Gas	1,912,128	3	Diesel Oil	4,895,731	3.5
Clinker	1,519,248	2.4	LNG	3,630,503	2.6
Diesel Oil	1,474,432	2.3	LPG	3,220,492	2.3
Steel Roll	1,230,021	2	Ingot	2,777,356	2
Ingot	1,222,447	1.9	Gas Oil	2,378,548	1,7
Marble	914,938	1.5	Fertilizer	2,247,236	1.6
Other	13,567,137	21.6	Other	29,627,741	21.2
Full Container Load (FCL)	19,538,296	31.1	Full Container Load (FCL)	18,578,343	13.3
TOTAL	62,915,898	100	TOTAL	139,855,928	100

Source: DTO, 2008

As seen in the Table 30, among the main items, full container load items has the biggest share in exports with 31.05 percent, while the share is 13.28 percent in terms of

imported goods. This data is a supporting point for this dissertation in terms of intermodal transportation since; containers are the main carrying packs of the traded goods. Furthermore, regarding tone/km values, maritime transportation is the cheapest mode of transportation therefore, especially improving the cabotage transportation and container carriage will decrease the transportation costs for the end customers besides the benefits for intermodal transportation to be spread within the whole country.

Table 31. The First 20 Country for Turkish Maritime Trade In Terms of Total Volume in 2007

Country	Export ($ x1000)	Import ($x1000)	TOTAL	Export (tone)	Import (tone)	TOTAL (tone)
Russia	11,738,572	1,825,320	13,563,892	1,636,858	32,328,102	33,964,961
U.S.A.	3,523,694	3,907,666	7,431,360	4,730,428	8,000,189	12,730,618
Ukraine	2,930,379	902,471	3,832,850	1,134,899	9,761,351	10,896,250
Italy	4,307,006	4,125,276	8,432,282	7,201,687	2,286,776	9,488,463
China	8,977,515	995,904	9,973,419	3,359,102	5,374,910	8,734,012
Romania	2,052,213	560,837	2,613,050	719,100	4,906,339	5,625,439
Spain	2,822,311	2,646,660	5,468,972	4,058,439	1,268,423	5,326,862
U.K.	2,293,378	3,808,479	6,101,857	1,785,724	2,742,123	4,527,847
Germany	5,144,610	2,319,688	7,64,298	1,131,228	2,005,955	3,137,183
Greece	537,493	698,154	1,235,647	1,571,527	1,050,096	2,621,623
Bulgaria	959,451	242,403	1,201,854	498,130	1,968,187	2,466,318
Belgium	1,672,047	828,729	2,500,776	764,715	1,695,613	2,460,328
France	3,845,316	2,544,075	6,389,391	1,142,154	1,270,877	2,413,032
Canada	485,592	312,595	798,188	443,059	1,783,209	2,226,269
Sweden	638,599	356,680	995,279	209,486	1,978,278	2,187,764
Netherlands	1,183,690	1,092,462	2,276,152	876,725	1,182,323	2,059,048
Australia	278,171	202,058	480,229	89,043	1,804,315	1,893,358
Portugal	242,358	500,010	742,368	909,262	140,067	1,049,329
S. Korea	2,430,783	88,542	2,519,325	64,915	671,881	736,795
Poland	631,664	230,065	861,729	169,247	536,225	705,472
TOTAL	48,300,674	27,468,313	75,768,988	29,249,448	77,902,611	107,152,063

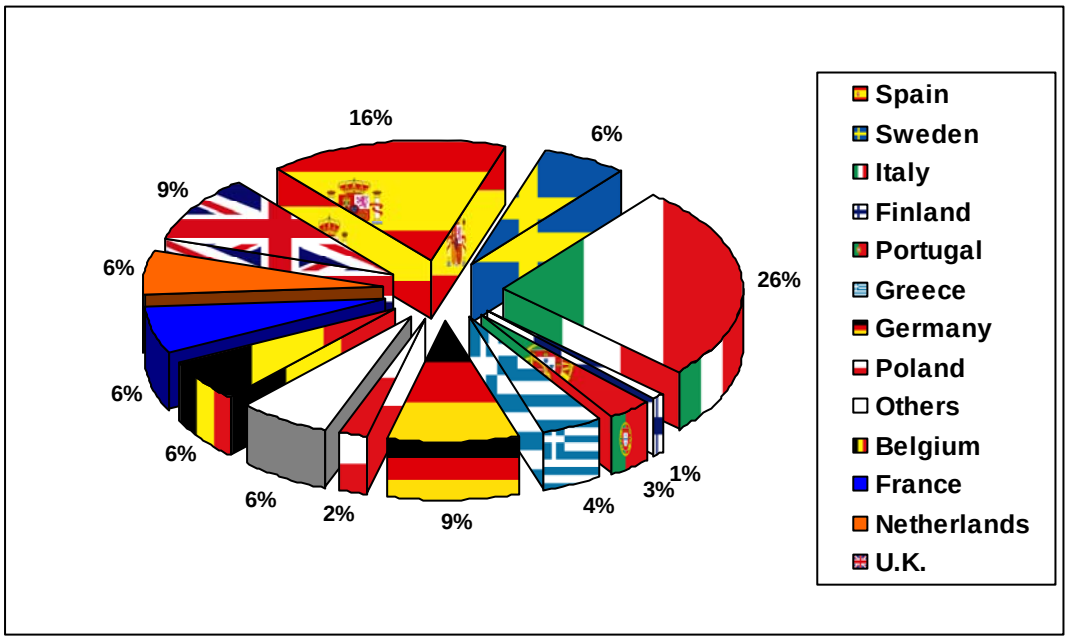
Source: UTIKAD, 2008

In terms of countries that transportation made from/to, 46.5 percent of total maritime export transportation and 55.7 percent of total maritime import transportation in 2007 was made through these 20 countries stated above. Russia comes first in both terms of volumes transported and the value of the goods (See Table 31).

Considering international transportation by sea routes with EU countries, it is recorded as 35,632,675 tons in 2006. 19,600, 702 tons of total freight is exports and

16,031,943 tons of it is imports. 26.2 % of total trade volume is realized with Italy, 15.5 % with Spain and 9 % with United Kingdom (See Figure 20).

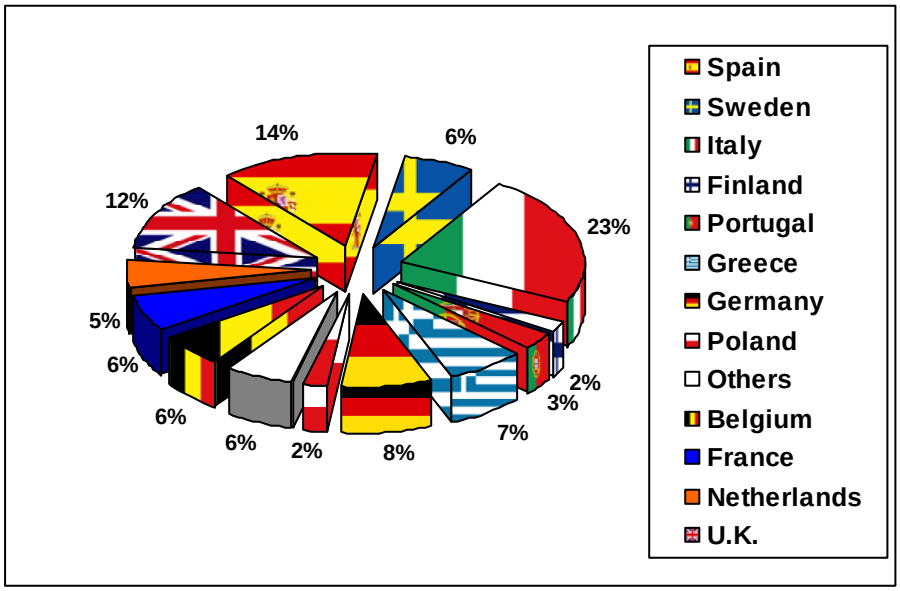
Figure 20. External trade maritime transports with EU Countries in 2006



Source: DTO, 2007

For the year 2007, aggregate trade volume made via maritime transportation was 39 million tones and 18 million tones of this volume were under export terms and 21 million tones of this volume were imported goods. The first three EU Countries in terms of maritime transportation of the foreign trade goods are; Italy, Spain and U.K. which have 23 percent, 14 percent, 12 percent respectively. (See Figure 21)

Figure 21. External trade maritime transports with EU Countries in 2007

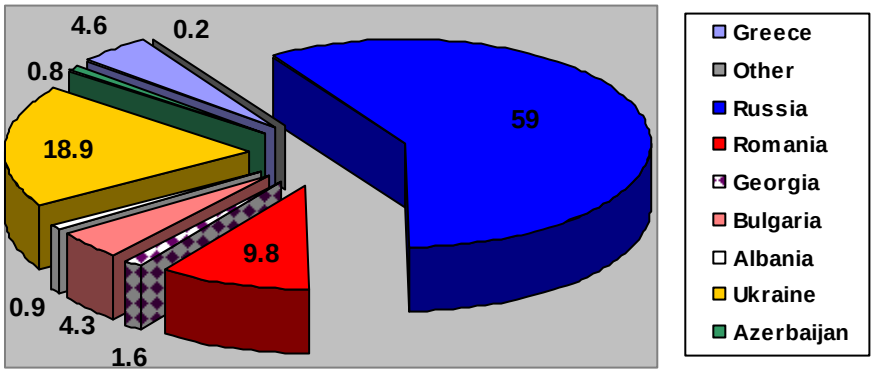


Source: DTO, 2008

It is observed that, Turkish maritime transportation increased to 39 million tones in 2006 where the number was 35.6 in 2005. In the same period, imported goods' volume increased from 16 million tones to 21 million tones while, on the other hand, imported goods' volume decreased from 19.6 to 18.1 million tones.

In 2006, maritime trade with the Organization of Black Sea Economic Cooperation (BSEC) Countries was 57.5 million tones composed of; 6.3 million tones of exported goods and 51.2 million tones of imported goods (See Figure 22). The first three countries are Russia, Ukraine, and Romania obtaining 59 %, 18.9 % and 9.8 % respectively. The reason behind high shares of Russia and Ukraine is the import of petroleum and natural gas. In terms of trade value, those three countries obtain 58.53 % (Russia), 16.54 % (Ukraine), and 11.28 % (Romania) total value of USD 23,172,323,000 (UTIKAD, 2007).

Figure 22. Maritime Trade with BSEC Countries In Terms of Volume (tons)



Source: BSEC, 2008

Cabotage Transport

As for maritime transportation, the Ottoman Empire had granted large privileges to foreign companies in coastal shipping through capitulations. The maritime lines which are forming the traditional Ottoman transport were also in the dominance of foreign capital, and domestic maritime business was indefensible due to cabotage rights provided by capitulations to the foreigners (Kepenek et al., 2003).

Cabotage includes transport activities that are loaded and unloaded in Turkey's ports. Under Cabotage Law (No: 815, official gazette 28 April 1926 no. 358) this activity is allowed to be performed by Turkish vessels only. Cabotage transportation cannot show the same acceleration as foreign transportation via maritime has (Erdal, 2005). There has not been a continuous upward or downward slope of cabotage transportation. Total cabotage value in 2000 was 37,327,805 tones while in 2001 it was 26,281,398, a 29.6 percent decrease occurred in the total value. Furthermore, though it rose until 2006, the cabotage volume was 20.3 percent lower in 2006 than the volume of 2000. In addition to this, 232.4 million tones of goods handled in 2006 in Turkish Ports

however, only 12.79 percent of those goods were transported between two national ports (UTIKAD, 2007).

In terms of container loading, cabotage handling seems more desperate. In 2006 there were 3,850,000 TEUs of container loading handled and only 0.55 % of that amount was cabotage handling. In 2006 cabotage loading was 13,595,664 tones and discharging was 14,682,817 tones (See Figure 23). 41.68 % of the loaded cargo was dry cargo and 58.32% percent was liquid. Izmit, Aliaga, and Çanakkale are the most cabotage loaded ports in 2006 (Undersecretaries of Maritime Affairs, 2009).

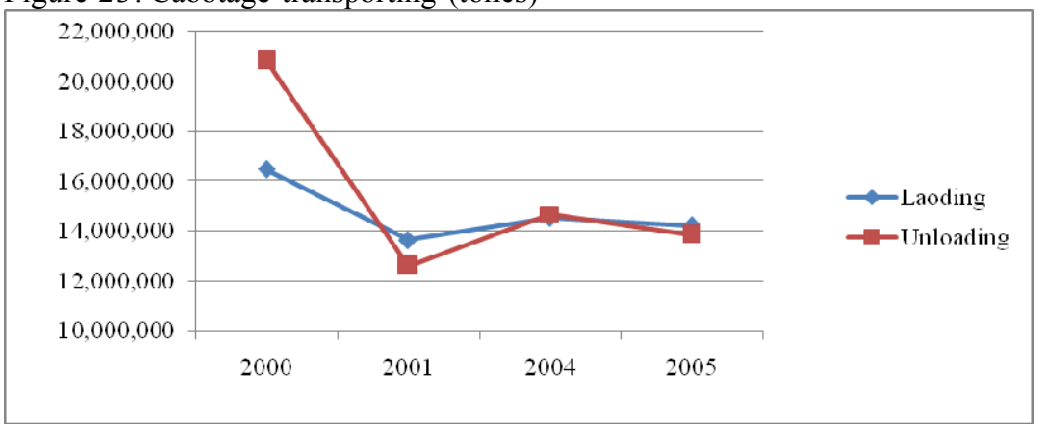
As a result, although maritime transportation increases in foreign trade in parallel with the development of Turkish Economy, cabotage transportation can not achieve the same performance. According to UTIKAD (2008), the most serious reason behind the underdeveloped status quo of the cabotage transportation is that ports are subject to customs duty and therefore, getting in and out of a port in Turkey for the goods which are not subject to customs duty is so hard in real terms since there is no legal regulations made for those type of goods.

This situation increases the time and cost of the cabotage transported cargoes since they are subject to the same reason of what foreign goods subject to. Therefore, rather than using a near port, preferring road transportation is easier for the senders. Although the preventing article of November 7th, 2003 about this issue has been modified on 20 March 2008, (Undersecretaries of Maritime Affairs, 2009) it is not as feasible as the road transportation.

Data related with cabotage freight transport is one of the most problematic data to reach in Turkey. There is not any information about quantity of freight

loaded/unloaded in 2002 and 2003. Theoretically, loaded and unloaded quantities must be in balance within Turkish borders. However, because of problems in registering data, different standards implemented in loading and unloading and of many other reasons the data is not consistent.

Figure 23. Cabotage transporting (tones)



Source: DTO, 2006

In 2005 cabotage loading and unloading are recorded as 14,238,305 tons and 13,858,655, respectively (See Figure 23). These volumes of transport point to the law utilization of sea transport in internal trade. In order to vitalize cabotage transport and arrange competition rules a reduction is granted in port tolls (DTO, 2007). In June 2003, the excise duties were eliminated in accordance with their technical features for freight and passenger ships, commercial yachts, service, and fishing boats that are registered in National Registry and Turkish International Ship Registries (Vergiturk). Following the law, in 2004 190 million TRY and, in 2005 246.6 million TRY excise duties were not collected which is regarded as cost-reduction for the ship owners (DTO, 2007).

Administrative and Legal Structure of Maritime Transportation

In the administrative level Undersecretaries of Maritime Affairs being the leading administrative authority, there exist many administrative associations and institutions (Undersecretaries of Maritime Affairs, 2009). While some of them are

directly related to maritime transport, some serve as supporting administrative institutions to the industry (Erdal, 2005). Since some ports are operated by TCDD, board of ports affiliated to Ministry of Transport may be counted as administrative authority. These authorities may be summarized as: Ministry of Transport, General Directorate of Railways, Harbors and Airports Construction (DLH), TCDD, Directorate General of Coastal Safety, Turkish Maritime Administration (TUSIAD, 2007).

Turkey is a party to many international organizations and conventions in the field of maritime. It is a member state of International Maritime Organization (IMO) since its establishment and is a contracting party to IMO Convention which includes 31 international conventions and protocols in total according to official legislation data of Undersecretaries of Maritime Affairs. Besides IMO Convention, Turkey is a contracting party to Brussels Convention for the Unification of Certain Rules of Law relating to Bills of Lading (The Hague Rules-1924); is United Nations Convention on the Carriage of Goods by Sea which is known as Hamburg Rules (1978), though not ratified this convention yet.

Providing navigation, life, property and environment safety at sea is one of the main targets of the EU. Hence EU *Acquis* attaches great importance to safety issues. Especially, after the big accidents occurred need for amendment of the existing EU legislation has born and also amendment of common rules has come up to order on the IMO platform. EU legislation in this field comprises of many directives and they must be transposed to national legislation by member and candidate countries. Turkey 2006 Progress report prepared by European Commission states that good progress could be reported in legislative alignment and strengthening of administrative capacity in the area of maritime transport, particularly in the field of safety (CEC). Alignment with the

Acquis in the field of maritime trade will only be possible to be transposed to national legislation with the membership as directives in question require membership.

> Law on the Protection of Competition No. 4054 (Official Gazette: 13 December 1994, no 22140) constitutes the legal framework against anticompetitive practices and it is applicable to all sectors of the economy in Turkey. There are no maritime services given by the government. So, there are no state-appointed operators. Also, selection of 'providers to the public' is also subject to the procurement legislation (Directorate General of EU, 2006).

Regarding aid schemes given to maritime industry, the exemption from customs duties and related taxes for imported equipment for shipbuilding or repair yards under the terms of Law on the Development of Maritime Commercial Fleet and Support of Ship Building Facilities (Official Gazette: 21 January 1982, no 17581) is applicable as stated in the law. Concerning technical conditions, Turkey has two types of ship registries, namely Turkish International Ship Registry and National Ship Registry. Turkish International Ship Registry is regulated by the Law on Turkish International Ship Registry (Official Gazette: 21 December 1999, no 23913).

Most important safety issues include flag state implementation and port state control. Flag state implementation is responsible for ensuring that Turkish-flag vessels are inspected in accordance with both Turkish regulations and, for vessels on international voyages, the appropriate international memorandums, conventions, and protocols that Turkey has ratified or adopted. Furthermore, it is responsible for taking all other steps necessary to give these instruments fully in order to ensure that, a Turkish ship is fit for the service intended in terms of safety of life and environmental protection (Official Gazette: 19 August 1993, no 21673).

These security conditions are standardized under certain procedures by "classification societies". They apply guidelines to assist flag states in the implementation of IMO instruments and criterias indicated in the Annex of the By-Law (Directorate General of EU, 2006), Authorized Ship Inspection and Survey Organizations are Turkish Lloyd (TL), American Bureau of Shipping (ABS), Det Norske Veritas (DNV), Nippon Kaiji Kyokai (Class NK), Lloyd's Register (LR), Germanischer Lloyd (GL), Bureau Veritas (BV) and Registro Italiano Navale (RINA). Turkish Lloyd has not been recognized among these societies because of the fact that only a member state shall request recognition from Commission and a classification society shall class certain number and tonnage of ships (Azakli, 2009). In consequence; the ships classed by Turkish Lloyd are subject to more inspection in Paris MOU Ports due to targeting factors.

Regarding port state control, Turkey is a State Party to Black Sea Memorandum of Understanding (MOU) and Mediterranean MOU. According to IMO definition, Port State Control (PSC) is the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules (IMO, 2008). If flag states had been implementing their duties successfully, there would be no need for port state controls (Yavuz, 2003). In order to execute port state control, By-law on Port State Control has entered into force in March 2006.

> The efficiency of flag state control has increased via employment of new surveyors, training of existing surveyors and non-scheduled surveys, and as a result, the detention rate of Turkish flagged ships according to Paris MOU is in a downward trend (Secretariat General for the European Union Affairs, 2006, p. 69).

Evolution of detention rates of Turkish flagged ships in Paris Memorandum of Understanding (MOU) is shown in the Table 32.

Table 32. Detention rates of Turkish flagged ships in Paris MOU

Years	Average detention rate of Paris MOU	Average detention rate of Turkish flagged ships (TF)	Excess factor (TF-PMOU)	Category
1998	14.31	30.6	16.29	very high risk
1999	9.5	24.5	15	very high risk
2000	9.5	23.8	14.3	very high risk
2001	9.09	24.59	15.5	very high risk
2002	7.98	18.78	10.8	very high risk
2003	7.05	17.49	10.44	very high risk
2004	5.84	8.63	2.79	high risk
2005	5.74	7.85	2.11	medium to high risk
2006	5.76	7.31	1.55	medium risk

Source: Derived from Paris MOU Annual Reports

According to the Black, Gray, and White List 2007 published by Paris MOU in June 5th, 2008, Turkey has driven through black list to Gray List (PMOU, 2009). With this progress, development may be expected in the credibility of Turkish flag. According to Andrea Tassoni (2009), an official of European Maritime Safety Agency (EMSA), claims that Turkey has the potential of getting into white list in three prospecting years. This European belief for possibility tantalizes Turkish ship owners, and therefore affects Turkish foreign traders. Progress in the field of safety legislation alignment is worth appreciation. The main legislative activities regarding flag state implementation, port state control, traffic monitoring, technical, and operational rules transposed to national legislation issues are handled successfully.

Regarding maritime security, IMO adopted a new international maritime security regime in the form of amendments to the Safety of Life at Sea (SOLAS) Convention 1974 and a new International Ship and Port Facility Security (ISPS) Code.

After the Diplomatic Conference in which ISPS Code was adopted, Turkey made intensive efforts for effective implementation of the ISPS Code.

> Best way of improving safety at sea is by developing international regulations that are followed by all shipping nations. IMO's first task when it came into being in 1959 was to adopt a new version of the International Convention for the Safety of Life at Sea (SOLAS), the most important of all treaties dealing with maritime safety. IMO has also developed and adopted international collision regulations and global standards for seafarers, as well as international conventions and codes relating to search and rescue, the facilitation of international maritime traffic, load lines, the carriage of dangerous goods and tonnage measurement (IMO, 2009)

Thirteen Recognized Security Organization (RSOs) for ships and fourteen RSOs for port facilities to carry out certain assessment, approval, verification, and certification activities according to SOLAS XI-2 and ISPS Code are authorized by Government of Turkey. 583 vessels under Turkish flag have been covered by and 175 port facilities are implementing ISPS Code. The Government of Turkey has authorized 10 organizations to train Ship Security Officers (SSO), Company Security Officers (CSO) and Port Facility Security Officers (PFSO) taking into account the guidance given in Part B of the ISPS Code (Secretariat General for the European Union Affairs). By-law on Implementation of ISPS code which is prepared for alignment with Regulation (EC) 725/2004 of the European Parliament and of the Council of 31 of March 2004 on enhancing ship and port facility security and of Directive 2005/65/CE of the European Parliament and of the Council of October 26th, 2005 on enhancing port security was published in the Official Gazette No.26468 dated 20 March 2007. This By-Law includes all principles and procedures of EU Acquis *(*Turkish Prime Ministry, 2009).

According to the Progress Report on Turkey prepared by the European Commission (2007), in the area of maritime transport, there has been further progress

concerning legislative alignment and strengthening of administrative capacity. Implementing regulations were issued on the inspection and certification of ships, Ro-Ro passenger ships, registration of passengers on ships and the safety of passenger ships, response to pollution by oil and other harmful substances, a vessel traffic monitoring and information system, and the international ship and port security (ISPS) code. Training of flag-state and port-state inspectors continued. The procedures to become a signatory party to certain international conventions (SOLAS-78, SOLAS-88, and Mar-Pol annexes III and IV) have not been finalized. Turkey moved from the black list to the gray list of the Paris Memorandum of Understanding. The detention rate of Turkish vessels improved slightly, however it remained too high with a rate over 7%. The rules on market access and ship registration are not in line with the Acquis. Preparations in this industry are advancing at a good pace (EU Official Website, 2009).

Investment Projects

In Turkey, port infrastructures have been generally planned in a conventional way. New investment projects are planned in order to build ports which will meet the infrastructure needs for international container transports. Candarli Port Project is planned to serve as container complex in Aegean region for container transport (Deniz Haber, 2009). It will be one of the top ten largest ports in the world and can accommodate 15,000 employees. The Candarli Port will be at the same distance to Main Container Transport line which crosses Mediterranean with Piraeus Port and it is regarded as more advantageous compared to Piraeus Port in the access of Asia-Mediterranean. It will have total capacity of 2 millions TEU per year. Filyos Port Project is a regional development project besides being a container complex with a capacity of 25 million tones per year. Mersin Container Port is planned as container

transfer center because of its adequate position in order to meet future demand towards Central Asia and Middle East. It will have 4 million TEU/year capacities (Vira Haber).

Finally, the last project, Derince Container Terminal Project is planned in order to serve to freight towards Kocaeli Gulf and Central Anatolia. And it is expected to create an alternative to Haydarpaşa Port with its road and railway connections. It is planned to have a capacity of 1 million TEU per year. But main problem of the investment projects is financing. Studies on the realization Çandarlı and Filyos Port Projects by build-operate-transfer model are going on (Vira Haber, 2009).

Air Transportation in Turkey

Overview of the Industry

The first aviation activities in Turkey have started in 1912 as an establishment of two hangars and a small port in Sefaköy nearby Ataturk Airport of today (Turkish Aerospace Industries). In 1925, institutional foundations of Turkish Aviation have started with the establishment of Turkish Aeroplane Association of which name has changed as Turkish Aeronautical Association'' in later times (Turkish Civil Aviation). In 1933, the first civil air transport operator, named ''Turkish Air Mails'' which has only a small fleet of 5 aircrafts, has started its operations. In the tenth year of Turkish Republic, State Operation Administration of Airlines under the Ministry of National Defense was established with the mission of establishing civil airline operators and performs transport activities (Turkish Civil Aviation).

As stated in the Annual report of DHMI (2007), Turkey has a large and very important airspace (982,286 km²), located in the center of three continents (Europe, Asia and Africa). Due to its strategic geographical location, Turkish airspace includes

crossroads of north-south and east-west traffic flows between Europe, Asia, Russia, and the Middle East. Air transportation industry has experienced a significant development process, particularly as from the second half of 1980's in conjunction with the entry into force of the Law on Civil Aviation No 2920 published in Official Gazette on 19 October 1983. Within this period, Turkish Airlines (THY) has started to enhance its fleet in the framework of a modernization and standardization program. Besides, an increase has been observed in the number of private industry airlines, fleet capacities and their shares in the industry (THY, 2009). At the end of the 1980's, airport investments have focused on enhancing the standards of existing airports rather than building the new ones. In late 1990's, in the framework of "Build-Operate-Transfer" model, which is a new model of financing in Turkish civil aviation industry, many airport investments have been realized (DHMI Annual Report 2007).

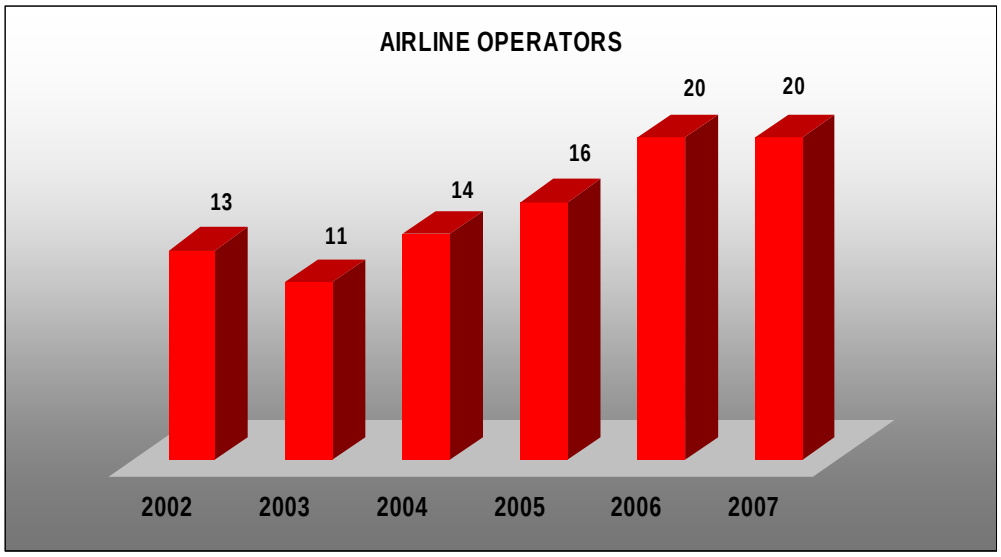
1992 has been the year of renaissance for the air transport industry and the industry has kept this situation until 1995 (Ministry of Transport Sub-commission, 2009). Once more, be obliged to a national economic crisis in 2001 and terrorist attacks in USA, so called "9/11 Event", the air transportation industry in Turkey has brought to a standstill at the very beginning of the new millennium. Radical declines in airline and passenger traffic have been experienced and industry has come fast across bottlenecks. Airline operators have reduced their fleet and staff, while canceling some of their flights and decreasing the frequency of their flights in some lines in order to be able to recover from the crisis (THY, 2009). Moreover, Iraq War, various contagious diseases such as SARS, and increase in oil prices influenced air transport industry all over the world. After 2003, the industry has entered into a progress and Turkey has further, benefited from this trend (Erdal, 2005). Due to both rise in administrative structuring and

increasing interest of entrepreneurs; values of fleet, airport, and passenger have experienced considerable increases (TUSIAD, 2007).

Current Situation of Airways

If civil aviation activities are to be classified, they can be ordered as flight, manufacturing, maintenance and support activities. Flight activities include commercial flights, civil aviation, education, and other activities such as agricultural activities, ambulance services, fire prevention etc. Support activities include airport navigation services, airport services and ground handling services (Ministry of Transport Sub-commission, 2009). According to the official data provided by Directorate General of Civil Aviation, there are 20 in 2007 and 19 airline operators in Turkey in 2009 (See Figure 24). Total number of aircraft in Turkish fleet is 250 (see Figure 25) and, not surprisingly, THY fleet accounts for the greatest share of the fleet as seen in the Table 33.

Figure 24. Airline Operators in Turkey



Source: Directorate General of Civil Aviation, 2008

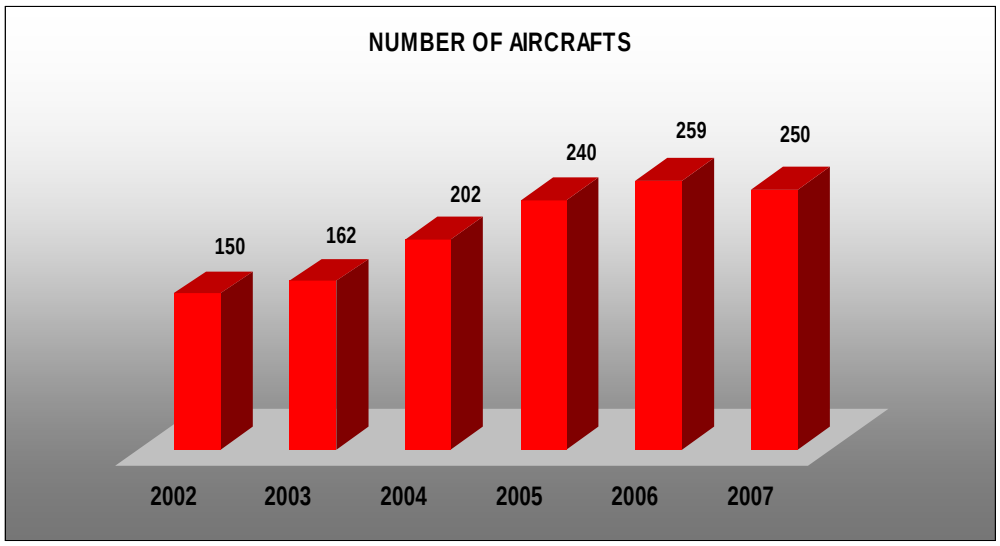
The inevitable increase in oil prices influenced the Turkish air transport industry all over the world (See Figure 24). After 2003, industry went through to a growth trend and Turkey gained advantages from this trend (Turkish Civil Aviation, 2008). Due to both leaps in administrative structuring and increasing interest of entrepreneurs, values of fleet, airport and passenger have exposed considerable increases (TUSIAD, 2007).

Table 33. Airline Operators in Turkey (2009)

Airline operator	Passenger craft	Cargo craft	Seat capacity
Turkish Airlines	102	1	17,931
Cyprus Turkish Airlines	8		1,645
Fly Air	9		905
Onur Air	27		6,682
Inter Express Airlines	5		595
Atlas Jet	15		2,362
Sky Airlines	7		1,089
Freebird Airlines	5		980
Sun Express	12		2,363
Pegasus Airlines	17		3,001
Kuzu Airlines Cargo		5	
Saga Airlimes	5		1,061
Golden Arlines	1		217
World Focus Airlines	3		495
Corendon	4		632
MNG Airlines	1	16	9
ACT Airlines		6	
Iz Air	3		396
Best Air	3		600

Source: Derived from the individual fleet data of the relevant airline operators' websites in February, 2009

Figure 25. Number of Aircrafts of Turkey



Source: Directorate General of Civil Aviation, 2009

Furthermore, there are 57 air taxi operators which own a total of 193 aerial vehicles (aircraft, helicopter, light aerial vehicle, seaplane, and balloon) in 2007. Moreover, there are 30 general aviation operators equipped with 128 aerial vehicles in 2007, and also there exist 44 operators which are authorized for agricultural aviation and 13 hospitals which are competent for performing air ambulance services (Ministry of Transport, 2009).

Operation right of civil airports belongs to General Directorate of State Airports Authority (DHMI) while civil-military airports are operated by Turkish Armed Forces (TSK). Under DHMI, there are 38 airports operated. Istanbul Ataturk, Ankara Esenboga, Izmir Adnan Menderes, Antalya, Mugla Dalaman, Adana, Trabzon, Milas–Bodrum, Isparta Suleyman Demirel, Nevsehir Cappadocia, Erzurum and Gaziantep Airports are open for international and domestic flights, both regular and charter (DHMI, 2009).

Bursa-Yenişehir, Canakkale, Denizli-Cardak, Tekirdag-Corlu, Kars, Kayseri, Konya, Balıkesir-Korfez, Malatya, Samsun-Carsamba, Van Ferit Melen, Sivas,

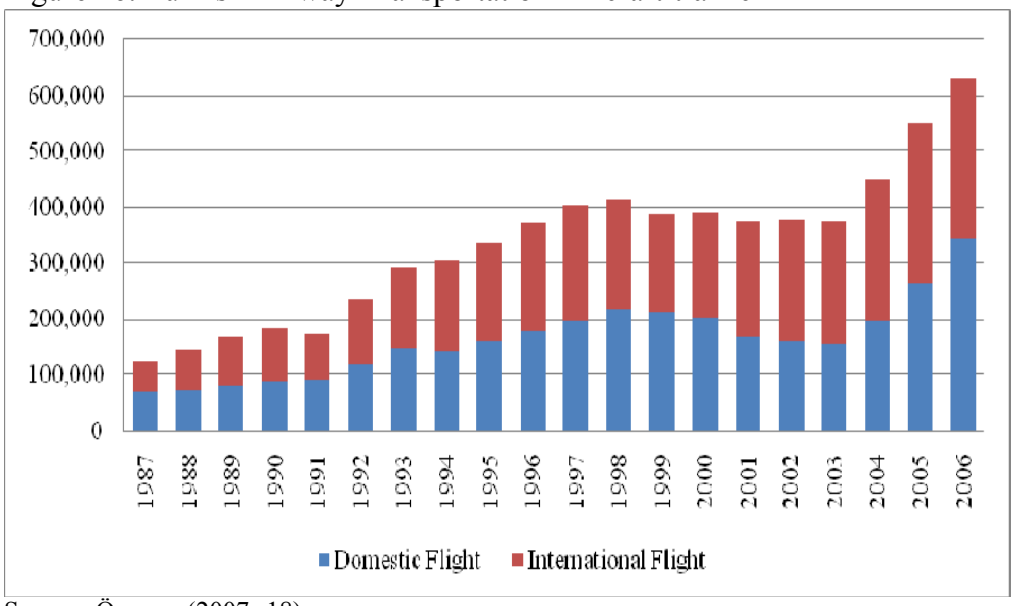
Sanliurfa GAP and Usak Airports are for international unscheduled and domestic flights. And lastly, Adiyaman, Agri, Balıkesir-Merkez, Diyarbakir, Elazig, Erzincan, Hatay, Kahramanmaras, Mardin, Mus, Siirt, and Tokat Airports are open only for domestic flight (THY, 2009).

Some of the airports mentioned above are operated together with military authorities. The rights of use of these civil-military aerodromes of Dalaman Airport and Balikesir, Bursa-Yenisehir, Denizli-Cardak, Corlu, Diyarbakir, Erzurum, Kayseri, Konya, Malatya, Mus and Sivas Airports have been given to DHMI and the Command of the Air Forces. The rights to use Elazig and Erzincan Airports have been given to DHMI and the Command of the Land Forces; and the right to use Çanakkale Airport has been given to DHMI and the Command of the Naval Forces (Turkish Civil Aviation Airport List, 2009).

Airway Transportations

As indicated in Figure 26, air transportation industry has been experiencing significant developments, predominantly from the second half of 1980's in coincidence with the entry into force of the Law on Civil Aviation (Turkish Civil Aviation, 2009). Together with the new millennium, significant progress in the number of passenger transportation and aircraft traffic has been observed. Particularly, with the permission of Ministry of Transport to private operators in terms of performing domestic flights, the first private domestic flight was performed on October 20th, 2003 and domestic aircraft traffic has started to increase considerably starting from the end of 2003 Turkish Civil Aviation (Korul and Kucukonal, 2006, p.5).

Figure 26. Turkish Airway Transportation Aircraft traffic



Source: Özenen (2007: 18)

Total aircraft traffic between 2002 and 2007 has grown by 76 percent, while international aircraft traffic increased by 31 percent (DHMI 2002-2007 Statistical Report). The effect of the permission to perform national flights given to national operators is clearly seen by the growth of national aircraft traffic by 120 percent.

Table 34. Cargo Traffic in Turkey (2002-2007)

	2002	2003	2004	2005	2006	2007
Number of aircrafts	138	138	142	202	245	250
Freight carried domestic lines(tone)	181,198	188,936	262,647	315,858	373,055	414,192
Freight carried international lines (tone)	698,935	742,255	860,461	933,697	973,934	1,131,833
Source: Ministry of Transportation General Directorate of Civil Aviation, 2009						

As seen in Table 34, freight carried in domestic lines increased by 2.24 times in five years. On the other hand, international lines carried 1.6 times more freight in 2007 than in 2002. Freight carried in international lines is in decline regarding these five years. The ratio was 3.85 for the benefit of international lines however; it drops to 2.72 though still for the good of freight carried through international lines. A positive point to consider, freight carried within domestic lines increased by 3.85 times in five years.

This is a benefit for the airway transporters where on the other hand, senders accept to pay more for transportation in order to have the quickest results. Those increases can be evaluated as being more attractive to the customers or just the increasing number of aircrafts which seems almost doubling itself in five years.

Considering the passenger traffic in air transportation there has been an enormous increase in the number of passenger traffic. Between 2002 and 2007 number of domestic line passengers increased from 8.5 million to 31.97 million which corresponds to a growth rate of 276.1 percent. Within the same period, the international line passenger traffic increased from 25.05 million to 38.38 million; an increase by 53.2 percent. Growth with regard to total passenger traffic has been recorded as approximately 109.7 percent (See Table 35).

Table 35. Passenger Traffic in Turkey (2002-2007)

YEAR	DOMESTIC LINE PASSENGERS	INTERNATIONAL LINE PASSENGERS	TOTAL NUMBER OF PASSENGERS
2002	8.500.839	25.054.613	33.555.452
2003	9.128.124	25.296.216	34.424.340
2004	14.438.292	30.596.297	45.034.589
2005	20.502.516	35.042.957	55.545.473
2006	28.799.878	32.884.325	61.684.203
2007	31.970.874	38.381.993	70.352.867
percentage change (2002-2007)	276,1	53,2	109,7
percentage change (2007-2008)	11,0	16,7	14,1

Source: DHMI 2002-2007 Statistical Report

Administrative and Legal Structure of Air Transportation

As in other modes, there are various authorities in terms of Turkish air transportation. Directorate General of Civil Aviation(SHGM-Sivil Havacılık Genel Müdürlüğü), General Directorate of State Airports Authority (DHMI-Devlet Hava Meydanları Işletmesi) and General Directorate for the Construction of Railways, Seaports and Airports (DLH-Demiryollar Limanlar ve Hava Meydanları İnşaatı Genel Müdürlüğü) are the performing authorities to air transportation.

SHGM is responsible for the development and administration of civil aviation industry in accordance with international safety and security requirements by taking up the necessary measures, preparing regulations, auditing and supervising, applying sanctions and, certifying and licensing (Turkish Civil Aviation, 2009).

The airport administration in Turkey and provision of the air traffic service and its control in Turkish Airspace are performed by DHMI. DHMI further, is responsible for constructing airport facilities and setting up necessary systems, installing and setting up air navigation systems and facilities and other related systems (DHMI, 2009). DLH draws up plans and programs for building airports, prepares projects and specifications, ensures the implementation of plans, and projects (Secretariat General for the European Union Affairs, 2007).

International Dimension of Air Transportation

At present, in terms of standardization, Turkey has the membership of International Civil Aviation Organization (ICAO), European Civil Aviation Conference (ECAC), Joint Aviation Authorities (JAA), and European Organization for the Safety of Air Navigation (Eurocontrol) (Turkish Civil Aviation). As a consequence of Turkey's

membership in these international organizations, DGCA follows the international standards and rules, and ensures their implementation in the Turkish civil aviation industry.

The International Civil Aviation Organization, ICAO, is an expert agency of the United Nations and was created with the signing of the Convention on International Civil Aviation. ICAO in Chicago, in December 1944 is the permanent body charged with the administration of the principles laid out in the Convention. It sets the standards for aviation safety, security, efficiency, and regularity, as well as for aviation environmental protection, and encourages their implementation. ICAO's membership contains 189 Contracting States (ICAO, 2007, p. 1). Turkey ratified the membership of ICAO on June 5, 1945 with the law no 4749 (TUSIAD, 2007).

European Civil Aviation Conference, ECAC is founded in 1955 as an intergovernmental organization. Its objective is to promote the continued development of a safe, efficient, and sustainable European air transport system. Thus, ECAC seeks to harmonize civil aviation policies and practices amongst its Member States and to promote understanding on policy matters between its Member States and other parts of the world. It has close liaisons with the ICAO and the Council of Europe and active co-operation with the institutions of the European Union (ECAC). At present, it has 42 members in which Turkey is a founding member state in 1955.

Eurocontrol is a civil and military organization which currently has 38 member states. Its principal objective is to develop a flawless, pan-European Air Traffic Management (ATM) system. In order to deal with the growth in air traffic, while maintaining a high level of safety, reducing costs, and respecting the environment, this objective must be achieved as stated in the website of Eurocontrol (2009).

Eurocontrol Convention was ratified by Turkey on December 2nd, 1988 law no 3504 with being in force since March 1st, 1989 (Directorate General for European Union Affairs, 2007). The Joint Aviation Authorities, JAA, is an associated body of the ECAC representing the civil aviation regulatory authorities of member European States who have agreed to collaborate in developing and implementing common safety regulatory standards and procedures. This cooperation is intended to provide high and consistent standards of safety and a "level playing-field" for competition in Europe". At present there are 42 member states in JAA (2009). SHGM signed JAA Arrangements on March 26th, 1996 and it entered into force through the publication in official gazette dated September 2nd, 1997. From May 5th, 1997 Turkey is represented as a "candidate member" in JAA Board and JAA Committee. As a result of the intensive efforts shown after entitling as a candidate membership, those efforts and goodwill of Turkish side was approved by JAA Committee and Turkey was granted a full membership in JAA Board meeting in Brussels on March 4th, 2001 (UTED, 2009) .

As other modes faced the situation of being ignored when they first introduced to Turkey, airway transportation faced the same situation and recently, is confronting the difficulties and trying to attract the attention of recent governments in terms of infrastructure. Former governments thought that building an airport to every city is enough for investment though it meant wasting the public account collected through taxes. Recently, Ministry of transportation arranges meetings in order to invest and improve the cargo terminal of Ataturk Airport (AHL) since, AHL is the heart of airway cargo transportation of Turkey however, does not have sufficient infrastructure, actually, far behind the times of today's world standards (Erdal, 2005). In addition to its underdeveloped standards, AHL cargo terminal is stuck within the Ataturk Airport.

Therefore, the mode of future; intermodal transportation through air-rail type cannot be achieved under these standards and mentality (Lojistik Haber, 2009).

According to the 2007 Progress Report of Turkey prepared by the European Commission, in the area of air transport some progress can be reported. Implementing legislation was adopted on liability insurance for air carriers, on occurrence reporting in civil aviation, on licensing and rating of air traffic controllers, on certification and licensing of safety electronics staff, reporting and assessment of safety incidents, on approved maintenance organizations and commercial air transport operators. The General Directorate of Civil Aviation (GDCA), which has become financially autonomous, started generating revenues from service charges as well as from the issuing of licenses to operators and ground handling organizations. GDCA also completed its re-organization, recruited new staff, and established another branch in Antalya. GDCA staff is foreseen to nearly double to 300 within four years. Turkey has not engaged with the Commission in negotiations on a horizontal air transport agreement, and does not accept Community designation, a fundamental requirement under Community law. Air Traffic Management is suffering from a lack of regional cooperation. The lack of communications between air control centers in Turkey and the Republic of Cyprus is seriously compromising air safety in the Nicosia Flight Information Region. Besides underdeveloped infrastructure of cargo terminals, the progress report states the importance of safety regulations' improvements where also stated that preparations in this area are underway.

CHAPTER 4

INTERMODAL TRANSPORTATION

Intermodal transportation is a new concept for Turkish transport industry. As the other developments in various fields, logistics industry cannot benefit from intermodal transportation as much as the rest of the world does. The main technical reason behind this problem is that there is no master plan for the industry and therefore, the necessary improvements cannot be applied. Most of the developed countries try to shift their transportation modes from road to railway and seaway through intermodal transportation. The situation is not different in Turkey, however this shifting effort progresses gradually (See Tables 36 and 37).

Table 36. Transportation Mode Shares in Turkish Exports (%)

Mode of Transportation	2003	2004	2005	2006
Railway Transportation	0.84	0.91	1.03	1.07
Maritime Transportation	49.17	49.49	48.21	49.97
Other	0	0.03	0.47	0.16
Airway Transportation	6.83	6.18	5.41	5.61
Road Transportation	43.12	43.29	44.73	43
Static Transportation (Pipeline etc.)	0.04	0.1	0.14	0.16
TOTAL	100	100	100	100

Source: DTM, 2008

Table 37. Transportation Mode Shares in Turkish Imports (%)

Mode of Transportation	2003	2004	2005	2006
Railway Transportation	0.93	1.29	1.56	1.59
Maritime Transportation	57.29	58.21	57.16	58.53
Other	0.13	0.06	0.1	0.07
Airway Transportation	12.18	12.6	11.19	9.89
Road Transportation	25.72	24.74	25.73	23.85
Static Transportation (Pipeline etc.)	3.66	3.1	4.26	5.55
TOTAL	100	100	100	100

Source: DTM, 2008

Dealing with the infrastructure problems of intermodal transportation seems almost impossible for the near future, since there are insufficient funds left for the railway transportation although it seems to get the most attention (Aksaylı, 2009). In this respect, though there are lots of deficiencies, there are serious improvements in the legislation for issues of using your own wagon or renting private wagons. In addition to that, decreasing bureaucratic obstacles and the close attention of the private logistics industry are the signs of progress for a better transport system (Güvenler, 2009).Together with the maritime transportation, transportation of goods via railways is the best alternative for the road transportation especially for the high-volume and long-distance transportation (Erdal, 2005).

All transportation modes have pros and cons. For instance, airway is the fastest mode to transport the goods however, the limited size of the cargo and the huge costs are considerably important for the senders. Furthermore, maritime transportation is the cheapest for carrying goods in bulk and overseas if necessary however, at least one connection is needed in order to reach the final destination. As stated in the Table 38 below, intermodal transportation provides the greatest

opportunity among all modes that can pick and choose the advantages of other modes and can eliminate as many disadvantages as possible.

Table. 38. Evaluation of Modes of Transportation

	Advantages	Disadvantages
Train	• Low cost • Security • Suitable for large quantities • Quick handling	• Limited coverage • Long and expensive investment for rails • Transshipment is necessary (with exceptions) • Additional damage cost following with higher packaging costs
Truck	• Flexible • Suitable for small quantities • No transshipment is needed • Low packaging costs	• Low security • High costs • Pollution • Higher energy consumption • Restrictions especially at borders • Dependent on weather conditions
Ship	• Suitable for bulk (big) cargoes • Low cost	• Long transit time • Always a transshipment is needed
Aircraft	• High speed • Low risk for loss and damage • Lower cost of insurance and packaging	• High costs • High energy consumption • Transshipment is required • Not suitable for large quantities

Source: International Transport and Logistics, Ayguler, 2007

Furthermore, in comparison to costs and environmental effects, railway transportation is both better for the consignee / consignor and the environment. In addition to this, EU supports the preference of waterway and railway transportation of the shipping of goods into Europe, especially shipped via non-EU countries. It is then observed that, for the future, Turkish logistics industry must be using RO-RO and RO-LA transportation methods more (Erdal, 2005).

4.1. The Concept of Intermodalism

Jennings (et al, 1996) believes that *"constraining the meaning of intermodality to coordinated transportation of goods in containers or trailers by combination of truck and rail, with or without ocean-going link"* limits the researches

conducted in this area and ultimately the potential to create an integrated transportation system. In this situation, it will be valuable to engrave different definitions for the concept. There are several terms defining the concept of intermodal transport. The terms “intermodal”, “multimodal”, “combined” and “through transport” are sometimes assumed to be the same and interchangeable (Islam, 2005). The European Conference of Ministers of Transport (ECMT) defines intermodal transportation as the movement of goods in one and the same loading unit or vehicle that uses successively more than one mode of transportation without handling of the goods themselves while changing the modes. The need for more efficient transport systems in developing countries is a concern of the United Nations Conference on Trade and Development (UNCTAD) where the preferred term is multimodal transport. The United Nations Convention on Multimodal Transport defines multimodal transport as (UNCTAD, 1994):

> The carriage of the goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which goods are taken in charge by a multimodal transport operator to a place designated for delivery situated in a different country.

Many developing countries are unable to provide all the necessary components of transportation and communications infrastructure which are required for intermodal system to function efficiently (Deveci et al, 2003). In these countries a multimodal system, which can be seen as an interim stage on the way to full intermodalism, is a more realistic target (Gray and Kim, 2001). UNCTAD advocates multimodal transport as a type of service where a multimodal transport operator assumes a contractual responsibility to move goods from a point of origin to a destination under a transport contract, for an agreed price with - possibly - a time limit for the delivery.

According to UNCTAD (2007) an intermodal system requires unitary liability of the intermodal operator. As told above, the ECMT definition requires that there is no handling of the goods/items during transport chain. This requirement rules out the possibility of performing any value adding activities such as third party logistics services in the terminals. Furthermore, it rules out the possibility of changing cargo-carrying equipment according to the possibilities and requirements of the different transport modes.

The Effects of Intermodal Transportation

The role of an efficient transport system in providing a catalyst for national economic growth is well-rehearsed as transport and logistics service quality which influence both the demand for products and service, delivery cost and time (Islam, 2005). Competition between the modes has tended to produce a transport system that is segmented and un-integrated. Each mode has sought to exploit its own advantages in terms of cost, service, reliability, and safety. All the modes saw each other as competitors. The lack of integration between the modes was also accentuated by public policy that has frequently barred companies from owning firms in other modes (as in the United States before deregulation) (Rodrigue, 2008), or has placed a mode under direct state monopoly control (as in Europe). Intermodality was also favored because of the difficulties of transferring goods from one mode to another, thereby incurring additional terminal costs and delays (Deveci, et al.2003).

Islam (2005), in his research on Bangladesh's intermodal system and opportunities talks about theoretically sufficient but in fact problematic intermodal system. He mostly claims that intermodal system eliminates the high ship turnaround times in part which increase transport cost, transit times, and unreliability. Moreover,

intermodal transportation serves as a catalyst for removing trade barriers (Kunadhamraks and Hanaoka, 2007).

At the micro level, costs and the quality of services are the major factors in determining the competitiveness in the logistics industry where Porter (1990) has identified these factors as the key success factors for a company or the whole industry. The major objectives of intermodalism are to increase the speed of cargo distribution and reduce the amount of cost spent for transportation. Since new international trade patterns require quicker, cheaper, and faster transport of goods than in the past, the main obstacle was found to be at each transport mode interface causing delay and increasing the cost of the whole transport chain rather than a moving part of that chain (Tangzon, 2007). Thus, both in developed countries and in developing countries the intermodalism is gaining ground (Deveci et al, 2003). For instance, since the road transportation in Spain is costly, a distribution center based on intermodality in Valencia, Spain was built (Hummels, 1999). Proving this point, Zarzoso (2003), in his research on Spanish ceramic industry's transportation problems, claims that the transportation cost estimation shows that high distance and poor infrastructure lead to a notable increase in transportation costs, and high transportation costs significantly deter international trade.

Demand for freight transport is a "derived demand" (Kotler, 2002) which means that, it is a part of the economic process, therefore, it is strongly influenced by global competition, customized production, the concentration of supply centers, and distribution depots (Deveci et al, 2003). Freight transportation is closely linked with production and distribution processes and therefore it tries to meet the increasing quality requirements in terms of flexibility, speed, and reliability (Sanchez, 2003).

Taking into account the complex interaction of sourcing, suppliers, manufacturers, retailers and consumers, freight intermodality requires the integration of a broad range of transport services in the supply and distribution chains.

The concept of intermodalism provides rational cargo handling, safe storage, and quicker turnarounds of ships, rail wagons, trucks, and prevention of loss, theft, and contamination (Erdal, 2005). It also ensures increased productivity in the ports and other interchanging points, and an efficient cost effective transport network, thereby promoting the growth of international trade.

The underlying principle for intermodal transport solutions stems from the merits of the various modes of transportation and from relative merits due to problems in other modes. As for the relative merits of the various transport modes, these are primarily of two kinds (UNCTAD, 2002). One is the obvious ability of certain transport modes to cover geographical areas where there is no other alternative. For example, in most cases, road transport is the only alternative mode in the transport system; whereas, there are other instances where waterborne transport is the only practical transport solution. The other kind of relative merit is the economies of scale. In logistics, there are often economies of scale, for instance, the unit price decreases with increasing volume, and there is economy in using a large means of transport as long as it is filled with cargoes (Boske and Cuttino, 2003). On the other hand, there are diseconomies in using oversized means of transport. Big manufacturers have big potential in cost reduction once they learn to concentrate their flows on a few channels (Deveci et al, 2003).

By doing so, the cargo volume allows for a very high frequency for the waterborne transport. This again leads to flexibility in the logistics system through

approaching the flexibility of road transport. In Table 39 below are given expected benefits with increased use of intermodal transport for different stakeholders.

Table 39. Expected Benefits of the Intermodal Transport for Different Stakeholders

Stakeholder	Expected Benefits
(Domestic) Shipping Companies	Development of a new product and entering of new markets (earnings & employment)
Existing Shippers	Lower transport costs, more transport opportunities, more alternatives, greater reliability and safety
Potential (new) Shippers	Better access to market, opening up of new markets, more transport opportunities, lower transport costs
Railways	A potential growth of the market and segments where competition with road transportation can succeed.
Road Transportation	Improved economics, greater flexibility for crew operations (within constraints of prevailing driving and resting regulations)
Forwarding Industry	Greater range of transport alternatives, lower costs (earnings & employment)
Intermodal Transport Operators (or MTOs)	Improved economics, more transport alternatives, lower costs (earnings & employment)
Authorities, policy makers and the society at large	More transport alternatives, enabling limitation of traffic congestion and more safety, emission of hazardous materials, and energy use.

Source: Infolog, 2000. Public Final Report

Historical Development of the Concept of Intermodality

Since the 1960s major efforts have been made to integrate separate transport systems through intermodalism. This involves the use of at least two different modes in a trip from origin to destination through an intermodal transport chain (Rodrigue, 2008). Intermodality enhances the economic performance of a transport chain by using modes in the most productive manner (Erdal, 2005). Thus, the line-haul economies of rail may be exploited for long distances, with the efficiencies of trucks providing flexible local pick up and delivery. The key is that the entire trip is seen as a whole, rather than as a series of legs, each marked by an individual operation with separate sets of documentation and rates (Güvenler, 2009).

According to Rodrigue (2008), from a functional and operational perspective, there are two different components involved in intermodalism. Intermodal transportation, as the first component, is the movement of freight from one mode of transport to another, commonly taking place at a terminal specifically designed for such a purpose; and secondly, transmodal transportation is the movement of freight within the same mode of transport.

Thus, transportation systems having several modes can be considered from two different conceptual perspectives: intermodal transportation network as a logistically linked system using two or more modes of transportation with a single rate where modes have common handling characteristics and permit freight to be transferred between modes during a movement between an origin and a destination; and secondly, multimodal transportation network as a set of transport modes offering connections between a set of origins and destinations (Rodrigue, 2008).

Intermodal transportation has significant connections with technology since it requires management units for freight such as containers, swap bodies, pallets, or semi-trailers. In the past, pallets were common management units, however, their relatively small size and lack of protective frame made their intermodal handling labor intensive and prone to damage or theft (Güvenler, 2009). Better techniques and management units for transferring freight from one mode to another have facilitated the functioning of the intermodal transfers. Early examples include piggyback (TOFC: Trailers on Flat Cars), where truck trailers are placed on rail cars, and LASH (lighter aboard ship), where river barges are placed directly on board sea-going ships (Intermodal Association of North America: IANA, 2009).

The major development certainly has been the container, which permits easy handling between modal systems. Containerized traffic has surged in recent years, underlining its adoption as a privileged mean to ship products on international and national markets (Azaklı, 2009). Double-stacking of containers on railways (COFC: Containers On Flat Cars) has doubled the capacity of trains to haul freight with minimal cost increases, thereby improving the competitive position of the railways with regards to trucking for long-haul shipments (Intermodal Association of North America, IANA, 2009). Containers have become the most important component for rail and maritime intermodal transportation.

Containerization is the central part of the total intermodal transport concept (Guvenler, 2009). Containerization involves heavy capital investments for the development of an intermodal transport system. Investments are required in cellular container ships, rail flats, truck trailers, container boxes, terminals equipped with container handling cranes such as gantry cranes, large container stacking yards, railway terminals for transfer operations, inland container depots, container freight stations and mobile cargo/container handling equipment such as forklift truck and spreaders etc (Deveci, et al, 2003).

The movement of containerized cargo by inland waterways is not very popular as component leg of the intermodal system. However, it has been taking place in Europe with the concept of short sea shipping (Becker et al, 2004). Container Ports or ports equipped with container terminals have container handling equipment including gantry cranes, straddle carriers, reach stackers forklifts, and container yards (Veldman and Bückmann, 2003). These are significant components within ports since the productivity of the port in this respect is generally reckoned in terms of containers

handled per crane per hour (Sanchez et al, 2003). Success of a hub port depends on various factors: Economic and political stability, strategic location, high level of operational efficiency, high port connectivity and inland transport facilities, adequate infrastructure, cheaper terminal costs, simplified customs procedures, adequate info structure and a wide range of port services (Tongzon, 2007).

The most important feature of intermodalism is the provision of a service with one bill of lading for any type of cargoes. This has necessitated a revolution in organization and information control. Therefore, intermodalism has data handling, processing and distribution systems inside that are essential to ensure reliable and cost effective control of freight movements transported via several modes. The noticeable raise in the standardization of goods has permitted the introduction of intermodal system where goods can travel by rail, truck, or vessel however, through a standardized way (Parola and Sciomachen, 2004).

Intermodality originated in maritime transportation industry through the development of the container shipment in the late 1960's as the birth of logistic distribution centers and has spread to integrate other modes (Erdal, 2005). It is not surprising that the maritime industry should have been the first mode to track containerization since it was the mode that is mostly constrained by the time taken for loading and discharging the vessels. A conventional break bulk cargo ship could spend as much time in a port as it did at sea. Containerization permits the mechanized handling of cargoes of diverse types and dimensions that are placed into boxes of standard sizes. In this way goods that might have taken days to be loaded or unloaded from a ship can now be handled in a matter of minutes. By doing this, logistics

companies can offer door-to-door rates to their customers by integrating rail services and local truck pick up and delivery in a flawless network (Jennings et al, 1996).

According to Rodrigue (2008), unlike North America which uses intermodality efficiently; other parts of the world have not developed the same degree of synergies between rail and shipping. However, a trend towards closer integration in many regions is emerging. In Europe, rail intermodal services are becoming well-established between the major ports, such as Rotterdam, and southern Germany, and between Hamburg and Eastern Europe (EU Transportation Policy and Ocean Management, 2003). Rail shuttles are also making their appearance in China, although their market share remains modest.

While it is true that the maritime containers have become the locomotive of international trade, other types of containers are found in certain modes, most notably in the airline industry (Erdal, 2005). High labor costs and the slowness of loading planes, that require a very rapid turnaround, made the industry very receptive to the concept of a loading unit of standard dimensions. The maritime container was too heavy and did not fit the rounded configuration of a plane's fuselage, and thus a box specific to the needs of the airlines was required. The major breakthrough came with the introduction of wide-bodied aircraft in the late 1970s. Light weight aluminum boxes could be filled with cargoes, and loaded into the holds of the planes using tracking that requires little human assistance (Rodrigue, 2008).

Transport chains are being integrated into production systems, today. As manufacturers are spreading their production facilities and assembly plants around the globe to take advantage of local factors of production, transportation becomes an ever more important issue (Kunadhamraks and Hanaoka, 2007). The integrated transport

chain is itself being integrated into the production and distribution processes (Azaklı, 2009). Transportation can no longer be considered as a separate service that is required only as a response to supply and demand conditions (Zarzoso, 2003). It has to be built into the entire supply chain system, from multi-source procurement, to processing, assembly, and final distribution. Supply Chain Management (SCM) has become an important facet of international transportation. Therefore, the container has become a transportation, production, and distribution unit.

In today's world of trade the modes used, and the routing selected are no longer of immediate concern but, the pre-occupation is with cost, reliability, and level of service (Boske and Cuttino, 2003). There is a relationship between costs of transportation, distance, and modal choice and according to these relations, road transportation is chosen usually for short distances (from 500 to 750 km), railway transport for average distances, and maritime transport for long distances (over 750 km) (Parola and Sciomachen, 2004). However, intermodalism offers the opportunity to combine these modes and find a less costly alternative than a single-mode solution (Deveci et al, 2003).

Intermodal transportation cost implies the consideration of several types of transportation costs for the routing of freight from its origin to its destination, which involves a variety of shipment, transshipment and warehousing activities and considered these components according to organized logistics chains where production and consumption systems are linked to transport systems (Erdal, 2005). Numerous technical improvements, such as sea shipping and better rail/road integration, have been established to reduce interchanging costs (Jennings et al, 1996). However, the concept of economies of scale applies best to container shipping.

While maritime container shipping companies have been pressing for larger ships, transshipment and inland distribution systems have tried to cope with increased quantities of containers. Thus, in spite of a significant reduction in maritime transport costs, land transport costs remain significant (Azaklı, 2009). Between approximately 50 to 65 percent of total transportation costs for a Twenty-foot Equivalent Unit (TEU) is accounted by land transport (Güvenler, 2009).

In most of the countries and in terms of modal competition, public policy is also playing a role through concerns over the dominant position of road transportation in modal competition since there are question marks on safety, and environmental issues. In Europe, policies have been introduced to stimulate a shift of freights from the roads to modes that are environmentally more efficient. Intermodal transportation is seen as a solution that could work in certain situations. In Switzerland, for example, laws stipulate that all freight crossing through the country must be placed on the railways in order to try to reduce air pollution in alpine valleys. The European Union is trying to promote intermodal alternatives by subsidizing rail, and shipping infrastructure through programs such as Marco Polo (EU Project, 2009), and increasing road users' costs. Since intermodal transportation is mostly the outcome of private initiatives seeking to capture market opportunities, it remains to what extent the public strategies can be resolved through a flexible, global intermodal transportation system (Rodrigue, 2008).

Drivers and Components of Intermodal Transportation

Production and customer driven need for an integrated transport chain has led to intermodality. Offering a competitive intermodal transport solution means making the correct trade-offs between costs and performance and setting the right priorities

for the service quality. There are some strong trends currently, supported by various EU and UNCTAD directives and policy statements on intermodality, rail, and ports (Infolog, 2000). These trends will influence the future transport systems. They will be governed by some major general economic developments such as; globalization of trade and transport, diversification of production and consumption, growing competition among economic regions in the world, growing congestion in and around main economic centers and growing concern for the environment and the use of energy by the transport industry (Erdal, 2005).

Some major trends in transportation and logistics are increasing demands for integration of modes along the logistics chain, changing service requirements from node-to-node transportation to door-to-door transportation services, increasing demand for customized solutions of transport supply (Tuna, 2002), and increasing co-operation between individual transport modes (operators) and logistics chain organizers (Taylor and Jackson, 2000). The combination of these developments results in a growing demand for fast and flexible transport systems, with increasing attention for the impacts and limits of the existing transport systems. In addition, for intermodal transportation to emerge as a major alternative to road transport, ease of use, transparency, and the possibility of achieving reliable estimates for estimated arrival times are important properties that may be realized by intelligent use of information and communication technologies (Deveci, et al.2003).

Intermodality is further, a quality indicator of the level of integration between different modes: more intermodality means more integration and interconnectivity between modes, which provides scope for more efficient use of the transport system (Gray and Kim, 2001). The economic basis for intermodality is that the transportation

modes displaying favorable economic and operational characteristics by themselves can be integrated into a door-to-door transport chain in order to improve the overall efficiency of the transport system (Erdal, 2005). The integration between modes needs to take place at the levels of infrastructure and other hardware (e.g. loading units, vehicles, telecommunications), operations and services, as well as the regulatory conditions (Deveci, et al.2003).

Intermodal transportation requires efficient transportation systems supported by smoothly-functioning infrastructure and institutional facilities so that goods move safely and rapidly from door to door. In terms of this efficient system; the major infrastructure facilities include railroads, roads, airports, seaports, inland container depots, and container freight stations. Road vehicles capable of transporting containers not only provide local distribution but also long haul services where rail links do not exist (Erdal, 2005). Road transport has the inherent advantage of flexibility, door-to door service capability, speed, etc. Rail transport is used between ports and inland distribution centers separated by long distances since it is less expensive for carrying large volumes of cargo over long distances. Rail traffic has been adapted to carry container traffic, through special designed wagons and container yards. Specialized container trains, such as, double stack trains offer regular schedules with guaranteed departure and delivery time (Güvenler, 2009). Air transportation began to take part in more advanced intermodal movements of cargo on international routes. The construction of special air-surface containers produces a common competitor for air-sea and air-land intermodal movements.

Logistic Distribution Centers (LDCs)

The Concept of Logistic Distribution Centers

According to Turkish State Railways (TCDD), a logistic distribution center – also called; logistic village or logistic bases- is a defined compact area where both all operations on national and international transportation, logistics, and distribution of the goods are handled by various operators. Furthermore, a logistic distribution center is an area that provides cheaper, faster and safer transportation where also, has companies of logistics and transportation and governmental agencies related to these companies' activities, dedicated connections to any kind of transportation mode, and activities such as loading and discharging, handling, warehousing, maintenance and repairing, packaging, separation and combination of goods (TCDD Logistic Village Project).

Erdal (2005) states that, a logistics base is a center where distribution, warehousing, handling, consolidation, separation, customs, import & export and transit procedures and applications, infrastructure for every kind of modal transport, banking and insurance activities, consulting and even production and many other logistical activities concentrated within that center. Güvenler (2009) declared that any kind of possible mode of transportation should be supplied but railway is a must for the center, and every aspect of the logistics industry should stay within that logistics village.

In a more elaborative way, a logistic distribution center has basically the following features;

- A strategic location, able to be connected to global transport routes, regional countries and especially proximity to production and consumption bases,
- Ability to be connected via national and international railways, seaways, highways, short seaways and pipeline connections,
- Sufficient infrastructure for intermodal transportation,
- Sufficient port infrastructure
- Sufficient superstructure for logistic activities such as trailer and lorry parking, offices for logistics companies and customs offices, banks, warehouses etc.,
- Recreational Facilities including accommodation facilities and restaurants,
- Advanced information and communication technologies,
- Simplicity in the legal framework and customs,
- Cold stores, repairing services and stores for dangerous goods according to international conventions such as RID
- Banking and insurance services,
- Containerization, packaging, and handling services.

By looking at the historical background of the logistics distribution centers; it is clearly possible to say that the very first covered areas of these centers are based on airports and seaports (Erdal, 2005). Through the internationalization process, seaports and airports integrated with each other (Thai and Grewal, 2005). Following this step, the connection of all other modes lead to distribution centers and finally logistics bases were born where all steps and activities of logistics are controlled and gathered under one control center (Rodrigue, 2008). Considering their current and potential-for-future importance, logistics bases can be described as the heart of global trade.

The concept of logistic distribution center in Europe firstly declared as "freight village" in late 1960s. For instance, "Freight Village Quadrante Europa" in Verona (Quadrante Europa, 2009), Italy serves for more than 30 years which proves that the concept of "freight village" is older than the concept of European Union though its seeds were drilled just after the Second World War (Oran, 2003). Currently, there are more than 60 logistic villages in Europe serving to 2400 different

operators as of 2005 (Erdal, 2005). These European countries are France, Germany, Greece, Spain, Italy, Denmark, Netherlands, Belgium, Luxembourg, Poland, Ukraine, Hungary, and Portugal.

Why Are the Logistic Distribution Centers Necessary?

Logistics is directly related to the import and export activities globally. Since term "global" has emerged by the combination of "locals" (Sakarya, 2008), features of domestically produced and consumed products directly affect the volume of trade movements and therefore, the logistics industry. The economic factors of; Gross Domestic Product (GDP), Purchasing Power Parity (PPP) and socio-economic factors such as; population, changing attributes clearly influence logistics industry via general economic conditions. It can be obviously, observed that the more the economic stability occurs and the trade volume increases, the better served and the more technologically developed the logistic activities.

Today, logistic activities play significant roles in global economy (Lu, 2004). The more the global trade volume increases, the more freight and passengers are carried day by day. Thus, this enormous ongoing growth increases the amount of investment spent on logistics. According to a project of Deutsche Verkehrs Bank Germany (DVB Group) consists of the foreseen global project investment amount regarding years between 1999 to 2009 which is an amount of USD 3 trillion (See Table 40).

Table 40. World's Annual Logistics Market Investment Amounts 1999-2009 (Billion US$)

Railway Transportation	Vehicles	25
	Infrastructure	45
	TOTAL	70
Road Transportation	Vehicles	109
	Infrastructure	4
	TOTAL	113
Waterway (Sea) Transportation	Ship	42.5
	Port	4.5
	TOTAL	47
Airway Transportation	Plane	70
	Airport	11
	TOTAL	81

Source: Industrial Research of DVB Group 2009

From exporter's perspective; if the exporter becomes reluctant to ship, earnings for the exporting country will decrease or simply, there will be a loss for a market depending on the elasticity of demand and the availability of substitutes (Sanchez et al, 2003). Economic estimations suggest that, the doubling of a country's transport costs leads to a drop in its trade even by 80 percent or even more (McMillan, 2006). Therefore, more efficient seaports are clearly associated with lower transport costs after controlling for the distance, type of product, liner services' availability, and insurance costs among others (Sanchez, et al, 2003). This situation is closely related to the well-being of the producing companies especially Small and Medium-sized Enterprises (SMEs) since most of them are located within an industrial production area (Namusange, 2003). There are "Organized Industrial Zones" where SMEs are clustered within and also, there are factory zones where bigger factories are gathered together in certain areas. In Turkey, those Organized Industrial Zones are not designed for further logistics services. They are just constructed by considering the production types and necessities of the companies inside. Therefore; for those industrial organized zones, logistic distribution centers are necessary where railway and highway connections are linked to ports via distribution centers. Increasing customer demands lead new purposes for both the exporter and the consignee who is

time-sensitive besides the sensitivity for cost and quality balance (Karadeniz and Göçer, 2007). Just-in-time processes find the lifeline through this path. Gathering the same-type of industries under certain locations facilitate to choose the right mode of transport for especially product-based productions. For the agricultural areas especially, this gathering seems crucial for trade (Erdal, 2005).

Adaptation to globalization leads many enterprises to function all around the world; from production to new market explorations. This increasing globalization leads enterprises to give more importance to logistic activities since the more inbound or outbound logistic activities, the more costly the production will be. Hence, logistic activities become more crucial for the enterprises where those activities should be handled on time and at lowest possible cost in order to compete more efficiently (Holter, 2008).

Globalization has chain effects. Once a change is made, it directly affects other factors and, they change as well (Gunay, 2008). In this respect, starting regionally, trade agreements have been made such as European Union (EU) and North American Free Trade Agreement (NAFTA) where customs barriers are aimed to be limited to some extent and, movement of goods become easier (Proffitt, 1995). These rapid movements of traded goods lead the logistics services to be more efficient, hence get improved.

Besides all these trade-related issues, environmental factors exist for the establishment of logistic distribution centers (Erdal, 2005). Increasing concerns on environmental issues led by global warming manipulate governments to make more environment-friendly decisions. Through the unions stated above, new long-term projects such as EU's Marco Polo Program occur. Marco Polo aims to alternate the

highway transportation to alternative modes such as seaway and especially railway. In order to use railway connection efficiently, distribution centers are necessary for modal shifts (EU Marco Polo Project).

Types of Logistic Distribution Centers

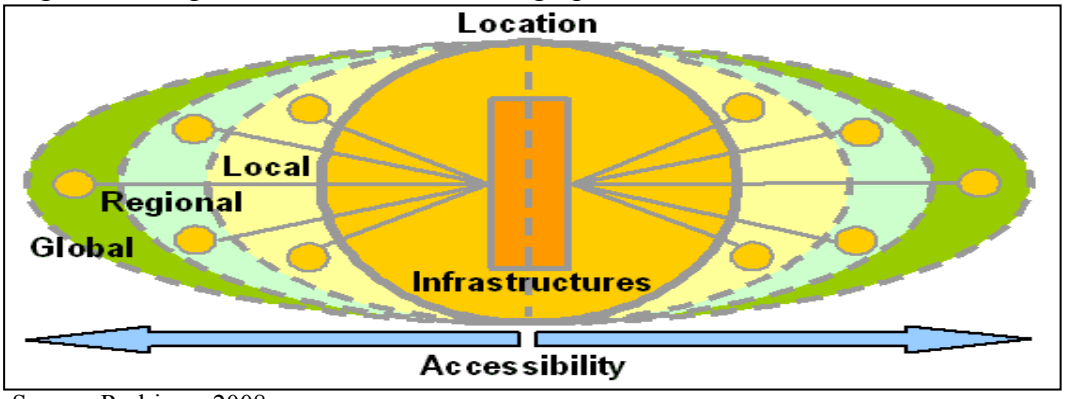
Either through sea-based or air-based activities, logistic distribution centers provide an opportunity to reach anywhere on earth cheaper, safer and faster in terms of transportation. However, the abilities of the logistic center changes from local to global according to technical and juristic infrastructure, and geographic location (Rodrigue, 2008). Transport terminals are bound to various degrees depending on their individual modes. For instance, maritime transportation terminals are particularly dependent on local conditions, especially for large port activities which can be accommodated in a limited number of locations. Airport terminals on the other hand, are more flexible in their locations, however still bound to specific location-based constrains (Krugman, 1999). In accordance with these, there are three basic types of logistic distribution centers classified through their geographic locations and capacities. These LDCs are; local, regional, and global (Rodrigue, 2008).

Logistic centers are the points of interchange within the same modal system which insure the continuity of the freights' flows. For instance, trucks haul freight to rail terminals, and rail brings freight to docks for loading on ships, for instance. One of the main attributes of both regional and international transport terminals is their convergence function (Rodrigue, 2008). In fact, they are obligatory points of passage having invested on their geographical location which commonly intermediates to commercial flows. Thus, logistic centers are either created by the centrality or the intermediacy of their respective locations. In some

cases, large transport terminals, particularly ports, act as gateway or hub to their location since they appear as the only points of transit between different modes of the transport system (Boske and Cuttino, 2003).

There are three major attributes which are linked with the importance and the performance of logistic distribution centers; location, accessibility, and infrastructure (Rodrigue, 2008). The major location-based factor of a logistic distribution center is to serve a large concentration of population and/or industrial activities, representing a terminal's market area. Specific terminals have specific location-based constraints, such as port and airport sites. Therefore, new transport terminals tend to be located outside central areas to avoid high land costs and congestion. Accessibility to other terminals as well as how well the distribution center is linked to the regional transport system is important. For instance, a maritime terminal has not much relevance if it is efficiently handling maritime traffic but is poorly connected to its market areas through an inland transport system such as rail and road transportation (Panayides, 2005). In terms of infrastructure, the main function of a terminal is to handle and transship freight or passengers. Infrastructure considerations are consequently important as they must accommodate current traffic and anticipate future trends and also technological and logistical changes (Erdal, 2005).

Figure 27. Logistic Bases and Their Geographic Zone of Influence



Source: Rodrigue, 2008

Global Distribution Centers

The most important attribute of the global distribution centers is to be the linking hub of the continental transportation (Erdal, 2005). There are many examples of those global hubs which are mainly; Trans-Pacific Line, Trans-Atlantic Line, and Europe-Far East Line. Global distribution centers or in other terms, global logistic bases should locate in a place where any kind of transportation modes are able to be used and should be close to many other countries (Rodrigue, 2008). This advantageous position is linked to the connection of production and consumption centers (Slack, 2008). Many types of cargoes ranging from petroleum products to packed stuff are carried to logistic bases and they are stored for a while and distributed safely to their final locations.

In terms of global centers, they have mostly sufficient infrastructures for combined transportation through strong connection of railway, seaway, airway and road transportation each other. Besides these, there are suitable areas in order to load or discharge any kind of cargoes and if requested, there are suitable warehouses to store these cargoes for a while (Rodrigue, 2008). While decreasing the total transportation costs, global distribution centers have high standardized software and legal structure besides the banking and insurance applications (Erdal, 2005).

The best models for global distribution centers are; Rotterdam, Antwerp, Hamburg, Marseille, Hong Kong, Singapore, Shanghai and Los Angeles as maritime ports; and Memphis, Hong Kong, Tokyo, Singapore, New York, London, Frankfurt, Paris, Amsterdam and Los Angeles again as airports.

Regional Logistic Bases

Regional logistic bases are mostly located in the certain part of the geography and their locations are close to international transportation axis and strategic ports. Mostly have same attributes and properties with global distribution centers however they serve for their close region and those centers are generally, based on certain types of transportation modes (Rodrigue, 2008).

The best alternatives for today's regional distribution centers are; Ghent, Limassol, and Larnaca in South Cyprus as maritime ports and; Beijing, Shenzhen, and New Delhi as airports.

Local Logistic Bases

Finally, at the core of distribution centers, there lay local distribution centers. Those bases mostly, act as national distribution centers and generally located to the main production and consumption centers in order to contribute to the national economy more(Rodrigue, 2008). However, since these are local distribution centers, combined transportation modes are not evolved enough (Erdal, 2005). Therefore, by and large specific transportation modes are used within those centers and this is mostly related to the nation's historical background such as; Greeks use inland waterway transportation mainly while, Turkish transporters use road transportation (Azaklı, 2009).

The best advantage of these local bases is that since they are national, they do not confuse with international bureaucratic and legal procedures (Erdal, 2005). Besides, they contribute much to the local economies that they are located in. Moreover in terms of locality; local distribution centers usually focus on carrying

certain product groups which are produced and/or consumed in their local area such as agricultural products, mines, sea food etc.

Basic Characteristics of Distribution Centers

According to TCDD and Erdal (2005), in order to build a well-functioning logistic distribution center should have;

- Significant geographic location which is both close to production and consumption centers, and to global transportation routes,
- Minimum legal and bureaucratic obstacles, in order to attract consumers to these senders by decreasing time that they spend on the paper issues,
- Connection of both internal and international modes of railway, road, waterway (inland and international), since LDCs should serve for customers all around the world and all modes by providing easy interchanging options between the modes,
- State-of-art technology and software, in order to increase the utilities of LDCs and keep up the newest technology which is compatible with other LDCs,
- Skilled and educated staff, since the successful infrastructure and investments are valuable only with successful employees,
- Container renting places where, customers feel confident to bring their goods to LDc without searching for containers to rent,
- Offices for various objectives such as for logistics companies, certified councillorship, or banking and insurance applications,
- Parking Lots which eliminates the problem of parking outside LDCs,
- Warehouses where SMEs can store their goods including the special zones for dangerous goods,
- Repair stations in case of any intervention is required for repairing or producing the final parts of the goods,
- Packaging and handling processes which provides SMEs not to worry about making the proper packaging procedures and serve for handling process,
- Customs units in order to facilitate the customs procedure, and
- Recreational facilities such as restaurant, hotel etc. in order to satisfy customers' social and accommodation necessities.

According to the general project view of TCDD (2007), a logistic distribution center must have a master plan as the backbone of the area and the map of future projections, must be administered by single authority, must be close to cities (Güvenler, 2009), must be well-designed, must have both open and closed storages

and warehouses in the facilities, and must provide support services which are listed above for its customers.

Successful Logistic Distribution Centers

Port of Rotterdam

According to the Administration of the port of Rotterdam, the port is a hub of international goods flows, while at the same time an industrial complex of global stature. The port is the gateway to a European market of more than 500 million consumers. With an annual throughput of more than 400 million tonnes of goods, Rotterdam is by far the biggest seaport in Europe and the third biggest all around the world after Singapore and Shanghai, respectively (Erdal, 2005). Due to the immediate location at and the open connection with the North Sea, Rotterdam is one of the most accessible ports in Europe. The terminals at the Maasvlakte Region in the Port of Rotterdam can be reached within one or two hours from the pilot station.

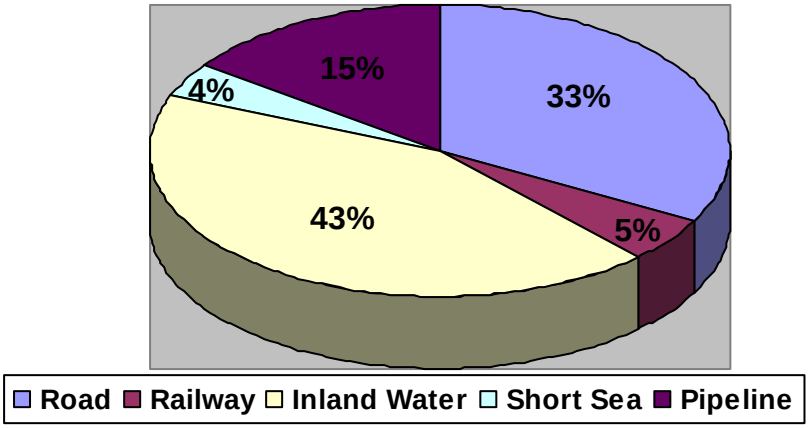
In terms of employment, Port of Rotterdam employs more than 86,000 people and indirectly provides 255,000 job opportunities. In terms of added value, Port of Rotterdam, by itself, adds value of around 11.6 billion Euros which corresponds 2 % of the national GDP of Netherlands (US Department of State).

The port of Rotterdam is deep enough to accommodate the largest vessels in the world, such as mammoth tankers, ore carriers and container vessels. Off the coast, in the North Sea, The Eurogeul which is a quay built within the Port of Rotterdam has a depth of 23 meters and is 57 kilometers long. Maasvlakte 2 will shortly be accessible for the container ships of the future. With a depth of 20 metres, the port is accessible for container ships which are unable to berth in other European ports (Port Authority of Rotterdam).

More than 500 scheduled liner services connect Rotterdam with over 1,000 ports worldwide. Many of the global container liner services only call at a limited number of European ports (Erdal, 2005). Rotterdam is one of these, often as first and/or last port of call in Europe where shipments are gathered in an distributed to near smaller ports. The port of Rotterdam is directly located on the North Sea and total area of port and industrial area stretches over a length of 40 kilometres and covers 10,000 hectares (Port Authority of Rotterdam). Companies can find all necessary facilities for cargo handling, distribution, and industry. A lot of auxiliary services are also on hand. Due to the size of the operations, the port offers significant advantages of scale. Rotterdam is, for example, Europeans cheapest bunker port (Erdal, 2005).

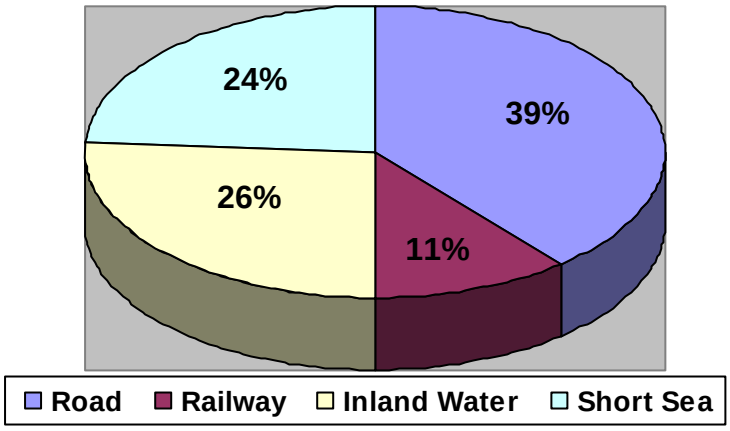
The European market is accessible from Rotterdam via five competing modalities: road, rail, inland shipping, coastal shipping, and pipeline (See Figure 28 and 29). Goods which arrive in Rotterdam in the morning can be in, for example, Germany, Belgium, France, or Great Britain the same afternoon From Rotterdam, all major industrial and economic centers in Western Europe can be reached in less than 24 hours. One of the main advantages of Rotterdam is its location on the rivers Rhine and Maas. As a result, efficient and economical transportation by inland vessels is possible even into core of Europe. Rotterdam serves a hinterland of more than 150 million consumers living within a range of 500 kilometers of Rotterdam, and 500 million consumers all over Europe (Port Authority of Rotterdam). This is an enormous market which represents a combined buying power of € 420 billion.

Figure 28. Types of Goods in Port of Rotterdam According to the Modes of Transportation (Metric Tonnes) 2008



Source: Drawn by gathering various kinds of information presented within www.portofrotterdam.com

Figure 29. Types of Goods in Port of Rotterdam According to the Modes of Transportation (TEU) 2008



Source: Drawn by gathering various kinds of information presented within www.portofrotterdam.com

The port of Rotterdam is investing continually to extend and improve its service. The most eye-catching project is the pending construction of Maasvlakte 2, a new port and industrial complex in the North Sea, with 1,000 hectares of industrial land directly on deep water and 750 hectares set aside for nature (Port Authority of Rotterdam).

Port of Hamburg

Hamburg is not significant only for Germany, but also is it for the whole Continental Europe. It is the most important logistic hub for German national economy besides its contributions to continental economy through its ability to connect overseas countries to Continental Europe, bond production and consumption centers. Its location lies on the trade routes located on both North to South and East to West directions (Erdal, 2005). All types of transportation modes are highly provided within the Port of Hamburg. Logistical services must ensure that at any point along the transport chain the necessary goods are available in the right quantities, in the right place and at the right time (Taylor and Jackson, 2000). Thus, forwarding agents are commissioned with acquiring capacities for forwarding the goods by feeder ship, truck, rail, and barge. Furthermore Hamburg's forwarding agents arrange the warehousing, the commissioning, or the quality control on behalf of foreign exporters (Hamburg Port Authority). The same also applies to exports from inland regions, i.e. for collecting, interim storage, and finally shipment to overseas destinations.

The Port of Hamburg is well-known for it high "loco quote" (Hamburg Port Authority). This means that more than a third of the goods arriving in the Port of Hamburg have their destination within the boundaries of the City of Hamburg, ensuring that goods are supplied to around 4 million people along these short overland routes. Port of Hamburg, despite its location of 120-km-inside from the sea, is able to accommodate world’s largest container vessels. The port has 51 km long wharves besides 320 vessel berths, 200 container bridges and multifunctional cranes located at the shore and investment for infrastructure is perpetual (Hamburg Port Authority).

Annually, more than 134 million tones of various cargoes are handled which are mainly 40 million tones of bulk cargoes (coal, mineral ore, petroleum products, grain, seed, oil, forage, fertilizer) and over 92 million tones of general cargoes are handled in Hamburg. Especially through the high amounts of investment for the handling and storing of the bulk cargoes, the port has gained significant competitive advantage against other ports by decreasing the huge bulk carrier vessels' handling operations and providing large enough warehouses for storing bulk goods (Erdal, 2005). Moreover, all the terminals in the city of Hamburg have the compatibility for overseas, short sea or inland water transportation, railway and road transportation and intermodal mode which combines those different modes together (Hamburg Port Authority).

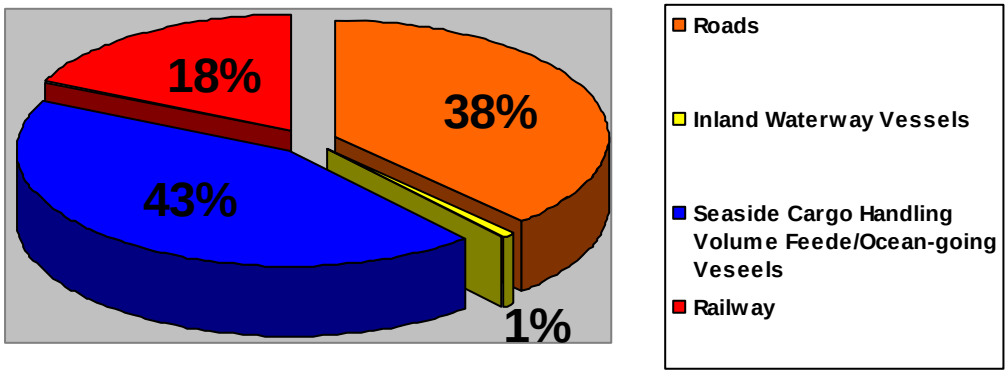
Looking at the region around, Port of Hamburg serves as a transit port for many countries especially for Austria, Switzerland, Central and Eastern European Countries and Scandinavian Countries. Furthermore, surprisingly, almost 50 percent of the total containers handling operations are under the trade made with Northern and Southern Asia. Under this percentage, Japan, Hong Kong, Singapore, Taiwan, South Korea and China are the most significant partners of Hamburg in terms of trade. For the Baltic Countries located around Baltic Sea such as Estonia, Latvia, Lithuania etc. have gained 18 percent of the total container traffic in Hamburg (Erdal, 2005).

In terms of employment, Port of Hamburg directly provides over 140,000 positions for the port employees and furthermore, indirectly provides more than 165,000 jobs within the city of Hamburg and over 270,000 jobs for the Germany nationally in 2007. Value added by port-related employees in the metropolitan region is around 15 million Euros, and revenues which are port-related of Hamburg City is

more than 885 million Euros in 2007 (Annual Report 2007 of Hamburg Port Authority).

Port of Hamburg is named as the "port of railway" because of its strong infrastructure and superstructure of railway facilities throughout history (Erdal, 2005). There are 5 long distance and 2 regional railway lines in Hamburg Port and that creates a trade portfolio of 200 international and more than 250 national bloc trains services provided weekly. Most of the export cargoes are carried via railway to the port and then exported through various modes according to the receivers' location (See Figure 30).

Figure 30. Modal Split Container Traffic in Port of Hamburg 2007 (8.9 million TEUs)



Source: Annual Report 2007, Hamburg Port Authority

Rail freight movements to and from the port of Hamburg participated greatly in the increase in cargo handling volumes in the port. This development is particularly evident in container traffic, though bulk goods traffic also showed significant growth rates. Whereas today, a total of approximately 200 freight trains transporting all categories of goods arrive at, and depart from, the port per day; and by 2015 this figure is expected to increase to 400 goods trains daily (Annual Report 2007 of Hamburg Port Authority). The development in container traffic has been recording annual growth rates of 10 to 15 percent. Goods volumes in 2006 rose by 16.5 percent

to 38.9 million tones, and container traffic grew by 11.5 percent to approximately 1.5 million railway containers/TEUs. Hamburg was thus able to maintain its position as Europe's leading railway container handling site (Port Authority of Hamburg).

Increasing cargo handling volume affects the volume of goods transported via road transportation, too. Freight volumes transported by trucks in the port of Hamburg are rising as trucks provide the largest transport contingent in the ever more dominating general cargo/container segment (see Figure 30). However, due to the effects of rationalization, the share which trucks have in overall transport movements is increasing below the increase in total cargo handling volumes, as the number of empty rides is decreasing, truck utilization rates are improving, and more emphasis is being placed on other environmentally friendly modes of transport (Port Authority of Hamburg).

In terms of waterway transportation via both sea transportation and inland water transportation, Port of Hamburg operates well, however; these terms should be considered as two different concepts; firstly, the main logistic hub for import-export transportations; sea transportation and, inland water transportation which is important as it passes through the neighboring countries. For instance, the heavy railway traffic to and from middle and south-eastern Europe will be greatly reduced and the roads will also accommodate less traffic (Erdal, 2005). The transfer of traffic movements from trucks to inland waterway vessels that reverses the traffic growth leads to a cost-effective waterway transport which is also a lot less damaging to the environment.

According to the director of the Hamburg Port Authority,

> As in the previous years, the port of Hamburg benefited from the global economic development and stirred business in the container transport industry on a higher-than-average level. Its unique geographic location makes it the perfect logistic hub for the maritime traffic between Asia, America and the European hinterland, in particular

> Scandinavia and Eastern Europe, and container handling volumes moved through the port rose by 9.6 percent to a total of 8.9 million TEUs.

Average growth in the north-range ports of Antwerp, Rotterdam, Bremen, and Hamburg was 8.3 percent in 2007 (Port Authority of Hamburg). In Antwerp container handling volumes increased by 531,000 TEUs, in Rotterdam volumes grew by 313,000 TEUs (Port Authority of Rotterdam) and in Bremen by 738,000 TEUs, which made Hamburg the port with the highest absolute growth rate among the North-range ports. With a plus of 774,259 TEUs, Hamburg was able to increase its market share to about 30 percent compared with its direct competitor ports. Overall, the port surpassed its record result in seaborne cargo handling volumes achieved in 2006 by 7.3 percent in the year under review, and the 134.86 million tones handled gave the port a share of 18 percent in overall seaborne cargo handling volumes moved through the north-range ports.

Through its huge growth rates, the port of Hamburg could further advance its position as one of the Europe's leading container port in trade activities with China, East Europe and the Baltic Sea area. Traffic to and from China increased by 20 percent compared with the 2006 values and container traffic to and from South America rose up by 25.2 percent. Seaborne traffic between Hamburg and the states in the Baltic Sea area grew by 11.8 percent compared to 2006 values again. And lastly, container traffic to and from Russia lasted strong as it was in previous years by obtaining 41.3 percent growth rate (Port Authority of Hamburg).

Port of Marseille

Port of Marseille is the southern gateway of France on Mediterranean in terms of trade (See Figure 31). Most of the import-export transportations of France are made through Le Havre, Rouen and Dunkerque from north, Bordeaux from the mid-west and Marseille-Fos Port from the south of France. Clearly, Port of Marseille-Fos is the gateway of neighboring Mediterranean countries (Brochure of Port Marseille-Fos, 2008).

Figure 31. North of Mediterranean

Source: Global Industry Travel News, 2009

When a historic glance is taken, city of Marseille has been one of the most visited ports of the colonial powers such as Spain, Italy, and Portugal besides France itself. Locating Spain on its west and Italy just on its east, Marseille is on the Northern Part of Mediterranean together with Greece and Turkey; close to North African countries which are Morocco, Tunisia, Algeria, and Libya (See Figure 31). Besides these significant locations port of Marseille is one of the main gateways for trade between Far Eastern Countries, and North-South America and Mediterranean-Europe Region (Erdal, 2005).The port of Marseille-Fos is the only Southern European port to offer trimodality which has modes for rivers, railways, and roads

used together, providing the port with a wide-ranging influence throughout the inland regions such as Provence, Rhône valley, Burgundy, Germany and Switzerland. The port is well-equipped with all modes of transportation including river transportation. Daily railway connections linking Marseille-Fos Terminals with major European cities, besides a modern highway network to all major European cities which enable to reach them in less than 24 hours. Furthermore, there is a direct connection to Lyon Terminal and Fos Containers Terminal by barge - waterway network. From the Port of Marseille-Fos, 300 different ports from 120 different countries are reached through 200 different charter voyages. From Marseille for instance, it takes 3 days to Suez Canal, 15 days to United States of America and 24 days to Japan via maritime transportation (Port Authority of Marseille-Fos).

Figure 32. Medlink, France Inland Port Connection Map

Source: Port Authority of Marseille-Fos, 2009

As seen on the Figure 32, Medlink is a comprehensive network of regional logistic distribution centers in France. There are 8 multi-modal inland platforms covering French and future European hinterland of the Port of Marseille-Fos with extra land capacity in order to accommodate customers' logistics and industrial projects (Port Authority of Marseille-Fos). It seems like single-line-subway-network with 8 stops on its route where cargoes get in and get off at the stops on a single line. Moreover, there are direct connections to inland waterway (Rhone and Saone rivers) and railway networks according to the brochure of Medlink (2009), and cargoes such as container, liquid and dry bulk logistics services are served by providing consolidation, picking, distribution, bonded warehousing, hazardous & sensitive cargo handling and so on.

Besides its various terminals, there is a "Distriport", the logistics distribution center of the port- which is a mile away from the highway connection and has dedicated railway connections (Port Authority of Marseille-Fos). Distriport has 600,000 square meters capacity for logistic activities. Moreover, there are many private distribution centers, and repair and final construction facilities are located in port of Marseille such as the one that was built by Ikea. Many large shipments to Southern Europe and North Africa are being made over Marseille (Ikea, 2009). In this 160 hectare logistics area, annually 1,800,000 tones from Far East (China, Japan, Taiwan, South Korea based), 900,000 tones from Southeast Asia (Thailand, Indonesia, Malaysia based), 1,300,000 tones from North America and 1,300,000 tones from Mediterranean on average are transported as transit goods.

In order to improve current facilities, investment amounts have been increased hugely. The amount was 20 million Euros in 1998 while it was raised to 138 million Euros ten years after; in 2008. For the investment projection including years from

2009 to 2013, a budget of 620 million Euros is targeted, however this can reach to 4 billion Euros together with the private investments. After these investments, it is targeted to increase the traffic of cargoes from 96 million tones in 2008 to 125 million tones in 2013 and 40,000 employment opportunities to 50,000 jobs which are linked to the port directly (Port Authority of Marseille-Fos).

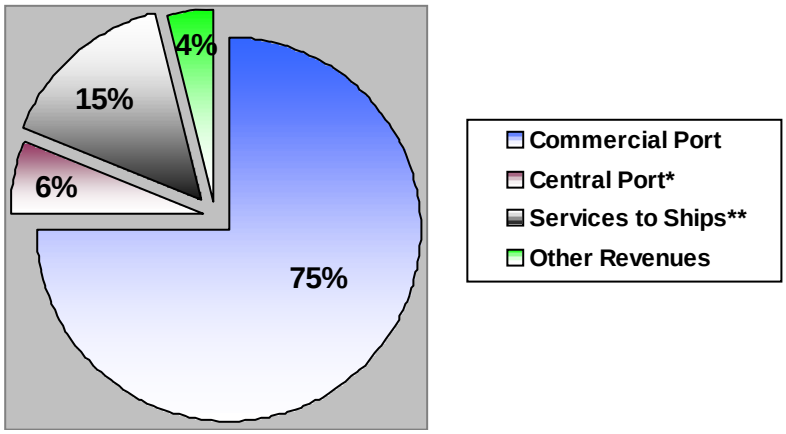
Port of Piraeus

Piraeus, the biggest port in Greece and one of the biggest in the Mediterranean, acts as a lever of development of international trade and the local and national economy. With a history starting in 1924 when the beginning of major civil works took place, Piraeus Port today has multiple activities in reference to the commercial port, the central port, ship services and real estate development and exploitation (Erdal, 2005). Piraeus Port is the hub for the connection of continental Greece with the islands, an international cruise center, and a commercial hub for the Mediterranean, providing services to ships of any type and size (Port Authority of Piraeus Port). According to the financial statement declared for the year 2008 there are almost 1700 employees working for the port; furthermore, more than 25,000 ships are served according to the director general of Piraeus Port. The Port contributes to the local and national economic growth and continues its development by upgrading infrastructure and services provided. The tax amount paid in 2007 was 5,222,738.48 Euros while it was 11,352,897.14 Euros for the year 2008 (Financial Statement and Additional Information of Piraeus Port of 2008).

Port of Piraeus is one of the greatest contributors for the Greek national economy. It is ranked in the 50 most productive ports of the world with 1,625,000 TEUs of container handling in 2004 while the amounts were decreased in following

years as 1,394,512 TEUs in 2005, 1,403,408 TEUs in 2006 and 1,373,318 TEUs which corresponds to 84 percent of the total handling operations of the year 2007 and the total capacity of containers handled is between 1,600,000 to 1,800,000 TEUs annually. 12 percent of the total handling was operated for car terminal and 4 percent of the total handling was operated for general cargo terminal which are both located within the Port (See Figure 33). There are 2 different piers for container handling and the total length of the docks is 2774 meters. Maximum depth is 18 meters which allows ocean-going vessels to easily berth on piers. 626,000 square meters of the 900,000 square meter total area is designed as the storage area (Port Authority of Piraeus Port).

Figure 33. Piraeus Port Revenue of 2008



Source: http://www.olp.gr/EN_PDF/olpProfileEn.pdf
* Accommodated for passenger transportation
** Accommodated for dry-docking, ship repairing, barging, etc.

Its close location to the international trade routes leads the port to serve as a hub for international trade by being the only European port in the East Mediterranean providing the necessary infrastructure for the accommodation of transshipment cargo. Such as the Port of Marseille-Fos which is located at the north of Mediterranean, Piraeus Port is close to many significant production and consumption centers. Just to give some examples, from Port of Piraeus it takes 11 hours to Thessalonica (Greece),

15 hours to Istanbul (Turkey), 22 hours to Marsaxlokk Port (Malta), 23 hours to Constanza (Romania), 25 hours to Port Said (Egypt), 27 hours to Ashdod (Israel), 34 hours to Novorossiysk (Russia), 35 hours to Koper Port (Slovenia), 41 hours to Genoa (Italy), and 65 hours to Gibraltar (Port Authority of Piraeus Port).

Dubai Logistics City

According to Dubai Logistics City (DLC) Authority, DLC is the world's first truly integrated logistics platform with all transport modes, logistics and value added services, including light manufacturing and assembly, in a single customs bonded and Free Zone environment. DLC is adjacent to what will eventually be the world's largest airport, the DWC-Al Maktoum International Airport. Regarded as the regional center for export, retail, leisure, aviation, IT and banking, Dubai has more than 60 percent of the entire Middle East's imports transiting its borders. With a logistics market growing in excess of 20 percent annually, Dubai is now a market with more than two billion customers from South East Europe, the Commonwealth of Independent States (CIS), Indian Sub-Continent, Middle East, and Africa. DLC will have the capacity to turnover 12 million tones of air cargo annually, in addition to having its own Staff Village set in landscaped surroundings with sports and leisure facilities, restaurants, shops and service centers (DLC Authority).

DLC is spread over 21.5 square kilometers and it is located in a single customs-bonded free zone environment made up of DLC, DWC Aviation City, and Jebel Ali Port. The 41,000 square meter cargo terminal within Dubai Logistics City (DLC) with an annual handling capacity of 600,000 tones is underway too expecting operations soon (DLC Authority). For DLC, it is planned to create a free zone which will have customs duties, no taxes, liberal visa policy, free capital transfer, quality

labor at competitive cost and above all abundant space. For future projects, a bridge is planned to be constructed in order to link DLC and Jebel Ali Port and Free Zone allowing for goods to move freely once they are offloaded a ship or a flight (Erdal, 2005).

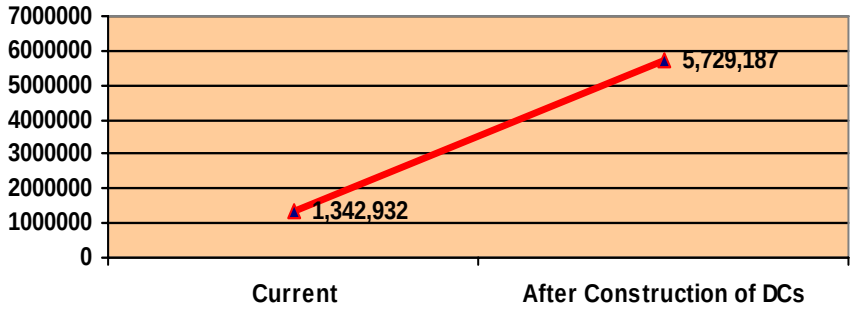
DLC provides logistics service providers and forwarders with focus on airfreight shipments and multimodal transport needs; Third party logistics (3PL) and contract logistics service providers experienced on warehousing/distribution with multimodal transport requirements value added services, areas for trading and industry companies and manufacturers who need warehousing and Light manufacturing as part of the order fulfillment process (Aymen, 2009).

Logistic Distribution Centers in Turkey

Logistic villages are considered as the center of freight transportation and they improve the combined transportation by integrating all transportation modes. As the first phase, the construction of 11 of 20 logistic villages are planned in Turkey (See Figure 34) for an aggregate value of approximately 250 million TRY, which are; Halkali/Ispartakule (Istanbul), Kosekoy (Izmit), Gelemen (Samsun), Hasanbey (Eskisehir), Bogazkopru (Kayseri), Gokkoy (Balikesir), Yenice (Mersin), Palandoken (Erzurum), Kayacik (Konya), Kaklik (Denizli), and Usak. These projects are aimed to provide approximately 2000 jobs average and 50 million US Dollars average as the public revenue (Sürmeli, 2009) (See Figure 35). Most of these projects are going to be connected to Istanbul and Alsancak (Izmir) Ports. These ports are the major two ports of Turkey; therefore there is an enormous congestion of goods in the port which can sometimes lead to delays. Such an importance Not only stresses the insufficient capacities of these major ports, but further leads to traffic problems within Istanbul

and Izmir. Since the ports are located within the cities most of the vehicles have to be stuck into the city traffic by increasing the rush hours of traffic. According to these projects traffic congestion will be reduced since all of these defined areas are planned to be located outside the city centers where ports are located in (Erdal, 2005).

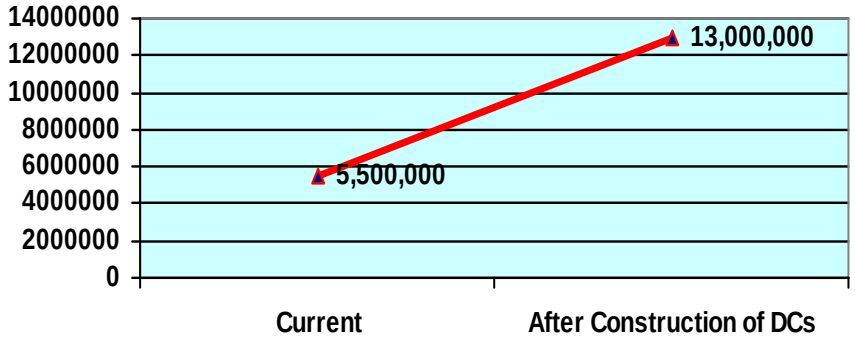
Figure 34. Projected Change in Total Areas of Distribution Centers in Turkey (m2)



Source: Sürmeli, 2009

A late track of Europe, the concept of "logistic distribution center" initially spelled in 2005 in Turkey, more than 35 years after its echoes in Europe. It is called "logistic village" in Turkey and the first related project was produced in 2006 by Turkish State Railways (TCDD, 2008). However, the projects were realized only after the private sector put a hand on the issue in real terms (Güvenler, 2009). The Turkish Government planned to operate and administer the logistic villages together with the private sector companies from single headquarters; one of the models of administration in European distribution centers, besides the administration of local municipalities, local trade organizations, or logistic companies (TCDD, 2008).

Figure 35. Projected Change in Transportation of Goods in Turkey (tones)



Source: Sürmeli, 2009

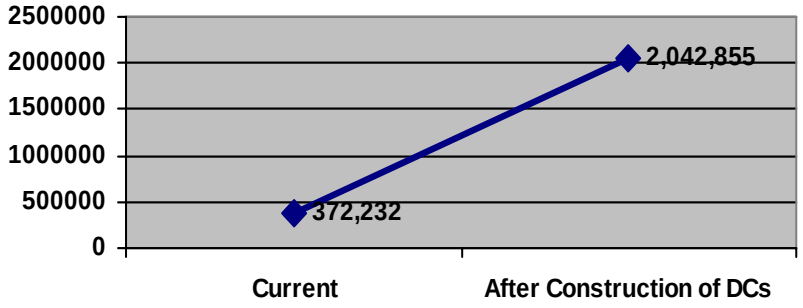
Junction lines are the connections aim to providing economic and safe transportation and transferring the production and also, raw material dispatching of fabrics, firms and organized industry zones, in coordination with relevant organizations (Güvenler, 2009). As a good example of this co-ordination in Turkey, Adana Concrete and Manisa Organized Industry built their own junction lines. In 302 junction lines which were built up to now; 55 percent of total freight transportation in 2004 and 64 percent of total freight transportation in 2005 were performed. Both to support door-to-door transportation and combined transportation and within the framework of co-operation with private industry, the construction of approximately 100 km junction lines per year is planned (TCDD, 2008).

Turkish State Railways (TCDD) launched Ro-La transportation - the system of transportation of road vehicles such as trucks, TIR, etc. by train- which is highly preferred mode in Europe, in order to avoid road vehicles to harm motorways and the environment (Atılgan, 2005). A demonstration run was performed between Istanbul-Wells (Austria) as the first phase.

Besides the governmental projects, private sector has its own projects of logistic bases. For instance, a logistics company in Turkey (Perşembe Rotası, 2009) is building its own logistic village which will be the second biggest logistic village in Europe with 160,000 pallets capacity after Quin Cam in London with 250,000 pallets capacity (See

Figure 36). It is a clever idea to establish logistic villages together with private companies since while 11 public projects' total worth is 200 million US Dollars, only this private logistic village which is under construction has a value of 80 million US Dollars. Furthermore, there are logistic hub projects other than public investments such as International Transportation and Logistics Providers Association (UTIKAD) is establishing in Hadimkoy, Istanbul and Ro-Ro Transportation Providers Association (RODER) plans one in Ankara while there are private logistic distribution center projects in Manisa, Izmit, Istanbul, Tekirdag, Eskisehir and Edirne (Yıldıztekin, 2009).

Figure 36. Projected Change in Handling and Storage Areas in DCs in Turkey (m2)



Source: TCDD, 2009

CHAPTER 5

RESEARCH DESIGN AND METHODOLOGY

Research Objectives

The major aim of this study is to develop location and service strategies for logistic distribution centers and Turkish SMEs are targeted for this research. For such strategy formulation, the following research objectives are identified.

- An extensive literature survey focusing on the historical developments and the current situation of global and Turkish transportation and trade,
- In-depth interviews with logistics professionals, SMEs, state officials and academicians in order to discover the opinions of different parties,
- Designing a questionnaire based on literature survey and in-depth interviews for manufacturing SMEs.
- Finding out the problems of exporting and non-exporting SMEs and their expectations from a logistic distribution center.
- Developing location and service strategies for logistic distribution centers to solve the problems of SMEs and to increase their contribution in international trade.

Exploratory Research I

Literature Survey

Since intermodal transportation and the Logistic Distribution Centers are the basics of this research, previous international and national studies are searched and award-winning global intermodal projects and successful logistic distribution centers from various places worldwide are reviewed.

Besides intermodal transportation and logistic distribution centers, history of Turkish foreign trade and modes of transportation in Turkey were analyzed from both official reports of state departments and chambers of transportation. Furthermore, in order to capture the latest developments of the logistics industry, logistics magazines and websites were analyzed regularly in order to enrich the research.

Exploratory Research II

In-Depth Questions & Interviews

Believing in the valuable opinions of people from logistics industry, in-depth interviews were conducted with experienced people from the industry, state, and SMEs. The interviews were conducted with Assistant Professor Murat Erdal of Istanbul University; Aydin Güvenler from Balnak Logistics; Bilal Azaklı from Sarioglu Shipping; Fatih Aksaylı from Arkas Anadolu Logistics; Fatih Candan from Sipil Plastics Co. Turkey; Serdar Tansu from Yonca Gıda, Turkey; and Kaan Sürmeli, the Head of Logistics Department of Prime Ministry Undersecretaries of Foreign Trade of Turkey.

Following are the questions asked in the interviews and the feedbacks received.

Questions Asked in the Interviews

General Questions

- How do you evaluate the 216 percent increase ($ 87.5 to 223 billion) in Turkish foreign trade? How did the recent global crisis affect this increase?
- Road transportation has a great share in transportation in Turkey. How do you evaluate this situation?
- Do you believe that programs such as Marco Polo by EU will create a balance in the modes of transportation and decrease the negative effects of road transportation to the environment?

- How do you evaluate the role of sea transportation in European Countries and Turkey?
- European Union states the importance of achieving intermodal transportation in foreign trade transportations as using more than one mode successively under one bill of lading. How do you evaluate this situation?
- In relation to this, how do you evaluate logistic distribution centers which are used as the transaction bases for intermodal transportation?
- How do you evaluate the transportation infrastructure in Turkey in relation to intermodal transportation?

Questions for SMEs

- What are the problems that your company faces in terms of foreign trade?
- How would the construction of logistic distribution centers (LDC) affect your foreign trade activities?
- What do you expect from an LDC?
- Which criteria should be considered when deciding on the location for an LDC?

Questions for Logistic Companies

- How do you evaluate the impact of logistics industry in the 216 percent increase in foreign trade of Turkey between 2002 and 2007?
- What are the main problems that the logistics companies face?
- Do you have any projects such as EU's Marco Polo?
- How do you evaluate the situation of railway and sea transportation modes in Turkey?
- What do you think about the capacity of ports in Turkey?

Questions for State Officials

- EU Master Plan for transportation states the importance of regular charters arranged to certain ports in certain times. Does Turkey have any expectations of being included in this plan? As a state, do we have such plans on transportation?
- Do you have any plans of expanding the current capacity of ports or to build new ports?
- What are the plans on intermodal transportation and LDCs in Turkey?

Interviews Feedbacks

Interview with Fatih Aksaylı

Fatih Aksaylı is the manager of Arkas Anadolu Logistics Company. The significant points to be mentioned of this phone interview are stated below:

- Most of the Turkish economic activities are gathered in the coastal cities, thus non-coastal cities cannot show their potential to contribute more to the economy.
- Istanbul, Kocaeli, Bursa, Izmir represents the 70 percent of the Turkish economy. Therefore, most of the export activities occur in these cities. Non-coastal cities use road transportation for many times since they are unable to use sea transportation only.
- This situation led the logistics companies to center alongside the Tekirdağ – Izmir line. Therefore, most of the logistics investments are made along this line. It is time to use the hinterland of this line as the logistic investment area.
- Railway network is extremely insufficient and furthermore, the mindset about the use of railway should change. It is hard to direct exporters to use

railway transportation while few of the passengers prefer railway transportation in Turkey. There are even railway lines today, which were built in 1930s.

- Today, Izmir (Alsancak) Port is one of the most significant ports in Turkey, however, because of the cargo congestion in the port, the cost of transportation increases. Therefore, a ship owner can prefer not to berth on this port. This situation stems from the insufficient handling capacity of the ports. Besides this issue, there is no railway connection to the port. All of the transportations are made through road transportation which also, creates traffic congestion around the port.
- It would be better to take advantage of geographic conditions. Anatolia should be the first area of investment in terms of logistics. Railway connection to the port should be offered to the exporters which will directly decrease the cost of transportation.
- Sea transportation also, is not used efficiently in Turkey. Few companies prefer cabotage transportation rather than using road transportation. Thus, cabotage transportation should be improved.

Interview with Bilal Azaklı

Bilal Azaklı is the operating manager of Sarıoğlu Shipping, Istanbul. The important points to be mentioned of this personal interview are stated below:

- Logistics is the image of the economy in a country. As the economy gets better, the volume of logistics industry increases directly.
- Because of the globalization, a company prefers not to produce its products in a single facility, but prefers to distribute the stages of production to different locations. Energy sources, raw materials, and facilities are

distributed; therefore, logistics activities gain more importance than they were before.

- The recent global crisis hammered logistics industry. Both the volume and the unit price of carrying goods decreased. For instance, the unit price of carrying goods through sea transportation decreased more than 90 percent. The main reason of this financial crisis is the unlimited supply of goods. Consumption got out of control and because of this, companies started to produce more than demand by believing in the consumption madness.
- Railway and cabotage transportations are not accepted as the means of transportation in Turkey. Therefore, investments in logistics industry seem not enough and not fairly distributed. Even today, it is hard to remember any railways built after 1946 (After World War II).
- In addition to this, until 1980s, like all other industries, logistics were handled by the state which decreased the quality of the industry and directly affected the level of foreign trade. Thus, after 1980, foreign trade boomed.
- Railway and sea transportations are the basic means of transportation. Therefore, the first ports built in Turkey have railway connections however, in time, the importance of the strong relation between railway and sea transportations were forgotten leading to traffic congestion in port cities.
- There should be a master plan for transportation industry and the ports should be the core of this plan. Lack of a master plan leads companies to build their own ports individually. This situation prevents the main ports to be used efficiently.

- In Europe, a port is constructed according to a master plan, however, in Turkey a port is built because it is believed that there should be a port in the selected location regardless of feasibility calculations.
- Ports should be located outside city centers in order to eliminate traffic congestion and pollution.
- The locations of ports should be determined according to the plans on intermodal distribution since it will be the mode of future. Intermodal transportation should be added to the master plan together with the logistic distribution centers and should be built according to the feasibility calculations made by state departments such as State Planning Organization.
- The importance of the sea transportation as a transportation mode and its contribution to foreign trade should be realized. Greece has the largest fleet in the world in terms but Turkey has a fleet which is not enough for its own foreign transportation activities.

Interview with Fatih Candan

Fatih Candan is the plastics products manager of Sipil Plastics, Manisa. Sipil Plastics is an SME producing refrigerator parts for the factories in Poland and Italy. The significant points to be mentioned of this phone interview are stated below:

- The preferred mode of transportation does not have frequent trips therefore SMEs have to pay more for the transportation when sending the products through chartered trips.
- The biggest problems faced while exporting are the difficulties in the foreign countries' customs. The language used in the customs papers can sometimes be a problem even it is English and the transported goods sometimes are kept waiting at the customs.

- Intermodal transportation is a must. The only way to decrease the cost and time of transportation is to use the modes together successively.
- Sipil Plastics are happy to use third party logistics in foreign trade transportations. By using them, they can focus only to the production stages.

Interview with Serdar Tansu

Serdar Tansu is the export department manager of Yonca Food Production Company, Manisa. Compared to Sipil Plastics, Yonca is a bigger company in terms of revenue. They export to 39 countries, especially to Europe. Furthermore, their export department is located in Izmir while the production facilities are located in Manisa. The following important issues are mentioned in the interview:

- Railway infrastructure is extremely insufficient and the existing rail lines are terribly old. Therefore road transportation is used as the first mode to reach to the Izmir Port.
- Transportation costs are mostly of 10 to 15 percent of the total cost of product. The cost differs in this range according to the location of the customer. Most of the export transportations are made through Izmir Port and third party logistics are used for export transportation.
- Izmir Port is one of the most important ports in Turkey however, the capacity is not enough. Especially in summer months, agricultural products are kept waiting in customs line at the Port. This is because, they are in huge amounts, and handling process takes a lot of time.
- Besides this goods congestion, slow and uncooperative behaviors of the port employees cause the handling activities to get slower. Tansu believes that, this behavior is the common characteristic of the Mediterranean people; therefore the situation is almost the same in Morocco or Italy.

Interview with Kaan Sürmeli

Kaan Sürmeli is the Head of Logistics Department of the Undersecretaries of Foreign Trade. The significant points to be mentioned of this phone interview are stated below:

- Logistics industry of Turkey should be ready to compete in global logistics arena. Therefore, the industry should be acknowledged as a great contributor to the national GDP.
- Today not only buying or selling products from/to foreign countries, the raw material transportations of Turkish construction companies for their foreign constructions increase the volume of exports.
- Undersecretaries of Foreign Trade did not consider the logistics industry much before the establishment of the Logistics Department there.
- Global trade's dynamics are shifting to East of Turkey; Turkey is in the center of production and consumption. If suitable modes for Turkish geography can be arranged, Turkey will be one of the logistics leaders in the world.
- Road transportation overbalances the fair distribution of modes and this further creates bureaucratic difficulties at the foreign countries' customs units since they do not want to permit the trespassing of various road vehicles which increases the traffic congestion and pollutes the environment more.
- In order to create a fair distribution of modes, Undersecretaries of Foreign Trade tries to achieve project with the State Railways. However, since the railway network is insufficient and the sea transportation hardly stands on its own feet, it seems difficult to achieve intermodal transportation as a solution in Turkey.

- Most of the sea transportations are made through foreign flag ships. Thus, projects on increasing the number of Turkish flag shipments should be planned.
- There are logistic zones in Turkey such as Marmara; however, they are not supported through any logistic distribution centers.
- There are 20 LDC projects of the Ministry of Transport. Most of them try to link the surrounding cities to Mersin and use Mersin as a logistic hub.
- Best examples for LDCs can be given from Germany since the geographic conditions are more similar with Germany than Netherlands or Belgium.
- State now plans to link Mersin logistic hub to Hamburg and further build two different strategic hubs in South Russia and China and link them to Mersin too.

Interview with Aydın Güvenler

Aydın Güvenler is the head of railway department of Balnak Logistics, Istanbul. Important issues discussed in the interview can be listed as follows:

- LDCs are not located behind the strategic ports. They are planned to be built according to the political ambitions.
- Wide range of services should be provided in LDCs ranging from banking and insurance to handling and storing to recreation centers. Furthermore, LDCs should be compatible with all transportation modes.
- An LDC should at least have 500,000 m² of capacity however the most important distribution center in Istanbul, Halkalı is 220 decare and is constructed without a master plan therefore expansion seems impossible.

- There should be at least three cranes and more than three railway lines in an LDC in order to increase efficiency and further, warehousing for any kind of goods including the dangerous ones should exist.
- Since state LDCs are not attractive for the customers, they prefer private sector logistic companies since they can provide intermodal transportation. This is a signal of how LDCs should be administered. Most of the operations should be given to the control of private sector.
- There are organized industrial zones everywhere in Turkey however; they do not have railway connections to the main network which makes it impossible to use railway transportation. Therefore, transportation costs increase since the customers have to carry their goods to the ports via road transportation.
- EU-based projects should be supported more in terms of logistics since they are ahead of Turkey in logistics. There are certain transit lines where the global logistics leaders do not prefer to pass through Turkey such as Black Sea Coast.
- State mostly hinders the logistics efforts. There is a 20 percent increase in the price of railway transportation in Turkey. In the same global crisis period; increase in Russia was 9 percent and in Balkan states 10 percent. None of the EU states increased the price.
- As a result of this increase, railway transportation to Iran suddenly became unattractive. In addition to this increase, there has not been a remarkable investment made to railway network for years.
- In terms of environmental concerns, few of the SMEs in Turkey would consider the environmental issues rather than decreasing the cost of transportation.

- Transportation costs should not exceed 10 percent threshold of a company's total production cost. If otherwise, that company seems to lose money.

Interview with Murat Erdal

Murat Erdal is an academician in Istanbul University who has specialization on global logistics. Although an appointment was made for a personal interview, due to his personal issues, Murat Erdal had to cancel the meeting. However, he suggested sources related to the subject of this research which are written by Erdal, thus reflects the opinions of him.

Academicians, logistics professionals, and exporting SMEs agree on a single reason that causes the insufficient infrastructure for transportation, lack of efficiency, and high costs which is; lack of or imbalanced government support. All three working groups believe that, government support is not directed to the points that need to, and furthermore, investments made to restructure the industry are mostly insufficient or unfairly distributed.

Academicians, logistics professionals, and exporting SMEs moreover, look at the future hopefully, by expecting the intermodal transportation to help and save their industries. In this point, government officials agree on the issue also. Starting from 2005, government tries to build or convert the local distribution centers to logistics distribution centers in order to promote intermodal transportation (Sürmeli, 2009). However, none of the state researches were made for finding out the needs, expectations and opinions of SMEs which will be the most valuable customers of the logistic distribution centers.

After researching the literature and completing the in-depth interviews, the following points stand out to be investigated;

- Turkey has a great potential in terms of transportation however; it is not yet turned into an opportunity,
- Railway transportation is a must for the intermodal transportation,
- Port performance is a catalyst for intermodal transportation,
- Geographical advantage should be turned into an opportunity by cooperating with efficient infrastructure for the intermodal transportation,
- The needs of foreign buyers, the market, seem to be changing continuously,
- The global environmental concerns lead both the world to look for better solutions which are more environmental caring,
- Transportation cost is an immense problem for SMEs that are expected to be reduced anyhow,
- Time and efficiency are great concerns for SMEs that lead them to find out the fastest way for transportation,
- In order to reach the fastest way with less cost, able to reach easier and transport safer, SMEs look for standardization of the voyages of the transportation modes
- Logistic distribution centers will be catalyst to apply standards of intermodal transportation, and it will be easier for the exporters to adopt the new system.

Conceptual Model

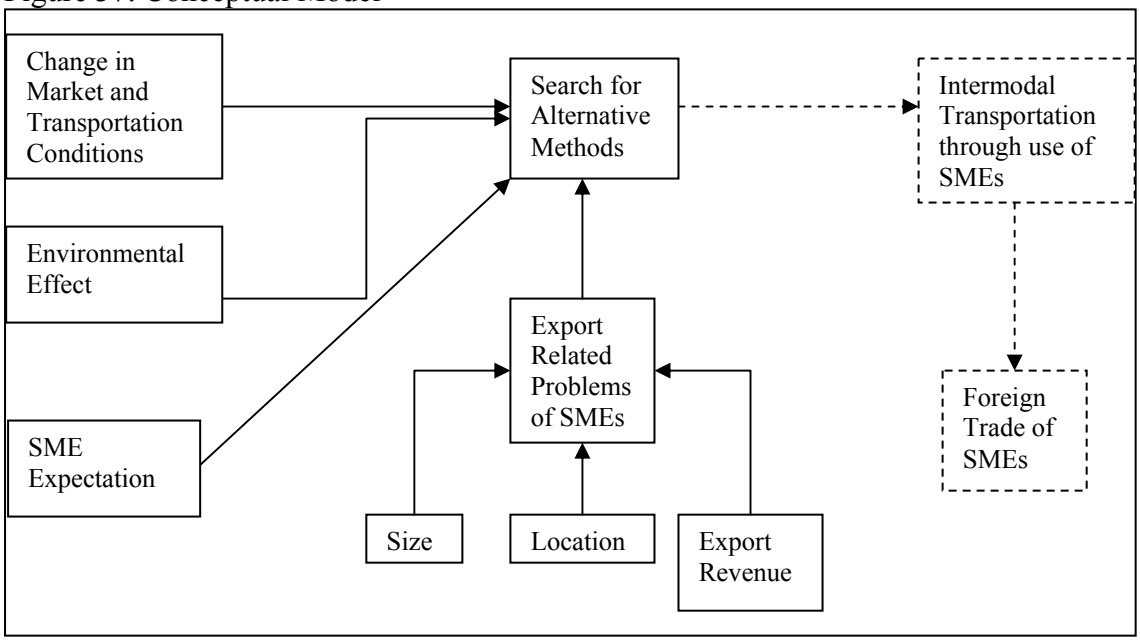
The conceptual model of this study is designed based on the information gathered from literature survey and in-depth interviews. There are certain independent variables which affect the attitude of SMEs to search for alternative modes of transportation. These variables are grouped under major ones which are; “change in market and transportation conditions”; “environmental effect”; “SME expectations”; and “export related problems of SMEs”.

The cost of the transportation mode, the efficiency of the transportation mode, its relations with government, and changes in the frequency and the amount of orders sub-variables are gathered under “change in market and transportation conditions”.

“Environmental effect” variable includes the changes in environmental conditions and finally SME expectation represents the demands of SMEs from logistics and trade.

Export related problems of SMEs are effective in determining the attitude of SMEs in terms of searching for alternative methods. Therefore, these problems will be tested according to the size, location, and export revenues of SMEs.

Figure 37. Conceptual Model



The effect of searching for alternative methods to intermodal transportation through use of logistic distribution centers and therefore the following effect on the foreign trade of SMEs is suggested to be tested through further research after the construction of LDCs.

Preparation of the Questionnaire

In light of the literature research and in-depth analyses, a questionnaire was prepared. There were 25 questions in the questionnaire. The first question divides the respondents into two groups as; exporting and non-exporting. Non-exporting

respondents complete the question by only answering the question about major obstacles that prevent them not to export while they are willing to. Following this, 11 questions were prepared to identify the demographic characteristics of the respondents. Those demographic questions were trying to identify the export experience, last exported goods and country, the percentage of exported countries in respondents' portfolios, INCOTERMS used, frequency of usage of third parties for logistics and also for customs applications, usage of LDCs, employee numbers, the industry field of the respondents, revenue, the percentage of exports in revenue, and the status of company profile. However, some of these questions are not used in this analysis. After completing the questionnaire, a pilot survey was conducted with 7 SMEs, to get point by point feedback in order to improve the questionnaire.

Some re-wording was made for some variables under three questions in order not to manipulate the respondents. For two questions which are about the effects of geographic location and the necessary services and areas that would be served in LDCs, new items were added. Furthermore, a new question was added about the percentages of the INCOTERMS used while exporting.

For the statistical analyses, SPSS was used. Under SPSS, data was analyzed with SPSS through the use of descriptive analyses, T-tests, factor analysis, and ANOVA tests.

Sampling

This study focuses on small and medium enterprises (SMEs) located in Organized Industrial Zones in Turkey. In terms of exporting SMEs, firstly, 81 cities of Turkey are filtered and sorted according to their export volume and first thirteen cities that have more than 1 billion US Dollars of export volume are chosen (See Appendix 1).

The second elimination criteria was to study cities that do not have sea shores due to the fact that they will rely more on LDCs and intermodal transportation. From the first step of 13 cities five remained at the end of second elimination (Ankara, Denizli, Gaziantep, Kayseri, and Manisa). Third elimination was based on regions and the study concentrated on West and Central Anatolia; therefore, Gaziantep was eliminated.

Snowball sampling and the lists of Chambers of Industry & Trade are used as the data gathering method in order to reach as many SMEs as possible. Personal connections in related sample cities were used which facilitated the survey to be responded in a quicker manner. Furthermore, Chambers of Industry and Trade in Ankara, Denizli, and Manisa also, supported the research by sending the questionnaire to their members who are the manufacturing SMEs either exporting or non-exporting. Since no responses were received, neither from the Chamber of Industry and Trade nor any SMEs in Kayseri for the pilot survey, Kayseri was eliminated and Ankara, Denizli, and Manisa were selected as sample cities. Among these cities, 281 exporting SMEs were reached through the survey.

Non-exporting SMEs were included to the research in order to determine the reasons of not having any activities in terms of exports. Thus, using the same criterias above, Ankara, Denizli, and Manisa were selected for the second part of the research and 41 different SMEs which do not have any export activities responded to the survey. Finally, a total of 322 respondent SMEs were reached for this research.

In Ankara, 217 exporting and manufacturing SMEs who are members of Ankara Chamber of Industry and located in 1. Organized Industrial Zone, were reached and 78 of them responded to the survey (35.94 % response rate). 8 non-exporting manufacturing SMEs in Ankara were reached through snowball sampling method and all firms responded to the questionnaire (100 % response rate). In Denizli, 152

manufacturing and exporting SMEs located in Organized Industrial Zone were reached and 101 of them responded to the questionnaire (66.4 % response rate). Non-exporting 14 SMEs were reached through snowball sampling method (response rate: 100 %). Finally, in Manisa 108 member SMEs in Manisa Organized Industrial Zone were reached through Manisa Chamber of Trade and 81 SMEs responded (response rate: 75 %). 21 exporting SMEs were further reached through snowball sampling method in Manisa and all of the firms responded to the questionnaire. For the non-exporting SMEs in Manisa, 20 of them were reached through snowball sampling and 19 of them responded to the questionnaire. The only non-responding SME which was reached through snowball sampling was in Manisa (response rate: 95 %).

Sample Characteristics

In Organized Industrial Zones in Ankara, Denizli, and Manisa; 322 SMEs responded to the research; 281 of them were exporting SMEs and 41 were non-exporting SMEs.

There was an almost-equal distribution of respondents in the cities(See Table 41). Manisa which had the most respondents had 102 exporting and 19 non-exporting SMEs (37.58 %). In the second place, Denizli had 101 exporting and 14 non-exporting SMEs (35.71 %). And lastly, Ankara had 78 exporting and 8 non-exporting SMEs corresponding to 26.71 percent of the total SMEs.

Table 41.Numbers and Percentages of Respondents from Ankara, Denizli, and Manisa

YES	Number of SMEs	Percent	NO	Number of SMEs	Percent	Cumulative Number	Cumulative Percentage
ANKARA	78	27.8	ANKARA	8	19.5	86	26.71
DENIZLI	101	35.9	DENIZLI	14	34.1	115	35.71
MANISA	102	36.3	MANISA	19	46.3	121	37.58
Total	281	100.0	Total	41	100.0	322	100.0

Non-exporters were not asked about their revenues, industry, number of employees and other exporting questions since the focus of this research is to identify the factors to facilitate exporting SMEs' export processes and to reduce their costs. Providing these, non-exporting SMEs are expected to start exporting.

Among these 281 exporting SMEs, there are companies with different revenue levels. Those different revenue levels were grouped under three categories as small, medium, and large and EURO was used as the basic currency for this research. The categories are; small: 0 – 4,999,999; medium: 5,000,000 – 9,999,999; and large: 10,000,000+ (see Table 42). The major group of the sample is middle-sized with 39.5 percent.

Table 42. Categorized Revenue Levels of Exporting SMEs

	EURO (€)	Number of Companies	Percent
Valid	0 – 4,999,999 , (S)	100	35.6
	5,000,000 – 9,999,999 , (M)	111	39.5
	10,000,000+ , (L)	70	24.9
	TOTAL	281	100.0

Respondent SMEs have different export experiences and export to various regions. In terms of export experience, the respondents were grouped under four categories as; 1 to 5 years; 6 to 10 years; 11 to 20 years; and 21 years and more of experience. The results are given in Table 43. The majority of the respondents are gathered in 6 to 20 years by categorizing 6 to 10 years of experience as 30.2 percent of the total, and 11 to 20 years of experience as the major group with 45.2 percent. The following groups acquire almost the equal percentages which are 12.5 percent for the group of 1 to 5 years of experience and 12.1 percent as the category of 20 years and more experience years corresponds to.

Table 43. Categorized Export Experiences of the Exporting SMEs

	Years	Number of SMEs	Percent	Valid Percent
Valid	1 - 5	35	12.5	12.5
	6 - 10	85	30.2	30.2
	11 - 20	127	45.2	45.2
	20 +	34	12.1	12.1
	Total	281	100.0	100.0

In terms of exported countries, there are 9 categories. The categories are listed in the Table 44. 55.76 percent of the respondent SMEs' export volumes belong to European Union Countries. Following EU, Middle Eastern Countries acquire 11.84 percent of the total, and Russia and Former Soviet Countries acquire 11.77 percent, almost the same with Middle Eastern Countries. As seen from this table, Turkey's exports are mostly traded to neighbor countries.

Table 44. Categorized Exported Countries in Percentage

EXPORTED COUNTRIES IN %	
	%
EUROPEAN UNION	55.77
MIDDLE EAST	11.84
RUSSIA AND FORMER SOVIET COUNTRIES	11.77
TURKIC REPUBLICS	5..91
ASIA	4.64
NORTH AMERICA	4.41
OTHERS	2.72
AFRICA	1.79
SOUTH AMERICA	1.14

In terms of the INCOTERMS (international commercial terms) respondents mostly (42.65 %) use "Free On Board (FOB)" and "Cost, Insurance and Freight (CIF)" (38.91 %) as seen in Table 45.

Table 45. INCOTERMS of the Respondents

	%
FREE ON BOARD	42.65
COST, INSURANCE & FREIGHT	38.91
EXWORKS	6.53
DELIVERY DUTY PAID	4.25
DELIVERY DUTY UNPAID	2.21
FREE ALONGSIDE SHIP	2.14
CARRIAGE & INSURANCE PAID	1.32
FREE TO CARRIER	.25
COST AND FREIGHT	.18
CARRIAGE PAID TO	.11
FREE AT FRONTIER	.04
FREE EX-SHIP	.00
FREE EX-QUAY	.00

Respondent SMEs seem to be mostly using sea and road transportation. According to the survey, more than 90 percent of the transportation of exported goods are carried through sea transportation (47.99 %) and road transportation (43.75 %) as seen in Table 46.

Table 46. Percentage of Transportation Modes Used by Respondents

MODE	%
SEA TRANSPORTATİON	47.99
ROAD TRANSPORTATION	43.75
RAILWAY	4.21
AIRWAY	3.41

The respondents were asked on a five-point scale, how frequently they use third parties for customs process and for export transportations. Their means are 4.76 and 4.31 respectively. Furthermore, the frequency of using logistic distribution centers by the respondents was analyzed and according to this question, 78 percent of the respondents do not use any logistic distribution centers. On the other hand, 17 percent use their own distribution centers while 4 percent use common distribution centers in their region.

Most of the respondents function in the food industry. There are 94 respondents from food industry which corresponds to 33.5 percent of the total respondents. Following this, 61 SMEs are operating in the textile industry and 33 of the respondents are from machine and machine parts production industry which corresponds to 11.7 percent of total.

Table 47. Respondent SMEs in terms of Their Industry

INDUSTRY	Number of SMEs	Percent
Food	94	33.5
Textile	61	21.7
Machine / Machine Parts	33	11.7
Plastics	18	6.4
Leather	13	4.6
Chemistry	11	3.9
Personal Care	6	2.1
Furniture	5	1.8
Marble	5	1.8
Glass	5	1.8
Cement	4	1.4
Board	4	1.4
Aluminums / Steel	4	1.4
White Goods	3	1.1
Mine	3	1.1
Synthetic Goods	2	.7
Pipe	2	.7
Paper	1	.4
Health Care	1	.4
Bicycle	1	.4
Carpet	1	.4
Candle	1	.4
Automotive Parts	1	.4
Lighting	1	.4
Jewellery	1	.4
Total	281	100.0

Furthermore, respondents were grouped according to their shares of exports within their revenues as; less than 50 percent and more than or equal to 50 percent (See Table 48). According to this, 178 SMEs have export levels of revenue less than 50

percent and the remaining 103 respondents have more than or equal to 50 percent as export revenues.

Table 48. Percentage of Export within the revenues of the Respondents

		Number of SMEs	Percent
Valid	< 50 %	178	63.3
	≥ 50 %	103	36.7
	Total	281	100

Finally, the respondents were grouped according to their company status. According to this categorization, 52 percent of the respondent SMEs are incorporated companies, 47 of them are limited companies, and 1 percent of the SMEs have sole proprietorship status (See Table 49).

Table 49. Percentage of Company Status

		Number of SMEs	Percent
Valid	Incorporated Companies	146	51.95
	Limited Companies	132	46.97
	Sole Proprietorship	3	1.1
	Total	281	100

Data Collection

Preparation of the questionnaire took almost 2 months since there was much information to use in the preparation of questionnaire and also there were too many issues to be analyzed. Starting from November 2008, preparing the questionnaire lasted till the last week of December 2008. This long period could cause a shift in research plan, however; 295 responses were gathered in a month, and the 27 responses were gathered in a week further. Such a quick data collection was achieved by the help of Chambers of Industry and Trade in Ankara, Denizli, and Manisa and intensive follow-up made through phone conversations with SMEs in order to enlighten them about the objectives of this research and to request filling the questionnaire. In addition to this, to

get quicker responses, internet was used. All the questionnaires were distributed via emailing to the addresses of SMEs which are gathered from the Chambers of Industry and Trade and also from personal contacts. Follow-up telephone calls were made to increase the response rate.

Reliability of the Questionnaire

The questionnaire prepared for testing SMEs opinions and possible attributes towards certain changes in terms of logistics and foreign trade remains strongly reliable. In order to test the reliability, the Cronbach's Alpha Analysis was used.

The first question that was tested for its reliability tries to identify the reasons of non-exporting SMEs who are further willing to export. The question had 23 sub-questions and those sub-questions seem reliable enough to investigate the reasons of not exporting by having ".6" from Cronbach's Alpha analysis.

Moreover, a similar question with the above one, another question in the questionnaire tries to identify the major problems of the exporting SMEs within whole exporting process. The Cronbach's Alpha analysis proves this question's target by pointing ".847".

In another question, the research tried to find out how the respondents feel about their currently most-used transportation method in different characteristics. The Cronbach's Alpha level is ".891" for this question which shows that this question reaches its target.

In the question where the possible reasons that can lead the respondent SMEs to change their transportation mode were asked, the Cronbach's Alpha score is quite high also for this question with ".768".

In our questionnaire, the characteristics of logistics distribution centers (LDCs) that respondent SMEs feel that those should exist in the LDCs were tried to be

determined. The Cronbach's Alpha score is the highest for this question in the whole questionnaire with ".917".

Furthermore, we tried to find out the drawbacks of the location that the respondents are located in. The Cronbach's Alpha score is ".854" for this question which is also more than necessary in terms of reaching its target.

Just like the other questions in our questionnaire, the question which asks the opinion of the respondent SMEs for the situations characterized according to their geographic locations acquires a high reliability score; ".789" as the Cronbach's Alpha Test score.

CHAPTER 6

ANALYSIS AND FINDINGS

Descriptive Findings

These findings present the general problems of exporting and non-exporting SMEs. In order to hear the voice of the non-exporting SMEs a question was asked which aims to investigate the reasons behind staying away from exporting activities (See Table 50).

Table 50. Mean Results of the Reasons of Non-exporting SMEs
(1: Absolutely Not Effective 5: Absolutely Effective)

	MEAN (Over 5.00)	Std. Deviation
Effective Ones		
BOARD OF EXPORTERS IS NOT PROVIDING ENOUGH INFORMATION ABOUT EXPORTING	4.71	.461
COSTS ARE HIGH	4.65	.656
TRANSPORTATION COSTS	4.65	.480
DOMESTIC DEMAND IS ENOUGH	4.63	.488
LACK OF SUITABLE CONDITIONS FOR THE REPAYMENT OF EXPORT LOANS	4.58	.591
THE EFFECT OF THE LOCATION OF THE FIRM ON TRANSPORTATION	4.53	.745
INADEQUACY OF LOANS GIVEN FOR EXPORTING	4.53	.505
STORAGE AND WAREHOUSING COSTS	4.46	.809
THE ANXIETY OF THE POSSIBILITY FOR NOT COLLECTING THE EXPORT REVENUES	4.39	.737
CUSTOMS PROCEDURES TAKE TIME	4.36	.915
STATE IS NOT SUPPORTING THE ADVERTISING AND EXHIBITON ACTIVITIES	4.17	.667
JUDICIAL BARRIERS IN THE FOREIGN TARGET MARKETS	4.12	.900
STATE IS NOT GIVING ENOUGH INFORMATION ON FOREIGN TRADE ACTIVITIES	4.02	.790
BUREAUCRATIC PROBLEMS IN THE FOREIGN TARGET MARKETS	4.00	.837
FLUCTUATING EXCHANGE RATES	3.78	.962
Not Effective Ones		
INSUFFICIENT NUMBER OF LOGISTICS COMPANIES	3.41	.706
STATE IS NOT GIVING ENOUGH EDUCATION ABOUT EXPORTING	3.19	.813
UNFAIR DISTRIBUTION OF SECTORAL SUBSIDIES	3.19	.679
THE COST OF MARKET RESEARCH	2.85	1.014
STATE IS NOT SUPPORTING THE EXPORTING FIRMS ENOUGH FOR COLLECTING EXPORT REVENUES	2.75	.888
COST OF ESTABLISHING AN EXPORT DEPARTMENT	2.24	.943
VISA PROBLEM FOR EU COUNTRIES	2.12	1.249

As seen in the table, the reason “board of exporters is not providing enough information about exporting” gets 4.71. Following this reason, the complaint about the high level of general costs gets the same mean with the problem of “transportation costs are high” as 4.65.

For the same question, the least significant problems are visa problem for EU countries as 2.12, and cost of establishing an export department within the company as 2.24.

Another question in the questionnaire tries to identify the major problems of the exporting SMEs regarding the whole exporting process (See Table 51). Logistics problems seem to be the most effective ones for the exporting SMEs. Transportation costs get the first place with 4.30. Following this, another cost factor which is the overtime payment made to ship owners get 3.93 and in the third place, being far from sea ports in terms of geographic location gets 3.86. Other logistics problems “storage and warehousing costs” gets 3.85, and the problem of “Turkish Ports’ charges are higher than European Ports” gets the same mean of 3.83 together with “handling process problem”.

“Being far from customs units” seems to be a minor problem for the respondents (2.01). Besides this, foreign language does not seem as a problem for exporting SMEs by getting 2.08. The third least significant problem seems to be visa problem for EU Countries which gets 2.13. This problem was the least effective obstacle for non-exporting SMEs, too.

Table 51. Major Problems of the Exporting SMEs
(1: Absolutely Not Effective 5: Absolutely Effective)

	MEAN (Over 5.00)	Std. Deviation
Effective Ones		
TRANSPORTATION COSTS ARE HIGH	4.30	.790
OVERTIME PAYMENT MADE TO SHIP OWNERS	3.93	1.014
LOCATION IS FAR FROM PORTS	3.86	.789
STORAGE AND WAREHOUSING COSTS	3.85	.908
TURKISH PORTS ACQUIRE HIGHER CHARGES THAN EU PORTS	3.83	1.015
HANDLING PROCESS	3.83	.984
FLUCTUATING EXCHANGE RATES	3.74	1.168
COSTS ARE HIGH FOR THE TARGET MARKETS	3.71	.891
BUREAUCRATIC OBSTACLES IN TARGET MARKETS	3.70	1.258
Not Effective Ones		
BOARD OF EXPORTERS IS NOT PROVIDING ENOUGH INFORMATION ABOUT EXPORTING	3.51	1.517
HANDLING COSTS ARE HIGH	3.39	1.160
CUSTOMS PROCEDURES TAKE TIME	3.26	1.319
JUCIDIAL BARRIERS IN THE TARGET MARKETS	3.23	1.398
NOT ENOUGH PERSONNEL ACCOMMODATED IN CUSTOMS OFFICES	3.15	1.073
STATE IS NOT SUPPORTING THE EXPORTING FIRMS ENOUGH FOR COLLECTING EXPORT REVENUES	3.05	1.377
THE LANGUAGE USED FOR ANNOUNCEMENTS AND CIRCULARS IS NOT CLEAR	2.96	1.405
STATE IS NOT GIVING ENOUGH INFORMATION ON FOREIGN TRADE ACTIVITIES	2.92	1.571
OVERTIME COSTS OF CUSTOMS OFFICES	2.86	1.445
INSUFFICENT NUMBER OF LOGISTICS COMPANIES	2.58	1.160
NOT ENOUGH TAX REDUCTION IS PROVIDED FOR EXPORTING FIRMS	2.51	1.237
LOGISTICS INFRASTRUCTURE IS NOT SUFFICIENT FOR EXPORT TRANSPORTATIONS	2.45	1.098
TRANSPORTATION METHOD USED DOES NOT HAVE FREQUENT JOURNEYS	2.42	1.033
STATE IS NOT GIVING ENOUGH EDUCATION ABOUT EXPORTING	2.31	1.259
PROBLEMS FOR ACQUIRING THE NECESSARY EXPORT DOCUMENTS	2.21	1.046
VISA PROBLEM FOR EU COUNTRIES	2.13	.900
FOREIGN LANGUAGE	2.08	1.126
LOCATION IS FAR FROM CUSTOMS UNITS	2.01	1.025

Another question tried to find out how the respondents feel about their most-used transportation method. The question was a 7 point scale semantic differential between two bipolar adjectives (See Table 52). SMEs evaluated their current transportation mode as 3.86 between cheap and expensive. Furthermore, respondents seem undecided whether their mostly-used transportation mode is harmful or not for the environment.

Table 52. Respondents Opinions about the Characteristics of the Most-Used Mode

	1	2	3	4	5	6	7	
SLOW					♦5.86			FAST
HARD TO ACCESS					♦5.56			EASY ACCESS
EXPENSIVE				♦3.86				CHEAP
DANGEROUS					♦5.97			SAFE
LATE ARRIVAL					♦5.33			ON TIME ARRIVAL
NOT FREQUENT TRIPS					♦5.85			FREQUENT TRIPS
NOT WIDESPREAD					♦5.77			WIDESPREAD
HARMFUL TO ENVIRONMENT				♦4.19				ENVIRONMENT-FRIENDLY

Another question tries to assess the possible reasons that can lead the respondent SMEs to change their transportation mode to an alternative one. The most effective reason seems to be the transportation cost by a mean of 4.56. Following this, if time of arrival gets longer than expected, respondents are willing to change their current transportation mode to an alternative one. Besides these, any damage for the goods that can occur during transportation seems to lead the respondents to change their modes to an alternative mode (3.89). SMEs are not sensitive to the environment issue related to transportation and they are not planning to change their current transportation mode if it is harmful to the environment (See Table 53).

Table 53. Mean Results of the Possible Reasons that Can Lead to Mode Change (1: Absolutely Not Effective 5: Absolutely Effective)

	Mean (over 5.00)	Std. Deviation
Effective		
The cost of the transportation mode	4.56	.740
Time of arrival gets longer	4.14	1.263
Goods can be damaged through currently-used mode	3.89	1.315
The increase in the amount of demands	3.86	.933
The increase in the frequency of demands	3.56	.897
Not Effective		
Generality of the mode	3.23	1.248
Insufficient state support for the currently-used transportation mode	3.14	1.169
Decrease of the amount of demands	3.07	1.090
Currently-used mode is harmful to environment	1.99	1.222

SMEs are also asked to evaluate the facilities and services that logistic distribution centers should have (See Table 54). Respondents rated the non-stop working hours as the most significant service with the mean of 4.53. Following this, SMEs require suitable loading and discharging areas for any kind of goods with 4.45 mean. The third most significant service in LDCs is the certified public accountancy (4.42). Another consultancy service customs consultancy's mean is 4.35.

In terms of electronic systems, "electronic follow up for goods" gets 4.36 and "reservation system for handling activities" a mean of 4.34. "Suitable loading and discharging areas for dangerous goods" gets 4.14. Related to this, "suitable storage for any kind of goods" gets 4.11. Final two most significant components, bank gets 4.08 and software compatible with connected ports get 4.05. The least necessary variables seems to be the support services where, existence of seminar rooms gets 3.03, and research and development center gets 3.08.

Table 54. The Necessary Characteristics of LDCs according to Respondent SMEs (1: Absolutely Not Necessary 5: Absolutely Necessary)

	Mean (Over 5.00)	Std. Deviation
NON-STOP WORKING HOURS	4.53	1.358
SUITABLE LOADING/DISCHARGING AREAS FOR ANY KIND OF GOODS	4.45	1.539
CERTIFIED PUBLIC ACCOUNTANCY	4.42	.990
ELECTRONIC FOLLOW-UP FOR GOODS	4.36	.943
CUSTOMS CONSULTANCY	4.35	1.021
RESERVATION SYSTEM FOR HANDLING ACTIVITIES	4.34	.804
SUITABLE LOADING/DISCHARGING AREAS FOR DANGEROUS GOODS	4.14	1.075
SUITABLE STORAGES FOR ANY KIND OF GOODS	4.11	.859
BANK	4.08	1.036
SOFTWARE COMPATIBLE WITH CONNECTED PORTS	4.05	.915
OFFICES FOR LOGISTICS COMPANIES	3.88	.871
TRAILER PARK	3.86	1.004
RAILWAY CONNECTION TO HINTERLAND AND PORTS	3.84	1.289
CONTAINER RENTING AREA	3.70	.843
OFFICES FOR LEGAL COUNSELLING	3.53	.828
OFFICES FOR EXPORTING FIRMS	3.53	.989
OFFICES FOR INSURANCE COMPANIES	3.51	.949

	Mean (Over 5.00)	Std. Deviation
OFFICES FOR FOREIGN TRADE CONSULTANCY	3.49	.938
EDUCATION CENTER	3.47	1.222
CERTIFIED TRANSLATOR	3.37	.792
RECREATİON CENTER	3.27	1.066
PARTIAL PRODUCTION & REPAIRING AREAS	3.17	1.209
R&D CENTER	3.08	.867
SEMINAR ROOMS	3.03	1.079

SMEs are also asked to evaluate the drawbacks they experience due to geographical location. Respondents complain about the fact that there are no alternatives to road transportation. In a 5 point scale question, respondent SMEs rated this problem as the first problem with a mean of 4.13. Secondly, the lack of state support and subsidies in their regions seems to be a problem for the respondents. In terms of logistics again, in the third place, "being far from sea ports" seems as another important problem for the respondents who are all far from sea ports. The "high storage costs within the area" gets 3.87 and seems as another important issue related to the geographic location (See Table 55).

Table 55. Effects of Geographic Location to SMEs
(1: Absolutely Not Effective 5: Absolutely Effective)

	Mean (Over 5.00)	Std. Deviation
Major Problems		
THERE IS NO ALTERNATIVE MODE FOR ROAD TRANSPORTATION	4.13	1.342
STATE SUBSIDIES AND SUPPORT ARE NOT ENOUGH IN THE REGION	3.92	1.229
LOCATION IS FAR FROM PORTS	3.89	1.173
STORAGE COSTS ARE HIGH	3.87	1.462
LOCATION IS FAR FROM TARGET MARKETS	3.54	1.406
Minor Problems		
THERE ARE MORE SUPPORT AND SUBSIDIES PROVIDED FOR THE FOREIGN INVESTORS	3.37	1.232
LOGISTIC DISTRIBUTION CENTERS ARE NOT PLANNED AND BUILT PROPERLY	3.18	1.136
LOCATION IS FAR FROM THE RAW MATERIALS	3.16	1.345
NO PLACE TO RENT CONTAINER BOXES	3.15	1.446
LOGISTIC COMPANIES ARE NOT SUFFICIENT	3.10	1.336
INVESTMENTS FOR LOGISTICS ARE NOT ENOUGH	3.09	1.050
ROAD TRANSPORTATION IN THE REGION IS NOT DEVELOPED	2.88	1.131
ORGANIZED INDUSTRIAL ZONES IN THE REGION ARE NOT PLANNED AND BUILT PROPERLY	2.85	1.177

	Mean (Over 5.00)	Std. Deviation
LOGISTICS COMPANIES ARE NOT WORKING EFFICIENTLY	2.85	1.326
LABOR COSTS ARE HIGH IN THE REGION	2.84	1.109
INSUFFICIENT ORGANIZED INDUSTRIAL ZONES	2.36	1.299
INSUFFICIENT PERSONNEL FOR FOREIGN TRADE ACTIVITIES	2.12	1.131

In terms of geographic location, respondents are also, asked if they agree or disagree with a number of statements listed in Table 56. The respondents disagree with the statement "the state is investing enough for the logistics industry" with a mean of 1.72. Furthermore, respondents believe that the alternative modes to road transportation are not effective to attract SMEs (4.13). Respondent SMEs seem to complain neither about the insufficiency of personnel for foreign trade (2.12) nor the organized industrial zones (2.36).

Table 56 Opinions of SMEs for the Status Quo Characterized According to Their Geographic Locations (1: absolutely disagree 5: absolutely agree)

	Mean	Std. Deviation
STATE IS INVESTING ENOUGH FOR THE LOGISTICS INDUSTRY	1.72	1.283
TAXES COLLECTED FROM EMPLOYEES SALARIES ARE DECREASED	1.86	1.215
THERE ARE ENOUGH SUBSIDIES AND SUPPORT FOR EXPORT TRANSPORTATION	2.00	1.382
PRIVATE SECTOR IS INVESTING ENOUGH FOR THE LOGISTICS INDUSTRY	2.07	.974
BUREACURATIC OBSTACLES THROUGH CUSTOMS PROCESSES ARE ELIMINATED	2.11	.818
THERE ARE LOW-INTEREST LOANS FOR EXPORTERS	2.16	1.163
ENERGY COSTS ARE PAID LOWER BY EXPORTERS THAN BY NON-EXPORTERS IN THE REGION	2.80	1.295
TAXES FOR RAW MATERIALS ARE PAID LOWER BY EXPORTERS THAN BY NON-EXPORTERS IN THE REGION	3.03	1.515
THERE ARE NOT EFFICIENT ALTERNATIVES FOR ROAD TRANSPORTATION	4.13	1.342

In terms of opinions of SMEs for the state's investment on logistics, SMEs believe that none of the transportation modes including the road transportation are being invested enough by the state (See Table 57).

Table 57. Opinions on State's Investment on Logistics
(1: Absolutely not enough 5: Absolutely enough)

	Valid	Mean	Std. Deviation
Road	281	1.71	1.052
Railway	281	1.17	.549
Sea	281	1.50	.938
Airway	281	1.25	.615
Combined	281	1.31	.747

Analysis of Problems in terms of Location

This research was applied to various SMEs in three different cities. Thus, effect of various variables such as location, size, and export revenue share within total revenue were tried to be analyzed.

H1: Transportation cost perception of SMEs will differ according to location.

Since, Ankara, Denizli, and Manisa are located in different regions their distances to seaports vary. Therefore, their transportation costs could vary from city to city. In order to examine that, ANOVA test was applied (see Table 59). Initially, respondents from three cities rate high transportation costs differently. For Ankara, it is rated as 4.42, for Denizli it is 4.26, and for Manisa it is 4.25 (see Table 58).

Table 58. Mean Results for High Transportation Cost According to Different Cities
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean
Ankara	78	4.42
Denizli	101	4.26
Manisa	102	4.25

Table 59. ANOVA Test Results for Location-Based Transportation Cost Variable

	F	Sig.
High transportation costs	1.341	.263

According to the ANOVA test, there is not a significant difference among Ankara, Denizli, and Manisa. Therefore, hypothesis 1 is not supported.

The variable "overtime payments made to ship owners" seems to be the second major problem for the exporting SMEs. Thus, overtime payments made to ship owners was analyzed through ANOVA Test if the results differ according to the location (See Table 60 and 61).

H2: SMEs evaluation regarding "overtime payments made to ship owners" will differ according to location.

Table 60. Mean Results for Overtime Payments Made for Ship Owners Evaluation according to Location (1: Absolutely not effective to 5: Absolutely effective)

City	Valid	Mean
Ankara	78	3.97
Denizli	101	4.03
Manisa	102	3.80

Ankara has 3.97 as mean while Denizli and Manisa have 4.03 and 3.80 respectively as seen in Table 60.

Table 61. ANOVA Test Results for Location-Based "Overtime Payments Made to Ship Owners" Variable

	F	Sig.
Overtime payment made to ship owners	1.355	.260

Like the high transportation costs variable, different locations do not seem to have a significant difference on overtime payments made to ship owners. Therefore, hypothesis 2 is not supported.

So far, transportation cost and the overtime payments made to ship owners seem not to differ according to different locations. In addition to these, although transportation cost does not change according to locations, being far from seaports can be affected by location difference. In order to examine this, ANOVA test was used again (See Table 63).

H3: SMEs evaluation on "being far from seaports" will differ according to location.

Table 62. Mean Results for Being Far from Seaports Evaluation according to Location
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean
Ankara	78	3.90
Denizli	101	3.90
Manisa	102	3.78

As seen in Table 62, Ankara and Denizli have the same mean of 3.90 while Manisa has 3.78. Similar to high transportation costs and overtime payments, "being far from seaports" does not have a significant difference among Ankara, Denizli, and Manisa. Therefore, hypothesis 3 is not supported.

Table 63. ANOVA Test Results for Being Far from Seaports

	F	Sig.
Location is far from seaports	.691	.502

Since storage and warehousing activities are one of the main activities of logistics, storing goods in different locations can affect the cost of total transportation costs.

H4: Storage and warehousing costs evaluation of SMEs will differ according to location.

For this variable, Ankara has the mean of 3.90, Denizli has 3.88, and Manisa has 3.79 (See Table 64).

Table 64. Mean Results for Location-Based "Overtime Payments Made to Ship Owners" Variable (1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean
Ankara	78	3.90
Denizli	101	3.88
Manisa	102	3.79

In order to find out the result for this hypothesis, ANOVA test was applied as seen in Table 65.

Table 65. ANOVA Test Results for Location-Based "Storage and Warehousing Costs" Variable

	F	Sig.
Storage and warehousing costs	.354	.702

As seen in Table 65, there is not a significant difference among cities therefore it cannot be claimed that SMEs perception on storage and warehousing costs differ significantly. Thus, hypothesis 4 is not supported.

SMEs believe that Turkish ports acquire higher charges than European ports do, and this result has different means in terms of location (See Table 66).

Table 66. Mean Results for "Turkish Ports Acquire Higher Charges than EU Ports" Evaluation according to Location
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean
Ankara	78	3.76
Denizli	101	3.95
Manisa	102	3.78

This variable has 3.76 from Ankara, 3.95 from Denizli, and 3.78 from Manisa. Furthermore, a significant difference was searched if there is any for this variable according to cities.

H5: "Higher charges of Turkish Ports than European Ports" evaluation of SMEs will differ according to location.

However, the result seems not significantly different according to ANOVA test regarding different cities (See Table 67). Therefore hypothesis 5 is not supported.

Table 67. ANOVA Test Results for Location-Based "High Charges of Turkish Ports"

	F	Sig.
Turkish ports acquire higher charges than EU Ports	1.015	.364

In terms of location, the perception on handling process as a major problem differs according to different cities since they have different means which are; Ankara as 3.78, Denizli as 3.84, and Manisa as 3.86 (See Table 68).

H6: Handling process evaluation of SMEs will differ according to location.

Table 68. Mean Results for Handling Process Evaluation according to Location (1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean
Ankara	78	3.78
Denizli	101	3.84
Manisa	102	3.86

ANOVA test was applied and according to this test, there is not a significant difference among cities on perception on handling processes. Therefore, hypothesis 6 is not supported. By concluding these, it is discovered that difference of the cities does not affect the perception on logistics costs and applications.

Table 69. ANOVA Test Results for Location-Based "Handling Process"

	F	Sig.
Handling Process	.154	.857

Location difference can exist in other questions. For instance, in the question where the possible situations that lead the respondents to change their currently most-used mode to alternative transportation modes were asked, the cost of transportation mode seems to be the most considered problem (4.56). However, since the location of companies differ from each other; their perception on changing their mode to an alternative one can differ too.

H7: Changing transportation mode because of high transportation costs evaluation of SMEs will differ according to location.

Table 70. Mean Results for Changing Transportation Mode because of High Transportation Costs Evaluation according to Location
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean	Std. Deviation
Ankara	78	4.67	.574
Denizli	101	4.48	.856
Manisa	102	4.56	.725

In order to find if the mean results in Table 70 are significantly different from each other, ANOVA test was applied however, the significance level does not lower from 0.05 therefore there is not a significant difference among cities in terms of changing their transportation mode according to transportation costs (See Table 71). Thus, hypothesis 7 is not supported.

Table 71. ANOVA Results for Changing Transportation Mode Because of High Transportation Costs According to Cities

	F	Sig.
Cost of Transportation Mode	1.478	.230

For the question which is related to effects of geographic location to SMEs, it is believed that the top three logistics-related variables can differ according to different cities.

H8: Non-alternative road transportation evaluation of SMEs will differ according to location.

Table 72. Mean Results for Non-Alternative Road Transportation Evaluation according to Location (1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean	Std. Deviation
Ankara	78	4.12	1.217
Denizli	101	4.12	1.267
Manisa	102	4.16	1.507

H9: Geographic location-based evaluation of being far from seaports will differ according to location.

Table 73. Mean Results for Geographic Location-based Evaluation of Being Far from Seaports Evaluation according to Location
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean	Std. Deviation
Ankara	78	3.73	1.159
Denizli	101	3.94	1.173
Manisa	102	3.96	1.185

Both of the variables are tested through ANOVA; however there are not any significant differences for both variables in terms of different locations. Therefore, hypothesis 8 and 9 are not supported.

Table 74. ANOVA Results for the Effect of Geographic Location According to Cities

	F	Sig.
There is no Alternative for Road Transportation	.028	.972
Location is far from Seaports	.997	.370

H10: The effect of high storage and warehousing costs evaluation of SMEs will differ according to location.

Table 75. Mean Results of the Effect of High Storage and Warehousing Costs Evaluation according to Location
(1: Absolutely not effective 5: Absolutely effective)

City	Valid	Mean	Std. Deviation
Ankara	78	3.88	1.450
Denizli	101	4.19	1.294
Manisa	102	3.54	1.565

In order to test if the means given in Table 75, ANOVA test was applied and finally reached a significant difference which is 0.006. Therefore, the means of 3.88 of Ankara, 4.19 of Denizli, and 3.54 of Manisa are significantly different from each other (See Table 76).

Table 76. ANOVA Results for the Effect of High Storage and Warehousing Costs According to Cities

	F	Sig.
Storage and Warehousing Costs are high	5.157	.006

In our questionnaire, the opinions of SMEs for the situations characterized according to their geographic locations were searched. SMEs seem to agree that there are not efficient alternatives for road transportation. Furthermore, SMEs seem to disagree that state is not investing enough for the logistics industry. In order to analyze if these opinions differ from city to city, ANOVA test was applied (See Table 77 and 78) for the following hypothesis:

H11: Location difference of SMEs affects the perception of agreeing the absence of efficient alternative modes to road transportation.

Table 77. ANOVA Test Results for Hypothesis 11

	F	Sig.
There are not any efficient alternatives for road transportation	.028	.972

H12: Location difference of SMEs affects the perception that state is not investing enough for the logistics industry.

Table 78. ANOVA Test Results for Hypothesis 12

	F	Sig.
State is investing enough for the logistics industry	1.350	.261

As seen in Tables 77 and 78 the significance levels are .972 and .261. Since none of them are under .05, there are not any significant differences for these perceptions about the absence of alternative transportation modes to road transportation and insufficient investment made for logistics industry by the state. Therefore, hypothesis 11 and hypothesis 12 are not supported.

Regarding these ANOVA results, it was realized that logistics problems are at the same level of importance in Ankara, Denizli, and Manisa. Respondents from three cities evaluate that logistics costs including transportation, over payments made to ship owners, storage and warehousing, and Turkish port charges are high significantly. In addition to this, SMEs report that being far from seaports affects their transportation costs, therefore it is a major problem too regardless of location. Furthermore, the respondents do not see the investment efforts of state enough for the logistics industry and complain about the non-alternative situation of road transportation.

Analysis of Problems in terms of Company Size

Companies are classified as small, medium, and large according to their revenues. Thus, means and perceptions can vary according to companies as listed under every hypothesis. In order to test this, ANOVA tests were applied for the same variables above. For this criterion, our hypotheses are as follows:

H13: Transportation cost evaluation of SMEs will differ according to company size.

Table 79. Mean Results for the Relation of High Transportation Costs and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.69	.884
Medium	111	3.76	.886
Large	70	3.66	.915

H14: Overtime payments made to ship owners perception of SMEs will differ according to company size.

Table 80. Mean Results for the Relation of Overtime Payments Made to Ship Owners and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.92	1.002
Medium	111	3.87	1.080
Large	70	4.04	.924

H15: Being far from seaports evaluation of SMEs will differ according to company size.

Table 81. Mean Results for the Relation of Being Far from Seaports and Company Size

	Valid	Mean	Std. Deviation
Small	100	4.01	.772
Medium	111	3.79	.752
Large	70	3.74	.846

H16: High storage and warehousing costs evaluation of SMEs will differ according to company size.

Table 82. Mean Results for the Relation of High Storage and Warehousing Costs and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.82	.925
Medium	111	3.86	.893
Large	70	3.90	.919

H17: Turkish ports acquire higher charges than European ports evaluation of SMEs will differ according to company size.

Table 83. Mean Results for the Relation of Turkish Ports Acquire Higher Charges than EU Ports and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.85	1.009
Medium	111	3.79	1.001
Large	70	3.89	1.057

H18: Handling process evaluation of SMEs will differ according to company size.

Table 84. Mean Results for the Relation of Handling Process and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.83	.995
Medium	111	3.81	.977
Large	70	3.87	.992

Table 85. ANOVA results for the Relation of Major Problems and Company Size

	F	Sig.
High Transportation Costs	.011	.989
Overtime Payments Made to Ship Owners	.606	.546
Being far from Seaports	3.023	.050
High Storage and Warehousing Costs	.159	.853
Turkish Ports Acquire Higher Charges than EU Ports	.193	.825
Handling Process	.082	.922

According to Table 85 only being far from seaports have significant difference in terms of company sizes of SMEs. As the company size grows, being far from seaports becomes a minor problem. Thus, for the small SMEs which have revenues between 10,000 to 4,999,999 Euros, being far from seaports is a more significant problem when compared to medium-sized and large SMEs. Thus, hypothesis 15 is supported while hypothesis 13, 14, 16, 17, and 18 are not supported.

SMEs are eager to change their transportation mode if current transportation mode is expensive. This variable is analyzed if differs according to company sizes determined through revenues and applied ANOVA test for the following hypothesis.

H19: Changing transportation mode because of high transportation costs evaluation of SMEs will differ according to company size.

Table 86. Mean Results for the Relation of Changing Transportation Mode Because of High Transportation Costs Evaluation and Company Size

	Valid	Mean	Std. Deviation
Small	100	4.55	.770
Medium	111	4.58	.733
Large	70	4.54	.716

According to ANOVA test results, differences between company sizes do not have significant values when changing the current transportation mode is considered to be changed because of high transportation cost. Therefore, hypothesis 19 is not supported (See Table 87).

Table 87. ANOVA Test Result for Hypothesis 19

	F	Sig.
The cost of the current transportation mode	.055	.947

In terms of the effects of geographic location to SMEs, non-alternative road transportation, being far from seaports and high storage costs are significantly effective. These variables were analyzed if there are any differences in terms of company sizes.

H20: Location-based effect of the absence of alternative modes to road transportation evaluation of SMEs will differ according to company size.

Table 88. Mean Results for the Relation of Absence of Alternative Modes to Road Transportation and Company Size

	Valid	Mean	Std. Deviation
Small	100	4.08	1.285
Medium	111	4.14	1.257
Large	70	4.19	1.554

H21: Being far from seaports effective because of company's location evaluation of SMEs will differ according to company size.

Table 89. Mean Results for the Relation of Being Far from Seaports and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.90	1.159
Medium	111	3.95	1.159
Large	70	3.79	1.226

H22: High storage and warehousing costs evaluation of SMEs will differ according to company size.

Table 90. Mean Results for the Relation of Absence of Alternative Modes to Road Transportation and Company Size

	Valid	Mean	Std. Deviation
Small	100	3.84	1.475
Medium	111	3.81	1.480
Large	70	4.00	1.424

Table 91. ANOVA Test Results for Hypothesis 20, 21 and 22

	F	Sig.
No alternative for road transportation	.135	.874
Being far from seaports	.404	.668
Storage and warehousing costs are high	.387	.679

As seen in Table 91, there are not any significant differences for listed effects in terms of company sizes. Therefore, it is realized that regardless of the company size, SMES believe that the absence of alternative modes to road transportation, being far from seaports, and high storage and warehousing costs are effective for most of the SMEs. Thus, hypotheses 20, 21, 22 are not supported.

In terms of the opinions of SMEs for the situations characterized according to their geographic locations, not efficient alternatives for road transportation and the disagreement of the state's necessary investment amount for the logistics industry are analyzed according to respondents' company sizes.

H23: Existence of inefficient alternative modes to road transportation evaluation of SMEs will differ according to company size.

Table 92. Mean Results for the Relation of Inefficient Alternative Modes to Road Transportation and Company Size

	Valid	Mean	Std. Deviation
Small	100	4.08	1.285
Medium	111	4.14	1.257
Large	70	4.19	1.554

H24: The investment amount made to logistics industry by state is not enough evaluation of SMEs will differ according to company size.

Table 93. Mean Results for the Relation of Inefficient Alternative Modes to Road Transportation and Company Size
(1: Strongly Disagree to 5: Strongly Agree)

	Valid	Mean	Std. Deviation
Small	100	1.75	1.306
Medium	111	1.76	1.329
Large	70	1.61	1.183

Table 94. ANOVA Test Results for Hypothesis 23 and 24

	F	Sig.
Not efficient alternative modes to road transportation	.135	.874
State is investing enough for the logistics industry	.309	.734

According to ANOVA results, SMEs regardless of their company sizes agree that the alternative modes to road transportation are not efficient and further disagree that state is investing enough for the logistics industry again regardless of their company sizes. Therefore, hypotheses 23 and 24 are not supported.

Similarly, it is seen that logistics problems are at the same level of importance for companies of different sizes (as measured by their revenues). Respondents of small, medium, and large sized companies evaluate that logistics costs including transportation, over payments made to ship owners, storage and warehousing, and Turkish port charges are high significantly. In addition to this, SMEs report that being far from seaports affects their transportation costs, therefore it is also a major problem regardless of revenue amounts. Furthermore, the respondents do not see the investment efforts of state enough for the logistics industry and complain about the non-alternative situation of road transportation.

Analysis of Problems in terms of Shares of Export Revenues in Total Revenue

Besides locations and company sizes, the effect of shares of export revenues within total revenues was analyzed on export-related problems. The share of export revenues were classified as lower than 50 percent and higher than or equal to 50 percent (See Table 95).

H25: High transportation cost evaluation of SMEs will differ according to share of export revenues within total revenue.

H26: "Overtime payments made to ship owners" evaluation of SMEs will differ according to share of export revenues within total revenue.

H27: Being far from seaports evaluation of SMEs will differ according to share of export revenues within total revenue.

H28: High storage and warehousing costs evaluation of SMEs will differ according to share of export revenues within total revenue.

H29: Higher charges of Turkish ports than European ports evaluation of SMEs will differ according to share of export revenues within total revenue.

H30: Handling process evaluation of SMEs will differ according to share of export revenues within total revenue.

Table 95. T-Test Results for Hypotheses 25 through 30

	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
High Transportation Costs	4.67	279	.000	.44	.255	.627
	4.69	216.201	.000	.44	.256	.626
Overtime Payment Made to Ship Owners	3.36	279	.001	.41	.172	.657
	3.59	256.626	.000	.41	.188	.641
Being Far From Seaports	-.104	279	.917	-.01	-.203	.182
	-.108	239.522	.914	-.01	-.195	.175
High Storage and Warehousing Costs	2.331	279	.020	.26	.040	.480
	2.290	201.527	.023	.26	.036	.484
Turkish Ports Acquire Higher Charges Than EU Ports	3.761	279	.000	.46	.220	.704
	3.850	228.454	.000	.46	.226	.698
Handling Process	.348	279	.728	.04	-.198	.283
	.376	261.076	.708	.04	-.180	.265

According to the T-test results, the perception of high transportation costs significantly differs from each other according to share of exports within total revenue. Therefore, means of 4.46 which belongs to percentage lower than 50 percent is significantly higher than 4.02 which belongs to percentage higher or equal to 50 percent. Thus, it can be claimed that high transportation cost is a more significant problem for companies which have less than 50 percent of their revenues from exports. According to this, hypothesis 25 is supported. Furthermore, overtime payments made to ship owners significantly differ in the

two groups. Thus, the problem of overtime payments made to ship owners is a more significant one for companies which have less than 50 percent of their revenues from exports. According to this, hypothesis 26 is supported.

Being far from seaports, as it was in previous hypothesis, does not have significant difference according to the share of exports in revenue. It means being far from seaports is a major problem for any SMEs. Thus, hypothesis 27 is not supported.

Other logistics cost variables; high storage and warehousing costs and higher charges charged by Turkish ports than EU ports are significantly different from each other in terms of export percentage. Such as the variables above, these costs are significantly higher for SMEs which have less than 50 percent export revenues of the total revenue. Thus, hypothesis 28 and 29 are supported.

Finally in this table, handling cost does not have significant difference when the export percentage in total revenue is considered. It is significant for both SME categories. Therefore, hypothesis 30 is not supported.

In terms of mode change to alternative ones, it is tried to analyze if the high transportation costs are equally significant or not for SMEs which both have lower than 50 percent export revenues and higher or equal to 50 percent. In order to examine this, T-test was applied again (See Table 96).

H31: Changing transportation mode because of high transportation costs evaluation of SMEs will differ according to the share of export revenues within total revenue.

Table 96. T-Test Results for Hypothesis 31

	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Cost of Widely-used Transportation Mode	2.977	279	.003	.269	.091	.447
	3.125	244.825	.002	.269	.099	.439

According to t-test results, cost of currently most-used transportation mode is significantly more effective for the SMEs which have less than 50 percent of export revenue within total revenue. Thus, hypothesis 31 is supported.

In terms of the effects of geographic location to SMEs, non-alternative road transportation, being far from seaports and high storage costs are significantly effective. These variables were analyzed if there are any differences in terms of share of export revenues within total revenue (See Table 97).

H32: Location-based effect of the absence of alternative modes to road transportation evaluation of SMEs will differ according to share of export revenues within total revenue.

H33: Being far from seaports effective because of company's location evaluation of SMEs will differ according to share of export revenues within total revenue.

H34: High storage and warehousing costs as effective location-based variable evaluation of SMEs will differ according to share of export revenues within total revenue.

Table. 97. T-Test Results for Hypothesis 32 through 34

	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
No alternative for road transportation	2.952	279	.003	.484	.161	.806
	2.665	155.790	.009	.484	.125	.842
Being far from seaports	1.869	279	.063	.270	-.014	.555
	1.911	227.802	.057	.270	-.008	.549
Storage and warehousing costs are high	4.132	279	.000	.727	.381	1.073
	3.807	165.519	.000	.727	.350	1.104

According to the test, all variables seem to be significantly different in terms of export revenue share within the total revenue. These variables are significantly more effective for SMEs which have less than 50 percent export revenues of the total revenue in terms of the effects of geographic location. Therefore, hypotheses 32, 33 and 34 are supported.

In terms of the opinions of SMEs for the situations characterized according to their geographic locations, not efficient alternatives for road transportation and the disagreement of the state's necessary investment amount for the logistics industry are analyzed according to respondents' export revenue shares within the total revenue.

H35: Existence of inefficient alternative modes to road transportation evaluation of SMEs will differ according to share of export revenues within total revenue.

H36: The investment amount made to logistics industry by state is not enough evaluation of SMEs will differ according to share of export revenues within total revenue.

Table 98. T-Test Results for Hypothesis 35 and 36

	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Not efficient alternative modes to road transportation	2.952	279	.003	.484	.161	.806
	2.665	155.790	.009	.484	.125	.842
State is investing enough for the logistics industry	2.339	279	.020	.368	.058	.679
	2.406	231.741	.017	.368	.067	.670

According to t-test results, SMEs that have export revenues less than 50 percent of their total revenue agree that inefficient alternative modes to road transportation variable is significantly more than the SMEs which have export revenues higher or equal to 50 percent. However, on the other hand, SMEs which have export revenues higher or equal to 50 percent disagree more than SMEs that have export revenues less than 50 percent of their total revenue in terms of the state's investment amount for the logistics industry. Their disagreement is significantly higher than the other SMEs. Therefore, hypotheses 35 and 36 are supported.

6.5. Factor Analysis

This research also aims to get the opinion of the SMEs about the design and services that will be provided in LDCs. A question was asked in the questionnaire about the necessary services and areas in the LDCs that SMEs would like to see and use. It would be better to group the variables under dimensions (factors) to analyze the results better and offer more accurate suggestions, and service strategies. Thus, a factor analysis was applied to this question. By looking at the variables' eigenvalues, it can be said that there are 4 components that have

eigenvalues over 1.000 and these 4 components explain 74.8 percent of the variation (See Table 99).

Table 99. Total Variance Explained of the Factor Analysis

Components	Initial Eigenvalues			Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Total	% of Variance
1	6.493	40.581	40.581	6.493	40.581	3.546	22.164
2	3.019	18.867	59.448	3.019	18.867	3.544	22.151
3	1.435	8.971	68.419	1.435	8.971	3.056	19.099
4	1.021	6.378	74.797	1.021	6.378	1.821	11.383
5	.917	5.730					
6	.778	4.861					
7	.588	3.678					
8	.538	3.364					
9	.337	2.105					
10	.294	1.835					
11	.201	1.256					
12	.123	.770					
13	.093	.584					
14	.069	.430					
15	.048	.301					
16	.046	.290					

According to this factor analysis there are 4 different dimensions (factors) which can named as; “center design and allocation of space”; “support services”; “handling”; and “consultancy” (See Table 100).

Table 100. Factor Analysis Components

	Component			
	Center Design and Allocation of Space	Support Services	Handling	Consultancy
Customs Consultancy	.243	.351	.412	.710
Certified Public Accountancy	.031	.041	.473	.809
Bank	.651	-.151	.012	.466
Offices for Exporting Companies	.785	.423	.036	.102
Offices for Logistics Companies	.527	.421	.340	.264
Container Renting Areas	.753	.139	.409	.115

	Center Design and Allocation of Space	Support Services	Handling	Consultancy
Offices for Legal Counseling	.830	.294	.043	.080
Offices for Foreign Trade Consultancy	.665	.360	.297	-.220
Suitable Loading/Discharging Areas for Dangerous Goods	.029	-.149	.781	.301
Suitable Storage Areas for Any Kind of Goods	.063	.073	.943	.064
Electronic Follow-up for Goods	.248	-.118	.545	.328
Reservation System for Handling Activities	.394	.302	.645	.147
Recreational Center	.284	.793	.152	-.151
Education Center	.375	.650	-.140	.035
Research & Development Center	.105	.894	.118	.043
Seminar Rooms	.123	.906	-.141	.218
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 8 iterations.				

Center design and allocation of space

This group includes banks, offices for foreign trade consultancy, container renting areas, offices for legal counseling, and lastly, offices for exporting companies. As mentioned, this group includes rooms for renting for both the exporting companies themselves and for service providers such as logistics, bank, and legal issues. Besides that, container renting areas should exist according to SMEs.

Support Services

The second factor group is named as support services. Under this segment, there are recreational centers, education centers, R&D centers and seminar rooms exist. As seen in Table 100, this group includes additional services besides the logistics activities.

Handling Services

Thirdly, the handling services are gathered under handling category. The subjects under this heading are suitable areas for loading and discharging dangerous goods, suitable areas for storing any kind of cargoes and lastly the electronic reservation system which will serve to follow-up the goods.

Consultancy

Lastly, the consultancy group includes the customs consultancy service and certified public accountancy where also named as certified councillorship service under customs related consulting activities.

CHAPTER 7

CONCLUSION

According to Boske and Cuttino (2003), the reason behind the success of industrial revolution is the prior revolution in transportation. This statement stresses the important relationship between the economy and transportation/ logistics. The changing needs and wants of customers make customer satisfaction harder to achieve. Customers day by day enjoy more opportunities of reaching for more and better products at better values all over the world.

The more global the world, the more severe is the competition at all levels for manufacturers and marketers. This leads the manufacturers to search for better and lower-priced alternatives in terms of various cost items in manufacturing and distribution until the products reach their final destinations.

It is a common knowledge that the economic development of Turkey is strongly dependent on the advancement of SMEs. However, as state tried to support and encourage SME efforts to fully understand their problems and expectations have been limited. Turkish governments have tried to provide support to exporting companies however; none of them were long-term, market-based strategies, but instead, political and short-term populist tactics. Therefore, this study tries to draw attention to the needs of exporting SMEs through analyzing the current situation of both global and Turkish transportation systems and further, through trying to offer a cheaper, faster, and more coordinated means to exporter SMEs through the use of logistic distribution centers. Although not even on blueprints in Turkey, Italy has 22, Spain has 17 and Denmark for instance has 6 logistic distribution centers.

Rodrigue (2008) claims that when a logistics system works efficiently, economic and social opportunities and benefits are provided such as better accessibility to markets and additional investments. Vice versa, when there is inefficiency in terms of logistics, economic costs such as reduced or missed opportunities occur. At the dawn of industrial revolution the invention of steam-power ships and trains were welcomed as the keys to reach farther markets which will increase the economic developments. However, especially after the World War II, the increasing level of using road transportation shattered the objectives and improving railway and sea transportation modes became of secondary importance. The popularity of the road transportation has been such a pitch that it shattered the records of transportation worldwide and earned 796 billion US Dollars in 2004. In order to clarify how huge is the amount, we should better remind the total earned amount of railway and sea transportations together for the same year which was 814 billion US Dollars.

Believing that this intensity on road transportation is totally wrong, developed countries try to shift their transportation modes mainly to railway and sea transportation. Both of these transportation modes have the least negative effects to the environment and the best partners for each other in terms of intermodal transportation. Port performance is a catalyst for intermodal transportation and this can be improved through efficient railway systems. This is a significant partnership because most of the developed and some of the developing countries such as Bangladesh and Thailand are trying to settle the intermodal transportation into their geographies.

Obviously, intermodal transportation is the state-of-art logistics technology. Intermodalism basically means using at least two different transportation modes in a

combined way which is sealed under a single bill of lading. The most significant means of the intermodalism; railway and sea transportation cover up each other's fraud. For instance, rail transportation is more efficient than road transportation, while its main drawback is in flexibility as traffic must follow fixed routes and transshipment must be done at terminals. From the perspective of sea transportation, containers are the heart of this mode and prior to containerization, loading or unloading a ship was an expensive and time consuming task and a cargo ship typically spent more time docked than at sea (Jennings, et al, 1996). The perfect compatibility of the containers with both railway and sea transportation increases the chance of using both modes together which will decrease the transportation cost, increase time-saving and the customers will earn more by saving money just by changing their mode to an alternative one.

Logistics is regarded as one of the fastest growing 14 industries in the world. However, it seems that logistics is not yet discovered wholly in Turkey (Zarzoso et al, 2003). Even today, it is believed that logistics is a military term and nothing further. This is mainly because of the fact that, there has never been a master plan for transportation neither in the Ottoman Empire nor in the Turkish Republic. From the very beginning of the Republic until the death of Ataturk, a plan was tried to be applied by constructing railways all around Turkey, however, this short-winded atmosphere disappeared with Ataturk when he passed away. After the Second World War, the governments tried to build roads all around the country but, Turkey still falls behind its neighboring countries in terms of road length. Even Afghanistan, being a country enclosed with mountains has had a road length close to Turkey. This is an important indicator showing the seriousness of the situation in Turkey in the post-war period. As a result, Turkish economic activities remained

static since it was necessary to connect local markets and resources to each other for economic and social development. This is the connection point of the importance of the logistics and the Turkish economy.

Turkey having a strategic position between Asia and Europe has been an intersection point of transportation networks. In relation to increasing trade volumes from Asia to Europe the share of transportation corridors in the direction of east-west had also gained importance. West European countries willing to reach the Caucasus and Central Asia abounding in natural resources have agreed on expanding their transportation and energy corridors towards this direction. Turkey, by being a transition hub between east-west countries and having common cultural values with Central Asia countries and having relatively more stable economy and politics, takes place in the center of these international corridors (ASAM, 2009). Especially in the context EU, European transportation networks, corridors, and projects offer significant opportunities to Turkey (TUSIAD, 2007).

The study found out that the frequency of orders have increased in last two years which means, the exporting SMEs are transporting more frequently than they were two years ago. Furthermore, any increase in the frequency of demand is significant for those companies since they need to pay more for the transportation. Proving this connection, SMEs generally worry more about the transportation costs rather than other concerns such as bureaucratic obstacles regardless of their locations. High transportation costs are the main arguments to be considered. High storage and warehousing costs and, handling costs are the completing components of the transportation costs where also, SMEs evaluate these also as major problems.

The more an SME transports its goods, the less it would pay as marginal cost of transportation. This is an outcome of the economies of scale. SMEs that

export to Asia, Far East Region, and Africa seem less concerned about the increasing transportation costs than the SMEs who mostly export to European Union. This is because, Africa and Far East, Asia Regions are mostly visited by large vessels. Since they are farther than Europe or Middle East, products are mostly sent in large amounts in one time in order to reach the economies of scale. Furthermore, the 281 exporting SMEs demonstrated their beliefs that the currently most-used transportation modes is somewhat expensive, thus they are in favor of changing their current mode to an alternative one. 141 of 281 exporting SMEs are using sea transportation more since it is able to send large amounts of products in a ship full of goods from various exporters where the economies of scale happens again. Furthermore, through sea transportation, time and efficiency considerations of the companies are eliminated to some extent since the estimations of arrival times are almost perfect for the ships where there is no traffic and the speed of the vessels are almost certain. Therefore, we should consider the sea transportation as the main transportation mode for the exporting SMEs and feed the mode with inland connections mainly through railways.

Respondents from all three cities, consider being far from seaports as a problem. The reason is that, they are the export leaders of Turkey which means they transport more goods than other cities, however; all of them are far from seaports where at least one other mode is necessary to reach the port and then transport it through sea transportation. Thus, it is significant to transmit the goods to seaports cheaper and faster than the current means which will automatically increase the export revenues. Today, this mostly seems possible through intermodal transportation. Intermodal transportation aims to use a connection mode to seaports and use seaway transportation and then use another connection

to reach the final destination. All of these connections are made through one bill of lading which both decreases the cost and the time spent for mode changes since there is a standard flow of transaction of goods under intermodal transportation.

Transportation/logistics and related problems are the ones that have the most effect on export of all SMEs. Therefore, if state /logistic companies cannot solve the problems, the SMEs' competitiveness in global markets will not be realized and their future will be a question mark. The study showed that the impact of related problems of SMEs is the same in all three locations.

Findings of the study, among various hypotheses, only the one that is related to storage and warehousing costs significantly differ from city to city where Denizli gets the highest mean followed by Ankara and Manisa respectively. All three cities are far from seaports. High transportation costs, overtime payments made to ship owners, being far from seaports, higher Turkish Ports' charges than EU Ports, and handling processes are major problems for SMEs in all three cities, therefore need to be solved.

Furthermore, regardless of location, SMEs are willing to change their currently most-used transportation mode to an alternative one where we offer this mode as intermodal transportation.

Small SMEs consider being far from seaports more influential problem than the the medium and large SMEs. Thus, we can claim that transportation cost gets more significant where the size of the company gets smaller. Thus, distribution centers are definitely crucial for the survival and success of the SMEs.

The picture changes a little bit more when the percentage of export revenues within total revenues is considered. Divided into two groups; SMEs

which have less than 50 percent as the export revenue percentage of the total revenue and SMEs with export percentage less than 50 percent and export percentage higher than or equal to 50 percent. According to our analysis, we realized that SMEs which have export revenues less than 50 percent care significantly more about the logistics costs. High transportation costs, overtime payments made to ship owners, high storage and warehousing costs, and higher charges of Turkish ports than EU Ports seem to be the highest cost-related logistics items and all of these variables are significantly more effective as major problems for SMEs which have export revenues less than 50 percent than SMEs with export revenues higher than or equal to 50 percent. Since logistics costs are more significant for these SMEs they are more willing to change their currently most-used transportation mode to an alternative method.

Furthermore, these SMEs complain more about the situation of the absence of efficient alternatives for the road transportation. This is probably related to unconscious investments of state made for road construction without giving much importance to other modes. Likewise, being far from seaports is more significant since it increases the transportation cost. In addition to these, storage and warehousing costs are highly considered as major problems by these less exporting SMEs. Since their concern is more about the transportation costs, they believe that state is not investing enough for the logistics industry. Actually, most of the SMEs believe in the insufficient investment amounts of state for all transportation modes including road transportation.

The Ministry of Transport (MoT), Turkish Railways (TCDD), and the Undersecretaries of Foreign Trade try to solve the transportation problems and they are planning to offer logistic distribution centers (LDCs) which will

theoretically decrease the time spent and the cost for transportation. However, as we mentioned above, SMEs whom the LDCs are going to be built for are not included into this process. Therefore, the locations that LDCs are going to be built and the services that will be offered in there are far from satisfying the demands of SMEs. Furthermore, the lack of a common base on where and how to build these logistic distribution centers in Turkey, unfortunately sets back the implementation of plans. Thus, most of these investments are going to be waste investment projects as some airports in cities where there is no need to.

Considering the needs and problems of the exporting and non-exporting SMEs, we are offering implications about transportation under the "location and service strategies for LDCs" below.

Location and Service Strategies

Transportation cost is an immense problem besides time and efficiency that lead SMEs to consider changing their transportation modes seriously. In order to reach the fastest way, to access easier and to transport safer with the least possible costs, SMEs look for standardization of the voyages of the transportation modes. In terms of standardization, intermodal transportation should further be applied through Logistic Distribution Centers (LDCs) which are the heart of intermodal transportation, and it will be easier for the exporters to adopt this new logistics system. Also, it is the reflection of the system where SMEs actually come and see the efficiently operating intermodal transportation. However, this significance last if those logistic distribution centers are constructed at right locations and equipped with right services and areas where the consumers feel the difference of the alternative transportation mode. Since this study focuses on

suggesting the best possible locations for LDCs equipped with right services and areas, the expectations of SMEs are assessed.

According to our findings, railway connection to ports is a must. Thus, the logistics distribution centers should be located on or close to railway lines. By doing this, the cost of construction will decrease since the LDCs will mostly serve as a train station on the railway line. Furthermore, since the Alsancak Port of Izmir is one of the top three Turkish ports in terms of foreign trade, LDCs should be located in relation to Alsancak Port. Port of Alsancak is one of the most strategic gateways of Turkey. Standardizing and regulating the flow of goods to port will also eliminate the traffic problem around the port in Izmir.

Considering these factors, we suggest constructing 3 different LDCs in different sizes and in different locations and the following logistic distribution centers' locations are marked as dark circles on Figure 38.

1. The first LDC should be close to Central Anatolia Region. Central Anatolia's great export volumes basically come from the valuable mines and furniture. Therefore, the first logistic distribution center should be relatively the biggest one since many types of cargoes such as mined stones or furniture should be gathered in this LDC and should be sent accordingly to Alsancak Port. In these terms, we suggest to build the first LDC to a location around Alayunt Village, Kütahya. This center will serve for Central Anatolian Region and also East Aegean Region.
2. Second LDC should be built around Nazilli, Aydın and Denizli. The main objective of this logistic distribution center would be transporting textile and clothing exports. Containers with cloth-hangers should be stored in container renting area that the clothing exporters would require. This LDC

will serve as the gathering point for South Aegean Region and also West Mediterranean Region. Therefore, agricultural productions would feel more confident to produce more since the transportation cost will be at the least possible amount and the transportation will be as easy as a farmer can use.

3. The third and relatively smaller logistic distribution center should be constructed around Menemen, Izmir. This center will serve as a gathering point for Manisa, Balıkesir and even Izmir, and further the center will have the possibility to serve for Usak and Kütahya if requested. Manisa is one of the main zones of machine and machine parts and accessories production besides automotive production, textiles and clothing, and agriculture. Therefore, this LDC should mainly serve for the products that are exported from Manisa. Railway network should be constructed in order to link the organized industrial zones and agricultural producers to logistic distribution centers.

Furthermore, Turkey's one of the biggest ports is planned to be built in Çandarlı, Izmir. As told before, Alsancak Port in Izmir has a limited capacity. Considering that it is the one of the main gateways of Turkey in terms of export transportation, neither the export transporters nor the citizens in Izmir would feel more comfortable as the volume of transportation increase. Thus, the main target of Çandarlı Port is to handle the burden of Alsancak Port in terms of foreign trade handling and transportation activities. These three suggested distribution centers would be located to be linked to Çandarlı Port where it would be easier and less costly for the exporting SMEs to reach the main gateway in order to export their goods.

Figure 38. Turkish Railway Network and Suggested Locations for LDCs

Marseille-Fos Port seems to be the most possible logistic distribution center that can be benchmarked for the Turkish case. Medlink which is the main distribution network including 8 main stops on a single line. These are regional hubs and are fed by local distribution centers. Therefore, our suggestion of three logistic distribution centers should be expanded by linking other logistic distribution centers to each other. This linkage will increase the importance of railway transportation for inland transportation and decrease the importance of road transportation where environmental-friendly actions are going to be taken indirectly.

Another significant point is the range of services given under LDC and the design of these distribution centers. SMEs demands/expectations from an LDC can be summarized as follows:

– Efficient handling activities which are cheaper and quicker than today: This is significant since, the Port of Alsancak face most of its problems

stem from the slow handling activities. Since the capacity of port is limited, further handling processes have to wait for the previously handled goods to be carried out of the port. In order to eliminate this handling problem efficient personnel and cranes should be combined in wide discharging and loading areas for any kind of cargo including the dangerous goods.

- Electronic systems and software compatible with the ports: Electronic system will facilitate the standardization of goods that are going to be processed. Electronic reservation system will act as a reception system in hotels that cargoes will check in for the necessary loading or discharging area for the requested time period. Thus, the accumulation of the cargoes in ports will be eliminated which prevents more goods to be handled because of the lack of capacity. Through reservation system, SMEs feel confident of planning their timetable since they will be able to know when their goods are going to be processed under handling and stored if any demand is made for it. Reservation system will be completed with compatible port software which saves time and eliminates excess efforts for carrying goods to ports timelessly.
- Elimination of overtime costs: SMEs are tired of paying extra money when the port is congested because of slow-moving handling process request the LDCs to take no overtime costs but to work 24 hours a day.
- Offices for logistics companies: The offices will be used by the third parties of the intermodal transportation.
- Container renting areas: Exporters, according to their products need various sizes of containers. However, LDC should not depend on

containers only because, a great amount of cargoes in bulk are exported to worldwide where non of the containers are suitable to carry them.

- Trailer parks: SMEs can bring their own cargoes to the LDCs and/or wait for the arriving cargoes to take them to their production facilities.
- Consultancy offices for legal acts in case of any trade problems, offices for foreign trade in case of gathering information for any stage of the foreign trade process and information on countries, public accountancy offices for accelerating the customs clearance, and customs consultancy offices in the LDCs: In order to control the logistics process from the very beginning to the end, they need offices for themselves besides the electronic follow-up for the goods.
- Banks: In terms of quick, easy and cheap money transaction within the distribution centers.
- Railway connection to ports: SMEs see the railway connection as the standard of LDCs in order to reach to final destination or easy-to-access systems to ports.
- Additional support services: SMEs mostly remain undecided about the existence of recreational centers, education center, research and development center, and seminar rooms however, throughout our analysis and researches, we have detected that SMEs are aware of the state-of-art technologies created globally and further, new technologies should be followed and improved in order to be one of the major players in logistics arena. Besides these, a person needs to be accommodated in a hotel if he needs to stay for a while at the distribution center and furthermore, employees need to get rid of their tiredness from work through recreation

centers. Therefore, these support services are needed in the logistic distribution centers.

It would be better to group the variables under this suggestion in order to determine how SMEs give importance to certain services. By doing this, the results would be more clearly absorbed and better solutions and strategies could be provided. In order to determine these, a factor analysis was applied and the variables were grouped under certain components. These groups are; “center design and allocation of space”, “support services”, “handling”, and “customs consultancy”. In terms of center design and allocation of space, SMEs require banks, office for their activities, offices for legal acts, offices for foreign trade consultancy and container renting areas.

In terms of support services, we offer recreational centers, education centers, research and development center, and seminar rooms. As mentioned before, SMEs seem undecided about the necessity of these centers however; we believe that if the benefits of these centers are declared to SMEs there will be no reason that SMEs reject these additional services.

As the handling factor group, we gather places for handling of any kind of cargo including the dangerous goods, warehousing those goods separately, and provide an electronic reservation system where SMEs feel confident of knowing when the handling process will start for their goods.

Finally, customs consultancy category provides customs consultancy offices and certified public accountants- certified councillorships- are offered to be provided under the suggested logistic distribution centers.

Implications

Implications for the State

Initially, it will be better to mention that state should investigate the opinion of SMEs in various locations, in terms of constructing logistic distribution centers since they will be the most valuable customers of those centers. This research, thus, tries to act as a guideline for the government to be aware of how SMEs feel about logistics and foreign trade currently. Furthermore, most of the 322 SMEs believe that state is not investing enough to logistics industry. In addition to this, we can claim that the insufficient investment amounts are not directed to the right areas of transportation. In order to make the necessary investments at the right amount, state must ensure a master plan for transportation industry. Even a SWOT analysis can be made in order to discover the strengths, weaknesses, opportunities, and threats for both the geographic location and the logistics industry. The concept of logistic distribution centers has been valued since 1970s and became a law in 1990s. Because of the lack of judicial acts in Turkey, the construction of global logistic distribution centers and intermodalism cannot be achieved. In order to eliminate this problem, state should enact a specified law on LDCs which sets the dimensions of the concept in legal terms.

In terms of achieving intermodal transportation through LDCs, state must apply serious infrastructure and feasibility analyses and should support the master plan with these analyses. Instead of looking for political benefits of individuals, economic interests of the state should be considered.

Implications for the Logistics Companies

For the logistics companies, it can be mentioned that their investments for intermodal transportation should continue since private corporations generally implement their plans faster and more efficiently than state does. Thus, this research is a guideline for the logistics companies too as it is for the state. Everyday in logistics pages of newspapers and magazines, latest news come up related to the investments and projects of private logistics industry. Since bureaucratic procedures decelerate making decisions, logistics companies should be models for the state and lead the state to right direction. This will facilitate the Ministry of Transport to draw a master plan for the logistics industry. Since this research is also a guidebook for logistics companies, they should build their own logistic distribution centers by utilizing information in this research and in further researches about logistics.

Specifically talking about the sea transportation where also called maritime transportation interchangeably, logistics companies which are specialized in sea transportation in Turkey are mostly family corporations. Therefore, the business flows according to the will of the managing family. However, referring to my personal experience in a maritime transportation family corporation, the target is to save the day not to make further investments. This is because; these companies believe that making investments will be adventurous movements which can risk the liquidity of the company. However, if they invest, they will enjoy the benefits in the long run. If all companies act in the same way as it is right now, logistics industry in Turkey will collapse and location-based advantage will be nothing more than a paragraph in a geography book.

Implications for SMEs

Especially after the visit to Undersecretaries of Foreign Trade and tele-conversations with SMEs, it is realized that, SMEs are unaware of the logistics concepts. What they understand from logistics is the physical transportation of goods from one location to another only. SMEs seem to be unaware about the concept of intermodalism so much that we felt the difficulty of not using the concept of intermodal transportation. Thus we used “alternative transportation method” as the terminology. It was significant for us to feel confident of what SMEs understand about the alternative transportation mode since SMEs will be the majority of users when intermodal transportation method is achieved successfully. In accordance with these, this research further aims to introduce intermodal transportation and logistic distribution centers (LDCs) to SMEs and aims to be a guideline for state officials in order to provide them the opportunity to hear the voice of SMEs which will use the LDCs most.

Moreover, SMEs seemed unsatisfied about the current situation of logistics as far as they are aware of. This is because, although state officials try to advance logistics to higher levels, since they have not made any surveys or meetings with SMEs about the possible services that will be served under intermodal transportation, those construction plans only seem effective on paper.

From SMEs’ perspective, this research can act also, as a guidebook which teaches the current transportation modes’ situations and new terminologies under logistics. Discovering new solutions will decrease the cost of logistics and increase the efficiency of SMEs. Furthermore, SMEs should try to find the solutions for their transportation problems by going further from complaining about the problems.

They should benefit from the analyses of this and similar researches in order to discover the state-of-art means of operating more efficiently in their industry.

Implications for Further Research

For further research, the effects of reaching alternative transportation methods should be tested because, this research tries to examine the situations where SMEs reach to alternative transportation methods under certain circumstances. Besides investigating the echoes of reaching alternatives methods, it is further suggested to discover the means of directing the exporting companies to more environment-friendly transportation methods where intermodal transportation is one of the best alternatives for this mode of transportation.

The world becomes more global day by day. Besides, its social and cultural effects, the economic dimensions are changing also. Companies are looking for cheaper production ways since the customers are looking for the cheaper products which have at least the necessary quality that the customers are demanding. The demands of buyers, thus the market, seem to be changing continuously. Therefore, whether changing the production areas and dividing it into different locations or gathering them under single location which is closer to target markets, companies trying to keep up those demands together with the elimination of costs further by decreasing the cost of logistics, the hidden material that will increase efficiency.

The global environmental concerns lead the world to look for better solutions which are more environmental caring.

Turkey has a great potential in terms of transportation however; it is not yet turned into an opportunity. Geographical advantage should be realized by cooperating with efficient infrastructure systems for state-of-art logistics solution

such as the intermodal transportation. A strong and efficient partnership of maritime transportation and railway transportation has the greatest chance to turn this potential into a reality.

Making a market research helps companies to discover the problems and catch the demands of customers in order to serve them better and therefore earn more. This research thus, tries to act as a guideline and a logistics market research for state, SMEs, and for logistics companies, in terms of detecting the necessities of SMEs and offering them the right solutions at the right locations through logistic distribution centers which are the heart of intermodal transportation. Meeting those three different parties in one common location will increase the volume of Turkish foreign trade while decreasing the logistics costs where Turkish SMEs will feel more confident to compete in the global arena.

Limitations

The study has a number of limitations:

- A non-probabilistic sampling method is used.
- Direct questions regarding LDCs were not asked due to the fact that SMEs are unaware of such concepts.
- The total conceptual model can only be tested after LDC start operating.

APPENDIX A

Exports By Cities		
2008	Total	132 001 810
	İstanbul	73 127 979
	Bursa	11 103 964
	Kocaeli	8 320 257
	İzmir	7 758 376
	Ankara	5 338 548
	Gaziantep	3 251 891
	Sakarya	2 907 203
	Denizli	2 192 272
	Hatay	1 748 022
	Adana	1 274 049
	Kayseri	1 129 748
	İçel	1 051 399
	Manisa	1 011 594

APPENDIX B

BOĞAZİÇİ ÜNİVERSİTESİ

ULUSLARARASI TİCARET YÖNETİMİ YÜKSEK LİSANS PROGRAMI

TEZ ÇALIŞMASI ANKET SORULARI

Bu araştırmanın amacı, Türkiye'deki küçük ve orta büyüklükteki işletmelerin dış pazarlara açılım kararlarını etkileyen faktörleri ve bu süreçte yaşadıkları sorunları ortaya koymaktır. Araştırmadan elde edilecek veriler sadece akademik amaç için kullanılacaktır. Yüksek lisans tezi kapsamında yapılmakta olan bu çalışmaya cevaplarınızla vereceğiniz destek için teşekkür ederiz.
Geri bildirimleriniz için : aserens@gmail.com

Ahmet Seren Sungur

S.1 – İhracat yapıyor musunuz?

( ) Evet ( ) Hayır

(Yanıtınız hayır ise lütfen 3. soruya geçiniz.)

S.2 – Kaç yıldır ihracat yapıyorsunuz?

(Lütfen 4. soruya geçiniz.)

S.3 – İhracat yapmama kararınızda aşağıdaki faktörlerin ne derece etkili olduğunu **1-5 aralığında 1=hiç etkili değil; 5=çok etkili** olacak şekilde, uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	Hiç etkili değil				**Çok etkili**
	1	**2**	**3**	**4**	**5**
İç pazardaki talebin yeterli görülmesi					
Maliyetlerin hedef pazarlar için yüksek olması					
Hedef pazardaki hukuki engellemeler					
Hedef pazar gümrüklerinde yaşanacak bürokratik sıkıntılar					
Nakliye masraflarının yüksek olması					
Dış ticarette temel konularla ilgili devlet tarafından yeterli bilgilendirme yapılmaması					
Devlet tarafından yeterli ihracat danışmanlığı ve rehberliği yapılmaması					
İhracat alacakları için devlet tarafından yeterli desteğin verilmemesi					
Sektörel teşviğin dağılımı					
Dalgalı kur riskinden kaynaklanabilecek zararlar					
İşletmenizin coğrafi konumunun nakliye açısından olumsuzluk yaratması					
İhracat için gerekli olan işlemlerin zaman alması					
İhracat için gerekli olan belgelerin temininde yaşanan sıkıntılar					
İhracatı teşvik için verilen kredilerin yetersiz olması					
İhracat için verilen kredilerin uygun geri ödeme koşullarına sahip olmaması					
İhracat alacaklarının tahsil edilememe endişesi					
Tanıtım faaliyetlerinin devlet tarafından yeterince desteklenmemesi					

İhracat için gerekli olan depo / antrepo alanlarının maliyeti					
Dış pazar araştırmasının maliyeti					
İhracat departmanı kurmanın maliyeti					
	Hiç etkili değil				**Çok etkili**
	1	**2**	**3**	**4**	**5**
AB Ülkeleri için vize gerekliliği					
Yeterli sayıda uzmanlaşmış nakliye firmasının bulunmaması					
İhracatçı Birlikleri tarafından yeterli ihracat danışmanlığı ve rehberliği yapılmaması					

(NOT: Anketi sonlandırınız.)

S.4 – En son hangi ülkeye ihracat yaptınız?

S.5 – En son hangi ürün/ürünleri ihraç ettiniz?

S.6 – İhracat yaptığınız bölgeleri lütfen yaklaşık yüzde olarak belirtiniz.

Avrupa Birliği ve EFTA(İsviçre, İzlanda, Lihtenştayn, Norveç) Ülkeleri	**%**	
Kuzey Amerika	**%**	
Güney Amerika	**%**	
Türk Cumhuriyetleri	**%**	
Rusya ve Doğu Bloku Ülkeleri	**%**	
Orta Doğu	**%**	
Afrika	**%**	
Asya, Uzakdoğu	**%**	
Diğer	**%**	
Toplam	**%**	**100**

S.7 – İhracat yaparken karşılaştığınız/karşılaşabileceğiniz sorunların dış ticaretinizi ne derece etkilediğini **1-5 aralığında, 1=hiç etkili değil; 5=çok etkili** olacak şekilde, uygun gördüğünüz kutuya "X" koyarak değerlendiriniz.

	hiç etkili değil				**çok etkili**
	1	**2**	**3**	**4**	**5**
Maliyetlerin hedef pazarlar için yüksek olması					
Hedef pazardaki hukuki engellemeler					
Hedef pazar gümrüklerinde yaşanacak bürokratik sıkıntılar					
AB Ülkeleri için vize sorunu					
Yabancı dil					
Devlet tarafından yeterli ihracat danışmanlığı ve rehberliği yapılmaması					
İhracat alacakları için Devlet tarafından yeterli desteğin verilmemesi					
Dalgalı kur riskinden kaynaklanabilecek zararlar					
İhracat için gerekli olan belgelerin temininde yaşanan sorunlar					

İhracat için yeterli vergi indiriminin sağlanmaması					
Taşımacılık sistemlerinin dış ticaret için yeterli olmaması					
Nakliye masraflarının yüksek olması					
	hiç etkili değil				**çok etkili**
	1	**2**	**3**	**4**	**5**
İhracatçı Birlikleri tarafından yeterli ihracat danışmanlığı ve rehberliği yapılmaması					
Dış ticaret ile ilgili tebliğ ve genelgelerde kullanılan dilin sade olmaması					
Dış ticarette temel konularla ilgili devlet tarafından yeterli bilgilendirme yapılmaması					
Depo / antrepo alanlarının maliyetinin yüksek olması					
İşletmenizin limanlara uzak olması					
Türk liman masraflarının Avrupa'daki liman masraflarından daha fazla olması					
Yükleme/boşaltma masraflarının yüksek olması					
Limanlardaki yükleme/boşaltma işlemleri					
Limanlardaki sıkışıklıklardan dolayı armatörlerin sıkışıklık zammı alması					
Gümrük işlemlerinin zaman alması					
Gümrük idarelerindeki uzman personel sayısının yeterli olmaması					
Gümrük idarelerince çalışma saatleri dışında yapılan işlemlerden alınan fazla mesai ücretleri					
Yeterli sayıda uzmanlaşmış nakliye firmasının bulunmaması					
Kullandığımız taşımacılık şeklinin istediğiniz zamanlarda seferi olmaması					
Bölgenizin gümrük ile ilgili birimlere uzak kalması (gümrük,acente vb.)					

(**8. ve 9. soruları** ihracatınızdaki ürün taleplerinin **miktarında ve sıklığında (sayısında)** yaşanan değişimleri göz önünde bulundurarak, 7'li ölçek üzerinde değerlendirip uygun gördüğünüz ölçütün sağ tarafına "X" koyunuz.)

S.8 –Ürün taleplerinin **miktarı** son 2 yılda;

Azaldı 1 2 3 4 5 6 7 Arttı

S.9 – Ürün taleplerinin **sıklığı (sayısı)** son 2 yılda;

Seyrekleşti 1 2 3 4 5 6 7 Sıklaştı

S.10 – İhracat yaparken kullandığınız taşıma şekillerini lütfen yaklaşık yüzde olarak belirtiniz.

Karayolu	%	
Demiryolu	%	
Denizyolu	%	
Havayolu	%	
Toplam	**%**	**100**

S.11 – İhracat yaparken kullandığınız teslim şekillerini lütfen yaklaşık yüzde olarak belirtiniz.

Ticari işletmede teslim (EXW)	%	
Taşıyıcıya teslim (FCA)	%	
Gemi doğrultusunda teslim (FAS)	%	
Gemi bordasında teslim (FOB)	%	
Mal bedeli veya navlun (CFA)	%	
Mal bedeli, sigorta ve navlun (CIF)	%	
Taşıma ücreti ödenmiş olarak teslim (CPT)	%	
Taşıma ücreti ve sigorta ödenmiş olarak teslim (CIP)	%	
Sınırda teslim (DAF)	%	
Gemide teslim (DES)	%	
Rıhtımda teslim (Gümrük vergi ve harçları ödenmiş olarak) (DEQ)	%	
Gümrük resmi ödenmemiş olarak teslim (DDU)	%	
Gümrük resmi ödenmiş olarak teslim (DDP)	%	
Toplam	**%**	**100**

S.12 – En çok kullandığınız taşımacılık yöntemini aşağıdaki özellikleri açısından **1-7 aralığında** uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	1	**2**	**3**	**4**	**5**	**6**	**7**	
Yavaş								**Hızlı**
Erişimi Zor								**Erişimi Kolay**
Pahalı								**Ucuz**
Tehlikeli								**Güvenli**
Gecikmeli Teslim								**Zamanında Teslim**
Seferleri Seyrek								**Seferleri Sık**
Yaygın Değil								**Yaygın**
Çevreye Zararlı								**Çevreye Duyarlı**

S.13 – Aşağıdaki durumları, sizi alternatif taşımacılık yöntemlerine yönlendirmesi açısından ne derece etkili olduğunu, **1-5 aralığında, 1=hiç etkili değil; 5=çok etkili** olacak şekilde değerlendirip uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	hiç etkili değil				**çok etkili**
	1	**2**	**3**	**4**	**5**
Kullanılan taşıma yönteminin maliyeti					
Sipariş miktarlarının artması					
Kullanılan taşıma yöntemiyle yükün/eşyanın varış süresinin oldukça					

uzun olması					
Siparişlerin sıklaşması					
Kullanılan taşıma yöntemi için devlet teşviğinin yeterli olmaması					
	hiç etkili değil				**çok etkili**
	1	**2**	**3**	**4**	**5**
Kullanılan taşıma yönteminin çevreye zarar vermesi					
Kullanılan taşıma yöntemiyle taşınan yük/eşyanın zarar görmesi					
Siparişlerin seyrekleşmesi					
Kullanılan taşıma yönteminin yaygın olması					

S.14 – Gümrük işlemlerinizin takibi için hangi sıklıkta aracı kurum kullanıyorsunuz?

Hiç kullanmıyoruz 1 2 3 4 5 Sürekli kullanıyoruz

S.15 – İhracat taşımalarınız için hangi sıklıkta aracı kurum kullanıyorsunuz?

Hiç kullanmıyoruz 1 2 3 4 5 Sürekli kullanıyoruz

S.16 – İhracat yaparken kullandığınız bir lojistik dağıtım merkezi var mı?

( ) Evet, kendi işletmemizin bir dağıtım merkezi var
( ) Evet, bulunduğumuz bölge için yapılmış olan ortak bir dağıtım merkezi var
( ) Hayır, herhangi bir dağıtım merkezi yok

S.17 – Aşağıda belirtilen hizmetlerin bir lojistik dağıtım merkezinde sunulmasının ne derece gerekli olduğunu **1-5 aralığında, 1=kesinlikle olmamalı; 5=kesinlikle olmalı** şeklinde uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	kesinlikle olmamalı				**kesinlikle olmalı**
	1	**2**	**3**	**4**	**5**
Her türlü gümrük işlemi için gümrük müşavirliği					
Yeminli Mali Müşavirlik					
İhracat ile ilgili bankacılık işlemleri için bankalar					
Kendi firmanızın dış ticaret veya lojistik takip ve çalışmaları için kiralanabilecek ofisler					
Nakliye firmalarının ofisleri					
Konteyner kiralama alanı					
Yeminli tercümanlık ofisleri					
Hukuk danışmanlığı ofisleri					
Dış ticaret danışmanlığı ofisi					
Sigorta şirketleri için ofisler					
Her türlü taşıma türüne uygun yükleme ve boşaltma alanları					
Tehlikeli ürünlerin uluslar arası standartlara uygun depolama ve elleçleme alanları					
TIR parkı					
Her türlü yük/eşyaya uygun şartların bulunduğu depolama hizmeti					
Kısmi üretim veya onarım için her firmaya özel kiralanabilen üretim tesisleri					
İç bölgelerden direkt demiryolu bağlantısı					
Elektronik ortamda yük/eşya takip sistemi					
Yük/eşya gönderimi için dağıtım merkezine gelinmeden önce yükleme/boşlatmanın gün, saat ve konteyner rezervasyonu					
Bağlantılı limanlar ile koordinasyonu sağlayan yazılım programı					

Çalışma saatlerinde sınırlandırma olmaması					
Sosyal tesisler (restoran, konaklama vb.)					
Eğitim Merkezi					
Ar-Ge Merkezi					
Seminer Salonu					
Diğer(lütfen belirtiniz)					

S.18 – Aşağıdaki durumların, bulunduğunuz coğrafi konumdan kaynaklanarak, dış pazarlara açılma eğiliminizde sizi ne derece etkilediğini **1-5 aralığında, 1=hiç etkili değil; 5=çok etkili** olacak şekilde uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	Hiç Etkili Değil				**Çok Etkili**
	1	**2**	**3**	**4**	**5**
Üretiminiz için gerekli ana hammaddeye uzak olmak					
Hedef pazarlara uzak olmak					
Bölgenizde işçiliğin pahalı olması					
Bulunduğunuz yerde dış ticaret için gerekli kalifiye personelin yeterince bulunmaması					
Bölgenizde üretim sektörüne göre rekabet avantajı kazandırmak adına yeterli sayıda üretim merkezi (organize sanayi böl. vb.)bulunmaması					
Bölgesel teşviğin bulunduğunuz yerde yeterli olmaması					
Bölgenizde yabancı yatırımcı için daha fazla teşvik uygulanması					
Bölgenizdeki depolama maliyetlerinin yüksek olması					
Bölgenizde konteyner kiralama yerlerinin olmayışı					
Bölgenizde yeterli sayıda uzman nakliye firmasının bulunmaması					
Bölgenizde taşıma yapan nakliye firmalarının yeterince etkin çalışmamasından dolayı gecikme sorunları yaşanması					
Bölgenizdeki lojistik yatırımlarına yeterince önem verilmemesi					
Bulunduğunuz bölgedeki üretim merkezlerinin yerleşiminin yeterince verimli planlanmamış olması					
Bulunduğunuz bölgedeki lojistik dağıtım merkezlerinin yerleşiminin yeterince verimli planlanmamış olması					
Limanlara uzak olması					
Karayolunun yetersiz olması					
Karayoluna alternatif taşıma türünün olmaması					

S.19 – Faaliyette bulunduğunuz bölgenizdeki şartları düşünerek, aşağıdaki görüşlere ne derece katıldığınızı **1-5 aralığında, 1=kesinlikle katılmıyorum; 5=kesinlikle katılıyorum** olacak şekilde uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	Kesinlikle Katılmıyorum				**Kesinlikle katılıyorum**
	1	**2**	**3**	**4**	**5**
Hammaddenin tedariki için alınan vergiler iç piyasadan düşüktür					
Enerji için alınan vergi iç piyasadan daha düşüktür					
İhracat yapan firmalar için personel adına ödenen vergiler azaltılmıştır					
Üretim için yeterli derecede düşük faizli kredi sağlanmaktadır					
Gümrükleme esnasındaki bürokratik engeller azaltılmıştır					
İhraç edilen ürünlerin taşıması için nakliyeye teşvik vardır					
Bulunduğumuz bölgedeki lojistik maliyetlerini düşürmek amacıyla					

yeterli devlet yatırımı yapılmaktadır					
Bulunduğunuz bölgedeki lojistik maliyetlerini düşürmek amacıyla özel sektör tarafından yeterli yatırım yapılmaktadır					

S.20 – Aşağıdaki taşıma yöntemleri için Devlet teşviğini ne derece yeterli bulduğunuzu **1-5 aralığında, 1=hiç yeterli değil; 5=çok yeterli** olacak şekilde, uygun gördüğünüz kutuya "X" koyarak belirtiniz.

	Hiç Yeterli Değil				**Çok Yeterli**
	1	**2**	**3**	**4**	**5**
Karayolu taşımacılığı					
Demiryolu taşımacılığı					
Denizyolu taşımacılığı					
Havayolu taşımacılığı					
Kombine taşımacılık (farklı taşıma türlerinin ortak kullanılması)					

S.21 – İşletmeniz, çalışan işgören sayısına göre aşağıdaki tanımlardan hangisine uymaktadır?

( )10 kişiden az ( )10 - 99 kişi ( )100 - 499 arası ( )500 – 1000 ( )1000<

S.22 – İşletmenizin faaliyet alanı aşağıdakilerden hangisidir?

( )Tekstil ( )Beyaz Eşya ( )Sentetik ( )Kimya ( )Mobilya

( )Kağıt ( )Sağlık ( )Kişisel bakım ( )Makine Parça ( )Gıda

( )Diğer_____

S.23 – İşletmenizin cirosu aşağıdaki aralıklardan hangisine dahil olmaktadır? **(EURO €)**

( ) <10.000 ( )10.000 - 50.000 ( )50.000 - 100.000

( )100.000 - 250.000 ( )250.000 - 500.000 ( )500.000 - 1.000.000

( )1.000.000 - 5.000.000 ( )5.000.000 – 10.000.000 ( )10.000.000 – 20.000.000

( )20.000.000 <

S.24 – İhracatınız, toplam cironuzun yaklaşık olarak yüzde kaçını oluşturmaktadır?

%

S.25 – İşletmenizin statüsü aşağıdakilerden hangisine uygundur?

( )Şahıs işletmesi ( )Kollektif şirket ( )Anonim şirketi ( )Adi Ortaklık

( )Limited şirketi ( )Kamu kuruluşu ( )Diğer_____

Teşekkür ederiz.

REFERENCES

Akkaş, M., (2007). "Artan Dış Ticaret Hacmine Izmir Bir Limanla Cevap Veremez, Liman Sayısı Artırılmalı". *Referans.* Retrieved on 23 September 2008 from http://www.referansgazetesi.com/print.aspx?HBR_KOD=86962.

ABGS (Avrupa Birliği Genel Sekreterliği) (2007). *"Türkiye'nin AB Müktesebatına Uyum Programı – 14-Taşımacılık Politikası"* Retrieved on 19 February 2009 from http://www.abgs.gov.tr/files/Muktesebat_Uyum_Programi/14_Tasimacilik.pdf.

Aksaylı, F. Phone Interview, 12 March 2009.

Aktan, H. O., Ataç, K., Morgil, O. Sahiöz, A., Tokat, M. & Tokgöz, E., (2002). Atatürk'ten Günümüze Türkiye Ekonomisi: Siyasal Publication: Ankara.

Ankara Sanayi Odası (ASO), (2009). *2008 Yılı Faaliyet Raporu; Lojistik Köy.* ASO Books: Ankara.

Atılgan, C., (2005), "Short Sea Shipping and Combined Transport between Turkey and Europe". RODER & UN RO-RO Group of Companies: Istanbul.

Aymen, B., (2009). "Taşımacılık Sektörü Dubai Modeli Istiyor". *Perşembe Rotası.* Retrieved on 22 March 2009 from http://www.persemberotasi.com.

Azaklı, B. Personal Interview, 27 February 2009.

Ballou, R., (2004). *Business Logistics Management.* 4th Edition: Upper Saddle River, NY: Prentice Hall: New York.

Becker, J., Burgess, A. & Henstra, D., (2004). "No Need for Speed in Short Sea Shipping". *Maritime Economics and Logistics.* 2004-6, 236-251.

Belge Net, (2009). *Turkish – EU Relations Documents*. Retrieved on 11 March 2009 from http://www.belgenet.com/db/.

Beneda, N., (2008). Pinnacle Airline Corporation. *Corporate Finance Review*. vol. Sep/Oct. 2008.

Black Sea Economic Cooperation (BSEC), (2008). *Transport Action Plan.* Retrieved on 9 October 2008 from http://www.bsec-organization.org/aoc/Transport/Pages/ActionP.aspx.

Bloomberg, D. J., LeMay, S. & Hanna, J. B., (2002). Logistics; International Edition.: Pearson Edu: New Jersey, NY.

Bolat, S., (2006). EuroMed Rail Turkey SCST Railway Reform. Retrieved on 22 March 2009 from http://euromedtransport.org/fileadmin/download/maincontract/ts4/ts4_tcdd_day2.pdf.

Boske, L. B. & Cuttino, J. C., (2003). "Measuring the Economic and Transportation Impacts of Maritime-related Trade". *Maritime Economics & Logistics*. vol. 2003-5, 133-157.

Brueckner, J. & Spiller, K., (1994). Economies of Traffic Density in the De-regulated Airline Industry. *Journal of Law & Economics*. vol. 37.

Candan, F. Phone Interview. 9 March 2009.

Cottrill, K., (1997). "Intermodal Shipping at the Crossroads". *The Journal of Business Strategy*. vol. 18, iss. 3, 30-35.

Coyle, J., Bardi, J., Edward, J. & Langley C. J., (2003). *The Management of Business Logistics*. 7th Edition: Thomson Learning: South Western University, U.S.A.

Çancı, M., (2009). "Türkiye Lojistik Merkez Olabilir mi". *Perşembe Rotası*, vol. 5 March 2009.

Dağdemir, E. U., (2008). "Trade-Related Aspects of the European Neighborhood Policy and the Prospective Role of Turkey in Energy Trade". *Economic & Business Review for Central and South-Eastern Europe.* June 2008; 10, 2, 153-171.

Demirel, M. M. & Sezgin, S., (2006). "KOBI'lerin Dış Pazarlara Açılma Problemleri". *ITÜ Dergisi ID*, vol. 2006-2, iss. 5, part.1, 116-124.

Deveci, A., Cerit, A.G. & Tuna, O., (2003). "Determinants of Intermodal Transport and Turkey's Transport Infrastructure. *Dokuz Eylul University, School of Maritime Business and Management*.

Dubai World Center, (2009). *About DLC*. Retrieved on 3 March 2009 from http://www.dwc.ae.

Dünya Newspaper (2008, August 11). *Taşımacılığın Lastik Üzerindeki Yükü Deniz ve Demire de Paylaştırılmalı.* Retrieved on 18 January 2009 from http://www.dunyagazetesi.com.tr/arsiv.asp.

Ege, A. Y., (1998). "Türkiye'nin Dış Ticaretinin Bugünü ve 21. Yüzyıla Doğru Muhtemel Gelişmeler". Retrieved on 21 February 2009 from http://www.dtm.gov.tr/dtmadmin/upload/EAD/TanitimKoordinasyonDb/ozelsayi98.doc+Yavuz+Ege+dış+ticaret+21.+yüzyıl&cd=2&hl=tr&ct=clnk&gl=tr.

Erdal, M. & Demirkol, H., (2003). "Taşımacılık ve Lojistik Sektöründe Uluslararası Rekabet Avantajının Sağlanmasında Türkiye Altyapı Dinamiklerine Bir Bakış". *Pazarlama Dünyası,* November/December 2003-6, 16-19.

Erdal, M. (2004). "Liman Stratejimiz Olmalı". *Deniz Haber.* Retrieved on 16 March 2009, from http://www.denizhaber.com.tr/sektorden/17318/murat-erdal-liman-stratejimiz-olmali.html.

Erdal, M., (2005). Küresel Lojistik. UTIKAD Books: Istanbul.

Erdal, M. Phone Interview, 26 February 2009.

Erdoğan, M., (2008). "Kabotajda Yeni Bir Şey Yok". Retrieved on 17 October 2008 from http://www.lojiport.com/news_detail.php?id=8584.

Ergün, I., (1985). Türkiye'nin Ekonomik Kalkınmasında Ulaştırma Sektörü. Hacettepe University IIBF Publications: Ankara.

Ergün, N. A., (2009). "Ekol Dev Lojistik Üssü Kuruyor". *Perşembe Rotası.* Retrieved on 22 March 2009 from http://persemberotasi.com.

EUROSTAT (2008). *Transport Data in Focus.* Vol. 2008-33. Retrieved on 10 September 2008 from http://ec.europa.eu/eurostat/data/Transport.

Ferrari, C., Parola, F. & Morchio, E., (2006). "Southern European Ports and the Spatial Distribution of EDCs". *Maritime Economics & Logistics*. vol. 2006-8, 60-81.

Gerçek, H., (1998). "New Trade Patterns: New Transport Demands in the Black Sea Region". European Conference of Ministers of Transport Seminar: Antalya, Turkey.

Grossmann, H., Otto, A., Stiller, S. & Wedemeier, J., (2007). "Growth Potential for Maritime Trade and Ports in Europe". *Intereconomics,* July/August 2007, 226-232.

Güvenler, A. Personal Interview, 24 February 2009.

Hamburg Port Authority (2007). *Annual Port Report 2007.* Retrieved on 3 May 2009 from http://www.hamburg-port-authority.de/en/.

Hollmann, M., (2008). "Mr. Cool Ponders His Next Move". *Fairplay Magazine*. vol. 364, iss. 6499, 80-81, Lloyd's Register: Derbyshire, U.K.

Holter, A. R., Grant, D. B., Ritchie, J. & Shaw, N., (2008). "A Framework for Purchasing Transport Services in Small and Medium Size Enterprises". *International Journal of Physical Distribution & Logistics Management*. vol. 38, iss.1, 21-38.

IKEA, (2009). *Logistics.* Retrieved on 3 March 2009 from http://www.ikea.com/en.

Iktisadi Kalkınma Vakfi (IKV), (2008). *Comparison of Progress Report of 2006 to Progress of 2007*. Retrieved on 7 December 2009 from http://www.ikv.org.tr/en/.

Islam, D. M. Z., Dinwoodie, J. & Roe, M., (2005). "Towards Supply Chain Integration Through Multimodal Transport in Developing Economies: The Case of Bangladesh". *Maritime Economics & Logistics*. vol. 2005-7, 382-399.

Japan Mitsui Bank, (2008). *Historical Background*. Retrieved on 21 December 2008 from http://www.smbc.co.jp.

Japanese Ministry of Land, Infrastructure, Transport & Tourism, (2009). *The Organization of the Ministry of Land, Infrastructure, Transport & Tourism*. Retrieved on 11 March 2009 from http://www.mlit.go.jp.

Jennings, B. & Holcomb, M. C., (1996), "Beyond Containerization: The Broader Concept of Intermodalism". *Transportation Journal*. vol. 35, iss. 3, 5-13: Lock Haven.

Karadeniz, E. E. & Göçer, K., (2007). "Internationalization of Small Firms: A Case Study of Turkish Small and Medium-Sized Enterprises". *European Business Review.* vol. 19, no. 5-2007, 387-403.

Keeling, D. J., (2008). "Transportation Geography – New Regional Mobilities". *Progress in Human Geography.* vol. 32(2) – 2008, 275-283.

Kepenek, Y. & Yentürk, N., (2003). Türkiye Ekonomisi Thirteenth Edition: Remzi Publication: Istanbul.

Kobifinans, (2007, October 18). *Geleceğin Sektörü Lojistik.* Retrieved on 23 September 2008 from http://www.kobifinans.com.re/tr/icerik.php?Article=17565&Where=sektor&Category=01 1408.

Kumcuoğlu, E. (2006). Turkish Economy: Lecture Notes: Istanbul.

Kunadhamraks, P. & Hanaoka, S., (2007). "Evaluating the Logistics Performance of Intermodal Transportation in Thailand". *Emerald Asia Pacific Journal of Marketing and Logistics*, vol.20 no.3, 2008, 323-342.

Lakeway International Equities Ltd. *Tax Haven Countries.* Retrieved on 21 March 2009 from http://www.lakewayinternational.com.

Lansdale, A., (2008). "Shortsea Trumps as Europe Decides Its Future". *Fairplay Magazine*. vol. 364, iss. 6501, p.4, Lloyd's Register: Derbyshire, UK.

Lehmacher, H., (1998). "Legal Framework for the Development of Transport Infrastructure in the black Sea Region" Paper Presented in the Seminar of New Trend Patterns in the Black Sea Region: Antalya, Turkey.

Lu, C. S., (2004). "An Evaluation of Logistics Services' Requirements of International Distribution Centers in Taiwan". *Transport Journal.* Fall 2004; 43, 4, 53-66.

Luo, M. & Grigalunas, T., (2003). "A Spatial-Economic Multimodal Transportation Simulation Model for US Coastal Container". *Maritime Economics & Logistics*, vol. 2003-5, 158-178.

McMillan, C., (2006). "Embracing the Future: The Atlantic Gateway and Canada's Trade Corridor". Asia Pacific Foundation of Canada.

MUSIAD, (2008). "Işte Geleceğin Sektörleri". Retrieved on 8 December 2008 from http://www.tumgazeteler.com/haber?=ara_gelecegin _sektorleri.aspx.

Namusonge, M. J., (2003). "Linking Competencies with Strategies: The Case of Small and Medium-Sized Exporting Firms in Kenya". Dissertation for University of Illinois, Urbana.

Nebioğlu, O., (1986). Bir Imparatorluğun Çöküşü ve Kapitülasyonlar. Türkiye Iş Bankası Books: Ankara.

Nummela, N., Saarenketo, S. & Puumalinen K., (2004). "A Global Mindset – A Prerequisite for Succesful Internalization". *Canadian Journal of Administrative Sciences.* 2004-21, 1, 51-64.

Oran, B., (2003). Türk Dış Politikası.: Iletişim Publishing: Istanbul.

Pallis, A. & Vaggelas, G. K., (2005), "Port Competitiveness and the EU Port Services' Directive: the Case of Greek Ports". *Maritime Economics & Logistics*. vol. 2005-7, 116-140.

Pamuk, Ş., (1995). Ottoman Foreign Trade in the 19th Century: Historical Statistics Series. vol. 1: Ankara.

Panayides, P. M., (2006). "Maritime Logistics and Global Supply Chains: Towards a Research Agenda". *Maritime Economics & Logistics*. vol. 2006-8, 3-18.

Parola, F. & Sciomachen, A., (2004). "Intermodal Container Flows in a Port System Network: Analysis of Possible Growths via Simulation Models". *International Journal of Production Economics*. vol.97, 75-88.

Pinho, J. C., (2007). "The Impact of Ownership; Location-Specific Advantages and Managerial Characteristics on SME Foreign Entry Mode Choices". *International Marketing Review.* vol. 24, iss. 6, 715-727.

Piraeus Port Authority, (2009). *About PPA.* Retrieved on 3 March 2009 from http://www.olp.gr/EN.

Port Authority of Rotterdam, (2009).*About Us*. Retrieved on 22 March 2009 from http://www.portofrotterdam.com/en/home/.

Porter, M., (2000). "Location, Competition, and Economic Development: Local Clusters in a Global Economy". *Economic Development Quarterly.* 2000; 14; 15. Retrieved on 25 September 2008 from http://edq.sagepub.com/cgi/content/abstract/14/1/15.

Proffitt, M., (1995). "Extending the Supply Chain into Europe via Multi-modal Distribution". *Logistics Information Management,* vol.8, iss.6, 20-24.

Quarante, E., (2009). *Interporto.* Retrieved on 4 April 2009 from http://www.quadrante.it/en/interporto_en.php.

Rodrigue, J. P., (2008). "Transport Geography". Retrieved on 26 February 2009 from http://www.people.hofstra.edu.

Sakarya, S., (2008). Lecture Notes of International Marketing Strategies of Sema Sakarya. Boğaziçi University: Istanbul.

Sanchez, R. J., Hoffmann, J., Micco, A., Pizzolitto, G. V., Sgut, M. & Wilmsmeier, G., (2003). "Port Efficiency and International Trade: Port Efficiency as a Determinant of Maritime Transport Costs". *Maritime Economics & Logistics*. vol. 2003-5, 199-218.

Secretariat General for EU Affairs (2006). *AB Çerçeve Programları ve Türkiye.* Retrieved on 13 February 2009 from http://www.abgs.gov.tr/index.php?p=6&l=1.

Selçuk, O., (2009). "CSCMP Türkiye'de Yapılandı". *Perşembe Rotası.* Retrieved on 31 May 2009 from http://www.persemberotasi.com.

Slack, B., (2004). "Corporate Realignment and the Global Imperatives of Container Shipping": Routledge: London.

Soontiéns, W., (2002). "Managing International Trade: An Analysis of South African SMEs and Regional Exports". *Management Decision*. vol. 2002; 40-7/8, 710-719.

Sügen, Y., (2000). Yeni Kaptanın Kılavuzu: Akademi Denizcilik Publication: Istanbul.

Sürmeli, K. Phone Interview. 12 March 2009.

Şen, L., (2003). Türkiye'de Demiryolları ve Karayollarının Gelişme Süreci.: TESAV Publications: Ankara.

Şentürk, B. Ç., (2009). "Son Gelişmeler Işığında Güney Enerji Koridoru". *Avrasya Stratejik Araştırmalar Merkezi.* Retrieved on 7 May 2009 from http://www.asam.org.tr.

Tansu, S. Phone Interview, 9 March 2009.

Tassoni, A., (2009). *Türkiye Üç Yılda Beyaz Listeye Girer"*. Retrieved on 27 April 2009 from http://www.lojiport.com/news_detail.php?id=13155.

Taylor, J. C. & Jackson G. C., (2000). "Conflict, Power, and Evolution in the Intermodal Transportation Industry's Channel of Distribution". *Transportation Journal*. Spring 2000; 39, 3, 5-16.

Tekeli, I. & Ilkin, S., (2004). Cumhuriyetin Harcı – Modernitenin Altyapısı Oluşurken. Istanbul Bilgi University Publication. Vol. 3: Istanbul.
Thai, V. V. & Grewal, D., (2005). "Selecting the Location of Distribution Center in Logistics Operations: A Conceptual Framework and Case Study". *Asia Pacific Journal of Marketing & Logistics.* vol. 17, iss. 3, 3-24: Patrington.

The Economist (2000, June 10). *Ataturk's Long Shadow: A Special Report.* vol. June 10th-16th 2000: London.

Tongzon, J., (2007). "Determinants of Competitiveness in Logistics: Implications for the ASEAN Region". *Maritime Economics & Logistics*. vol. 2007-9, 67-83.

Trans-European Transport Network (TEN-T), (2008, May 6). *Implementation of the Priority Projects Progress Report May 2008.* EU Informal Transport Council. Retrieved on 19 September 2008 from http://ec.europa.eu/ten/transport/projects/index_en.htm.

Turkish Railways (TCDD), (2008). *Uluslararası Taşımalar Hakkında Genel Bilgiler.* Retrieved on 10 October 2008 from http://www.tcdd.gov.tr/yuk/yurtdisibilgi.htm.

TURKLIM (Türkiye Liman İşletmecileri Derneği), 2006, "Yük Bilgileri 2006". Retrieved on 16 September 2008 from http://www.turklim.org/tr/index.php?option=com_content&task=view&id=17&Itemid=36.

TUSIAD, (2007a), "Kurumsal Yapısı, Yasal Çerçevesi ve Göstergeleriyle Ulaştırma Sektörü". Retrieved on 2 April 2009 from http://www.tusiad.org/turkish/rapor/ulastirma/ulastirma.pdf.

TUSIAD, (2007b). "Kurumsal Yapısı, Yasal Çerçevesi ve Göstergeleriyle Ulaştırma Sektörü: Ek Tablolar". Retrieved on 2 April 2009 from http://www.tusiad.org/turkish/rapor/ulastirma/Ek_tablolar.pdf.

Undersecretaries of Foreign Trade, (2008). "Strategic Plan of 2009-2013". Retrieved on 10 December 2008 from www.dtm.gov.tr.

United Nations Conference on Trade and Development (UNCTAD), (2008). *Review of Maritime Transport 2007,* New York & Geneva: UNCTAD Publication.

United Nations Economic Commission for Europe (UNECE), (May 2009). *Transport Review 2009 Second Edition.* New York & Geneva: UNECE Publication.

UTIKAD (2007, October 22), *Altyapı Iyileştirilmeden Kanun Çıkarsa Demiryoluyla Taşıma Imkansız Olacak.* Retrieved on 13 January 2009 from http://www.utikad.org.tr/haberler//haber_oku.asp?haber=2121.

UTIKAD (2008). *Türkiye Uluslararası Taşımacılık ve Lojistik Sektör Raporu 2007*. Retrieved on 21 October 2008 from http://www.utikad.org.tr/db/files/2007sektorraporu.pdf.

Ünsan, Y., Insel, M. & Helvacıoğlu, I. H., (2007). "Türk Deniz Ticaret Filosu ve Kabotaj Taşımacılığı". 6th Kıyı Ulusal Mühendisliği Sempozyumu: I.T.Ü.: Istanbul.

Veldman, S. J. & Bückmann, E.H., (2003). "A Model on Container Port Competition: An Application for the West European Container Hub-Ports". *Maritime Economics & Logistics.* vol. 2003-5, 3-22.

Vira (August 2008). *Türkiye Limanları AB Sınavında.* vol. 4, iss. 23, 68-71.: Istanbul.

Vira (December 2008). *AB Deniz Alanı Planlama Politikası Geliştiriyor.* vol. 4, iss. 27, 58-60.: Istanbul.

Yıldıztekin, A., (2009). "Lojistik Köy Tanımı Doğru Uygulamalar Yanlış". *Perşembe Rotası*, vol. 12 March 2009.

Zarzoso, I. M., Menendez, L.G. & Burguet, C.S., (2003). “Impact of Transport Costs on International Trade: The Case of Spanish Ceramic Exports”. *Maritime Economics & Logistics.* vol. 2003-5, 179-198.

Ziraat Bankası. (2008). *History.* Retrieved on 21 December 2008 from http://www.ziraat.com.tr/history.asp.