The Turkish International Roll-on Roll-off Industry
Analysis of the Industry and the Strategies of the Companies on the European Lines

Zeynep Aslan
Abstract

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Ro-ro transportation is a type of short-sea shipping where the wheeled cargo is transported by ro-ro (roll-on/roll-off) vessels. This transportation type is different than other sea shipping transportations such as container shipping. The international ro-ro industry between Turkey and Europe has grown significantly in the past decades mostly due to the problems that Turkish international freight operators faced on the land routes through European countries. Currently, there are three companies operating ro-ro on the European lines; U.N. Ro-Ro, Alternative Ro-Ro and Ulusoy Ro-Ro. U.N. Ro-Ro is the market leader with 65% market share and is also the fourth largest ro-ro operator in terms of capacity in lane meters. Alternative Ro-Ro is the second largest ro-ro operator with 23% market share and Ulusoy Ro-Ro is the third with 12%. The companies emerged at different times in the market with different resources and strategies. Through archival studies and interviews, this thesis focuses on the analysis of the ro-ro industry with PESTLE Analysis and Michael Porter’s Five Forces and the strategies of the existing ro-ro operators in the market. PESTLE Analysis presented that factors that affect export and import volumes such as political and economical factors affect the ro-ro industry the most. Porter’s Five Forces Analysis presented that the power of buyers, the threat of land transportation as substitute and rivalry are high, the power of suppliers is medium, and the threat of new entrant and container shipping as substitute are low. The most commonly used strategies are differentiation, diversification, alliance and specialization strategies.
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Abbreviations

Ro-Ro : Roll-on/Roll-off
Lo-Lo : Lift-on/Lift-off
TIR : Transport International Routier
UND : Uluslararası Nakliyeciler Derneği (International Truckers’ Association)
TIM : Türkiye İhracatçılar Meclisi (Turkish Exporters Assembly)
ROPAX : Roll-on/Roll-off Passenger
EIA : European Intermodal Association
Ro-La : Rollande Landstrasse
RODER : Ro-Ro Gemi İşletmecileri ve Kombine Taşımacılar Derneği (Ro-Ro Vessel Operators’ and Combined Transport Users’ Association)
FSG : Flensburger Schiffbau-Gesellschaft
B.A.F. : Bunker Adjustment Factor
SAMC : Salem Al Makrani Shipping Company
GAC : Gulf Agency Company
UME : United Marine Egypt SAE
KKR : Kohlberg Kravis Roberts
CIT : Continuous Improvement Team
GDP : Gross Domestic Product
GNP : Gross National Product
AKP : Adalet ve Kalkınma Partisi (Justice and Development Party)
EU : European Union
UDH : T.C. Ulaştırma, Denizcilik ve Haberleşme Bakanlığı (Turkish Ministry of Transport, Maritime Affairs and Communication)
IMO : International Maritime Organization
UN : United Nations
BMW : International Convention for the Control and Management of Ships, Ballast Water and Sediments
MARPOL : The International Convention for the Prevention of Pollution from Ships
ECA : Emission Control Areas
SOx : Sulphur Oxide
NOx : Nitrogen Oxide
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1. INTRODUCTION

The introduction chapter of this thesis presents the background, purpose and research questions, providing the reader a comprehensive initial description of the topic. The area of research is ro-ro (roll-on/roll-off) shipping industry and companies in Turkey.

1.1. Background

Ro-ro shipping is a type of short sea shipping where wheeled cargo, such as cars, trucks, semi-trailer trucks, trailers, and railroad cars, are carried on vessels that are specifically designed for ro-ro industry. The wheeled cargo is loaded/unloaded by simply being driven on/off the vessels through the built-in or shore-based ramps, unlike lo-lo (lift-on/lift-off) vessels where cargo is loaded and unloaded by using cranes. Figure 1 shows a trailer that is being loaded into a ro-ro vessel.

![Figure 1 A trailer is being loaded to a ro-ro vessel](image)

Ro-ro industry in Turkey started with the launch of the first ro-ro line between Mersin-Izmir-Trieste (Italy) in 1977 by DB Deniz Nakliyat TAS which was a state enterprise. When the war in Yugoslavia broke out in early 1990s, Turkish international freight operators were not able to use the land routes to Europe and new ro-ro companies started to emerge utilizing the political situation of the Balkans.

Ro-ro industry in Turkey can be separated into three different markets depending on the destination or location of the ro-ro lines: Black Sea ro-ro lines, Middle Eastern and African ro-ro lines, and

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European ro-ro lines. In this thesis, the focus will be on European ro-ro lines as it is the biggest market and includes the main ro-ro operators in Turkey.

1.2. Purpose
The objective of this study is to provide a basic review of the ro-ro industry in Turkey and a comprehensive review of the strategies and historical developments of Turkish international ro-ro operators of European lines, particularly from the early 1990s and onwards. The methods used for this research are archival methods and interviews.

1.3. Research Questions
Some research questions are formed to facilitate to achieve the purpose of the thesis. The study has the following research questions:

1) What strategies have been used by the Turkish international ro-ro operators, particularly the more successful operators?

2) How do the political, economical, social, technological, legal and environmental factors affect the Turkish international ro-ro industry?
2. THEORY
This section presents PESTLE analysis, Michael Porter’s Five Forces analysis and the common strategies that are used by shipping companies. The PESTLE analysis was used to analyze macroeconomic forces that have impact on the ro-ro industry in Turkey, Michael’s Five Forces is used to understand the competitiveness of the ro-ro industry and the common strategies are used to find out the strategies of Turkish ro-ro companies.

2.1. PESTLE Analysis
A PESTLE analysis is a tool that can be used to identify external factors that can affect the operations of a company within a particular industry. P.E.S.T.L.E. is an acronym for Political, Economical, Sociocultural, Technological, Legal, and Environmental factors of the external macro-environment. The organizations usually have no control over many of these factors but they should understand their implications. 4

Some examples of political factors to be considered in a PESTLE analysis are government stability, employment and operational laws, government leadership, trade restrictions of reform, tax regulations, corruption levels, bureaucracy issues, and stability of neighboring countries. Examples of economic factors include inflation, taxes and duties, finance and credit, working practices, exchange rates, cost of living, GDP and GNP, and globalization. Sociocultural factors that need to be considered include lifestyle, attitudes and beliefs, social mobility, education, demographics, ethics and religion, historical issues, and cross-cultural communications. Technological factors to be considered are rate of change, use of outsourcing, research and development, knowledge management systems, network coverage, production efficiency, quality and pricing, intellectual property, patents and licenses. Legal factors are mostly about taxation, employment, consumer, advertising, import and export, health and safety, compliance, and regulatory bodies. Finally, environmental factors include infrastructure, cyclical weather, energy availability and cost, social implications, disposal of materials, ecological consequences, legislation, and contamination. 5

2.2. Michael Porter’s Five Forces Approach 6
Porter’s Five Forces tool can be used to identify and analyze the five competitive forces that shape every industry. The model can be helpful to explain why different industries are able to sustain different level of profitability. In an industry with weaker forces, the profits of all the firms are higher. It can be used as an indication of which industries are attractive. The five forces are illustrated in Figure 2.

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Figure 2 The five forces that shape industry competition

**Threat of New Entrants:** New entrants to an industry pose threat to the existing competitors. High profitability attracts new entrants into the industry and this may result in a decrease in market share and profitability among the existing competitors. When there is a high threat of new entrants, incumbents within an industry can try to deter the new entrant by decreasing the prices or increasing the investments. The level of threat of new entrants depends on the height of entry barriers and reactions of incumbents to the entrants. If the height of entry barriers is low, the threat of new entrants will be high or vice versa. Level of entry barriers depend on many factors within the industry such as economies of scale, capital investment, customer switching costs, access to distribution channels, government policies, and expected retaliation of existing companies.

**The Power of Suppliers:** Powerful suppliers can charge their buyers with higher prices or limit the quality of the products or services they supply in order to profit more. There are some determining factors to decide the level of power of supplier. The power of suppliers is high if the suppliers within the industry are concentrated comparing to buyers, if switching costs are high, if the suppliers’ product or services are differentiated, if there is no substitute for the product or service or if the suppliers threaten to integrate forwards into the industry.

**The Power of Buyers:** In order to gain better profits, the buyers within an industry can pressure the companies to decrease the costs of products or services and demand better quality or more service. The power of buyers depends on the level of their negotiation leverage. The power of buyers is high if there are few buyers, if the industry’s products are standardized or undifferentiated, if buyers have few switching costs in changing vendors, if buyers can threaten to integrate backward to the industry and if they are price sensitive.
**Threat of Substitute:** A substitute can be used to replace an industry’s product or service if it performs the same or similar functions. High threat of substitute affect the profitability within an industry. The industry might suffer from the substitutes if it does not differentiate its product or services through performance, marketing or other means. The threat of substitute is high if it offers an attractive price-performance trade-off to the industry’s product and if the buyers’ switching cost to the substitute is low.

**Rivalry among Existing Competitors:** Rivalry among competitors within an industry can show itself in different forms such as price reducing, product or service improvements, new product or service introductions and advertising campaigns. The profitability within an industry can be limited by high rivalry. The rivalry among the competitors are high if there are several competitor and they are similar in size and power, if industry growth is slow, if exit barriers are high and if rivals are highly committed to the business.

2.3. **Strategies of Shipping Companies**

From the literature review of strategies of shipping companies, it is noticed that the strategy of the company depends on many factors, mainly on company size and ownership. The companies of different sizes and the companies of groups or families have different strategic approaches. The main strategies that shipping companies use are diversification, differentiation, concentration, alliances, specialization and cost leadership. The following sections will focus on each of these strategies.

2.3.1. **Diversification**

Firms use diversification strategy in order to expand their business by adding new markets, products, services, or stages of production to their existing business. Diversification strategy is also used for protecting the firm by minimizing the risk by splitting different categories of products in different markets geographically. Therefore, if a product fails in a particular region, the firm does not lose everything and keeps its business.

Freight market is highly dependent on global changes and can incur changes over the night that could provide high profits or wipe out the entire business. In this risky environment, many shipping firms adopt the diversification strategy to protect their business. Another means to use diversification is to reduce their costs and gain higher margin by integrating some activities that can be done efficiently internally. Diversification also leads to customer satisfaction by providing more value-added services. Since diversification requires to operate several activities in different locations simultaneously, it requires enough resources and capabilities. For this reason, usually larger companies use this strategy.

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2.3.2. Differentiation

Differentiation strategy is the approach where the company aims to develop and market unique products or services for their customers. It is one of the three generic strategies of Michael Porter. It mostly means doing things differently to add value to the customers and this usually requires a higher price than the average. Some scholars believe that shipping companies have to go beyond just transporting freight and they have to innovate and develop more value added services. Unlike diversification, any firm, regardless of their size, can build a differentiation strategy. As innovation is the important factor to have a successful differentiation strategy, shipping companies are more innovative when they engage with customers, suppliers or other stakeholders in a process of interactive learning. Smaller companies usually build closer relationships with their customers which gives them a higher chance to be innovative and differentiate from their competitors.

2.3.3. Concentration

Concentration is a strategical approach when a firm focus on one product or market with all the resources it has. It is usually adopted by small companies that do not have enough resources to extend their businesses. Since all the resources are invested on a particular product or market, the firms carry high risk of losses in case of demand drop or higher competition. This approach can be considered as the opposite of diversification strategy.

In shipping industry, this type of strategy is adopted by smaller companies who do not possess enough resources to expand their services. A shipping company can concentrate by using only a few numbers of ports and shipping lines. Even though the firm is geographically narrow, it can still operate high rates of freight cargo on these lines with bigger vessels. Focusing on a niche area, the company can gain high competitive advantage by putting all the effort on understanding the supply and demand drivers.

2.3.4. Alliances

Strategic alliance is when two or more companies agree to share their resources in a mutually beneficial way while remaining independent organizations. It is very unlikely that one firm has enough resources to satisfy all the needs of its customers. By building strategic alliances, one shipping firm can expand its routes geographically, increase its customer base, and provide more frequent sailings and more efficient operations. Alliances give medium or smaller sized companies a chance to expand their operation for a low investment. Two common types of alliances are horizontal and vertical alliances.

Horizontal alliance is when two or more firms, operating in the same business area, become partners to improve their position against other competitors. Anti-trust laws should be considered since these alliances are anti-competitive. This strategy ensures to sell a product in multiple markets.

Vertical alliance is the type of collaboration with the company’s upstream and downstream partners in the supply chain who are the suppliers and distributors. The relationship within the supply chain deepens with the exchange of know-how and commercial intelligence.
arrangement usually allows suppliers to get involved in the product design and distribution processes.

2.3.5. Specialization
Specialization can be considered as a way of differentiation. Firms can specialize by focusing on a particular aspect of business. In shipping industry, some companies might have multi-activities on their lines with some dominant specialization.

2.3.6. Cost Leadership
As one of the Michael Porter’s three generic strategies, cost leadership concept focuses on providing the lowest cost of operation in the industry to establish a competitive advantage. The company has to achieve cost reduction on all value chain activities.
3. RESEARCH METHODOLOGY

This study contains longitudinal and comparative research designs. Longitudinal design is a study that involves repeated observations of the same variables over the time and helps to understand how the strategies of the ro-ro companies evolved and developed during different period of time. The comparative research is used to make comparison among different cases. In this research, it helps to understand the different strategies that the different ro-ro companies have used and why.

This study uses a collection of secondary data through google archives, company website and annual reports, books, related journals and magazines and primary data through interviews. All the used methods were qualitative.

3.1. Secondary Data

Valuable academic and non-academic resources are used in this study. Secondary data for this research is gathered as literature review through google archives, company website and annual reports, books, related journals and magazines. The literature review was conducted before the interviews in order to create base knowledge about the ro-ro industry and the current companies. After literature review presented existing knowledge that can be related to research topic of the thesis, interview questions for primary data collection were formed to fill the gaps of information to conclude the research.

Google searches provided richly varied and freely available sources but the search results were critically assessed to use the most reliable and relevant information in this study. The online sources from the websites of companies, governments, and related associations were decided to be the most reliable internet sources. It is also important to keep in mind that the information from the online resources, such as company websites, might not always be objective and be slightly modified in a way to benefit the company.

3.2. Primary Data - Interviews

After collecting valuable amount of secondary data, additional and further information is gathered by contacting the ro-ro companies that are currently operating on European ro-ro lines using the qualitative interview method as primary data method.

The interviews were conducted as open-ended and semi-structured interviews. Interview questions were prepared to fill the gaps in the research and address the research questions better and they differed slightly from one company to another. The interviewees were encouraged to express their own opinions. The duration of the interviews differed for each interviewee in the range of 25 minutes to 75 minutes. The interviews were conducted via Skype calls and were recorded with permission in order to transcribe for subsequent analysis. At the start of each interviews, all interviewees were informed about the scope of the research and were asked if

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preferred to remain anonymous for this research. Additional questions were directed to the interviewees depending on their answers to provoke more reflections and to clarify the received information. Interview questions generally addressed the areas of the history, development, strategy, operations and relations of the companies. Information about interviewees and interviews are given below:

Ilker Altun started his career in logistics publishing in 1985 when he started working for UND (International Truckers’ Association). Since then he worked as an editor in several monthly magazines in logistics and freight transport industries in Turkey. He also worked as a press consultant for Saffet Ulusoy for 25 years. In February 2010, he published a book covering the selling process of U.N. Ro-Ro to KKR in 2007. The interview with Ilker Altun took place in September 26 and it lasted about 30 mins.

Fuat Pamukcu currently works at U.N. Ro-Ro as Chief Marketing, Business Development and Strategy Officer. He was previously working as an analyst in Citigroup Investment Bank in London and he was involved in the KKR’s acquisition of U.N. Ro-Ro as a member of Citigroup’s team. He joined U.N. Ro-Ro in November 2007 after the acquisition as Business Development Manager. The interview with Fuat Pamukcu was done in two sessions, the first one on September 28 and the second one on October 3, and lasted 75 minutes in total.

Volkan Erucar works as Commercial and Charting Manager at Ulusoy Sealines Management A.S. Before he joined Ulusoy, he worked at TEM Denizcilik in a team to manage ro-ro operations for Ulusoy. The team was recruited by Ulusoy after the company established Ulusoy Sealines Management to manage its own operations. The interview with Volkan Erucar was conducted on October 11 and lasted about 40 minutes.

Kadir Mert Doganay joined Alternative Ro-Ro one year ago and he has been working as a Process Development Expert. The interview with Kadir Mert Doganay was conducted on November 9 and lasted around 25 minutes.

All the interviewees gave valuable information that extensively contributed to the research about the ro-ro industry and major ro-ro companies in Turkey.

The author was able to gather significant amount of information from U.N. Ro-Ro websites, annual reports and the interview. Other companies (Alternative Ro-Ro and Ulusoy Ro-Ro) did not provide as much information which affect the reliability of the analysis.
4. OVERVIEW OF EUROPEAN RO-RO LINES OPERATORS

Before Turkey got involved as a party in TIR (Transport International Routier) Convention in 1966, Turkish export goods were transported by trucks with foreign license plates to other countries. After the convention was approved in the Turkish Parliament, Turkish freight operators started transporting cargo to European countries. In 1974, Turkish international freight operators founded UND in order to overcome the problems that the operators might face and to strengthen the industry.

Turkish international freight operators faced many problems while transporting freight by land transportation to Europe and other countries over the years. These problems included waiting in long queues at the borders, borders being shut over the night, limited numbers of transit documents, unstable political environment of the route countries, 10 times increased passage fees over the night, decreased safety standards and other negative factors such as inadequate highway infrastructure especially in the Balkans. The drivers, the vehicles and the freights were, simply put, miserable on the roads. Traders faced difficulty when they were not able to carry out the promised commitments to their customers.

Ro-ro operations in Turkey mainly started as an alternative transportation to land transportation because of the problems faced on land routes. Especially after early 1990s, ro-ro industry started booming, many ro-ro operators emerged in different regions of Turkey as the export and import volumes of Turkey increased throughout the years.

International ro-ro industry in Turkey is divided into three different markets: Black Sea ro-ro lines operators, Middle Eastern and African ro-ro lines operators and European ro-ro lines operators. The focus of this research is the European ro-ro lines operators as it is the biggest market and includes the biggest ro-ro operators of Turkey. Additional information about Black Sea ro-ro lines operators and Middle Eastern and Africa ro-ro lines operators is given in Appendix 1 and Appendix 2, respectively. First ro-ro sailings in Turkey was initiated by DB Deniz Nakliyat TAS in 1977 on the route of Mersin-Izmir-Trieste with two vessels, Kpt. Necdet and Kpt. Sait Ozege. The vessels did not only carry the wheeled cargo during the first sailings but also the main traditional cash crops such as tobacco, cotton, and raisins in bales. The vessels included 16 cabins for the drivers. In 1980, DB Deniz Nakliyat TAS launched another line between Haydarpasa (Istanbul Asian Side)-Constanta with two ro-ro vessels, Burhanettin Isik and Ziya Abidin in order to eliminate the transport document problem with Bulgaria. This line was not very efficient for Turkish freight operators. Mersin-Izmir-Trieste line was operated until 1988 despite its irregular and unreliable operation.

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Freight operators that chose alternative ro-ro transportation to Romania instead of land transportation through Bulgaria started facing problems with high passage fees and limited transit documents in Romania, Hungary and Czechoslovakia. In addition to these problems, when the war broke out in Yugoslavia and the drivers were not able to drive safely on the land routes. The roads through Yugoslavia, which were vital for the Europe-Turkey cargo traffic, were blocked due to the embargo imposed by the United Nations in 1992. Even though new alternative land routes through Romania and Hungary were established, the inadequate infrastructure facilities such as border-crossing and general road and security conditions were far from sufficient to handle the cargo flow from Turkey to Europe. In addition to these inadequate conditions, the countries on the new land routes imposed excessive road charges and taxes for transit cargo, forcing the freight operators to search for alternative ways to reach Europe. UND started operating ro-ro between Haydarpasa-Trieste in 1992 with two chartered vessels, Anglebury and Exonbury, with guaranteed 70% utilization percentage from its members. Since the vessels had no space for the drivers, UND started transporting the drivers to the destination by planes and then buses. Because of the high demand on ro-ro sailings to Trieste, in 1994, 48 members of UND established UND Ro-Ro in order to transport ro-ro freight from Turkey to Trieste in Italy by purchasing the chartered vessels.

By means of ro-ro transportation, the chain of queues in land transportation through Bulgaria, Romania, Yugoslavia, Hungary and Austria to European markets were removed and transit duration of the trucks were decreased significantly and Turkey was able to reach the European markets much faster.

The growing ro-ro transportation market on European lines enabled many players to emerge in the market afterwards. Currently, there are three main players in European ro-ro lines market; U.N. Ro-Ro, Alternative Ro-Ro, and Ulusoy Ro-Ro. Companies that had failed in ro-ro business on European lines are Ege Ro-Ro, TI Ro-Ro, UND Deniz and BKT Ro-Ro. The market is still expected to grow, not only because of the growth of the economy, but also because of the effort to supply green logistics and the restricting implementations of land route countries.

4.1. U.N. Ro-Ro
In November 1993, 48 members of UND established UND Ro-Ro to operate ro-ro from Istanbul to Trieste. U.N. Ro-Ro was founded in the leadership of Saffet Ulusoy who was the UND president at the time. All the partners were freight operators, holding about 60% of the Turkish international freight transportation market. The partners of the company did not have any sea shipping or ro-ro shipping management therefore the board recruited Cemil Bayulgen, who was the ro-ro

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department’s manager at DB Deniz Nakliyat TAS., as general manager, and the rest of his team. UND Ro-Ro weakened its links to UND later on and in 2004, the company was renamed as U.N. Ro-Ro. Some important events in the company history are listed as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>UND Ro-Ro was established.</td>
</tr>
<tr>
<td>2000</td>
<td>U.N. Deniz Tasimaciligi A.S. was established.</td>
</tr>
<tr>
<td>2001</td>
<td>UN Ege vessel joined the fleet.</td>
</tr>
<tr>
<td>2002</td>
<td>UN Atilim and UN Birlik vessels joined the fleet.</td>
</tr>
<tr>
<td>2003</td>
<td>U.N. Gemicilik A.S. was established.</td>
</tr>
<tr>
<td>2004</td>
<td>U.N. Deniz Isletmciligi A.S. was established. UND Ro-Ro was renamed as U.N. Ro-Ro.</td>
</tr>
<tr>
<td>2005</td>
<td>Saffet Ulusoy, UN Pendik and UN Marmara vessels joined the fleet. UN. Ro-Ro inaugurated the Pendik Ro-Ro Port. UN Pendik joined the fleet. U.N. Ro-Ro started using B.A.F.</td>
</tr>
<tr>
<td>2006</td>
<td>UN Trieste joined the fleet. Pendik-Bar line was launched.</td>
</tr>
<tr>
<td>2007</td>
<td>KKR acquired U.N. Ro-Ro.</td>
</tr>
<tr>
<td>2008</td>
<td>A new freight pricing system is introduced. UN Akdeniz and UN Karadeniz vessels joined the fleet.</td>
</tr>
<tr>
<td>2009</td>
<td>Cuneyt Solakoglu vessel joined the fleet. U.N. Ro-Ro launched its Mersin-Trieste line.</td>
</tr>
<tr>
<td>2010</td>
<td>Cemil Bayulgen vessel joined the fleet. Pendik/Ambarli-Marseille line was launched.</td>
</tr>
<tr>
<td>2011</td>
<td>Pendik/Ambarli-Marseille line destination was switched to Toulon. Online services was launched. Pendik-Constanta line was launched.</td>
</tr>
<tr>
<td>2012</td>
<td>Pendik-Constanta line was shot down.</td>
</tr>
<tr>
<td>2013</td>
<td>UN Istanbul joined the fleet. U.N. Ro-Ro had acquired 60% stake in Samer Seaports terminal. Turkey-Egypt-Saudi Arabia line was launched.</td>
</tr>
<tr>
<td>2014</td>
<td>Turkey-Egypt-Saudi Arabia line was shut down. Actera Group-Esas Holding consortium acquired U.N. Ro-Ro.</td>
</tr>
<tr>
<td>2015</td>
<td>Pendik-Toulon and Mersin-Trieste lines started transporting containers. Continuous Improvement Team (CIT) was established. The company collaborated with Turkish Airlines.</td>
</tr>
<tr>
<td>2016</td>
<td>Fruit Terminal Trieste SPA was acquired.</td>
</tr>
<tr>
<td>2017</td>
<td>U.N. Ro-Ro announced the acquisition of Ulusoy Ro-Ro. UN Akdeniz and Cuneyt vessels were extended at GEMAK.</td>
</tr>
</tbody>
</table>

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The company purchased 7 ro-ro vessels between the years 1993 and 1997. These vessels had insufficient capacity and low speed of 15.5 knots. In 1998, U.N. Ro-Ro ordered modern vessels from the German shipyard Flensburger Schiffbau-Gesellschaft (FSG). Six newly-built and fast ro-ro vessels were delivered to U.N. Ro-Ro between the years 2000 and 2002. The company decided to purchase the new vessels through the additional, newly established companies. U.N. Deniz Tasimaciligi A.S. was established in 2000 with 120 partners, U.N. Gemicilik A.S. was established in 2003 with 142 partners and finally U.N. Deniz Isletmeciligi A.S. was established in 2004 with 118 partners. The proposal to establish the new companies came from Saffet Ulusoy in order to strengthen U.N. Ro-Ro while involving more freight operators in the ro-ro business.

U.N. Ro-Ro started renewing its fleet by adding with the first of its second generation vessels, UN Ege, to its fleet in 2001. The same year, UN Ege vessel was awarded “The Ro-Ro Vessel of the Year” by ShipPax, for its design, efficiency, capacity and innovation. The rest of the second generation vessels, UN Atilim and UN Birlik, joined the company’s fleet in 2002. The company continued expanding its fleet by adding its third generation vessels, Saffet Ulusoy, UN Pendik and UN Marmara, to its fleet in 2005.

The company’s effort to expand the use of ro-ro and intermodal modes was granted the ‘Best Intermodal Project’ award in 2005 by the European Intermodal Association (EIA). U.N. Ro-Ro created a new transportation model compatible with the “Motorways of the Sea” project supported by the European Union Marco Polo Program, which aims to shift freight transport from the road to environmentally friendly transportation ways, like seaways.

One of the most important milestones in the company’s history is the inauguration of Pendik Port in 2005. Pendik Port project was a significant part of the company’s strategy to increase its capacity and customer satisfaction. U.N. Ro-Ro inaugurated the Pendik Ro-Ro Port on April 2005, with the attendance of the Prime Minister of the time, Recep Tayyip Erdogan, and other government officials. The port was established on an area of 112 decares and has a capacity that allows 650 trailers to be parked at the same time. U.N. Ro-Ro invested about 60 million dollars for Pendik Port and also enabled a new security system called Gamma-Ray for 1.25 million dollars in order to prevent human trafficking which can be considered as a main issue in Turkey. Before Pendik Port was opened for service, ro-ro vessels departed from Haydarpasa Port which had an area of 13

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decades. Since it was located in a more central location in Istanbul, comparing to Pendik Port, trailer drivers would drive about an extra three hours to arrive to Haydarpasa Port. Saffet Ulusoy, president of RODER and chairman of U.N. Ro-Ro, stated in his speech that it was one of the most important days in the history of ro-ro industry. He also requested permit from the prime minister in order to sell fuel without special consumption tax. Binali Yıldırım, Minister of Transport, Maritime Affairs and Communications, stated that while there were problems and crisis in many industries, maritime industry was going strong due to the precautions that they had taken such as removing special consumption tax from fuel for maritime industry use and decreasing port charges significantly. In 2006, U.N. Ro-Ro Pendik Terminal started giving service and TAX free diesel service commences in Pendik Terminal for Turkish trucks carrying export goods.

The rise of the crude oil prices worldwide encouraged U.N. Ro-Ro to adapt B.A.F. (Bunker Adjustment Factor) system on September 2005. B.A.F. is adjusted to the oil prices worldwide and added to the freight rates. Freight operators usually prefer to reflect this cost directly to their customers.

As a part of its strategy to extend its lines, U.N. Ro-Ro launched a new line to Bari (Southern Italy) on February 2006 after considering the increase in transportations to Southern Italy, Southern France, Spain and Portugal.

In 2007, 97.6% of the company shares were purchased by Kohlberg Kravis Roberts (KKR), a private equity firm, for 910 million euros. The unsold 2.4% of the shares belonged to UND which disagreed with selling of the company from the beginning. KKR Member John Pfeffer commented: “The future success of U.N Ro-Ro’s business will be built on continuing to provide a high-quality, reliable service at a competitive cost, investing in new vessels and capacity and contributing to the success of the transporters it serves. We look forward to working with U.N Ro-Ro’s management team as they implement their plan to support this growth.” U.N Ro-Ro CEO Cuneyt Solakoğlu commented: “U.N Ro-Ro will continue to be based in Turkey and we as the management team will continue our duties. With KKR’s global financial and operational expertise, we can further build on the success of U.N Ro-Ro to the next stage of its growth and development.”

financing for the acquisition has been arranged by Turkish banks Turkiye Garanti Bankasi and Turkiye Is Bankasi.

During 2007, crude oil prices reached to record numbers worldwide and the company announced several times that they were adjusting their freight rates and B.A.F.s to the current rise of oil prices. In the beginning of 2007, the company was paying 285 $/ton, this number increased to 376 $/ton in the middle of the year and 466 $/ton at the end of 2007. They announced that they cannot ignore the record increase in oil prices and it is not foreseen to decrease in the near future so they had to increase both freight rates and B.A.F.s. On March 2008, U.N. Ro-Ro announced that they will start a new system with freight pricing. Since the oil prices were very unstable, instead of always changing the freight rates, U.N. Ro-Ro decided to announce freight rates at the beginning of each yearly quarter, keeping the prices fixed for at least three months. Oil cost was the highest cost item for the company but they still wanted to reach a common ground with their customers. Even though they kept increasing the freight rates, U.N. Ro-Ro claimed that they would still be “cheapest ro-ro per mile”.

On November 2008, U.N. Ro-Ro announced that high oil prices worldwide put ro-ro industry in a difficult situation but they decreased the freight rates in order to assist the freight operators during these difficult days. On April 2009, in order to prevent freight operators to choose land transportation over ro-ro transportation, the company announced that they were again making significant discounts. Last adjustment to pricing system was done on December 2012 when the company announced their new freight rates and B.A.F.s and stated that the freight rates would be fixed during the year 2013 and the following years and only B.A.F. values would be adapted to the oil prices every month. This way the customers could do better planning of their transportations.

U.N. Ro-Ro started receiving its fourth generation vessels in 2008. The company added the new modern vessels, UN Akdeniz and UN Karadeniz, to its fleet.

In order to serve better to its customers from the Mediterranean region, U.N. Ro-Ro started operating from Mersin Port on March 2009. Mersin-Trieste line was launched with a single vessel to sail once a week. When the demand to this line increased, the company increased the frequency

of sailings by adding a newly delivered fourth generation vessel, Cuneyt Solakoglu, to this line on October 2009. The last vessel of the fourth generation, Cemil Bayulgen, was delivered in 2010. Addition of the new vessels enabled the company to respond to the demands of its customers by launching a new line from Pendik/Ambarli to Marseille (France) on July 2010. The company increased the number of the vessels operating on this line to two on August 2010. Problems with the port operations and custom processes forced U.N. Ro-Ro to switch to Toulon Port on January 2011. The number of vessels operating on Istanbul-Toulon lines was increased to three on May 2011. Since the market was growing, the company needed to constantly increase its capacity by purchasing or chartering new vessels. U.N. Ro-Ro chartered a vessel to ease the operation on Trieste line on January 2011.

In order to enable its customers a faster ticketing and communication, U.N. Ro-Ro launched its online services on May 2011. Their customers were able to book a reservation, display the invoices and track the vessels.

The company launched a new line, Pendik-Constanta (Romania), with one vessel for freight transport to especially Northern and Eastern Europe on November 2011. Even though U.N. Ro-Ro tried to support the volume on this line with decreased freight rates, the line did not prove itself feasible due to the alternative short land routes to Romania and the sea traffic in Bosphorus. Pendik-Constanta (Romania) line was shut down in the fourth quarter of 2012.

U.N. Ro-Ro received UN Istanbul as its fifth generation vessel in 2013. The company kept increasing its capacity but also searched for new ways to attract more customers. U.N. Ro-Ro launched the “Land to Sea” campaign with its new pricing policies and promotions on February 2013. The campaign especially targeted international trucking companies that preferred land routes and did not use ro-ro transportation. U.N. Ro-Ro started offering competitive transportation opportunities to its loyal customers with a ticket commitment scheme on May 2013.

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The company expanded its port investments outside of Turkey by acquiring 60% stake in the Port of Trieste’s Samer Seaports terminal in 2013. Trieste is geographically close to major European countries like Austria, Germany and France. The free status of the Trieste Port provides a unique advantage by significantly reducing transit and custom procedures for Turkish ro-ro freight bound for European countries. Another advantage of this port is the connections to the ro-la (Rollande Landstrasse) trains that resolves the problem of low number of Austrian transit permits as Austrian authorities provides bonus transit permit for the use of ro-la. With the acquisition of the port in Trieste that U.N. Ro-Ro has been operating for almost 20 years, the start of trains operations in Austria under the name of UN RAIL, shipping all types of units including containers and the establishment of collaborations with railroad connections leading from Trieste to every location in Europe U.N. Ro-Ro have gained a huge momentum in intermodal transportation in their lines.\(^{54}\) U.N. Ro-Ro plans to invest in Trieste Port about 8.5 million euros in order to enlarge its capacity. The company will be strengthening its position by increasing the number of connections and the frequency and decreasing the costs\(^{55}\).

Soon after the war broke out in Syria, some companies from Turkey, Egypt and Lebanon started operating ro-ro from Turkey to Egypt and then established connections to Saudi Arabia. Due to financial inadequacy and operational problems, freight operators, including a majority of U.N. Ro-Ro’s customers on the European lines, suffered from the ro-ro operations. Ministry of Transport, Maritime Affairs and Communications requested support from U.N. Ro-Ro for this area. Even though it was not feasible, U.N. Ro-Ro started operating on the Egypt line to strengthen its political relations with the government, to resolve the issues of its customers in the Middle Eastern and African lines and to assist the country’s economy.\(^{56}\) U.N. Ro-Ro had only been operating on the lines between Turkey and Europe until June 2013, when it started collaborating with Salem Al Makrani Shipping Company (SAMC). U.N. Ro-Ro started its first ro-ro service between Turkey-Egypt-Saudi Arabia with UN Attilim vessel. With this new line, it was aimed to compensate for the shutdown land route through Syria. U.N. Ro-Ro operated between Mersin-Damietta (Egypt) with UN Attilim and SAMC operated between Damietta (Egypt) – Adabiya (Egypt) – Duba (Saudi Arabia) with its two vessels.\(^{57}\) The departure port was switched to Iskenderun Port from Pendik Port shortly after the launch of the line due to high request.\(^{58}\) In October, 2013, after evaluating the requests coming from their customers, U.N. Ro-Ro started a new line; Iskenderun-Israel-Jordan, parallel with its Egypt-Saudi Arabia line.\(^{59}\) UN Attilim started operating at both lines. On June 24, 2014 when U.N. Ro-Ro started cooperating with Gulf Agency Company (GAC) and

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\(^{56}\) Pamukcu, F. (2017, October 3). Phone interview.


United Marine Egypt SAE (UME) companies in Egypt after SAMC stopped operating at Adabiya Port because of its operational problems. In the meantime, international freight operators established a cooperative company, Hatay Ro-Ro, to operate on this line. U.N. Ro-Ro ended its operation after one year when Hatay Ro-Ro was able to operate ro-ro on the Middle Eastern and African lines.

The vessels operating on Pendik-Trieste line started making a stop at Ancona (Italy) with company’s decision on June 2014.

In September 2014, the shares that KKR was holding since 2007 were bought by the current owners of the company, the Actera Group-Esas Holding consortium, for about 700 million euros, i.e. 50 million euros over the company’s net debt. Esas, the owner of discount carrier Pegasus Hava Tasimaciligi AS, is a private equity and investment firm set up by Sabanci family members who broke away from Haci Omer Sabanci Holding AS. Actera was founded by former Merrill Lynch banker Isak Antika.

U.N. Ro-Ro diversified its business by starting transporting containers on Pendik-Toulon and Mersin-Trieste lines on January 2015. Containers are loaded onto the vessels only if there is available space for them.

The company established Continuous Improvement Team (CIT) in March, 2015 in order to improve corporate processes by reducing costs and increasing efficiency of its operations. The team has successfully completed many projects that focus on efficiency in 2015. The most important one among those was the improvements in the optimization of the trading routes. With energy saving projects that were based on innovations and technological advancements in fleet and port management, U.N. Ro-Ro have made positive contributions to the environment, resulted as using 1,500 tons less fuel compared to the previous year and avoided 2,000,000 tons of carbon emissions.

Since the day it was founded U.N. Ro-Ro transferred the drivers by planes to the destinations. Increasing freight volume meant increasing number of drivers and therefore the transfer of the drivers required collaborations with airline companies. In 2015, U.N. Ro-Ro started collaborating

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with Turkish Airlines in order to carry the drivers to the arrival ports and back. Turkish Airlines agreed to carry 150,000 U.N. Ro-Ro drivers within the following 3 years.\(^{67}\)

The need for new storage and additional parking areas in Trieste encouraged U.N. Ro-Ro to invest more in the Trieste Port by acquiring Trieste Fruit Terminal SPA on the first quarter of 2016.\(^{68}\)

U.N. Ro-Ro announced that it will be acquiring Ulusoy Ro-Ro for 215 million euros on the company website on January 20, 2017. With this acquisition U.N. Ro-Ro added a new port in the Aegean Region (Cesme) to its current ports in Pendik (Istanbul Asia), Ambarli (Istanbul Europe) and Mersin (Mediterranean). The company aims to increase the number of Cesme-Trieste sailings from 3 to 5 per week and launch a new line between Cesme and Toulon to directly connect Izmir province to France. U.N. Ro-Ro decided to keep the advantageous freight rates on Cesme-Trieste line.\(^{69}\)

In 2017, the company found a new way of increasing its capacity other than purchasing or chartering vessels; extending vessels. U.N. Ro-Ro extended the capacity of its two vessels, UN Akdeniz and Cuneyt Solakoglu, in a Turkish shipyard, GEMAK. Both vessels were extended with a 30 meters block that enabled 23% capacity extension and are now in operation with 300 trailer capacities.\(^{70}\) Extending of ro-ro vessels for capacity improvements was done by U.N. Ro-Ro for the first time in Turkey.

### 4.1.1. Fleet and Lines

Ro-ro lines established by U.N. Ro-Ro and the connecting rail lines serve as the greatest intermodal infrastructure leading to Turkey’s greatest trade partner, Europe. Some general information about U.N. Ro-Ro is given in Table 1.

**Table 1 General information about U.N. Ro-Ro\(^{71}\)**

<table>
<thead>
<tr>
<th>Utilization percentage</th>
<th>78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of vessels</td>
<td>12</td>
</tr>
<tr>
<td>Average age of the fleet in years</td>
<td>9</td>
</tr>
<tr>
<td>Number of ports</td>
<td>5</td>
</tr>
<tr>
<td>Rail connections</td>
<td>6</td>
</tr>
<tr>
<td>Annual number of passengers carried</td>
<td>45,000</td>
</tr>
<tr>
<td>Number of employees</td>
<td>469</td>
</tr>
</tbody>
</table>

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Possessing the largest ro-ro fleet in Turkey, U.N. RO-RO is the second biggest company in the Mediterranean. With 12 modern ro-ro vessels and 43.5 km line meters of vessel capacity, it is among the leading companies in the sector. Worldwide ranking of the top 12 companies that has the largest fleet is shown in Figure 3. Some general information about the vessels can be found in Appendix 3.

Between 3 ports in European countries (Trieste, Toulon, Bari) and 3 ports in Turkey (Pendik, Ambarli, Mersin), the company is currently operating five lines. Pendik Port is preferred by many freight operators that are located in Istanbul or Anatolia. Ambarli Port is located on the European side of Istanbul and is preferred by the freight operators that are located in Istanbul, Tekirdag and Corlu. Mersin Port is preferred by freight operators from Central Anatolia, Southeast Anatolia and Mediterranean Regions. Port of Toulon proved easy access to France, Spain, Portugal and United Kingdom. Bari Port is highly demanded for transit cargoes destined to countries like Spain and Portugal. Some basic information about the lines of the company can be found in Appendix 4.

4.1.2. Intermodal
After arriving in European ports, the trailers are loaded on the trains in order to be delivered to other European countries. Information about the main train connections of U.N. Ro-Ro can be found in Appendix 5.

4.2. Alternative Ro-Ro
Alternative Ro-Ro (Alternative Transport) was founded in January 2013 by Ahmet Musul, founder and CEO of Ekol Logistics, in order to facilitate Ekol’s operations. Ekol Logistics, an integrated

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73 Doganay, C.M. (2017, November 8). Phone interview.
logistics company founded in 1990, provides international freight, warehousing, domestic distribution, foreign trade, customs, and supply chain management services in 15 countries. Ekol has been using the European ro-ro lines extensively from the very beginning and that enabled the company to understand the ro-ro business and industry requirements. The general manager of the company, Hakan Yilmaz, had previous ro-ro experience before he joined the company. Alternative Ro-Ro was founded under Ekol Group when the existing ro-ro companies did not meet the capacity and price demands. Ekol wanted to assist their customers to be more competitive with its ro-ro service and prices.

The company started its business with chartering vessels but achieved sustainable growth by investing in expanding their fleet. In 2014, the company used a loan of 63 million Euros from European Bank for Reconstruction and Development (EBRD) to buy the three vessels that it has been operating on a charter basis. EBRD’s second transaction with Alternative Transport was 27.5 million euros in 2017 when the company was purchasing its 6th vessel, MELEQ, that was worth 55.5 million euros. An additional 4.5 million euros junior loan was provided under the EBRD’s Green Logistics Programme, which is funded by the Global Environment Facility, while Turkey's Isbank provided 16 million euros loan. Sue Barrett, EBRD director for transport said "Although the importance of ro-ro transportation between Europe and Turkey is increasing rapidly, shipping companies in Turkey suffer from scarce access to long-term financing. This is our second transaction with Alternative Transport, as we believe shipping operations are not only a successful business but also support a cleaner, safer and more efficient transport system for the country's booming trade.".

When it was first founded, the company was operating from Haydarpasa Port in Istanbul. Alternative Ro-Ro invested around 30 million dollars in the construction of Yalova Ro-Ro terminal and switched its operation from Haydarpasa Port to Yalova Port. Yalova Port is closer to the industrial zones of Izmit and Bursa amongst others and Ekol announced that it was moving its ro-ro service there from Istanbul. Yalova is around 92 km south of Istanbul. According to the company, that move will make significant carbon savings and take 100,000 vehicles off the main arterial roads and bridges around Istanbul.

The company started transporting containers shortly after it was founded. Currently, the company transports 20 ft., 40 ft. and 45 ft. high cube container types on roll-trailers.

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75 Doganay, C.M. (2017, November 8). Phone interview.
Ekol Logistics recently invested in Trieste Port by acquiring a 65-percent share of Europa Multipurpose Terminals (EMT). The company will invest further to make it possible to handle two separate Ro-Ro operations simultaneously and to increase train loading capacity to 10 daily trips.\(^8^0\)

Freight rates at Alternative Ro-Ro are decided once a year and are not changed if there are not significant changes in crude oil prices or exchange rates. The company claims to have lower freight rates than its competitors. The ticketing operations are done through e-mail services.\(^8^1\)

Alternative Ro-Ro is the second biggest ro-ro operator in Turkey with 23% market share on European lines.\(^8^2\) When it was founded, 98% of their transportsations consisted of Ekol’s customers. Six months after the company was founded, it was decided that Alternative Ro-Ro would be an independent company and treat all other companies of international freight industry equally. After this decision the company gained a huge ascend. The volume capacity was increased by expanding the fleet size and by the end of 2016, Ekol’s percentage as customer fell to 65%. Units carried by Alternative Transport over the years are shown in Figure 4.\(^8^3\)

![Figure 4 Number of units carried by Alternative Ro-Ro (in thousands)](image.png)

The reason behind the rapid growth of the company is because of the growing market, increasing demand and the customer loyalty of Ekol customers.\(^8^4\) Alternative Ro-Ro aims to continue to open new routes and increase frequency in the existing routes through new investments. The company will soon receive its 7th ro-ro vessel and use it to increase the capacity of the current lines.\(^8^5\)

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81 Doganay, C.M. (2017, November 8). Phone interview.


84 Doganay, C.M. (2017, November 8). Phone interview.

85 Doganay, C.M. (2017, November 8). Phone interview.
company aims to set itself apart from its competitors with its service quality by offering efficient, on time, low cost, and environmentally friendly transportation of goods between destinations.

4.2.1. Fleet and Lines
From the day it was founded, Alternative Ro-Ro continued to invest in the expansion of its fleet to maintain the company’s growth trend. The company now owns 6 state-of-the-art, technology equipped ro-ro vessels and operates at total of 5 ports in Turkey, Greece, Italy and France as shown in Figure 5. Alternative Transport operates nine weekly shuttle services between the ports of Haydarpaşa, Alsancak, Lavrio, Trieste, and Sete with ro-ro vessels; HATCHE, PAQIZE, QEZBAN, FADIQ, AYSHE, and MELEQ. AYSHE and FADIQ are chartered vessels and the company is planning to buy a new vessel in 2018, called AYSHE and replace the current chartered vessel with it. Some basic information about the company’s fleet and lines can be found in Appendix 6 and Appendix 7, respectively.

![Figure 5 Ports that Alternative Ro-Ro have been operating](image)

4.2.2. Intermodal
Trailers and containers are transported on ro-ro vessels to the ports of Trieste and Sete and are distributed over to the European countries from these points by train and road transport. Alternative Ro-Ro operates only one train for trailers between Trieste and Wels (Austria). Customers that want to proceed to further destinations from Trieste are free to choose the services of U.N. Ro-Ro and Eko.

A detailed illustration of Ekol’s intermodal connections are shown in Figure 6. From Trieste Port, trailers and containers can be transported on unit train shuttles to Ostrava in Czech Republic, to Cologne, Ludwigshafen, or Kiel in Germany. From Kiel in Germany, they can be transported to Oslo in Norway, Gothenburg or Malmo in Sweden, Helsinki in Finland or St Petersburg in Russia. From Sete Port, the ro-ro freight can be transported to Paris on unit trains or to Spain, Portugal,

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87 Doganay, C.M. (2017, November 8). Phone interview.
and Western European countries by road. The unit trains travel between Sete and Paris in 24 hours. Detailed information about Ekol Logistics’ intermodal operations can be found in Appendix 8.

4.3. Ulusoy Ro-Ro

Ulusoy Ro-Ro operated on Black Sea lines from 1995 to 2000. The company was outsourcing its ro-ro management to TEM Denizcilik during the first year. Ulusoy Sealines Management A.S. was established afterwards to start in-house operation and management of their own vessels with a team that was recruited from TEM Denizcilik. In 1999, ULUSOY-1 ro-ro vessel was sold and a new 92 trailer capacity ro-ro vessel was acquired by the company. The new vessel was also named ULUSOY-1 and it started operating on Cesme-Trieste line together with another new vessel that had the same capacity\(^8\). Increasing demand in the market required the company to extend its ro-ro fleet capacity. Ulusoy renewed its fleet with 135-150 trailer capacity vessels in 2003. Same year, the management rights to operate Cesme Port for 30 years was acquired by Ulusoy as the company offered the highest bid in the tender\(^9\).


In 2007, the company ordered new ro-ro vessels in order to renovate its fleet as the market and the world economy were growing. The new two 270 trailer capacity vessels (4100 lanemeters) were delivered in 2013’s first quarter.

Currently, Ulusoy ro-ro is operating on Cesme-Trieste line with two high capacity vessels, Ulusoy-14 and Ulusoy-15, and one medium capacity vessel, Saffet Bey. When it first started operating on Cesme-Trieste line, Ulusoy carried 8000 vehicles during the first year. With the capacity improvement investments, the company was able to increase the number of carried vehicles to 24000 in 2016. This increase in ro-ro transportation can be considered as a result of Turkey’s increased export volume over the years and the increase in the number of international freight operators that choose ro-ro transport over land transportation91.

Since early 2017, Ulusoy Ro-Ro is in the process of being acquired by U.N. Ro-Ro for about 215 million euros92.

4.3.1. Fleet and Lines
Currently, Ulusoy Ro-Ro is operating 3 round trips per week on Cesme-Trieste line with Saffet Bey, Ulusoy-14 and Ulusoy-15 vessels. Ulusoy-5 vessel is chartered to other companies93. Some basic information about Ulusoy’s ro-ro fleet can be found in Appendix 9.

4.4. Ege Ro-Ro
Ege Ro-Ro started its first operation between Tekirdag-Trieste with one chartered vessel in 1998. The company chartered two more vessels to operate in the same line in 1999. Due to the low utilization percentage and high lease of the vessels, the company agreed to purchase the three chartered vessels with a loan from Netherlands’ NIB Capital bank. Starting from July 3, 2001, the company switched its departure port from Tekirdag to Ambarli (Istanbul Europe side) trusting the high number of requests from their customers. Negative effects of 2001 economic crisis in Turkey and nonfulfillment of freight operators’ promise to keep high utilization percentages forced the company to search for alternatives to overcome its liquidity problem. First they proposed to UND to charter their vessels but they could not agree on the conditions. Finally, it was decided to charter the two of the vessels to foreign operators and continue to operate on Ambarli-Trieste line with one vessel. The vessel was also chartered to U.N. Ro-Ro afterwards94.

Ege Ro-Ro operated together with UND Ro-Ro on the same lines, with the same cooperative corporate structure that consisted of international freight operators. After serious competition and
price wars between the two companies, UND Ro-Ro acquired Ege Ro-Ro in 2004. After seeing the detrimental effects of high competition, other companies avoided the similar situations.\(^\text{95}\)

### 4.5. TI Ro-Ro
TI Ro-Ro was established as a Turkish-Italian partnership in the first half of 2007. The company started operating ro-ro with two vessels from Kepez to Brindisi in Italy. TI Ro-Ro was departing its vessels from Kepez in Canakkale. This area was distant to industrial areas such as Bursa, Gebze, Istanbul and it did not have customer potential for ro-ro industry. The vessels’ destination was Brindisi in Southern Italy which was also far away from the industrial areas. The failure of the company was because of the wrong strategy on the location of the ports. The company ended its operation after 2-3 months.\(^\text{96}\)

### 4.6. UND Deniz
In April 2010, UND Deniz started its operation between Tekirdag-Toulon and Tekirdag-Trieste. UND Deniz was established by UND members, with a cooperative structure. The company’s capital was only about 50,000 Turkish lira. The company started managing its operations with debts. Ramp-up duration of a line is about a year and requires a capital of 10 million euros to manage. In the shipping industry, companies pay everything in cash for fuel, port fees and agency fees and when they sell tickets to the customers, the customers are allowed to pay 2-3 months after the actual purchase of the tickets. Due to the low capital and wrong management of the capital, the company ended its operation on Tekirdag-Trieste line after four months and on Tekirdag-Toulon after eight months.\(^\text{97}\)

### 4.7. BKT Ro-Ro
BKT Ro-Ro started its operation on May 2010 and ended its operation only after a few sailings. The company was founded by freight operators as a cooperative structure but lacked competence in shipping and ro-ro management. The purchased vessels turned out to be at a lower performance than expected, about 10 knots instead of 20. This increased the sailing duration from 3 days to 6 days. The vessels were old vessels and the company faced many operation problems related to the engines and had to end its operation only after a few sailings.\(^\text{98}\)

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\(^{95}\) Pamukcu, F. (2017, October 3). Phone interview.

\(^{96}\) Pamukcu, F. (2017, October 3). Phone interview.

\(^{97}\) Pamukcu, F. (2017, October 3). Phone interview.

\(^{98}\) Pamukcu, F. (2017, October 3). Phone interview.
5. ANALYSIS
The analysis chapter presents the results from the gathered information through secondary and primary sources. In the first section of the chapter, political, economical, sociocultural, technological, legal and environmental factors that impact the ro-ro industry in Turkey are analyzed with the PESTLE tool. In the second section of the chapter, the competitiveness of the ro-ro industry on the European lines is analyzed with Michael Porter’s Five Forces tool. The final section presents the strategies of the ro-ro operators on the European lines.

5.1. PESTLE Analysis of Turkish Ro-Ro Market
Turkey is geographically located mainly in Anatolia in Western Asia and on a small part of Balkan Peninsula in Southeast Europe. As shown in Figure 7, it is surrounded by seas on its three sides: The Black Sea to the north, The Mediterranean Sea to the south and the Aegean Sea to the west. The Sea of Marmara is the northwestern sea that separates the European and Asian sides of the country. Turkey has a total of 2,753 km land boundaries with Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Iran, Iraq, and Syria. The coastline length of the country is 8,372 km\(^99\) which is about three times more than its land boundaries.

![Figure 7 Map of Turkey](image)

5.1.1. Political
Turkey has been ruled by the same political party, AKP (Justice and Development Party), since 2002. Turkey’s performance since AKP started ruling has been impressive. One of the current political strengths in Turkey can be considered as the government’s policies to support liberal trade and investment policies that allow open trade between Turkey and different countries in the

European Union (EU). Turkey-EU relations date back to the 1963 Ankara Agreement whose last stage, the custom union agreement, entered into force in January 1996. The implementation of the custom union agreement for 20 years allowed Turkey to become the EU’s 5th main trading partner globally with 4.2% share. Similarly, the EU is the most important trading partner for Turkey, receiving 48% of Turkey’s exports in 2016. The Customs Union enabled a fourfold increase in the trade between EU and Turkey, compared to 1996, with removal of several major trade barriers and to significant legislative compliance\textsuperscript{100}.

The use of land transportation is 60% in international trade and 80% in domestic trade. The Turkish Ministry of Transport, Maritime Affairs and Telecommunication is taking serious steps to decrease the rate of land transportation while expanding the use of intermodal modes. In June 2012, the ministry established Directorate General for Dangerous Goods and Combined Transport Regulation\textsuperscript{101} which released a document about combined transport strategies in 2014 and the document included action plans for the strategies such as extending the use of intermodal transportation, preparing master plans for freight transport and logistics, preparing legal framework for strengthening intermodal transport and facilitating management systems of intermodal transport and custom procedures\textsuperscript{102}.

Turkey has faced some challenges in recent years that affected the political developments. The Government’s reform momentum has been negatively affected by elections in June and November 2015, a cabinet reshuffle in May 2016, an attempted coup in July 2016, and the consequent dismissals of public officials. The attempted coup in July 2016 did not directly affect ro-ro operations. The companies did not stop their operations, U.N. Ro-Ro’s vessels departed from Pendik Port even during the attempt\textsuperscript{103}. Right after the attempt, there were significant drops in retail markets and personal consumptions. The companies that produced export goods continued their operations and transportsations as before. Even though there were slight changes in export and import values, the freight volumes were not affected.

Worsening political relations between Turkey and other countries might have two different consequences affecting the ro-ro industry. The first one is if the Turkish government has political issues with countries that are located on land routes, or if the countries on land routes are not politically stable, it might result in the countries closing their borders for land transportation. The best example of this can be when the war in Yugoslavia made it impossible for land transportations from Turkey to Europe and finally freight operators came together to establish a ro-ro company for their own sakes. Similarly, when the civil war in Syria broke out or when the political relations with Iran or Iraq were poor, land transportations to Egypt or Middle East had to stop and alternatively freight operators had to use ro-ro transportation to eliminate the problematic countries


\textsuperscript{101} Pamukcu, F. (2017, October 3), Phone Interview.


\textsuperscript{103} Pamukcu, F. (2017, October 3), Phone Interview.
on their routes. The second consequence is if Turkish government has political issues with the countries that the export and import activities are aimed for. In case of embargo imposed by the Turkish government or other countries, the export and import activities and of course the ro-ro industry would be negatively affected. An example of this is when Turkey downed a Russian warplane at its border in 2015, the political tension with the Russian government arose and resulted as embargo on the Turkish goods by Russia. Black Sea ro-ro operators faced many challenges at the time and small ro-ro companies operating in the region went out of business. When it comes to relations with European countries, especially recently there have been some tension but it has never resulted as embargo by both parties. This is mostly because the two parties have been economically dependent and the dependency increases more and more every year. Currently almost 50% of Turkey’s export goods are transported to European countries\textsuperscript{104}. Other factors affecting the relationship is the geographical proximity, cheap labor in Turkey, and European companies’ investments in Turkey.

5.1.2. Economical

According to World Bank values, poverty and extreme poverty has decreased drastically in the past decades. The income and employment of Turkish people improved positively. Turkey opened up to foreign trade and finance which required laws and regulations to be adjusted to EU standards. Recently, the growth of the country has slowed down which caused the income values to drop to lower values and the unemployment rates to rise. Some significant factors that are negatively affecting Turkey’s growth, and its import and export activities were the slow growth in Europe and deteriorating geopolitical environment in its neighborhood. Taking in more than three million refugees was also a big challenge for the country as it was not planned and created social, economic, and political demands. Tourism and foreign investment activities were also severely affected by the terrorist attacks that occurred in the recent years\textsuperscript{105}.

Even though Turkey has been facing some challenges recently, the export and import of goods and services have significantly increased, especially since early 2000. Figure 8 and Figure 9 show the amount of export and import activities in the current US$, and Figure 10 shows Turkey’s GDP since 1960. The Turkish government has politically taken some steps to create economic incentives for the companies in the ro-ro business in order to increase the rate of ro-ro shipping for export and import activities. One of them is to provide fuel without tax to ro-ro shipping companies and freight operating companies that are using ro-ro transportation, therefore ro-ro companies are allowed to sell fuel without tax to their customers at the ports. As one of the countries that uses the most expensive fuel, this might be an appealing reason for freight operators to use ro-ro transportation. Another incentive was the decrease the port fees for all the shipping companies.

\textsuperscript{104} Pamukcu, F. (2017, September 28). Phone interview
Figure 8 Export of goods and services, current billion US$, The World Bank

Figure 9 Import of goods and service, current billion US$, The World Bank


Turkey’s rapid expansion and economic growth is partially driven by high flow of foreign investment coming from abroad. The involvement and participation of international investors is highly encouraged in the massive privatization program. The privatization program was recently extended to include the infrastructure items of the country such as bridges, highways, and ports. The money generated from the investments is used for expanding the infrastructure of the country, which aims to strengthen intermodal transportation as mentioned in Development Plans.

Two economic factors that intensely affected the ro-ro industry in Turkey is the fluctuations of the exchange rates and oil rates. 50-60% of operational expenses in ro-ro stems from fuel expenses. Any significant rise in the fuel is reflected to freight rates, which in turn affects the volumes. Especially between 2007 and 2008, the sudden and record increase in the crude oil prices presented challenges for the ro-ro companies. Ro-ro industry is also affected by economic difficulties that the international freight operators face while buying new trailers or trucks. For ro-ro operators to increase their volumes, the freight operators might be able to extend their fleet\textsuperscript{109}.

In order to increase its market share, a ro-ro operator must invest in vessels, ports and intermodal connections\textsuperscript{110}. These investments require high capitals that the companies cannot compensate from their equity. The trust in the ro-ro business, its constant growth and its environment friendly solutions to transportation, encourage many Turkish and international banks to provide loans for the ro-ro industries.


\textsuperscript{109} Erucar, V. (2017, October 11). Phone interview.

\textsuperscript{110} Pamukcu, F. (2017, October 3). Phone interview.
5.1.3. Sociocultural

Turkey’s population is currently 80 million. As seen in Figure 11, the country’s population has been steadily growing for the past decades. The growth in population has a direct effect on the import and export activities as the personal consumption rise to higher levels and more people are available for jobs.

![Graph showing Turkey's population growth](image)

*Figure 11 Turkey’s population, in millions*¹¹¹

Turkey has accepted 3 million refugees in the past year that has created similar affects, increased demand in personal consumption and more availability of people for jobs which also has an effect on cheaper labor.

5.1.4. Technological

Even though the technological advancements in ship building in Turkey has recently risen, shipyards are only capable of building ships to a certain size which does not include ro-ro vessels. U.N. Ro-Ro completed two vessel extension projects with GEMAK last year, enabling 23% capacity increase on its vessels¹¹². This was done for the first time in Turkey and shows that the country is gaining competence that might eventually lead to ro-ro vessel building.

Turkey holds other technological competences for building infrastructure for ro-ro and intermodal transportation such as ports and terminals.

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5.1.5. **Legal**

The Turkish Competition Authority is in charge of ensuring the formation and development of markets for goods and services in a free and sound competitive environment. It is responsible for preventing any threats to the competitive process in the markets for goods and services through the use of the powers granted by law while ensuring the fair allocation of resources and increasing social welfare by the protection of the competitive process\(^\text{113}\).

The Turkish Competition Authority is very effective in the ro-ro industry\(^\text{114}\). It conducted several investigations in the past, which sometimes resulted in penalty for some ro-ro companies.

5.1.6. **Environmental**

Turkey is among the countries that are involved in the Kyoto Protocol since 2009. According to the protocol, the involved countries are supposed to decrease the quantity of greenhouse emissions to the degree that was reached before 1990. The protocol brought attention to sustainability concept and carbon footprint values. Carbon footprint is a measuring unit that shows the part of individuals or companies in global warming. When goods are being transported from one place to another, logistic operations’ effect to their carbon footprint is approximately 6-11%. Figure 12 shows the carbon emissions percentage in different industries. Logistics industry needs to reduce their own operations’ emissions in order to decrease their effect on the goods’ carbon footprint\(^\text{115}\). One of the best ways is to decrease fuel consumption.

![Figure 12 Worldwide carbon emission percentage](image)

International trade became important with the globalization of the world markets. All of the means of transportation that are used to deliver goods from one point to another release emission that effect the environment negatively and cause global warming. Solutions to decrease these emissions to a minimum are important for the future of logistics industry. According to the Supply Chain


\(^{114}\) Pamukcu, F. (2017, October 3). Phone interview.

\(^{115}\) MUSIAD. (2015). Lojistik Sektorunde Sürdürülebilirlik. Retrieved September 15, 2017 from [http://www.musiad.org.tr/F/Root/Ara%C5%9F%C4%B1rmalara%20Yay%C4%B1nlar/Ara%C5%9F%C4%B1rmalar-Ara%C5%9F%C4%B1rmalar%20Raporlar%C4%B1%40lichkeit%20auf%20logistisches%20Wirtschaftssystem.pdf](http://www.musiad.org.tr/F/Root/Ara%C5%9F%C4%B1rmalara%20Yay%C4%B1nlar/Ara%C5%9F%C4%B1rmalar-Ara%C5%9F%C4%B1rmalar%20Raporlar%C4%B1%40lichkeit%20auf%20logistisches%20Wirtschaftssystem.pdf)
Decarbonization report by World economic forum, production activities produce 50,000 mega ton CO₂. Logistics comprise 5.5% of this value which is 2800 mega ton. The target of the industry is to achieve 60% decrease in this value. Figure 13 below shows the percentages of different transportation types in 2800 mega ton\textsuperscript{116}.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure13.png}
\caption{Distribution of emission in logistics industry}
\end{figure}

A vehicle departing from Istanbul and transporting cargo to Germany using only the 2200 km land route releases 2019 kg carbon emission. If we consider the same vehicle using intermodal transportation through Trieste Port of Italy, it releases 697.4 kg carbon emission between Istanbul-Trieste (ro-ro), 0 kg carbon emission between Trieste-Worms (882 km rail transport) excluding the carbon emission of electricity production and 525 kg emissions between Worms-Berlin (626 km land transportation). Using the intermodal transportation, the vehicle releases 1273 kg emissions which is 745 kg less than when using only land transportation\textsuperscript{117}.

In international sea shipping industry, environment related issues are controlled and decided by International Maritime Organization (IMO) as a special agency of United Nations (UN). The standards regarding the safety, security and environmental performance of international shipping are globally set by IMO\textsuperscript{118}. Ro-ro companies are mostly concerned about laws regarding ballast water treatment and vessel emissions\textsuperscript{119}. Even though ballast water is essential to the safe and efficient operation of shipping, it is also a major threat to the world’s ocean by transferring invasive marine species into new environments. In order to regulate the discharges of ballast water and to reduce the risk of introducing non-native species from vessels’ ballast water, IMO has adopted the International Convention for the Control and Management of Ships, Ballast Water and Sediments


\textsuperscript{117} MUSIAD. (2015). Lojistik Sektorunde Sürdürülebilirlik. Retrieved September 15, 2017 from http://www.musiad.org.tr/F/Root/Ara%C5%9Ff%C4%B1rma%20ve%20Yay%C4%B1nlar/Ara%C5%9Ff%C4%B1rma%20Raporlar%C4%B1/lojistik_sektor_raporu_2015.pdf


\textsuperscript{119} Pamukcu, F. (2017, October 3). Phone interview.
(BMW) in February 2004\textsuperscript{120}. The International Convention for the Prevention of Pollution from Ships (MARPOL) was adopted by IMO on November 2, 1973 in order to prevent of pollution of the marine environment by ships from operational or accidental causes\textsuperscript{121}. Annex VI of MARPOL aims to set limits on sulphur oxide (SOx) and nitrogen oxide (NOx) emissions from ship exhausts and to prohibit deliberate emissions of ozone depleting substances. IMO has designated Emission Control Areas (ECA) which currently includes Baltic Sea, the North Sea area, and the North American and Caribbean Sea area and allowed emission level standards of SOx, NOx and particulate matter are even more stringent\textsuperscript{122}. Ro-ro companies have to invest time and money to adapt to the laws of the maritime industry.

5.2. Michael Porter’s Five Forces Analysis of the Turkish Ro-Ro Market

The Turkish international ro-ro industry network consists of companies, customers, suppliers and other companies that ro-ro companies collaborate with. In Figure 14, the three companies on the European lines and their relations with aforementioned parties is shown in a very basic network map with the information gathered during this research. The real network of the industry includes more parties and is more complex.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{network_map}
\caption{Network map of the Turkish international ro-ro industry on the European lines}
\end{figure}

\begin{thebibliography}{99}
\end{thebibliography}
Michael Porter’s five forces tool is used to understand the level of competitiveness of the Turkish international ro-ro industry. The analysis results are presented in the following sections.

5.2.1. Threat of new entrants

Ro-ro operation is a regular and frequent short-sea transportation for wheeled cargo. The sailing duration differs from 2 to 3 days on the European lines. A new entrant in the ro-ro industry needs to locate at least two ports, one in Turkey and one in Europe, both at strategical areas. The company must operate with at least two vessels in order to provide a minimum of two sailings per week as one sailing would not be enough to attract new customers. If the vessels are chartered, considering the daily rent is about 15,000-20,000 euros, the company requires enough capital to operate the vessels for at least 90 days.\(^{123}\)

U.N. Ro-Ro is the first company to start operating ro-ro on European lines. The company had monopoly until Ege Ro-Ro entered the market in 1998. Other players also started emerging in the following years; Ulusoy left Black Sea lines and started operating on European lines in 2000, and there were poor attempts to enter the market by TI Ro-Ro in 2007, and UND Deniz and BKT Ro-Ro in 2010. The attempts failed because of inadequate strategies, high competition and low capital. The last player to emerge in the market is Alternative Ro-Ro. Life time of the European ro-ro lines operators are shown in Figure 15.

![Figure 15 European ro-ro lines operators in Turkey](image)

The market has been dominated by a maximum of 2 or 3 main players at a time. Operating ro-ro requires high investments. If the market is too fragmented, it might not be possible for the companies to have a proper return on investment.\(^{124}\) Failed attempts of some ro-ro operators in the past also might have demotivated the potential ro-ro operators.

From the time it was founded until 2007, U.N. Ro-Ro had a large cooperative structure. When it was first established, 48 international freight operators were involved in the company. In 2000, the

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\(^{123}\) Erucar, V. (2017, October 11). Phone interview.

\(^{124}\) Pamukcu, F. (2017, September 28). Phone interview.
management decided to purchase new vessels through newly established companies while involving hundreds of other freight operators in the company. This move was a way to lower the risk in case something happens to the vessels and also U.N. Ro-Ro wanted to lower the threat of new entrants by including many freight operators who might consider operating ro-ro. The decision was perhaps taken because Ege Ro-Ro also had a similar cooperative structure to U.N. Ro-Ro when it was founded in 1998. U.N. Ro-Ro and Ege Ro-Ro operated on the same lines for a few years but Ege Ro-Ro could not survive the highly competitive market and was acquired by U.N. Ro-Ro afterwards.

The previous corporate structure of the company, before it was acquired by KKR, consisted of hundreds of international freight operators who were also the biggest customers of U.N. Ro-Ro. The company had a strong management structure and good relations with FSG to fulfill the demands by modern vessels and solutions. If new companies emerged at the market during this time, it would be hard for them to find customers. After the acquisition, old partners of the company had no relations with U.N. Ro-Ro and therefore they became potential entrants to the market or potential customers to other ro-ro operating companies\textsuperscript{125}, which is why new ro-ro companies such as TI Ro-Ro, UND Deniz and BKT Ro-Ro emerged in the market during or after the acquisition of U.N. Ro-Ro.

The threat of a new entrant in European lines is very low since the market is already fragmented and dominated by three companies. If a new company decides to operate from Istanbul, it would have to compete with Alternative Ro-Ro and U.N. Ro-Ro, or from Izmir, it would have to compete with Ulusoy Ro-Ro and Alternative Ro-Ro. A new entrant in the market has to have enough resources to compete with their freight rates and frequency of sailings.

\textbf{5.2.2. The power of suppliers}

Ro-ro vessels and the fuel to operate them are the core supplies for the ro-ro industry. The power of suppliers can be considered as a medium in the ro-ro industry, because even though oil companies or shipyards cannot make discounts on their products, there are many suppliers who can provide the same products or services.

\textbf{5.2.3. The power of buyers}

Power of buyers had proved to be changeable throughout the history of ro-ro. The buyers in ro-ro industry are the Turkish international freight operators. Since early 1960s, freight operators were using the land routes to transport cargo to European markets. Emergence of the ro-ro industry on European lines occurred when the land routes became problematic in early 1990s. Freight operators then came together to establish a ro-ro operator company, U.N. Ro-Ro, to overcome the problems of land transportation. The founders of U.N. Ro-Ro were the major customers of U.N. Ro-Ro. For other freight operators who were not involved in U.N. Ro-Ro, the power of buyers was very low since they were not able to use the land routes.

\textsuperscript{125} Altun, I. (2017, September 26). Phone interview.
Today, all the three companies operating on European lines are neutral companies and they serve any international freight operators equally. The land routes to Europe are also effective for cargo transport, so freight operators are not forced to use ro-ro transportation which means that they hold high power in ro-ro industry. All ro-ro operators are aware that in case of increasing freight rates, freight operators might prefer the land routes. Ro-ro companies are always looking for ways to attract more freight operators to use ro-ro. For example, U.N. Ro-Ro launched a campaign called "land to sea" in 2013.

5.2.4. Threat of substitute

There are two possible substitutes for the ro-ro market. The low threatening one is the container shipping. Even though both methods are sea shipping, they differ a lot in structure. Since containers are not wheeled cargo, they are loaded and unloaded by cranes. Ro-ro operation is an effective, direct method usually between two ports and the sailing duration differ from 2 to 3 days. Vessels carrying containers usually stop by multiple ports in order to load or unload containers and the sailing duration differs from 7 to 10 days. Ro-ro transportation is essentially preferred by freight operators that want to reach European markets as soon as possible. Freight operators that are using ro-ro transport already have wheeled vehicles such as trucks and trailers and in order to switch from ro-ro to container shipping, they would have to invest in containers and figure out what to do with their vehicles. For this reason, ro-ro operators consider container shipping as a low threat of substitute.

A higher threatening substitute in ro-ro industry is the land transportation. Ro-ro transportation is commonly used among European countries, mostly because it is an effective way of transportation, but also because it is the only alternative for wheeled cargo in some cases. For instance, a wheeled cargo from France to England can only be transported by means of ro-ro because there is no land linking the two countries126. The situation is not the same for cargo transport between Europe and Turkey. Istanbul acts as a bridge between Asia (Anatolian side of Turkey) and Europe and allows land transportation to Europe. One of the biggest competitors of ro-ro industry and the major player in the freight transportation is the land transportation through Bulgaria, Romania, Hungary and Germany. The duration of transportation is about the same with ro-ro transportation. There are some major factors affecting the decision to prefer ro-ro transportation to land transportation. First of all, the wheeled vehicle is being transported on ro-ro vessels and on rails. The vehicles are not worn off as they would be in land transportation. The conditions of land routes are also an influential factor. Land routes have the potential risks of unfavorable weather conditions, inadequate highway infrastructure, tickets and waiting at queues at the borders. Another reason is that with ro-ro transportation, freight operators are able to use one tractor with two trailers. In case of using the land transportation, they need one tractor for each trailer so either they need to invest more in tractors or they have to decrease the volume of cargo transport. An investment for 50 tractors is around 50 million euros127.

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The high preference of ro-ro by Turkish international freight operators is mostly due to the advantages of intermodal transportation and environment friendly enforcements of European authorities. Ro-ro transportation also offers more regular sailings with certain durations.

In case of borders being shot or facing too many problems on land transportation, ro-ro transportation becomes the only way to reach Europe for international freight operators. Although if ro-ro operators create a high price gap while deciding their freight rates, freight operators would engage in land transportation instead.

5.2.5. Rivalry among existing competitors
All the ro-ro companies that are operating on European lines are neutral companies, they serve equally to all Turkish international freight operators. The market is dominated by three companies and it is fragmented. All the companies are basing their strategies to increase their market share as the market is still growing. The rivalry is high and The Turkish Competition Authority is protecting the market and the companies that are involved.

5.3. Strategies of Ro-Ro Companies
Ro-ro companies on the European lines have used different strategies in order to gain market share and survive in the competitive market structure. In this thesis, primary and secondary data were gathered to find out what strategies have been widely used by the three ro-ro companies; U.N. Ro-Ro, Alternative Ro-Ro and Ulusoy Ro-Ro.

5.3.1. U.N. Ro-Ro
By applying many successful strategies, U.N. Ro-Ro was able to gain and sustain its leading position in the ro-ro transportation industry between Turkey and Europe. Currently, the company holds 65% of market share and is in the process of acquiring Ulusoy Ro-Ro. As of January 2017, U.N. Ro-Ro started the acquisition of Ulusoy Ro-Ro which is the third main player in the industry with the 12% market share. With this acquisition, U.N. Ro-Ro will be reaffirming its confidence in the Turkish and European economies and creating value for Turkish freight operators. This acquisition will be contributing to the trade volume between Turkey and Europe. U.N. Ro-Ro will be operating its ro-ro service from the Aegean region for the first time and aims to increase the frequency of the sailings, decrease the freight rate and create new destinations such as Bari and Lavrio in order to create more value for the freight operators of the region. After the acquisition is complete, the number of U.N. Ro-Ro’s vessels will be 16. After the acquisition is completed, U.N. Ro-Ro’s market share will rise to 77%.

U.N. Ro-Ro had three different ownerships since 1994. The first ownership lasted 13 years from 1994 to 2007. When it was first founded, the company had a cooperative structure with 48 international freight operators that comprised about 60% of Turkey’s international freight industry. Even though the company was founded by international freight operators, the management of the

The company was experienced in sea shipping and ro-ro industry. Partners of the company were also the customers of the company and they invested a considerable part of their earnings back into the ro-ro business. They considered the ro-ro industry as a significant complementary part of their freight transport business. The cooperative structure was strengthened and expanded by including even more international freight operators into the ro-ro industry while reducing the risk of new entrants and bankruptcy. The number of partners reached to more than 240 by 2007. Difficulties in managing a big company with a cooperative structure triggered the selling of the company and the change of the company corporate structure. After the acquisition by KKR, an equity firm, in 2007, the management and employees of the company remained in their positions. Old partners of the company remained as the biggest customers of U.N. Ro-Ro. After 7 years of operation, KKR sold to the company to another equity firm, Actera Group-Esas Holding consortium that is based in Turkey.

The main strategy of the company did not change between the acquisitions. U.N. Ro-Ro’s strategy, since it was founded, is to remain as a market leader in ro-ro transportations between Turkey and Europe while increasing its market share. In order to achieve this, the company focuses on three main topics. The first one is that U.N. Ro-Ro must keep increasing its capacity as the market is still growing by adding more vessels, more ports and lines. The second one is that the freight rates and timing of the sailings must be competitive to the competitors and other logistics and freight operators. The third one is that the company has to extend, differentiate and diversify its services to its customers. These three topics were kept the same during the three periods of different ownership of the company\textsuperscript{130}. The objective of the company is to increase its share in trade between Turkey and Europe. Today, 80-85% of U.N. Ro-Ro customers consist of Turkey-based international freight operators. The freight that is transferred by U.N. Ro-Ro constitutes 8% of the freight transported to Europe. The rate will increase to 10% after the acquisition of Ulusoy Ro-Ro is completed. U.N. Ro-Ro aims to increase this rate even more while focusing the three strategical aforementioned main topics\textsuperscript{131}.

U.N. Ro-Ro focuses on investing in vessels, ports and intermodal connections simultaneously. Vessel investments are the highest investments. U.N. Ro-Ro currently has 12 vessels each of which is valued to around 50 million euros. When purchasing a new vessel, the company uses 30% from its equity and 70% from loans from Turkish or international banks. Second highest investments are the port investments which are mostly long-term investments that are approximately 25 years. These investments are financed with 20% from equity and 80% from loans. Third one is the intermodal investments which are the operating costs of the intermodal lines and the capacity investments of the train terminals after making an agreement with the railroad companies. Intermodal investments are usually funded from the company equity\textsuperscript{132}.

\textsuperscript{130} Pamukcu, F. (2017, September 28). Phone interview.
\textsuperscript{131} Pamukcu, F. (2017, September 28). Phone interview.
\textsuperscript{132} Pamukcu, F. (2017, October 3). Phone interview.
Its market leading position enabled U.N. Ro-Ro to build high-level relations with all the stakeholders including other ro-ro operators, TIM, UND, UTIKAD, Turkish Ministry of Transportation, Maritime Affairs and Telecommunication, Turkish Ministry of Economy, Turkish Ministry of Development and the authorities in the destined countries such as Italian Ministry of Infrastructure and Transport, and Italian Undersecretary of Maritime Affairs. These relations are important to get support for especially strategical infrastructure developments.

U.N. Ro-Ro owes its leading position in the market to its many successful strategies that were adopted throughout the years. The company’s accelerated growth can also be linked to the fact that U.N. Ro-Ro was not only a player but was also the founder of the ro-ro industry with a cooperative structure. Other players in the European ro-ro market started emerging rather late, after 1998.

5.3.1.1. Differentiation as Strategy

U.N. Ro-Ro intensely implemented differentiation strategies from the day it was founded. During the first ownership period from 1994 to 2007, the partners of the company were also the major customers which naturally made U.N. Ro-Ro focus on customer satisfaction. The company differentiated in many areas in order to add value to its operations and gain higher customer satisfaction. The company successfully differentiated itself in many areas:

Intermodal & Transfer of drivers: U.N. Ro-Ro introduced intermodal transportation to Turkish international freight operators. Before it started its operation as an intermodal operator, international freight operators were using the land routes to reach European markets. U.N. Ro-Ro enabled a combined transportation mode using land, sea and rail transportation. U.N. Ro-Ro main line, Pendik-Trieste is mostly preferred due to its intermodal connections that offers a solution to transit document problems of Austria. Since U.N. Ro-Ro vessels were not designed to carry more than 16 people onboard, the drivers of the wheeled cargo were transferred by planes to the final destinations. U.N. Ro-Ro, the freight operators and the drivers were satisfied with this implementation as it was an economic and comfortable choice. This strategy was later adopted by other Turkish and European companies.

Capacity improvements & innovation: The first seven vessels of the company were low capacity and speed and they did not meet the demands of the customers. In 2000, the company started purchasing new innovative, modern ro-ro vessels with higher capacity and speed and currently has 12 state-of-the-art ro-ro vessels. This enabled the company to increase the frequency of the sailings and the number of the lines and to decrease the sailing duration. The freight operators were able to reach new location in European markets faster and easier. High responsiveness of the firm to its customer demands was also a part of its differentiation strategy.

U.N. Ro-Ro constantly searches for solutions to the problems that its customers encounter and that affect its operations. Since the market was continuously getting bigger, the customers mostly had capacity related problems at the ports and the terminals. U.N. Ro-Ro invested highly for capacity

improvements both in Turkey and Europe. Before the inauguration of Pendik Port, the vessels were departing from Haydarpasa Port which was located in the central Asian side of Istanbul. It lacked space for the wheeled cargo so it became very common for the drivers to queue at the gate of the port. Since the location was very central, the drivers were stuck on the roads because of the traffic jam in Istanbul. U.N. Ro-Ro invested around 50 million euros in order to build a port in Pendik, which is located outside of the city center in Asian side of Istanbul. Pendik Port is almost 9 times larger than Haydarpasa Port and it is easier for the drivers to reach since they do not enter the city traffic. Another value-added service by U.N. Ro-Ro is selling tax free oil to its customers that use its vessels for freight transportation. Turkey is one of the top countries that uses the most expensive oil worldwide and tax reduction is implemented as a support from the Turkish government to the shipping industry.

**Transparent customer relations & management:** Because of its leading position, U.N. Ro-Ro has a representative position in the market. They consider it as their duty to publish as much information as possible as a part of their corporate affairs. It is possible to access up-to-date information regarding the news, announcements, company details, and online operations on the company website. It is also possible to track and monitor the vessel locations live through the company’s quality web services.

**Pricing methods:** During the years 2007 and 2008, the oil prices reached record levels and U.N. Ro-Ro had to adjust its freight rates frequently in order to not incur loss. Oil cost is the highest expense item of the company and it is impossible to ignore the changes in oil prices. When the company adjusted its freight rates to current oil prices so frequently, it started bothering the customers and the company announced they were adopting a new system. In 2008, the company announced that they would keep the freight rates fixed during a quarter. In 2012, this system was changed from quarterly fixed prices to yearly fixed prices. The company reflected the change in oil or exchange rates with Banker Adjusting Factor (B.A.F.) and most freight operators reflected this price to their own customers. That enabled freight operators not to get affected by unstable changes in oil and exchange rates and make a better planning of their future operations.

**Continuous Improvement Team:** U.N. Ro-Ro formed a team from employees from all the departments to implement multiple projects for decreasing the company’s costs and increasing the efficiency.

**Close relations with FSG and GEMAK:** The core of U.N. Ro-Ro business is to operate ro-ro and the company invested in modern ro-ro vessels to provide the fastest operation to its customers. The company built and sustained close relationships with the German shipyard; FSG. The current 12 vessels were built by FSG throughout the years by exchanging know-how and building trust. FSG delivered innovative, eco-friendly and fuel-saving designs to U.N. Ro-Ro which made its business more efficient.

In 2017, U.N. Ro-Ro extended the capacity of its two vessels at GEMAK. This was a first in Turkey and the application was significant to both companies as a new competence emerged.
Environmental focus: Comparing to land transportation, ro-ro transportation is already an environmental friendly alternative. U.N. Ro-Ro makes its business even more environmental friendly through its innovative solutions and sustainability concepts. U.N. Ro-Ro claims to be Turkey’s most environmentally friendly ro-ro company in its 2015 annual report. The company completed many energy efficiency projects related to vessel silicon paint application, fan blade modification, LED lighting utilization, water pump modification and analyzer installation. The company aims to reduce the negative effects of its ro-ro business to environment by decreasing fuel consumption, carbon emissions, power demand and increasing efficiency.

Corporate responsibilities: The company has realized a number of corporate social responsibility projects and sponsorships in the past years. Some examples are sponsoring football team of Pendik area, water bike teams of universities, sailings and motorsports. The company values participating in the career fairs and meeting with students especially from maritime faculties to contribute to their education by offering internships.

5.3.1.2. Diversification as Strategy

U.N. Ro-Ro has been a company that listens and responds to the demands of its customers. This led to mainly differentiation in its strategy and also diversification.

Diversified outside the market: After the civil war in Syria broke out, land transportations through the Syrian routes became impossible. Even though it was temporary, U.N. Ro-Ro started operating its vessels to Egypt, a destination outside of Europe for the first time. Collaborating with different companies, U.N. Ro-Ro reached to Saudi Arabia.

A new system is established to extend the operations to North Africa in 2015. First freight is transported to Toulon in France by U.N. Ro-Ro vessels and then transported to a partner company’s vessel that departs for North Africa afterwards. Instead of launching a direct line to North Africa, U.N. Ro-Ro works with other companies and tests the potential of the line. U.N. Ro-Ro is constantly monitoring the political situations and the demands for new locations.

Diversified inside the market: U.N. Ro-Ro mostly invests in European lines as the market is still growing. The intermodal connections inside the European market is extended to East Europe and even to Scandinavia, which can be considered as a new market for U.N. Ro-Ro. With the new integrated system, a wheeled cargo can be transported on ro-ro vessel from Istanbul to Trieste, on rail from Trieste to Lubeck in Germany, and from Lubeck, it can be transported on ro-ro again to Sweden, Norway, Finland or Russia.

Diversified in port & terminal management: U.N. Ro-Ro departs from multiple locations from Turkey; Pendik Port (Istanbul Asian side), Ambarli Port (Istanbul Europe side) and Mersin Port. All customs and agency operations are handled electronically and customers are able to go through

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customs procedures using data entry stations. The ports house amenities for customers such as restaurants and supermarkets. It is also possible for the trucks with Turkish export cargo to be provided with tax-free fuel at the ports.

**Diversified in container shipping:** In July 2013, U.N. Ro-Ro started transferring containers in addition to its wheeled cargo. The containers carried by U.N. Ro-Ro are 45 ft. high cube containers and differ from the standard containers in container shipping which are usually 20 or 40 ft. High cube container is as big as a semi-trailer. The freight rate for container is less than a wheeled cargo rate. For example, while the freight rate for a semi-trailer in one direction is 850 euro, it is approximately 650 euro for container. The reason for freight rate to be cheaper is because the container is loaded on the ro-ro vessel if there is space for it. The priority is the wheeled cargo. While wheeled cargo reaches the destination in 3 days, it may take 5-6 days for a container to be delivered, depending on the availability of space on the vessels. Since U.N: Ro-Ro vessels are not originally container vessels, the company invested in some additional equipment such as cranes and roll trailers to put under the containers. The containers do not have wheels so they are placed on roll trailers to be driven into the vessel through ramp. Wheeled cargo is U.N. Ro-Ro’s premium product. The utilization percentage of ro-ro vessels is usually 85-90%. The rest of the vessel is filled with lower segment product, containers.

**5.3.1.3. Alliance as a strategy**

**Horizontal alliance with Ulusoy:** U.N. Ro-Ro and Ulusoy Ro-Ro started collaborating when Ulusoy Ro-Ro started operating on the European lines. The collaboration allowed the customers to use a common ticket that would be valid for both companies. This collaboration was terminated a few years ago.

**Vertical alliances with rail companies:** Depending on its strategy and the demand from the customers, U.N. Ro-Ro decides where to extend its intermodal connections. For this purpose, the company cooperates with many government or private rail operators. U.N. Ro-Ro operates all the trains to Austria and 50% of the trains to Germany itself. The company purchases the locomotives and rail wagons and acquires yearly right to operate the trains from the companies. Other train connections to Germany, Italy and other European countries are operated by the local rail operators. U.N. Ro-Ro collaborates with these companies by giving commitments.

**Vertical alliance with other ro-ro operators:** U.N. Ro-Ro wants to create value for its customers by offering them a wide intermodal network. The company operates its main ro-ro lines with its own ro-ro vessels but also choose to collaborate with other ro-ro companies in some additional destinations. When it started operating to Egypt and Saudi Arabia in 2013, the company collaborated with companies such as SAMC, GAC and UME for its ro-ro service between Egypt.

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139 Pamukcu, F. (2017, October 3). Phone interview.
and Saudi Arabia. Another collaboration to reach the North African markets started in 2015 with the ro-ro companies operating between Toulon in France and North Africa.

As a part of expanding the European network and reaching the Scandinavian countries, the company collaborates with ro-ro companies to operate ro-ro from Lubeck in Germany to the ports in Sweden, Norway, Finland and Russia.

**Vertical alliance with Turkish Airlines:** U.N. Ro-Ro collaborates with Turkish Airlines to transfer the drivers to the destinations in Europe and back. In 2015, the company transferred about 7,000 drivers to Marseille Airport and more than 10,000 drivers to Ljubljana Airport which is around 100 km away from Trieste Port.\(^{140}\)

### 5.3.1.4. Specialization as Strategy

U.N. Ro-Ro is a company providing intermodal transportation to its customers. The company has competence in many areas including transportation of ro-ro cargo and containers, rail transportation and management, and port and terminal management. Even though U.N. Ro-Ro is offering service in many areas, the company is specialized in ro-ro transportation, which is the real reason why it was founded.

### 5.3.2. Alternative Ro-Ro

Alternative Ro-Ro gained huge success in ro-ro business since it was founded in 2013. The company currently has 23% market share and wants to gain more market share in the following years by implementing its corporate strategy.

#### 5.3.2.1. Differentiation as Strategy

**New and modern ro-ro vessels:** The company uses newly built, modern, high capacity, and high velocity ro-ro vessels to respond to the demand from its customers. Having frequent sailing and short sailing duration is very important for freight operators as they want to reach the European markets in the fastest way possible.

**Environment friendly:** The company cares about the environment and tries to make its operations as environmental friendly as possible. In the past, Alternative Ro-Ro oversaw environment related projects in order to reduce emissions from the vessels and pollution of the seas.

**Pricing methods:** The system that the company uses for freight rates is very simple. Alternative Ro-Ro announces the freight rates only once a year and does not make changes unless there are significant increases in oil prices.

**Customer Relations:** One of the reasons that the company became one of the major players in the market in only 5 years is because of its relationships with its customers. Alternative Ro-Ro builds

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close relationships with each of its customers, treats and serves them equally like they are the most important customers.\textsuperscript{141}

5.3.2.2. **Diversification as Strategy**

**Container Shipping:** Container shipping is used by ro-ro companies in order to obtain higher utilization percentages. Alternative Ro-Ro started container shipping right after it was founded. The company diversified its business to carry its customers’ containers of different types and sizes. Even though Alternative Ro-Ro’s container business model is very similar to U.N. Ro-Ro’s model, the company differentiated its model by making it possible to carry different sizes (20 ft., 40 ft., and 45 ft.) and types of containers. The containers are loaded into the vessels after ro-ro cargo is loaded. In case of having 100% utilization with ro-ro cargo, containers are loaded into the queued vessels.

5.3.2.3. **Alliance as Strategy**

**Vertical alliance with Turkish Airlines:** Transporting the vehicle drivers to the destination ports are one the most important complimentary businesses in ro-ro industry. The companies usually collaborate with airline companies. Alternative Ro-Ro collaborates with Turkish Airlines in order to transfer the drivers.

**Vertical alliance with rail companies:** Ro-ro business usually offer intermodal connections to its customers. Alternative Ro-Ro has been managing one rail operation between Trieste and Wels by collaborating a railway company in Europe. For all the destinations in Europe, the customers can choose to use the intermodal connections of U.N. Ro-Ro, Ekol, or any other intermodal operator.

5.3.2.4. **Specialization as Strategy**

Alternative Ro-Ro was established to facilitate the operations of Ekol Logistics by providing ro-ro operations for the company. The company remarkably invested in modern ro-ro vessels and ports. Even though the company is diversified into container transporting, the core of Alternative Ro-Ro’s business is the ro-ro transportation between Turkey and Europe.

5.3.3. **Ulusoy Ro-Ro**

Ulusoy started operating on European lines in 2000. The company mostly invested in vessels in order to increase its capacity over the years. The company has also been managing Cesme Port since 2003. The strategy of the company has been to serve the freight operators of the Aegean region with higher capacity and higher velocity vessels to prevent them from choosing land routes or ro-ro transportation from Istanbul ports.\textsuperscript{142}

5.3.3.1. **Diversification as Strategy**

**Container shipping:** As requested by the customers, Ulusoy Ro-Ro started container shipping in May 2015. The used containers are 15-16 meters long, low height type. The company invested in 2 cranes and 30 roll trailers for container shipping. The containers are transferred to the trains by

\textsuperscript{141} Doganay, C.M. (2017, November 8). Phone interview.

\textsuperscript{142} Erucar, V. (2017, October 11). Phone interview.
cranes in Trieste. Similar to other ro-ro operators, the priority cargo type is ro-ro cargo and Ulusoy Ro-Ro loads the containers to ro-ro vessels if there is enough space available.

5.3.3.2. Concentration as Strategy
Ulusoy Ro-Ro has been operating on European ro-ro lines since 2000. Its only and main line is Cesme(Izmir)-Trieste and the company tries to serve its customers of Aegean area by providing the most capacity on this particular line. Ulusoy Ro-Ro was the only operator on this line until recently Alternative Ro-Ro started operating from Izmir to other European ports.

5.3.3.3. Alliance as Strategy
Vertical alliance with U.N. Ro-Ro: Ulusoy Ro-Ro built vertical alliances to handle complimentary parts of its ro-ro business. The company does not operate intermodal lines but offers intermodal connections to its customers with U.N. Ro-Ro’s lines.

Vertical alliance with Turkish Airlines: Similar to U.N. Ro-Ro’s and Alternative Ro-Ro’s models, Ulusoy Ro-Ro has built an alliance with Turkish Airlines to transfer the drivers to nearby airports to Trieste.

5.3.3.4. Specialization as Strategy
Offering services in ro-ro, container transport and port management, Ulusoy Ro-Ro has also specialized in ro-ro service since it was founded in 1995. In order to keep its ro-ro business alive, the company responded the high demand of its customers by increasing the vessels capacities on its main line Cesme-Trieste.

6. CONCLUSION

When the war in Yugoslavia made it impossible for the land transportations from Turkey to Europe, members of international freight operators came together to establish the first ro-ro operator on the European lines: U.N. Ro-Ro. The market grew bigger due to the advantages of intermodal transportation and the growing economic relations between Turkey and Europe. New companies emerged in the market, some of them could operate for only a short time because of inadequate strategies and management competences. Currently, there are three companies operating in the market: U.N. Ro-Ro, Alternative Ro-Ro and Ulusoy Ro-Ro.

This study provides empirical description of the Turkish international ro-ro industry and the companies and contributes to the literature by providing a basic review of the ro-ro industry in Turkey and a comprehensive review of the strategies and historical developments of Turkish international ro-ro operators of European lines. Michael’s five forces and PESTLE analysis of the Turkish ro-ro industry is also included in this research.

6.1. Research Questions

Before starting this study, some research questions were formed in order to guide and help the research. In this section, answers to the questions is presented.

1. What strategies have been used by the Turkish international ro-ro operators, particularly the more successful operators?

A summary of the strategies of the international ro-ro companies is given in Table 2. The three companies have specialized in ro-ro business among other services and operations that they offer. U.N. Ro-Ro and Alternative Ro-Ro have extensively implemented differentiation strategy in capacity improvements, environmental friendly services, customer relationships, and pricing methods in order to stand out in the industry. Differentiation strategies allowed the companies to gain the highest shares of the market. All the companies diversified from ro-ro transportation into the container transportation to keep up with the trends of the market and to provide more services for their customers. All the companies established vertical and/or horizontal alliances. U.N. Ro-Ro and Alternative Ro-Ro collaborated with rail companies to extend its services with intermodal connections. The three companies established agreements with Turkish Airlines in order to transfer the drivers to the destination in Europe. These strategies allowed the companies to obtain shares and to maintain their existences in the ro-ro industry.

Table 2 Summary of company strategies

<table>
<thead>
<tr>
<th>U.N. Ro-Ro</th>
<th>Differentiation</th>
<th>Diversification</th>
<th>Alliance</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Intermodal &amp; Transfer of Drivers</td>
<td>- Outside the market (Israel, Egypt, S.A., N. Africa)</td>
<td>- Ulusoy Ro-Ro (Common ticket)</td>
<td>Ro-ro business</td>
</tr>
<tr>
<td></td>
<td>- Capacity Improvements &amp; Innovation</td>
<td>- Inside the market (Eastern Europe &amp; Scandinavia)</td>
<td>- Railway companies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Other ro-ro operators</td>
<td></td>
</tr>
</tbody>
</table>

52
Alt. Ro-Ro

<table>
<thead>
<tr>
<th>Differentiation</th>
<th>Diversification</th>
<th>Alliance</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modern ro-ro vessels</td>
<td>Container shipping</td>
<td>Railway companies</td>
<td>Ro-ro business</td>
</tr>
<tr>
<td>Environmental focus</td>
<td></td>
<td>Turkish Airlines</td>
<td></td>
</tr>
<tr>
<td>Customer relations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pricing methods</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ulusoy Ro-Ro

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Diversification</th>
<th>Alliance</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cesme-Trieste line</td>
<td>Container shipping</td>
<td>U.N. Ro-Ro</td>
<td>Ro-ro business</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turkish Airlines</td>
<td></td>
</tr>
</tbody>
</table>

U.N. Ro-Ro has been in ro-ro business for 24 years and currently has 65% market share on the European lines market. Alternative Ro-Ro was established in 2013 and gained 23% market share in just four years. Ulusoy Ro-Ro has been operating on the European lines since 2000 and currently holds 12% market share. High market shares of U.N. Ro-Ro and Alternative Ro-Ro are achieved through successful implementation of company strategies. The two company differentiated in many areas including environmental focus, customer relations, and pricing methods. Differentiation, diversification, alliance and specialization strategies are essential to manage a successful ro-ro business.

2. How do the political, economical, social, technological, legal and environmental factors affect the Turkish international ro-ro industry?

Political, economical, social, technological, legal and environmental factors have impacts on the ro-ro industry as in other industries. Ro-ro cargo consists of export and import goods of Turkey and any factor that affects the export and import volumes, affect the ro-ro industry as well. Especially political and economical factors are usually interrelated and have significant influence on the export and import volumes of Turkey. In case of worsening political relations with the countries that the export and import activities are aimed for, the ro-ro industry is under the risk of possible embargos by the parties. Social factors such as the increase in population are the positive factors that affect the export and import volumes indirectly. Technological advancements like
vessel extension can help the company to improve its capacity and its operations faster. Legal frameworks like competition authorities that combat cartels and do not allow the companies to abuse their position in the market. Environmental factors have significant implementation in the ro-ro industry. Turkey and EU member countries are very sensitive about environment and they are both involved in the environmental conventions. Environmental laws concerning the sea shipping are decided by IMO and the enforcements are inspected as well. Companies operating on the European lines have invested highly to become environmental friendly companies and to adapt to the environmental regulations imposed by higher authorities.

6.2. Limitations and Further Research
A limitation of this study is the low number of the interviewees and the limited time of the interviewees for the interviews. Due to the short duration of the thesis and the difficulties to reach to the relevant people to interview, the interviewees were limited by four people. The research can be broadened by interviewing more people from other organizations, or within different departments of the ro-ro companies.

This study is mostly based on the existing ro-ro companies on the European lines. There is very limited information about the failed companies in the ro-ro industry. With further studies and more time, it can be possible to reach some contacts to interview from the failed companies.
APPENDIX 1 - Black Sea Ro-Ro Lines Operators

In 1985, first ro-ro transaction in Black Sea started between Trabzon-Tuapse (Russia) after economic relations with Russia started improving and the land transactions through Georgian border failed to ensure driver and commodity safety. Both Turkish and foreigner ro-ro operators emerged in the market. The biggest players in Turkey were Cenk Denizcilik, Ulusoy Ro-ro and a joint venture of the two, Karadeniz Ro-Ro afterwards.144

The operation on the Black Sea lines were significantly affected by the political and economic situation of Russia, Crimea and Ukraine.145 The relations between the Turkish Government and Russia has not always been stable. In 1995 the relations with Russia improved following a glasnost and the demand to Turkish export goods increased. In 2014 after the political crisis between Russia and Turkey, Russia imposed embargo to Turkish export goods and therefore small ro-ro operators on Black Sea lines went out of business.146

Cenk Denizcilik

Cenk Group was established by Y. Attila Yener as ship broker and agency company in 1986 and in 1993, Cenk Denizcilik started operating ro-ro by transporting automobiles of multiple international automotive producers. The company was able to diversify its business with services such as cargo surveys, stevedoring and terminal operations in the following years. The company continues its operation with weekly sailings from Derince Port (Turkey) to Ilychevsk (Ukraine) and Constanta (Romania).147

Ulusoy Ro-Ro

Ulusoy Ro-Ro consists of five incorporated companies: Ulusoy Deniz Tasimaciligi A.S., Ulusoy Marti Ro-Ro Isletmeleri A.S., Ulusoy Deniz Yollari Isletmeciligi A.S., Ulusoy Gemi Isletmeleri A.S. and Ulusoy Ro-Ro Isletmeleri A.S. Ulusoy has been in service in ro-ro industry since 1995 and has been managing Cesme Port since 2003.

In 1995, Ulusoy Ro-Ro started operating ro-ro vessels in Black Sea after the commercial relations with Russia improved and the demand of Turkish export goods increased. Ulusoy Ro-Ro started its ro-ro operation on Samsun-Novorossiysk (Russia) line with its 40 trailer capacity ro-ro vessel ULUSOY-1. After a short period of time, the company expanded to Derince-Illyichevskiy (Ukraine) and Zonguldak-Yevpotaria (Crimea) lines with its new 40 trailer capacity vessels Selcuk K and Ulusoy-2. The first three vessels of the company were low capacity but they had cabins to transport the drivers. In 2000, Ulusoy Ro-Ro ended its operation on Black Sea lines due to the turbulent political environment of Russia, Crimea and Ukraine, limited transit documents provided by Russia, high port fees, and low export volumes. Freight operators preferred road transportation

146 Pamukcu, F. (2017, October 3). Phone interview.
by trucks instead of ro-ro and Ulusoy Ro-Ro could not achieve high utilization percentages\textsuperscript{148}. After ending operation on Black Sea lines, the company switched to European ro-ro lines and started operating on Cesme (Izmir Province)-Trieste\textsuperscript{149}.

Karadeniz Ro-Ro

Karadeniz Ro-Ro was established between the two ro-ro operators in Black Sea, Ulusoy Marti Isletmeleri A.S. (Ulusoy Ro-Ro) and Cenk Denizcilik in April 1997. Cenk Denizcilik and Ulusoy started their ro-ro operations in Black Sea in 1993 and 1995, respectively. Due to the economic crisis in Russia in 1997, many operators abandoned Black Sea lines. Cenk Denizcilik and Ulusoy Ro-Ro established Karadeniz Ro-Ro to manage its marketing, ticket reservation and purchasing activities under one roof. The purpose was to decrease the costs and to maintain their presence in the Black Sea Ro-Ro market. Karadeniz Ro-Ro stopped its operation in 2004\textsuperscript{150}.

\textsuperscript{148} Erucar V. (2017, October 11). Phone interview.

\textsuperscript{149} Ulusoy. Ro-Ro. Retrieved September 3, 2017 from \url{http://www.ulusoysealines.com/kurumsal/faaliyetlerimiz/roro.html}

\textsuperscript{150} Erucar V. (2017, October 11). Phone interview.
APPENDIX 2 - Middle Eastern and African Ro-Ro Lines Operators

In early 2010s, the war in Syria caused major problems for freight transports to Middle Eastern countries. According to TIM (Turkish Exporters Assembly), export to Middle Eastern countries is about 18% of the total export of Turkey. 85% of fresh fruit and vegetable export goes to Middle Eastern countries such as Jordan Lebanon, Saudi Arabia, Kuwait and Qatar. Export to Jordan in 2011 was 40 million dollars less than the previous year and export to Kuwait in 2011 was 120 million dollars less than the previous year\(^\text{151}\). In 2012, Turkey started ro-ro operation between Mersin-Port Said (Egypt), Tasucu-Tripoli (Lebanon) and Iskenderun-Saudi Arabia. At the end of 2012, a new ro-ro line between Antakya-Tarsus (Syria) was established and the trucks used the land routes to deliver to the destined other countries\(^\text{152}\).

**Hatay Ro-Ro**

Hatay Ro-Ro is founded by 55 Turkish international freight operators and started its operation with two chartered ro-ro vessels on October 15, 2014. The main reason for establishment of this company was to maintain the commercial relations with Middle Eastern countries. The company added a ROPAX vessel to its fleet after the demand to this line increased. Company vessels depart from Iskenderun Port with about 100% utilization percentage, sail 7-8 days through the Suez Canal, and arrive at the destination at Duba Port (Saudi Arabia)\(^\text{153}\).

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# APPENDIX 3 - U.N. Ro-Ro Vessels

<table>
<thead>
<tr>
<th>Name of the Vessel</th>
<th>Generation</th>
<th>Year Built</th>
<th>Shipyard</th>
<th>Speed (knots)</th>
<th>Number of crew</th>
<th>Flag</th>
<th>Lane Meter</th>
<th>Trailer Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN EGE</td>
<td>2nd</td>
<td>2001</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3214</td>
<td>200</td>
</tr>
<tr>
<td>UN ATILIM</td>
<td></td>
<td>2001</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3214</td>
<td>200</td>
</tr>
<tr>
<td>UN BIRLIK</td>
<td></td>
<td>2001</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3214</td>
<td>200</td>
</tr>
<tr>
<td>SAFFET ULUSOY</td>
<td>3rd</td>
<td>2005</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>UN MARMARA</td>
<td></td>
<td>2005</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>UN PENDIK</td>
<td></td>
<td>2005</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>UN TRIESTE</td>
<td></td>
<td>2005</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>UN AKDENIZ</td>
<td>4th</td>
<td>2008</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>4605</td>
<td>296</td>
</tr>
<tr>
<td>UN KARADENIZ</td>
<td></td>
<td>2008</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>CUNEYT SOLAKOGLU</td>
<td>4th</td>
<td>2009</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>4605</td>
<td>296</td>
</tr>
<tr>
<td>CEMIL BAYULGEN</td>
<td></td>
<td>2010</td>
<td>FSG</td>
<td>21.5</td>
<td>20</td>
<td>Turkish</td>
<td>3735</td>
<td>240</td>
</tr>
<tr>
<td>UN ISTANBUL</td>
<td>5th</td>
<td>2013</td>
<td>FSG</td>
<td>21.5</td>
<td>21</td>
<td>Turkish</td>
<td>4094</td>
<td>280</td>
</tr>
</tbody>
</table>

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## APPENDIX 4 - U.N. Ro-Ro lines\(^{155}\)

<table>
<thead>
<tr>
<th>Lines</th>
<th>Number of Sailings</th>
<th>Avg. Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pendik - Trieste</td>
<td>6 round trips per week (on Saturdays the departure from Pendik makes a call at Port of Ancona.)</td>
<td>68 hours</td>
</tr>
<tr>
<td>Ambarli-Trieste</td>
<td>3 export, 1 import trips per week</td>
<td>60 hours</td>
</tr>
<tr>
<td>Mersin - Trieste</td>
<td>2 round trips per week</td>
<td>68 hours</td>
</tr>
<tr>
<td>Pendik - Toulon</td>
<td>3 round trips per week</td>
<td>72 hours</td>
</tr>
<tr>
<td>Pendik - Bari</td>
<td>2 round trips per week</td>
<td>45 hours</td>
</tr>
</tbody>
</table>

## APPENDIX 5 - Intermodal connections of U.N. Ro-Ro

<table>
<thead>
<tr>
<th>Intermodal Line</th>
<th>Operator/ Route Information</th>
<th>Cargo Information</th>
<th>Frequency</th>
<th>Train Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FERNETTI-SALZBURG</strong>&lt;sup&gt;156&lt;/sup&gt;</td>
<td>Operated between Fernetti and Salzburg by Railcargo and Alpe Adria with guarantee of U.N. Ro-Ro since 1998. Companies that use this line are awarded 2 bonus Austria transit permit for every 3 one-way ticket that purchased for this line. (Freight rate on this line for vehicles loaded to U.N. Ro-Ro vessels is € 600 for one way)</td>
<td>Complete units and truck heads</td>
<td>Approximatel y 13 round trips per month</td>
<td></td>
</tr>
<tr>
<td><strong>TRIESTE-WELS</strong>&lt;sup&gt;157&lt;/sup&gt;</td>
<td>Operated between Trieste and Wels in Austria by U.N. Ro-Ro since November 2013. (Freight rate on this line for vehicles loaded to U.N. Ro-Ro vessels is € 460 for one way)</td>
<td>All types of trailers and containers</td>
<td>Approximatel y 21 round trips per month</td>
<td>Ludwigshafen, Rotterdam, Neuss, Duisburg</td>
</tr>
<tr>
<td><strong>TRIESTE-MELZO</strong>&lt;sup&gt;158&lt;/sup&gt;</td>
<td>Operated between Trieste and Melzo by Hannibal S.P.A. It is possible to make reservations through U.N. Ro-Ro.</td>
<td>Container</td>
<td>2 round trips per week</td>
<td>Duisburg, Köln, Ludwigshafen, Rotterdam, Venlo, Zeebrugge, Basel, Cenova, Roma, La Spezia, Nola, Bari</td>
</tr>
<tr>
<td><strong>TRIESTE-BETTEMBOURG</strong>&lt;sup&gt;159&lt;/sup&gt;</td>
<td>Operated between Trieste and Bettembourg in Luxembourg by CFL since 2012.</td>
<td>Cranable trailers, some types of standard trailers and</td>
<td>4 round trips per week</td>
<td>Le Boulou, Lyon, Antwerp, Duisburg, Lübeck, Helsingborg,</td>
</tr>
</tbody>
</table>

---


<table>
<thead>
<tr>
<th>Route</th>
<th>Description</th>
<th>Container Type</th>
<th>Frequency</th>
<th>Destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIESTE - DUISBURG</td>
<td>Operated between Trieste and Duisburg in Germany by Greenbridge (Samskip and Intercombi partnership) since 2004.</td>
<td>Cranable trailers and all types of containers</td>
<td>3 round trips per week</td>
<td>major cities of Sweden and Denmark and Lübeck in Germany</td>
</tr>
<tr>
<td>TRIESTE - LUDWIGSHA FEN</td>
<td>Operated between Trieste and Ludwigshafen in Germany by Kombiverkehr since late 2013.</td>
<td>Cranable trailers and all types of containers</td>
<td>3 round trips per week</td>
<td>Lubeck, Hamburg, Dorpen, Munchen, Duisburg and Bayonne in France</td>
</tr>
<tr>
<td>TRIESTE - MUNICH</td>
<td>Operated between Trieste and Munich Germany by Kombiverkehr since late 2013.</td>
<td>Cranable trailers and all types of containers</td>
<td>5 round trips per week</td>
<td></td>
</tr>
<tr>
<td>TRIESTE - LUBECK</td>
<td>Operated between Ludwigshafen and Lubeck in Germany by ECL.</td>
<td>Cranable trailers and all types of containers</td>
<td>6 round trips per week</td>
<td>Trelleborg, Malmö, Göteborg and Stockholm in Sweden, Oslo in Norway, Liepaja in Latvia, Hanko and Kotka in Finland, St. Petersburg in Russia</td>
</tr>
</tbody>
</table>

APPENDIX 6 - Alternative Transport Ro-Ro vessels

<table>
<thead>
<tr>
<th>Name of the Vessel</th>
<th>Year Built</th>
<th>Shipyard</th>
<th>Speed (knots)</th>
<th>Flag</th>
<th>Length/Beam</th>
<th>Trailer Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HATCHE</td>
<td>2009</td>
<td>Odense Staalskibs</td>
<td>21</td>
<td>Turkish</td>
<td>193m / 26m</td>
<td>240</td>
</tr>
<tr>
<td>PAQIZE</td>
<td>2010</td>
<td>Odense Staalskibs</td>
<td>19</td>
<td>Turkish</td>
<td>193m / 26m</td>
<td>240</td>
</tr>
<tr>
<td>QEZBAN</td>
<td>2010</td>
<td>Odense Staalskibs</td>
<td>20.5</td>
<td>Turkish</td>
<td>193m / 28m</td>
<td>240</td>
</tr>
<tr>
<td>AYSHE</td>
<td>1999</td>
<td>Mitsubishi</td>
<td>28</td>
<td>Malta</td>
<td>200m / 25m</td>
<td>180</td>
</tr>
<tr>
<td>FADIQ</td>
<td>2012</td>
<td>Odense Staalskibs</td>
<td>21</td>
<td>Malta</td>
<td>193m / 26m</td>
<td>240</td>
</tr>
<tr>
<td>MELEQ</td>
<td>2017</td>
<td>FSG</td>
<td>22</td>
<td>Turkish</td>
<td>210m / 26m</td>
<td>280</td>
</tr>
</tbody>
</table>

APPENDIX 7 - Alternative Ro-Ro lines

<table>
<thead>
<tr>
<th>Lines</th>
<th>Number of Sailings</th>
<th>Average Cruise Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yalova- Trieste</td>
<td>5 round trips per week</td>
<td>58 hours</td>
</tr>
<tr>
<td>Alsancak- Trieste</td>
<td>3 round trips per week</td>
<td>52 hours</td>
</tr>
<tr>
<td>Alsancak - Sete</td>
<td>1 round trips per week</td>
<td>48 hours</td>
</tr>
<tr>
<td>Yalova - Lavrio</td>
<td>1 round trip per week</td>
<td>18 hours</td>
</tr>
<tr>
<td>Trieste-Lavrio</td>
<td>2 round trips per week</td>
<td>43 hours</td>
</tr>
</tbody>
</table>

# Appendix 8 - Ekol Logistics’ Intermodal Connections

<table>
<thead>
<tr>
<th>Intermodal Line</th>
<th>Operator/ Route Information</th>
<th>Carried Units</th>
<th>Travelling time</th>
<th>Train Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trieste-Ostrova</td>
<td>Unit train services between Trieste and Ostrova are operated by Ekol Czechia on the Trieste to Ostrava railway route, and offers new solutions for transportation among European countries.</td>
<td>192 units/week</td>
<td>20 hours</td>
<td>Spain, Portugal, and other Western European countries with road transportation</td>
</tr>
<tr>
<td>Sete-Paris</td>
<td>The freight is forwarded to the terminal in Paris using unit train services. Ekol France operates intermodal shipping routes from Sète and Paris to Le Boulou, Bettembourg, and Calais. Transportation networks have been expanded through mutual agreements with railway service providers.</td>
<td>72 units/week</td>
<td>24 hours</td>
<td></td>
</tr>
<tr>
<td>Trieste-Köln</td>
<td>Ekol Germany is established as the first Ekol subsidiary in Europe in Heppenheim in 1996. Ekol Germany offers intermodal transportation, warehousing, and customs clearance services with 200 employees.</td>
<td>512 units/week</td>
<td></td>
<td>Oslo in Norway, Malmo and Gothenburg in Sweden, Helsinki in Finland and St Petersburg in Russia</td>
</tr>
<tr>
<td>Trieste-Cologne</td>
<td></td>
<td></td>
<td>24 hours</td>
<td></td>
</tr>
<tr>
<td>Trieste-Ludwigshafen</td>
<td></td>
<td>320 units/week</td>
<td>20 hours</td>
<td></td>
</tr>
<tr>
<td>Trieste-Kiel</td>
<td></td>
<td>128 units/week</td>
<td>28 hours</td>
<td></td>
</tr>
</tbody>
</table>

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| Cologne-Budapest\(^{172}\) | Ekol Hungary, as an integral part of Ekol’s European intermodal network, started operating trains on this route in September 2017. | 192 units/week |  |

## APPENDIX 9 - Ulusoy Ro-Ro Fleet

<table>
<thead>
<tr>
<th>Name of the Vessel</th>
<th>Year Built</th>
<th>Shipyard</th>
<th>Speed (knots)</th>
<th>Flag</th>
<th>Capacity</th>
<th>Lanemeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFFET BEY</td>
<td>1987</td>
<td>Danyard A/SESBJERG</td>
<td>15</td>
<td>Turkish</td>
<td>150</td>
<td>2760m</td>
</tr>
<tr>
<td>ULUSOY-5</td>
<td>1987</td>
<td>Danyard A/SESBJERG</td>
<td>15</td>
<td>Turkish</td>
<td>150</td>
<td>2760m</td>
</tr>
<tr>
<td>ULUSOY-14</td>
<td>2012</td>
<td>FSG</td>
<td>21</td>
<td>Turkish</td>
<td>270</td>
<td>4094m</td>
</tr>
<tr>
<td>ULUSOY-15</td>
<td>2012</td>
<td>FSG</td>
<td>21</td>
<td>Turkish</td>
<td>270</td>
<td>4094m</td>
</tr>
</tbody>
</table>

---