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**MAIN SUCCESS FACTORS FOR DEVELOPING
CAR SHARING IN TURKEY**

THESIS

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ARAÇ PAYLAŞIMIN TÜRKİYE’DE BAŞARILI OLMASI İÇİN GEREKEN FAKTÖRLER

ÖZET

Araç paylaşım, 1980’lerde Kuzey Amerika ve Avrupa’da başlamış olan yeni bir sektördür. 2000’li yıllarda, insanların paylaşım ekonomisini kayda değer bulmasına, çevreyi koruma isteğine ve gereksiz harcamaları azaltmasını sağlamasına istinaden daha popüler bir hale gelmiştir. Diğer sektörlerle karşılaştırıldığında, araç paylaşım sektörü çok daha yeni ve taze bir sektördür. Bu bilgiye istinaden, bu sektör gelişmiş ülkelerden Türkiye gibi diğer dünya ülkelerine doğru yayılmaya başlamıştır.

Türkiye’de ilk araç paylaşım firması 2012 yılında İstanbul’da kurulmuştur. 2012’den itibaren, Türkiye’de araç paylaşım sektörünün büyüme oranı pek tatmin edici olmamıştır. Toplamda 4 adet bulunan araç paylaşım şirketlerinden iki tanesi zaman içinde işlemlerini sonlandırmış, mevutta sadece iki adet şirketin kalması ise araç paylaşımının Türkiye marketi için uygun olmadığı izlenimi vermiştir.

Araç paylaşım şirketlerinin nasıl başarılı olabileceğini ortaya çıkarmak için, bu bağlamda gerekli faktörleri, odak noktalarını, global firmaların temel işleyişlerini ve Türk marketinin detaylarını ortaya çıkarmaya karar verdim. Global şehir taşımacılığı metod ve modellerinin İstanbul’daki örneklerini araştırdım ve ek olarak global araç paylaşım firmalarının tarihçesi, operasyonları ve öne çıkan özelliklerini de çalışmaya katmış buldum. Genel olarak, Avrupa ve Kuzey Amerika merkezli araç paylaşım firmalarına odaklandım çünkü araç paylaşım sektörü bu coğrafyalarda ortaya çıkmış bulunmaktadır. Araştırma metodları içerisinde gerçek kullanım dataları ve araç paylaşım üzerine detaylı bir anket çalışması kullandım. Son olarak, araç paylaşım sektörü ile ilgili olarak başarı faktörleri hakkında araştırma metodlarına, global firmaların işleyişlerine, İstanbul’daki ulaşım modellerine, Türk toplumun konu hakkındaki bilgisi ve fikrine ve devlet, araç paylaşım firmaları gibi önemli konumda bulunan aktörlere dayanarak görüşlerimi, yorumlarımı ve yapılması gerekenleri derledim.

Umut ederim ki, ortaya çıkardığım bu çalışma girişimcilerin ve sektöre girmek isteyen firmaların isteklerine ve ihtiyaçlarına cevap verecek nitelikte olur. Aynı zamanda,

Türkiye’de araç paylaşım sektörünün büyümesine, paylaşım ekonomisinin ilerlemesine ve toplumumuzun adaptasyonuna yardımcı olması amaçlarımız arasındadır.

Anahtar Kelimeler: ARAÇ PAYLAŞIM, BAŞARI FAKTÖRLERİ, ARAÇ HAVUZU, SAATLİK ARAÇ KİRALAMA, TRAFİK



MAIN SUCCESS FACTORS FOR DEVELOPING CAR SHARING IN TURKEY

ABSTRACT

Car sharing is a new sector that started at 1980's in North America and Europe. It starts to become popular in 2000's as people believe that sharing economy is more feasible in economic reasons, protects the nature and reduces the irrelevant consumption. As car sharing is a fresh market by comparison to other markets, it starts to enlarge its growth to other countries like Turkey.

First car sharing company is established in Istanbul at 2012. From that time, the growth of the sector in Turkey is not satisfied the market players. Two of the market players stopped their operations so there are two companies left on the market which seems like car sharing market is not eligible for Turkey.

To find out how a car sharing company might be successful in Turkey, I decided to research the factors, focus points, main process of global companies and Turkish market in details. I researched about global urban transportation methods and models in Istanbul, than find out the global car sharing companies, their history, operation and specialities. I focused on companies which are located in Europe and North American as the starting point of car sharing in these locations. I decided on the research methods that I wanted to use and collected the relevant data from them to use in the thesis. At the end, I shared my opinion about success factors that depending on research data, process of global companies, transportation models in Istanbul, knowledge of Turkish society and key actors such as state and companies.

Hope that, this thesis will support the willingness of entrepreneurs and other companies to join into the market, support the growth rate of car sharing and helps to conduct the sharing economy to our state and society.

Key Words: CAR SHARING, SUCCESS FACTORS, CARPOOL, CAR RENTAL BY HOUR, TRAFFIC

PREFACE

This thesis is a snapshot of the car sharing in Turkey, in comparison with the known examples of car sharing models in the world. As the thesis is one of the lead academic work in Turkey, describes the meaning and the concept of car sharing and reflection of the car sharing on Turkish society.

Most tricky part about the thesis is to find usage data about car sharing usages as Turkish market is limited and companies are still searching for the right car sharing model in Turkey. Besides, the competition in this limited market is high, most of the companies do not want to share their data. In order to add data, one of the companies accepted to share data as they want remain anonymous. Survey was helpful to have an idea about the society and market. Collaboration of these datas let me to establish this thesis and define the car sharing for the folks who is wondering about the car sharing market and situation in Turkey.

I would like to thank my thesis advisor Prof. Dr. Mehmet Tanyaş to encourage me about working on car sharing area and urban mobility, the anonymous company and their employees for sharing their valuable data, Eda Hatipoğlu who let me to know and learn about the car sharing systems and models at the beginning of professional career, Esra Eskihoran about her absolute support and effort and lastly, i would like to thank to all my family and friends about their support.

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1.Introduction

Traffic becomes an important problem in Turkey relating to increase on number of cars, lack of park spaces and inadequate length of roads. As it can be seen on the Figure.1, Istanbul is the sixth place in the world on the ranking table of TomTom Traffic Index (*Figure.1*). In order to official numbers of TÜİK July 2016 report, there are 20.643.246M cars in all over Turkey, more than 3,8 millions cars are in Istanbul. Length of the roads in the country is 66.774 km, 18.178 km of the roads are located in Istanbul. As insufficient length of roads and huge number of cars lead to traffic which occurs different problems in several manners.

Especially, the rise of traffic causes to air pollution and increasement on fuel consumption. People who live in crowded cities collides from air pollution which decreases the life quality in a dramatic way. According to reports of Health of Ministry and World Health Organisation, air pollution causes skin disorders, hair loss, lung diseases and cancer. This problem might occur as health problems, decreasement on life quality and unclear sight while driving the car at morning which causes to more traffic.

Secondly, fuel consumption is a huge problem for a country which do not have sufficient natural resources such as petrol and natural gas. As Turkey belongs to category of developing country on world structure, insufficient resources creates a deficit problem as importation of fuel is high.

At that point, it is crystal clear that Turkey needs sort of solutions to decrease the rate of traffic to increase the life quality and decrease the importation of fuel. As building new roads or bringing higher tax rates to automobiles are not a permanent solution, country and society needs alternative ways such as car sharing systems.

As a solution for air pollution, car sharing is an effective option. It leads people who have not own a car but to share a car and lowers the usage of cars per person. This situation helps to decrease the rate of air pollution as it decreases the number of cars in traffic. As an example, 104.203 tons of CO₂ emission saved by car sharing customers in 2011. According to an another example, Swiss Car Sharing survey relates that every active car sharing user releaves the environment per year with 290 kg less of GHG emissions. In addition to relevent information, Car Club members in London reduces transport carbon

footprint by 73% and saved 49.220 tons of CO₂ in 2016. It is obvious that to increase the air quality, car sharing is one of the best solution for places with traffic problem.

Specifically, car sharing lowers the fuel consumption as car sharing members reduce their annual household mileage and a car share car replaces several number of privately owned cars so that it enables to decrease consumptions. According to car2go research in 2016, each car sharing vehicle replaced 7 to 11 privately owned vehicle and suppressed the need of vehicle between 4 to 9 regarding to one car sharing vehicle. As a point of view, car sharing system can decrease the private ownership of cars and need of cars in urban places in Turkey such as Istanbul, Ankara or Izmir. This progress helps to decrease the traffic rate correspondingly fuel consumption and need of vehicle ownership in which Turkey is not a car producer as do not own a national car brand which means that car ownership leads to deficit problem next to high fuel consumption.

As many urban places and big cities in North America and Europe adjust car sharing system to their transportation routine, there is not any obstacles to adjust car sharing to Turkish cities. As economical and social advantages of car sharing, it has to be supported by government to create car sharing club culture and decrease the need of vehicle ownership to increase the rate of selling of older cars which consumes and pollutes more than brand new ones. Car sharing system offers brand new cars with efficiency and more ecological Technologies, it also enables community to use new cars instead of their old ones. Car sharing system which integrates to urban transportation will be more effective to solve the traffic problem in urban areas.

Finally, in this research, there will be details of car sharing usages, survey outcomes and according to advantages of car sharing system in which car sharing might be more succesful according to society, government and private sector. As there is a gap in the rent a car sector for hourly car rent or car sharing systems. It is important to not to hurry to build up a system but to create and build a car sharing system with localised solutions and taking care of needs of public. Benchmarks and several companies that already build an infrastructure for car sharing will lead us to find out the success terms to create a car sharing environment. The main reason to work on thesis like that is to support involvement of car sharing in Turkey and to strengthen the car sharing in the sector.

RANK BY FILTER ^	WORLD RANK ^	CITY	COUNTRY	CONGESTION LEVEL	MORNING PEAK	EVENING PEAK	TOMTOM CITY
1	1	Mexico City	Mexico	66% ↑7%	96%	101%	traffic news
2	2	Bangkok	Thailand	61% ↑4%	91%	118%	traffic news
3	3	Jakarta NEW	Indonesia	58%	63%	95%	traffic news
4	4	Chongqing	China	52% ↑14%	90%	94%	
5	5	Bucharest	Romania	50% ↑7%	90%	98%	
6	6	Istanbul	Turkey	49% ↓1%	63%	91%	traffic news
7	7	Chengdu	China	47% ↑6%	74%	79%	
8	8	Rio de Janeiro NEW	Brazil	47% =0%	63%	81%	traffic news

Figure.1 Tomtom Traffic Index (www.tomtom.com)

So, the main question of this thesis is;

How can car sharing systems be successful in Turkey?

2. Research Methods

2.1. Survey

In that thesis, survey was a guide to measure the relativity of Turkish society on car sharing subject and show up the outcome of knowledge and sense about car sharing systems of participants. The outcomes of the survey is crucial to find out the rate of knowledge about car sharing and familiarity of people so it helps to conduct future goal to let car sharing be more successful in Turkish market.

Before analyse the survey, it is clearly expressed the reason of the survey and the need of participant who live in Istanbul to fill the survey. It is important to choose people who live in Istanbul because Istanbul is the most crowded city of Turkey, one of the most famous facts about Istanbul is the traffic problem and density of traffic and also the population. Also, people in Istanbul is more used to spend their money on gas, car and mobility. So, it is the perfect place to manage a car sharing company.

Survey is distributed online via Google Forms and let participants to answer 13 to 18 questions depending on their answers. Survey stayed online for a month between 1st of April to 1st of May. It reaches out to 325 people who are mostly recommended by myself and anonymous respondents that filled out the survey by several forums on web. Survey is prepared in Turkish but translated to English for the thesis. At the beginning of the survey, respondents filled out the questions about personal information such as age, profession and more on. Lately, they diverse to two groups; first group, the ones who experienced car sharing before in Istanbul and second group, the ones who do not experienced car sharing in Istanbul.

2.2. Usage Data

In this survey, as a second research method, usage data is used to find out the aim of the members and outcomes from data results. These data results are taken by permission from a company which prepares to enter car sharing market in Turkey and made test usages on 71 real customers. The data and results are real but the name of the company and details of users are classified.

System was operated as one-way and outcomes will be provided in that manner. Data includes the information of average usage time of reservations, average distance of

reservations, average distance of reservations per hour and mostly preferred car type depended on its segmentation, engine type and gearbox type. The price of the each segment was fixed. All of the customers became members of the test system and do not experienced car sharing system before. So, results of the data is important to get the outcome of usage details and needs of Turkish people about car sharing.



3.Urban Transportation

3.1.Occurrence of Urban Transportation

Transportation is a term that has meaning of the movement of people or goods from one place to another or system of vehicles which lets humans to get from one place to another. Urbanisation is a transition which includes movement of people from rural to urban places such as cities or village in case of receiving better life quality, education or job opportunities. Since 1950, the world's urban population has more than doubled, to reach nearly 3.8 billion in 2014, about 54% of the global population (*Rodrigue, D. (2017). Urban Mobility*). There are three main factors that affect the increasement of population rate at urban areas; Natural increase, local migrations (from country to city) and international migrations. By the time, urban areas convert their local structures to divided places depends on specific socio-economic differences. For example, all of the business centers in a city gathers around on a simple Street, avenue or neighbourhood or people who can afford to live in the central of the city are started to build living areas around the city which named as suburbs or sub-centers.

At that manner, accessibility and time has started to become an important factor in urban life style. People found the solution by owning a car or a vehicle so that they can arrive to where they want to go rapidly and effortlessly. As population increases, there is an increasement on the number of the cars in which individual way of transportation became an absolute disaster for urban population as it causes the occurrence of traffic. Traffic has affected the urban population in a negative way about the accessibility and time management. It causes to new problems such as air pollution, high consumption of fuel and discomfort of being stuck in traffic as it becomes impossible to reach from a place to another easily and rapidly.

This situation lets the creation of a term named urban transportation. There are three types of urban transportation; Collective transportation, individual transportation and freight transportation. Collective transportation includes publicly accessible mobility over specific parts of a city. Individual transportation means a mode of mobility of a personal choice such as automobiles, motorcycle, cycling or even walking. Freight transportation mentions about large movements of freight between severals place inner city or outside of the city limits.

3.2.Modes of Urban Transportation

Urban transportation offers different types and mobility specifications to the urban populations such as roads, railroads, and ports.

Most of the transportation types are depended to roads and rails. The most known mobility types are buses, trams and metro systems. It is eligible to add taxis and funicular systems to these types.

Taxis, minibus or minibus-taxi (dolmuş in Turkey) is a type of transportation named as para-transit which is a form of a small passenger transport mode that operates informally on a fare paying basis. This fare might change from a location to another without any standards. These are popular transportation types in urban areas as it allows customer to have a door-to-door service and uses main roads. The main aim is to offer flexibility and speed to the passengers. It can move fast and time-saver for customer which depends on the small size of transport units. This issue creates an advantage in highly rated traffic and units need less passenger than larger units to move on. These units are operated by private owners or small sized companies and they are more related to needs of passengers as owners or companies do not get support from state or institutions. They need to make profit on their operations. In Turkey, there are several local types as named as minibus, dolmuş or taxi-dolmus which are constantly used in cities (*Urban Public Transportation Modes, n.d.*).

Motorised buses are operate on a standard schedule and route as different as para-transit modes. Also, fares of the buses are constant and servicing areas are zonal. They provide regular and systematic transportation mode to passengers. These units have large dimensions than cars and minibuses. This dimensional difference creates an disadvantage to buses. They can not operate fast and provide speed to passenger. However, buses provide comfort and order with an advantage of price related to minibuses and taxis. They are supported by state or institutions so they do not aim to make profit by their services.

As a modernised version of motorised buses are metrobuses. Metrobuses are used in Istanbul as an effective mode of urban transportation. They have a route on a special road that seperated from the rest of the traffic. So, metrobuses operate on their own roads and zones. These kind of buses offers speed and price advantage to passengers but limits the

customer by lacking their other choices because of specialised roads, route and schedule and avoids the comfort at rush hour.

Metro and light rail transport systems are expensive but effective transportation types for urban areas. They are built on ground or underground with use of advanced technology and high financial costs. This type of transportation do not exaggerate from weather conditions (especially if they are built underground) and external effects. They operate in order to strict time schedule and prevent high capacity to transfer passengers from a place to another. System can not move freely and it has to run on a railroad that built for it. In this manner, this system provides speed, comfort and high price performance together to passengers. However, it can not be operated 7/24 at every urban area and stuck to a strict path so it might not be useful for passengers who needs to arrive a place far away from stations. It is also supported by state or institutions so do not aim to make profit from their operations. This system is an alternative for traffic problem but as it is mentioned, it is not effective as para-transit modes as it limits the passengers freedom to reach a place.

They are also other alternatives such as funiculars and cable-cars for the cities and urban areas with highly numbered hills or ferries and boats for urban places at the side of sea. These are also alternatives for traffic problem in urban areas.

The important point is; all of these modes need to complete one to other one by one. For example, it is possible to use bus routes as a feeder for light rail transport systems. There has to be more than an opinion for passengers to let them go to the location that they want. Para-transit systems are not controlled or created by state so it can not be serve in a strict manner as part to complete the feed chain of local transport solutions (*Urban Public Transportation Modes, n.d.*).

At that point, car-sharing systems preserve a solution for traffic, air pollution and high rate of fuel consumption for urban areas. It can be used as a feeder for other transportation systems, offers flexibility as passenger can go to the arrival point by individual routes as he or she can designate. Key figure of the car sharing systems is; it reduces the need of a self owned-vehicle. Passengers can use every single car sharing related car as their own vehicle for specified timezones. Users do not have to pay taxes, maintenance costs and parking fees as they sell their cars and diverse their usages to car sharing systems.

4.Car Sharing

4.1.Sharing Economy

Sharing Economy is a economic model that people may rent, share or use properties that owned by other people or companies. It has a motto named as “use rather than own it”. Main aim of the system is to minimise the ownership of products, the consumption that related to ownership and lack of resources of production and daily usage. This concept has become more popular day to day by societies especially the ones living in crowded areas to protect the nature and reduce expenses. Rise of internet users helps to spread sharing economy philosophy and enables to build websites that offers to use sharing economy modes in real (An, H., & Gu, L. (2014)).

One of the most popular use of areas for sharing economy is household sharing. As an example, Airbnb is the most used household sharing platform all over the world. The motto of the website is; “*Find the perfect place to stay at an amazing price in 191 countries.*” Or “*Belong anywhere with Airbnb.*” (<https://www.airbnb.com>). By that platform, people might search for staying places in the cities or village that they want to make a visit or tour. It is not important to make your trip for business or touristic affairs. Main idea is to pay a value to a service that lets you to stay at place which is owned by a person or living place of a person. In that manner, Airbnb is a platform to provide house sharing service and the trade relation between householders and consumers which is a great example for sharing economy. By using Airbnb, people might reduce their expenses by staying at a room or house instead of a hotel. This situation also depends on the prefers of consumer on comfort, service quality and interest to make savings. As the *Figure.2* shows the rate of preference about Airbnb depending on other travelling and hotle booking sites in Australia at 2016.

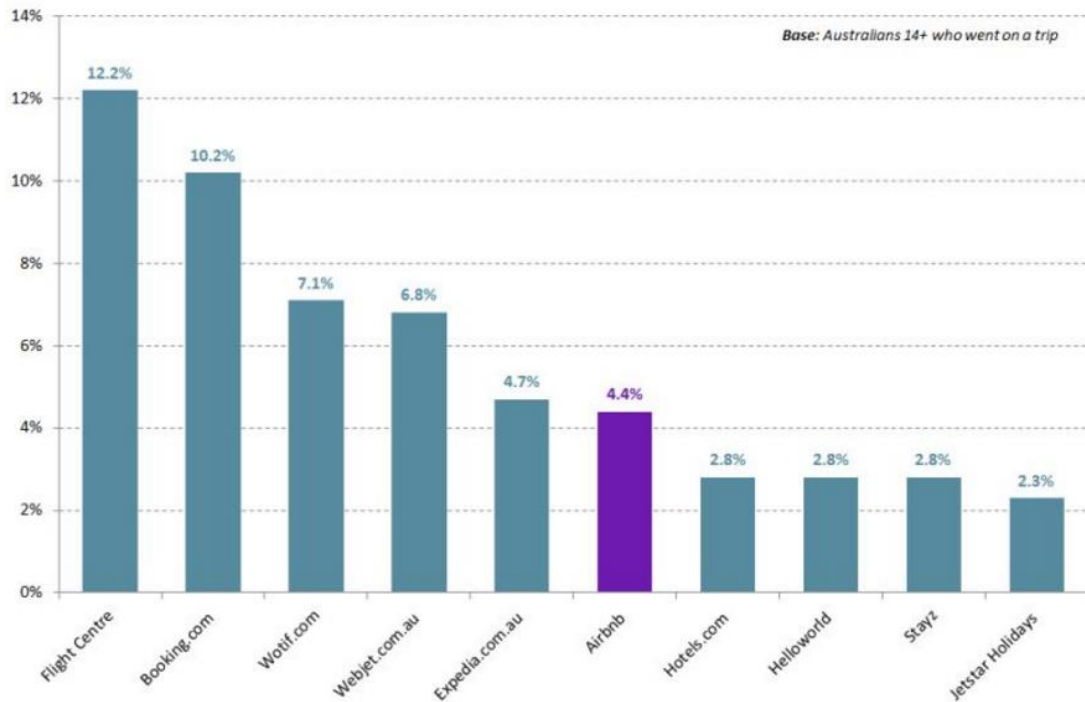


Figure.2: The Changing Face of Accommodation Booking (*Airbnb: the changing face of accommodation booking. (2016, February)*)

4.2. Term “Car Sharing”

Car Sharing is a term that notified in several meanings and forms all around the world. *“The term has encompassed open-access shared vehicle programs, intended for occasional trips where a car is needed; station cars for commuters to drive to work from the transit station; and systems for intra-campus mobility, for example in a university setting.”* (Millard-Ball, A., Murray, G., Schure, J. T., & Fox, C. (2005))

Car Sharing term is established on several features such as; a group of people that sharing the same goal, one or more shared vehicles, specific places for cars in need of usage next to community areas, booking service, availability to make a booking for less than a day and more than a minute and self-access vehicles by card or mobile application usage.

Especially, there is a misunderstood between car sharing and ride sharing in society. These two terms are relatively different than the other. Car sharing / Car clubs are separate organizations in which cars or vehicles are owned by organization and shared by different consumers in different times in need of a car or vehicle for some reason. Car pooling or ride sharing is a different term in which cars are owned by users and owners share their ride with passengers by trade for every different trip. In need of effective usage of car

sharing, difference of the terms are need to known by society and companies. Car sharing companies might operate a membership program or let everyone to use their cars as they need to rent a car by hour or minute. This difference is positioned under the term of car sharing as a category. This categorisation is based on needs of consumers, operation of car fleet, billing system of the program and tradition car renting in country.

In history, car sharing depends on 1940s with several types of operating system till 1980s. Each program is depended on differences on specific abilities such as billing system, operation management or membership process. The common point of these programs are; all of them aims to present car rental for a short time of period. Most of them are failed for weak planning of organisation, financial management, limited size of operation area and member and insufficient support of local governments. (*Millard-Ball, A., Murray, G., Schure, J. T., & Fox, C. (2005)*)

4.3.Models of Car Sharing

There are three types of car sharing operation models that using by car sharing clubs and companies. These are named as station based, private P2P and free floating.

Station based car sharing

In station based car sharing systems, cars are located at specific places or stations in order to get or leave. All of the cars must be left at the same place where the cars are picked-up by customers. Pricing is based on addition of two different sequences depend on usage by minute or hour as a fixed value and a spotted value for every KM that driven by customer. It becomes an alternative for rent-a-car sector as station based usage is more detailed in pricing and easier to reach by customers as stations are based in to neighbourhoods, commercial centers and many other easily reachable places.

Cars are provided by organisation or company and stationed in public parking places or special parking areas with a contract. Maintenance and washing service are provided by company and also gas is offered to customer by company as operator gets the gas consumption price from price per KM in theory. Customer have to make round-trip in this system.

Private peer-to-peer system

Private peer-to-peer system (Private P2P) provides people to use their car as a renting tool. Owners can give their cars to rent to others. In this system, car has to be at owners place and must have returned to the same place (owners house or parking area). The pricing fee is determined by car owner so there is not a standard pricing tariff. Cars are covered by specific type of insurance policy for the rent process as cars are not rented by a company or an organisation. P2P presents an alternative to both car owners and customers in order to create a difference according to rent-a-car companies.

According to this model, cars are owned privately by individuals instead of a corporate. Cars are located at owners parking place or nearest place. Maintenance is provided by car owner however gas and washing service is in responsibility of customer. Also, customer has to leave the car at the place that he or she picked up for rent so it is enable to call this model of rent as round-trip.

Free-floating car sharing system

Free-floating model is operated by companies to meet the need of car ownership of society in neighbourhoods. Cars are expanded all around the city, especially to parking areas on roads and inside neighbourhoods. There is not any directed pick-up and return places or areas, customer can rent a car from a place and return it to anywhere inside operational area (which is mainly whole of the city or neighbourhood). Pricing fees are fixed and these cars can be rented by minute instead of an hour or a day.

In addition, system lets customers to pick-up the cars from wherever they want in the limits of city or village. In general, cars are located in public parking places beyond roads or parking areas. Cars are owned by company or organisation. Maintenance and washing services are provided by company. Refueling the gas to the cars are provided by company or in responsibility of customer which is related to systems working process by company. These cars can be used for one-way trip or round-trip. (*Millard-Ball, A., Murray, G., Schure, J. T., & Fox, C. (2005)*)

4.4.Sub-models of Car Sharing

There three different sub-models of car sharing systems. These sub-models are integrated to standard models of car sharing systems in order to create a difference than other car

sharing companies. In the opinion of companies, they prefer to use one or all of these sub-models or none of it. These models are named as fractional ownership, hoster car sharing and e-vehicle car sharing (An, H., & Gu, L. (2014)).

Fractional ownership

Fractional ownership is an alternative to need of car ownership but the cars are different than standard models on the market. Customers sign-up for a fractional ownership as they buy time to rent the cars in the fleet. System works as it is a car sharing club but in a luxurious way of process. Cars are different than the rest of the market as preferred as premium brands or luxury models with a high-end service. The aim of the fractional ownership is to access cars of premium brands with luxury and prestige without owning any of them.

Hosted car sharing

Customers have opportunity to rent a car without paying any fee. It is named as “free-of-charge” as it is provided by car sharing company. Customer has to leave the car at the related area that car sharing company stated (even it is a free-floating system). Especially, this system is used from companies to lower their operational costs as car is transported for free by customer to where it has to be.

E-vehicle car sharing

In this model, providers operate the system as a station-based car sharing process. Instead of standard station-based car sharing system, in this model, cars are not powered by gas but electricity or half electricity – half gas (hybrid). Provider offers reloading service and power stations in addition to maintenance and washing services. By this model, companies are aimed to create environmental image and target customers that environmentalist and cares about nature. Also, this kind of transportation reduces the carbondioxide rate in the air which is an advantage in cities and villages. (Millard-Ball, A., Murray, G., Schure, J. T., & Fox, C. (2005))

4.5.Global Trends

Development of new modes of urban transportation by technology and marketing strategies make easier to be mobile in cities. Most of these new kind of transportation models are supported by government or municipalities. However, there are for-profit

organisations or companies to create alternative transportation modes to solve the urban traffic problems and offer new kind of mobility solutions to society. These kind of organisations uses economy and mobility to create new trends which are contributed a economical background. Car sharing is one of the biggest trends on world which is involved from sharing economy idea. One of the successful organisations are Zipcar, Drivenow and Car2go. As the car sharing system literally started at 1980's and become popular through 2000's, it enlarges its utility from one country to another and increases rate of members. As *Figure.3* shows the entire increasement of car sharing in global by measuring members and vehicles.

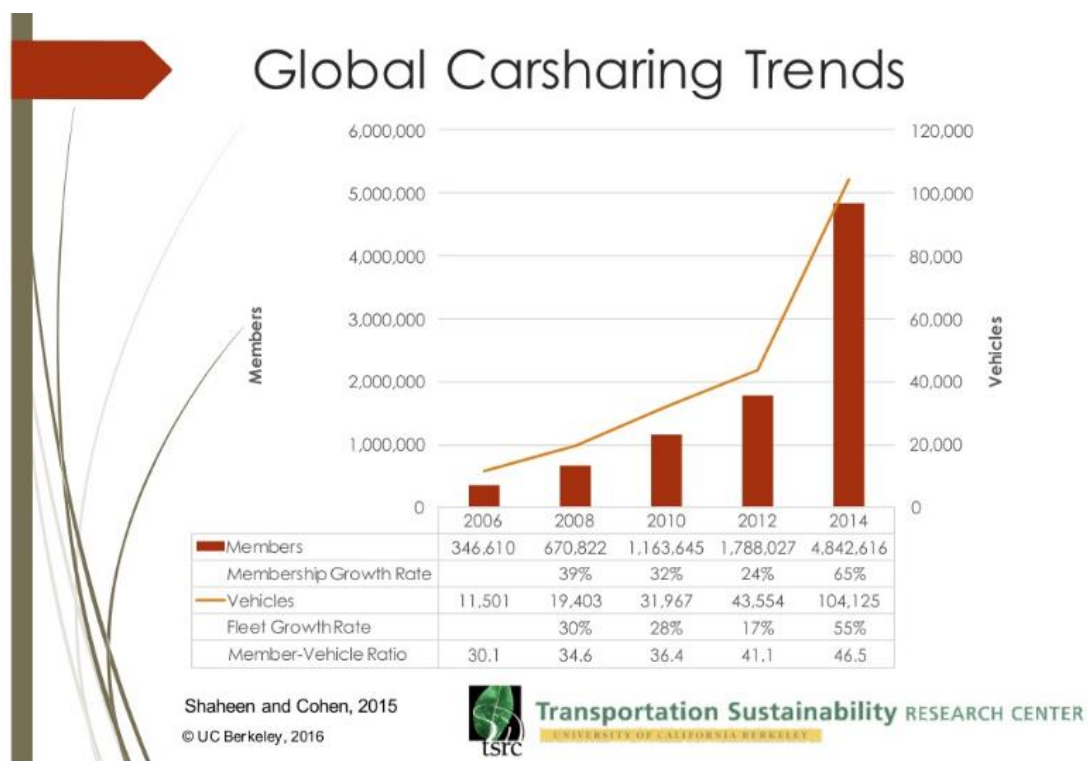


Figure.3 Global Carsharing Trends on Members and Vehicles (Shaheen, S. (2016))

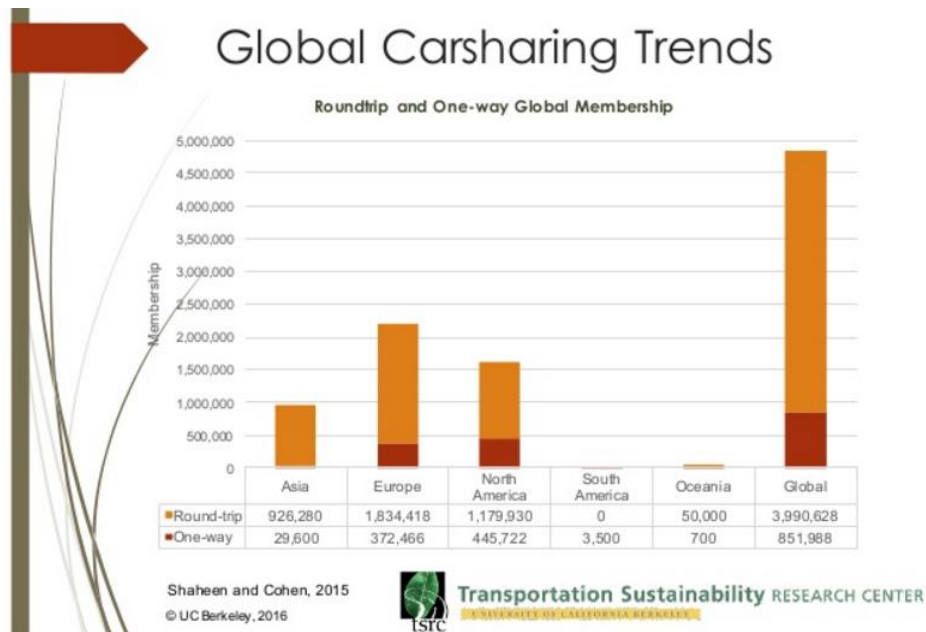


Figure.4 Global Carsharing Trends on Working Methods (Shaheen, S. (2016))

Depending to *Figure.4*, most of the members and vehicles are located in Europe, North America and Asia comes up after Europe. Obviously, round-trip method is more usual in Europe and Asia, one-way trip method is more preferred in North America. Car sharing trends and methods may differ from one region to another as rates of members.

Car sharing starts to intervene to market of developing countries. Systems become active and start to operate at Sao Paulo (Brazil), Beijing (China) in 2009, Istanbul (Turkey) in 2011, Mexico City (Mexico) in 2012 and Bangalore (India) in 2013. As these markets are seem as holding great opportunities for car sharing companies, car sharing systems will grow fastly to become integrated with locals. Depending to EMBARQ research, there will be 600 million new urban population in China and India by 2030. Besides, Asia, Africa and Latin America have more than %75 of the world's urban population but owns %10 of the global car sharing members (*Car-sharing in developing countries (2014)*)

4.5.1.Germany (Drivenow)

Car sharing is a preferred way of mobilisation in Germany and one of the main countries to develop new technologies on car sharing systems. Drivenow, Car2go, and Flinkster are the common companies that known for car sharing in country. These companies are operating in most of the German cities and supported by companies and operates for-profit. The first car sharing company is founded in 1988 as named as StattAuto in Berlin

with one car and now, there are 3,180 car sharing cars related to several companies in Berlin which is large as car sharing cars in whole Britain.

Drivenow is a car sharing company located in Germany and founded by BMW and Sixt in 2011. Operation of Drivenow has started in 4 main cities of Germany and San Francisco, USA. In 2015, they were active in Munich, Berlin, Dusseldorf, Cologne, Hamburg (Germany), Vienna (Austria), London (UK), Copenhagen (Denmark) and Stockholm (Sweden) with more than 460 vehicles and more than 600.000 members. Drivenow member does not need to reserve a car on Drivenow, just use the mobile app to find a car and access to a a car. The main aim of the system is to be easy, fast and flexible. In that manner, Drivenow is a free-floating car sharing system in which member can pick up the car from a random place and leave the car wherever he or she desires but car has to be stay in city limits. Most of the models of the fleet are enable to use in urban places easily as Minis, BMW 1 & 2 Series and iSeries which is a electric vehicle (*Figure.5*).

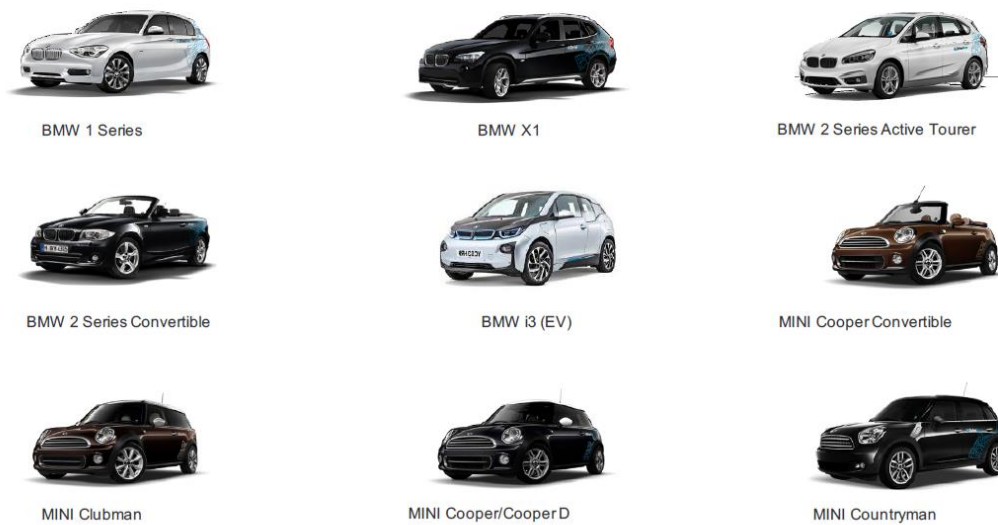


Figure.5 Fleet of Drivenow (www.drivenow.com)

Besides, Drivenow is the market leader in Germany among other car sharing companies (*Figure.6*). Depending to a research that supported by Drivenow, shared vehicles are more utilised than privately owned vehicles. As privately owned vehicles are used for an average of 60 minutes per day, shared cars are used up to an average of 300 minutes per day. Instead, large number of high-emission cars are substituted by a new, low or zero emission car. According to a case study of Drivenow with Munich municipality about test

usage of car sharing system in Munich, city council of Munich supports car sharing and experienced as parking licence fees are reduced. Residential parking zones are converted to car sharing parking zones, city center and central stations are admitted to car sharing vehicles. The support of municipality takes an important role to save the nature, reduce the CO_x, increase the green areas, lower the rate of traffic and reduce the need of car ownership. (Williams, L. H. (2013))

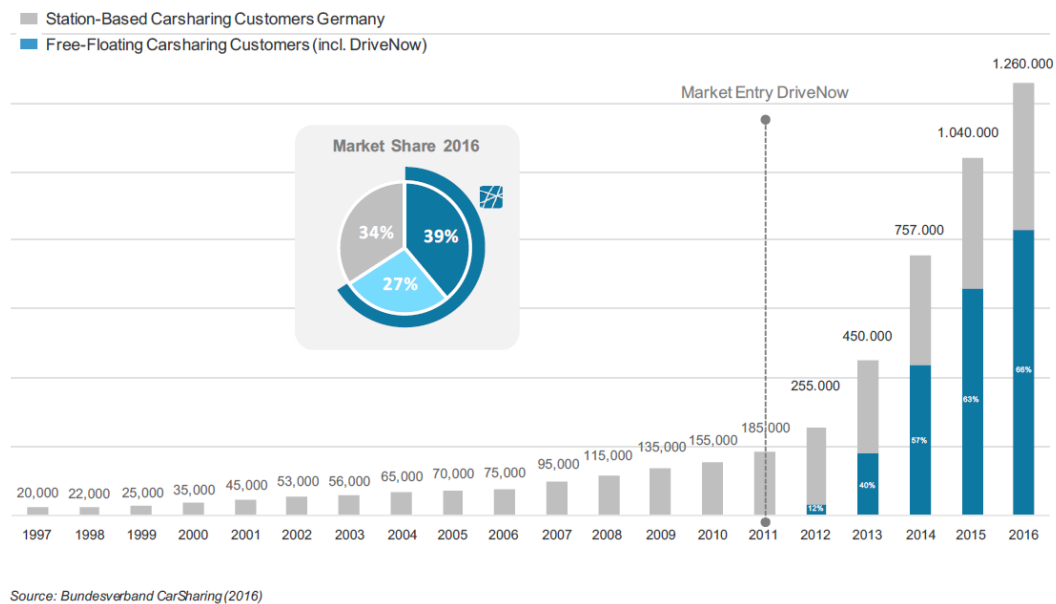


Figure.6 Market Research of Drivenow in 2016 (Drivenow Presentation, Taking Electric Car Sharing to Next Level, 2016)

4.5.2. France (Autolib)

France is one of the countries that started car sharing operations in 2010's but car sharing is reached to high level of market rate in a few years. First of the car sharing operation is started in 2010's in Paris and extended by past to today to several cities. Autolib, Zipcar One and Wattmobile are the top car sharing companies in France. Frankly, most of the car sharing companies preserve electric vehicle in their fleet. This is the most common factor that singles out the car sharing companies in French market than the other European and American car sharing markets. (Jayasinghe, P. (2013))

Autolib is an electric car sharing service is started in Paris and operates in cities on global. It is founded by Vincent Bolloré, a French businessman, and run by a public-private joint venture by Polyconseil and Paris municipality. As company started with 66 cars and 33

car rental stations, it raises the number of cars to 4,000 and number of stations to more than 500 by 2015.

The main difference of Autolib is to use only electric vehicles which are designed and produced privately by the firm named as Bluecar (*Figure.7*). These cars are built-on lithium metal polymer batteries which are recyclable. It prefers space for 4 person and owns an onboard PC and GPS. Bluecar offers 250 km range with fulfilled battery. Members may take the car from a station and leave the car at an another station. Member does not have to leave the car at the exact station as he or she took off. The main reason of station-based working operation of Autolib is the cars in their fleet. Autolib stations are equipped by electric charge machines so that cars needed to be recharged at these stations when their battery is low. These stations are located in tight and range between the stations are short. (*Figure.8*)



Figure.7 Autolib Station (www.autolib.com)

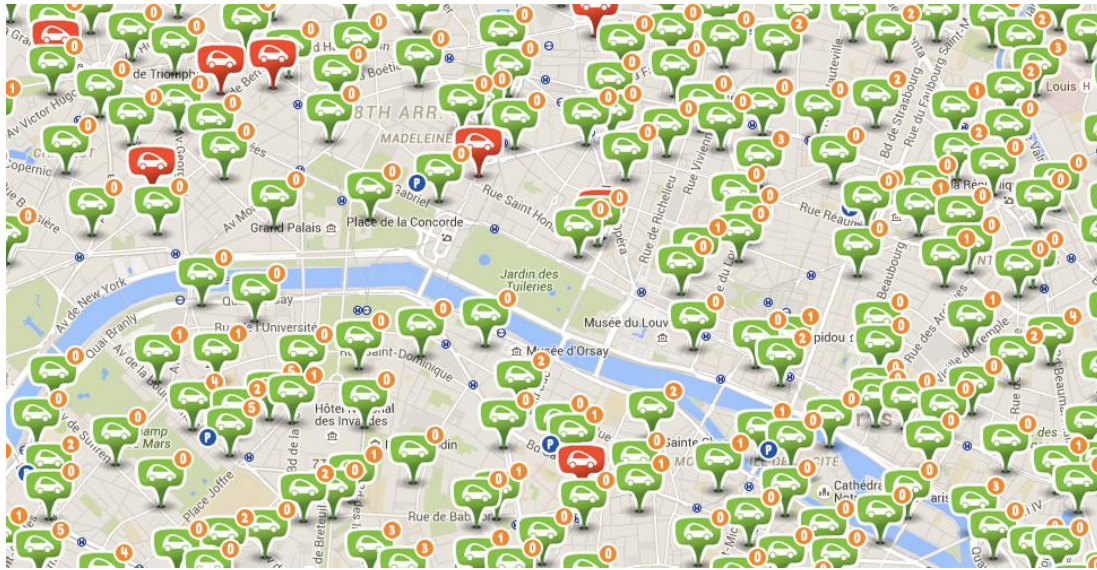


Figure.8 Autolib Stations on Map of Paris (www.autolib.com)

Depending to a research, %95 of cars in Paris spend their time as parked, %16 of Parisians use their cars less than once per month and %58 of Parisians are not motorised. On average, 17.000 rentals are happened per day and each car is rented approximately six or seven times per day. Autolib owns more than 100.000 members in 2015 (*Geron, S. (2016)*). Autolib has the advantage of being an alternative to car ownership, including respect for nature and political background. (<https://www.autolib.eu/en/>)

4.5.3.USA (Zipcar)

The first example of car sharing in Northean America is started at 1983 in Purdue University (*Filosa, G. (2006)*). This project shows that sharing of smaller, fuel-efficient vehicles would lower the need of car ownership. Besides, a second project named as, STAR, unveiled in San Francisco as a private firm. Short-Term Auto Rental Service or in other words, STAR, has a fleet of 51 vehicles and aims to encourage car sharing to reduce the car costs and car ownership. These two projects has attracted many entrepreneurs and other projects. At the mid of 2000's, there were 28 car sharing organisations in 32 cities with total number of 70.000 members and 1.400 vehicles (*Filosa, G. (2006)*).

Zipcar is the most known car sharing company in USA and one of the biggest carshare organizations all over the world. Zipcar is founded in Boston at 2000. It became popular in universities and city centers. Zipcar is expanded rapidly through most of the USA. Zipcar became more famous by a marketing move, in which, they asked 250 participants to not use their private cars, instead, use Zipcar. At the end, 100 of the participants decides

to leave their own cars and use Zipcar as Zipcar enables to travel easier and makes more sense in economic structure as cars are sharable. Zipcar owns more than 700.000 members and owns approximately %75 of American market share depending to a Frost & Sullivan research in 2013. Zipcar is purchased by Avis in the beginning of 2013.



Figure.9 Zipcar Station

Zipcar is based on a round-trip system in which vehicles are rented from stations and member has to leave the car at the same station that he or she had rented the car with a huge number of fleet and different size of cars. Zipcar struggles the problem less reservation in weekdays and enormous demand of reservation in weekends. Despite, the operation of huge number of fleet creates a know-how on fleet operation. Fastfleet is the company that comes out from the fleet operation know-how that Zipcar owned. Fastfleet lets corporate business' to operate their own car fleet. Besides, Zipcar owns a sub-car sharing company named as Zipvan which is aimed to members to rent vans at the moment they need one.

Zipcar is also operating in European market but they are not a market-changer in Europe as they were car sharing organisations and companies that already active and make operation with the support of municipalities or private companies such as automakers. In order to get market share, Zipcar merged some of European car sharing companies like Avancar (Spain) and Streetcar (UK). Some of them has changed their names as Zipcar and the rest continued to operate with their own names as a sub-company of Zipcar.

Zipcar has struggled financial problems till 2012. Especially, Zipcar has a net loss of 7.2 million dollars in 2011 as it is on the figure (Figure.10). Despite, in 2012, Zipcar has net profit of 14.7 million dollars which was a profitable year for them. This profitable chart of 2012, leads the merger of Zipcar by Avis. By this merger, Zipcar granted financial back-up from global rent-a-car company Avis. Avis also do not attempt to change the standard operation of Zipcar as each Zipcar rent fee includes insurance fee which is a positive way to cover up the bad prestige of rent-a-car companies as they have a public opinion by car renters as let them to pay hidden costs. Actually, the main success factors of Zipcar were investing in technology, listening the people and society on their needs of mobility and using a simple system which avoids to create a chaos on usage. (Williams, L. H. (2013))

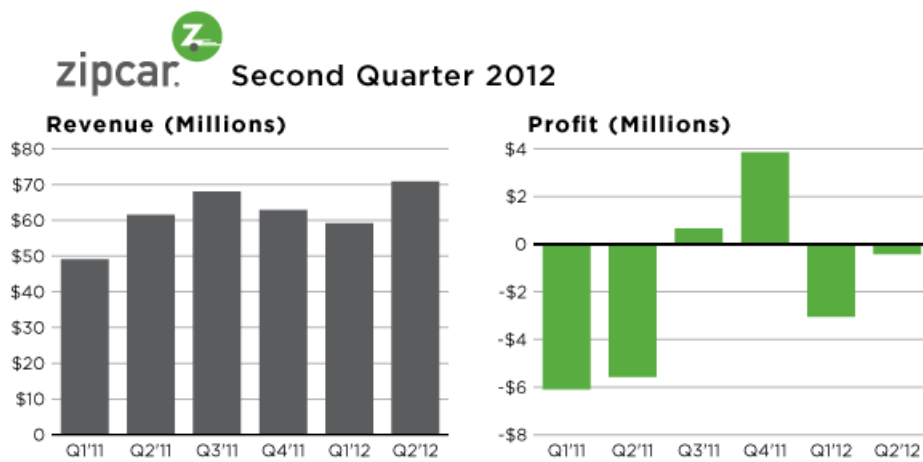


Figure.10 Zipcar Revenue and Profit Chart for 2011-2012 (Lawyer, R. (2012, August))

4.6.Local Trends

Car sharing is a new mode of transportation in Turkey depending on European countries and North America. Car sharing market is small but it has opportunity to grow in future. Some of the entrepreneurs had seen the opportunity in the market and established their company to operate the business and aimed to get the most of the market share. There is no regulation or rules based on car sharing systems and usage so market is not ready based on governments point of view. Actually, most of the countries are operated as rent by hour, instead of the developed and detailed pricing systems (rent by minute) in European countries.

4.6.1. Car Sharing in Turkey

The first example of car sharing company is founded in Istanbul at 2012, named as Mobilizm. Company started with 26 vehicles and 13 parking places which are located at university campus' and central areas of city. Company created tariffs for rent by hour, special tariffs for day times and night times. They operate the system with a RFID card and purchase membership fee and annual fee. Their operations are based on round-trip usages. They continued to operate until 2015 when they announced they have stopped their operations. (<http://webrazzi.com/2013/03/26/mobilizm-paylasimli-otomobil-servisi/>)



Figure.11 Mobilizm Web Page (www.webrazzi.com)

Mobicar also founded by the same motivation as Mobilizm by two entrepreneurs in Istanbul at 2013. As Mobicar started their operations on 5 locations with 12 vehicles, they raised the number up to 21 and owned a fleet of 41 vehicles. They get more than 1.000 members in a year and they aim to lower the rate of car ownership and become an alternative solution for Istanbul traffic. Their operations are based on round-trip usages. They also closed up their company in 2015 without any statement.



Figure.12 Mobicar Station (www.fortuneturkey.com)

Yoyo is another car sharing company which is established in Istanbul at 2012. Yoyo started their operations as a start-up in Istanbul. Operation is started by 5 parking places and 15 vehicles. Yoyo gets an investment at May 2013 from Partner Fleet Solutions. This was the break-point for company which lets to operate with a larger fleet and financial background. In 2015, company is active in 3 cities (Istanbul, Ankara & Bodrum) with more than 140 vehicles and 14.000 members. They operate their system with round-trip method. They are still operating their services and one of the two active car sharing companies in Turkey. Also, they are the first company to use electric vehicle and hybrid vehicles in their fleet. In 2017, they have entered into a joint venture with Zain Group to access MENA region car sharing market.

Zipcar (as a sub-company of Avis) started their operations in Istanbul at 2015. Zipcar started their operations with 20 stations and raised up the number to 50 less than a year. Stations are located at university campus' and central areas of city. As it is supported by Avis Group and their Turkish partner Koç Group, Zipcar has a solid financial background in Turkey. Their operation system is based on round-trip usages. Zipcar is one of the active car sharing operators in Turkey with Yoyo.

4.6.2. Benchmarking Car Sharing Companies in Turkey

Actually, there are two companies which are active in Turkish car sharing market. These are Yoyo and Zipcar. They both operate with round-trip method. Yoyo has a joint venture

deal with Zain Group and became global. Zipcar is already a global brand and operated by Turkish partner in Turkey.

Due to make a fair comparison on Table 1, small and economic segmented car, equipped with diesel engine and automatic gearbox has taken as base of the comparison and same day and hour is selected to get the pricing on same conditions.

Regarding to the Table 1, it is obvious to say that Zipcar and Yoyo operate in same conditions and regulations despite small differences. On fee per kilometer and annual fee sections, there are specific differences between these firms. Both of them use hourly based pricing system so there is not any firm in Turkish market that use pricing by minute. According to Zipcar operating system, Zipcar offers 20 km for free for every member based on each reservation. However, Zipcar keeps fee per hour higher than Yoyo in which they close the gap of pricing at 20 km free range by adding 3 TL more to fee per hour section. Also, Yoyo offers lower annual fee than Zipcar in which Yoyo tries to get more attention and advantage at member application step. Besides, Yoyo prefers to use different car brands and models than regular ones in Turkey market such as Infiniti, Mazda and VW. (www.yoyo.com) (www.zipcar.com.tr)

	YOYO	ZIPCAR
<i>Fee per Hour</i>	12,00 ₺	15,00 ₺
<i>Fee per Kilometer</i>	0,55 ₺	0,50 ₺
<i>Daily Fee</i>	125,00 ₺	125,00 ₺
<i>Application Fee</i>	- ₺	- ₺
<i>Annual Fee</i>	69,00 ₺	75,00 ₺
<i>Free Kilometer per Reservation</i>	0	20
<i>Gas</i>	Included	Included
<i>Insurance</i>	Included	Included
<i>Round-Trip</i>	Yes	Yes
<i>One-Way</i>	No	No
<i>Free-Float</i>	No	No

Table.1 Yoyo / Zipcar comparison (2017)

5. Analysis

5.1. Outcome of Survey

Survey is targeted on respondents who live in Istanbul, so survey presents the outcome of Istanbul residents as they are experienced the traffic, got knowledge on Turkish regulations and taxes about car ownership and use of transportation modes. 325 respondents attended to the survey in a month basis.

%56,6 of the respondents are male and %43,4 of them are female. 54,8 of the respondents are between 25 – 30 ages so, they might be called as young adults who started to work in 1 to 4 years.

%93 of the participants have bachelors degree or above. %90,2 of respondents own a driving licence but only %62,8 of them owns their private car. In general, 51,4 of the respondents use their own car for mobility. Especially, the gap between driving licence owners and car owners is the primary customer group of car sharing companies as system offers a mobility solution and an alternative to car ownership. Car ownership might reduce in future depending on easy to use systems, reachable structure and economic advantage of the car sharing to car owners.

Also, %72,7 of the respondents spend less than 400 TL per month for mobility. According to thesis, depending on Table 1, an average price of rent by hour is 13.5 TL which is dependent from both of Zipcar and Yoyo brands. Except the kilometer that will be covered, average price of rent by hour presents 29 hours of car sharing experience up to 400 TL cost of mobility per month. If a person uses his or her car less than 20 hours and 260 kilometers per month (covered distance per kilometer measured as 0,5 TL), car sharing system becomes more advantageous for private car owners. This group of users are the other customer group that might be targeted by car sharing companies. The results of the analysis and projected cost of users can be seen on Table 2.

	YOYO	ZIPCAR
<i>Fee per Hour</i>	12,0 ₺	15,0 ₺
<i>Fee per KM</i>	0,550 ₺	0,500 ₺
<i>If a person uses his or her car less than 20 hours and 260 kilometers per month</i>		
<i>Projected Usage Average</i>	13 KM per Hour	
<i>Cost per Month</i>	383,0 ₺	430,0 ₺

Table.2 Projected Cost of Users (2017)

%30,5 of respondents claimed that they do not know anything about car sharing and %48 of them responded as they learned about car sharing via Internet but the most important result is that, %87,7 of the respondents do not use car sharing systems in Istanbul. This result shows that car sharing companies could not reach to the customer that they are targeted and also could not reach to society to create a perception of car sharing on them. It seems like, companies need to focus on to reach society and they need massive solutions such as mass media or social media to create a sense about car sharing on people. They might be backed by government or make a co-operation with other organisations or companies to reach and introduce themselves to potential customers.

Respondants who used car sharing systems at least once a time in Istanbul mentioned that %67,5 of them use car sharing systems less than a time in a month. Instead, %67,5 of them use car sharing systems for travels. In that manner, there is a gap for usage of car sharing systems for more than once a month and for different reasons than travel. People might use it for business related mobility or personal mobility needs like shopping or visiting friends.

Besides, technology usage is common between respondents of survey, %72,3 of them uses mobile applications to get a service or create a reservation such as car renting or room booking via mobile applications. Depended on 40 respondents, %57,5 of them make a reservation or process via mobile application and %32,5 of them used website. Obviously, car sharing companies need to invest in technology to save sustainability of their operations and to make the usage experience more easier and practical.

285 of the respondents who did not use a car sharing vehicle or not a member of car sharing club mentioned that they do not prefer to use car sharing. %37,9 of them maintained their choice depending on that they do not need such a service. %28,1 of them

expressed that they do not aware that kind of a system in Istanbul and %24,2 of them suggested that they do not trust to car sharing systems.

As a result of survey, car sharing companies struggle to diverse their target customer groups and depending to this reason, they can not reach to their target customers. As figuring out that most of the respondants are between 18 – 40 ages, it is an important case to introduce the car sharing system and company/organisation to society to create a demand on sector. Regarding to survey, at least %30 of respondants might ready to use car sharing in their daily life depending on their mobility budget, usage of technology and small rate of car sharing experience. Car sharing companies need to open more stations or use more flexible methods such as free-floating so that potential customers can reach to cars and become a member of system.

5.2.Results of Data

Data of the users is collected by car sharing cars with unique hardware (RFID system, GPRS etc.) and service is offered to them as a rent by hour. Test usages are done in Istanbul by 71 customers who did not use a car sharing system before. They have given information by the officials of the company about the usage of the system. System is operated as one-way method in which customers rent the car from a station or parking place and leave the car at the same station or other stations. All of them paid the same fee rate for each of the car segments. Pricing tariff is created by rent per hour and fee per distance covered in kilometer.

In this part, it is measured that average duration of the users is 9 hours, average distance that they covered is 92 kilometers and distance that they covered per hour is 14 kilometers. These outcomes show that if a customer has covered 14 kilometers per hour, customer is stuck in the traffic or instead of travelling from A point to B point, customer has used the car to go more than one places. This outcome seems as true as customers has used the cars on average duration of 9 hours. Also, system is created itself as an alternative to car ownership as customers has used the cars for 9 hours and 92 kilometers on average distance so, they used the cars for their daily actions, travels or personal cases.

To specify the data on car segmentation, details are represented on the table below;

	Rents	Avg. Duration (Hour)	Avg. Distance (KM)	Distance/Hour (KM)
<i>ECO DIESEL/MAN</i>	28	9	92	14
<i>ECO DIESEL/AUTO</i>	35	8	83	14
<i>MID DIESEL/MAN</i>	1	21	124	6
<i>MID DIESEL/AUTO</i>	7	8	129	18

Table.3 Average Usage of Test in Details

Car segmentation is based on the segment of the car and gearbox. Eco group presents small hatchback cars which are more easy to use in city. Company has used Renault Clio as eco group cars in the project. Mid group presents middle-sized sedan cars which has more space and has a longer chassis than eco group cars. Company has used Renault Fluence as mid group cars in the project.

	Rents	Rent Rate per Car Groups
<i>ECO DIESEL/MAN</i>	28	89%
<i>ECO DIESEL/AUTO</i>	35	
<i>MID DIESEL/MAN</i>	1	11%
<i>MID DIESEL/AUTO</i>	7	
Total	71	100%

Table.4 Rent Rates per Car Group

	Rents	Rent Rate per Segments
<i>ECO DIESEL/MAN</i>	28	39%
<i>ECO DIESEL/AUTO</i>	35	49%
<i>MID DIESEL/MAN</i>	1	1%
<i>MID DIESEL/AUTO</i>	7	10%
Total	71	100%

Table.5 Rent Rates per Segments

As it is obvious, %89 of the usages are happened with eco group cars. Besides, %55 of the eco group customers are preferred cars with automatic gearbox. Actually, this study preserves that small-sized hatchback cars are more eligible than larger ones for car sharing customers. Low rate of rent on mid group cars shows that it might not be affordable to use middle-sized sedan cars in car sharing fleets. Also, eco/auto group of cars are used less and covered less distance than other car groups. This is an important fact that customers of this kind of segment prefers to use the cars as a mode of transportation. For a car sharing

company, users of eco group customers are the right customer type as a car sharer and an alternative to car ownership. Also, most of the car groups are easily be rented more than a time in a day with average duration time but lowest distance covered is more important for companies as lowest distance means better condition rate of the car in future.

As a result, eco group, small-sized hatchback cars are ideal vehicles to be used in car sharing fleets with highest rent rate than other car group, lowest average distance and average duration. It is needed to be work on customer groups who prefers which group of cars and what are their motivation to choose the car for rent on car sharing systems.



6.Factors

6.1.Regulations

As a fact, automotive industry is one of the biggest sector in Turkish economy. Producers export most of their product to all over the world and also develop special models for Turkish market which has nearly 1 million vehicle sales in 2015. According to this manner, it is weird to find out that Turkey do not have restrict policy on car sharing sector. Car sharing is not known well in Turkey as society mostly prefers to own a car. If you contribute money to let your car to be rented by someone, it becomes illegal and forbidden by government as it seems as a service of transportation without taxation.

However, car sharing reserves advantages for government. Car sharing systems enable improvement on urban transportation that supported by government for society. Also, companies are using brand new cars with high technology, hybrid or electric cars which are reduces the rate of air pollution.

6.2.Economy

In Turkey, it is hard to own a car because of the tax rates on cars, especially the ones which are imported, and yearly taxes for cars. Gas prices are also high for Turkish car owners. Also, insurance rates are not feasible for most of the society.

According to these facts, people might need a car or more but it is not easy to buy one. This situation creates an opportunity to car sharing companies if they aim to overrun on car ownership. This kind of motivation might reduce the car ownership rate, need of private car and gas consumption which mean savings for the most of the society. The difference is more clear on the chart which includes a comparasion based on the price of a Ford Fiesta with same equipments, engine and gearbox, price of gas and GDPs of countries. (Table 6)

	Turkey	Germany	France	USA
<i>GDP</i>	\$ 9.950,00	\$ 45.790,00	\$ 40.710,00	\$ 55.980,00
<i>Price of Car</i>	\$ 17.690,00	\$ 13.756,00	\$ 11.794,00	\$ 15.190,00
<i>Gas Price (per liter)</i>	\$ 1,44	\$ 1,47	\$ 1,49	\$ 0,70

Table.6 Comparison of car and gas prices depending on GDP (www.gfmag.com, 2017)

6.3. Technology

Car sharing is one of the sectors that uses technology mainly. Especially, car sharing systems are integrated to GPS to locate the place of the car, GPRS to get the data from the car, send data or information of reservation to car, software and hardware to control the car and system and mobile applications which enables to achieve to the car by map or lock/unlock the car. Also, websites and web services let members to create reservations, get memberships, get details of their trip and locate the cars that they want to use. They can access to the car by RFID cards or mobile applications. Some of the systems let members to rate the cleaning and damage of the car. Finally, it enables members to pay online via payment network, credit cards or special payment systems so members do not have to carry cash or look for a debit machine.

6.4. Social

Car sharing has effects on society as enables to decrease the traffic rate in the city and recudes the air pollution, also preserves members to ride new cars instead of owned old ones. It becomes an alternative to urban transportation modes and enables to make the mobility in transmodal way by using more than one transportation mode or different routes use on mobility. It saves the members from the problem of parking place and parking fees.

7.Key to Success

Most importantly, car sharing is not a well-known market for Turkish entrepreneurs, companies and even for Turkish society. There are several facts that formalizes the market;

- Car sharing is a small market but growing rapidly.
- Standards of market differs from region to region.
- Car sharing companies have to look for new models to conduct the sustainability and survival of the sector on behalf of customers.
- Companies need to establish more locations/stations to reach for members and more flexible usage systems

Regarding to research methods, car sharing sector in Turkey and factors in Turkey, companies or organisations need to focus on key points that listed below to be successful on car sharing market.

- Targeting the right customer profile and diversing into the customer groups, lining the groups depending on their profile. To provide this, companies need to do surveys, user experience scenarios, marketing methods to reach customers and activities on streets, malls or crowded places.
- Potential users need to be find out by companies as they do not have enough knowledge about car sharing system and the advantages of the system. Companies need to do campaigns and starter packages to draw attention of potential customers and let them to become used to the system and operation. Also, companies need to work on the trust issue of customers who did not use the car sharing system.
- Sector players have to express the sense of car sharing and sharing economy to government and municipalities. They need to get the support of them to enlarge the rate of using car sharing in society. Government and municipalities might help to create the perception of sharing economy on society but first, concept has to be accepted by them.
- Sustainability is an important fact that at least half of the car sharing companies in Turkey could not sustain in the market. Ones who sustain in market are supported by huge funds with enormous corporations (such as Avis – Zipcar & Partner Fleet Solutions / Zain Group – Yoyo). Economic model of car sharing companies might

not be bright until the operation of company and perception of sharing becomes solid in society. Start-ups or corporations need to be supported by joint ventures or angel investors to operate in future.

- Besides, companies need to select the right selection of cars which is also needed to be depending on customer needs. Instead of middle-sized sedan vehicles, small-sized but a bit higher SUVs might be usable and present as an alternative to regular small-sized hatchback vehicles. Also, it will affect positively to make invest on electric vehicles or hybrid vehicles to reduce the air pollution and increase the rate of government and municipalities to support car sharing. This might become a marketing strategy for company as supporting the nature and green. Companies need to measure the optimal number of fleet depending on their financial situation, number of stations they are willing to use and demand that they will face on their operations.
- The more car sharing vehicles, the less privately owned cars on traffic. Companies due to back-up this motto in need of becoming an alternative to traffic problem of Istanbul and other big cities of Turkey.
- Technologic solutions cost high but creates a great image on customers, flexibility on operation and usage and helps to follow the trends which are changing fast. Mobility is the key for car sharing companies and technology lets people to become more free as they can open the central lock of a reserved car sharing vehicle by mobile application. There might be more to search about the integration of car sharing and technology.
- Companies have to present more flexible usage models such as free-floating instead of round-trip. One-way trips might be helpful at first stage for a company which wants to create an originality than the ones in market. Also, new pricing methods might presented to customers to enlarge the options. Instead of including 20 kilometers per reservation, companies might present a tariff which includes rent by hour on high but distance per kilometer for free. In addition to that, pricing tariffs might be re-organised instead of hour-based to minute-based. So, companies need to chase originality instead of becoming same as their rivals.
- Car sharing systems might be feasible to use, easier to rent, trustworthy for users and present high service quality. Companies have to take attention the needs of the customers and make investments in that manner. Systems might differ from region

to region so, standard car sharing models might need to be changed and presented more local in Turkey. As an example, companies might create a sub-service which lets users or members to reach the car easily by using valets that transport cars to the places where user or member is or integrate the carsharing stations to urban transportation modes.



8. Conclusion

Depending to systems in other countries, car sharing is still an idea which is active in Turkey but not common in society. Actually, there are more time to reach the level of European and North American countries. For Turkish market, question was;

How can car sharing systems be successful in Turkey?

There are several factors that let car sharing not to be successful in Turkey. First one is the lack of knowledge of government and society about sharing economy and car sharing. Depending to our survey, %69,5 of participants have heard about car sharing but %87,7 of them did not ever experience car sharing. As car sharing is a tool for sharing economy concept, society needs to be introduced with car sharing and also with sharing economy concept. Companies and organisations need to get attention of government and societies by their projects, presenting advantages of sharing and figure out needs about mobility of society in crowded cities, at the starting point, mainly for Istanbul.

Therefore, government needs to support sharing by using municipalities, motivating companies about the structure of transportation that society and state needs and preparing law structure in order to support car sharing market. Campaigns need to be prepared to present the car sharing and sharing economy to residents of main cities of Turkey.

In addition, entrepreneurs need to create an operation network that touches to urban transportation modes with solid finance plan and feature in order to run the business without a profit for several years. Urban transportation is a key point as more than %70 of survey participants mentioned that they spend between 100 TL – 400 TL per month for mobility solutions in Istanbul. As participants are already residents in Istanbul, the outcome of survey shows that participants need supplementary solutions which are conducted to urban transportation tools of the city. Depending to the usage data, average usage distance per hour is 14 kilometres which gives clues about the total mobility distance of residents. These two facts support the idea of integration of car sharing with urban transportation.

Authenticity needs to be done by companies in order to strengthen the service and flexible usage. They have to act innovative and offer new types of tariffs, pricing and operation in which it might become easier, flexible and feasible for customers. To grow the market,

first of all, system needs to be usable for people, be sharable their interest in mobility and be easier to become a member and active user of car sharing. Low distances per hour on usages and low budget cost on mobility might let companies to create more economical car sharing services and let them to make collaboration with different sectors and firms. Price/performance fact is the key point as people are in need of rush in metropolitan cities and also, they want spend their money individually but wisely.

These are the main factors that need to be focused by entrepreneurs, companies and organisations to reach the success on car sharing in Turkey. Government support, feasible financial plan and needs of society are important features of car sharing sector.



9.Future Work

As car sharing is a new business and travel type for Turkish community, there is a lot to do to adopt sharing economy and car sharing to the society. In need of this, there has to be some actions to be taken by government, companies and non-profit organizations. Also, these requirements to support car sharing can be used for future researches and works.

1- Customer types – Needs of Society on Urban Transportation and Daily Life

It is a “must” to provide more detailed surveys on community to find out the needs of society on transportation and daily usages. Then, the data needs to be used on classification of society to find out how to create a transportation service to them? What are their obsession or primary objective on urban transportation? As we are living on a world which becomes more globalised and individual everyday, there will be different reasons and aims depended on the needs of community members. So, it is important to use the strategy of “divide & conquer” directly to community so that car sharing term can touch to every single person. This action will rise the usability and general knowledge of car sharing systems.

2- Advertisements – Sharing Economy and Advantages of It

State and companies need to work together to provide the idea of car sharing to society. Sharing economy is not well-known by Turkish society as car ownership seems like as a tool of prestige and luxury but actually, it is a way to spend huge capitals on unprofitable products. Thus, state needs to push campaigns that express the advantages of sharing economy, explanations on sharing a product and educate society about how to make savings. These opinions also a positive tool for state to keep the financial income and liquidity of capital in the country. Companies can support the actions of state by being sponsor or conducting workshops which will be a “win-win” situation for both state, companies and in the long-run for society.

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Appendix 1 - Survey

1- What is your gender?

Female	141	43,4%
Male	184	56,6%

2- What is your age?

18 – 24 years old	46	14,2%
25 – 30 years old	178	54,8%
31 – 40 years old	87	26,8%
41 – 50 years old	9	2,8%
51 years or older	5	1,5%

3- Where do you live in İstanbul? (*top 3 answers shown in below*)

Kadıköy	25	7,7%
Maltepe	22	6,7%
Ümraniye	15	4,6%

4- What is the highest degree or level of school you have completed?

Primary school	0	
High school	12	3,7%
College	11	3,4%
Bachelor's degree	294	62,8%
Master's degree	88	27,1%
Doctorate degree	10	3,1%

5- What profession are you in? (*top 3 answers shown in below*)

Engineer	64	19,6%
Student	20	6,1%
Consultant	15	4,6%

6- Do you have a driving licence?

Yes	293	90,2%
No	32	9,8%

7- Do you have a private car?

Yes	202	62,2%
No	123	37,8%

8- What is your transportation cost montly? (TRY)

100 or less	64	19,7%
100 – 200	72	22,2%
200 – 400	100	30,8%

400 – 600	56	17,2%
600 – 800	16	4,9%
800 or more	17	5,2%

9- Do you use mobile applications for book any service? (hotel reservations, booking rent a car etc..)

Yes	235	72,3%
No	90	27,7%

10- Which transportation vehicle do you use generally?

Bycle	3	0,9%
Motorbike	12	3,7%
Taxi	22	6,8%
Private car	167	51,4%
Public transportation	107	32,9%
Other	14	4,3%

11- Do you familiar with car sharing services?

No, I don't know	99	30,5%
Friends	54	16,6%
Internet	156	48%
Television	1	0,3%
Radio	0	
Article	4	1,2%
Other.....	11	3,4%

12- Have you ever use car sharing services? (*If answer is "Yes" participants continue from 13th question, if "No" they continue from 19th question*)

Yes	40	12,3%
No	285	87,7%

13- From which platfrom do you book a car?

Mobile applications	23	57,5%
Website	13	32,5%
Call center	4	10%

14- Why do you prefer car sharing services? Please explain shortly (*top 3 answers shown in below*)

Cheap	10	25%
Needs	8	20%
Cost Sharing	4	10%

15- How many times do you use car sharing services in a month?

Less than 1	27	67,5%
1	4	10%
2-5	4	10%

5-10	1	2,5%
10 or more	4	10%

16- In which purpose do you use car sharing services?

For work	3	7,5%
For shopping	2	5%
For corporate necessities	5	12,5%
For travelling	27	67,5%
For visiting friends	9	22,5%
Other	3	7,5%

17- How many people there were with you?

Only me	8	20%
1	6	15%
2	16	40%
3	5	12,5%
4 or more	5	12,5%

18- What is your feedback about your experience? Please explain shortly (*top 3 answers shown in below*)

It must be more safety	12	30%
It must be cheaper than other transportations	7	17,5%
There should be widespread car locations	5	12,5%

19- Why don't you choose car sharing services?

I don't even know the service	80	28%
There is no car sharing services in my location	22	7,7%
For security reasons, I don't prefer use the service	69	24,2%
I don't need car sharing service	108	37,8%
Other.....	6	2,1%

20- What is your main expectation from car sharing services? (*top 3 answers shown in below*)

Safety	60	21%
Easy to access	30	10,5%
Price	25	8,7%

Appendix 2 – Usage Data

CATEGORY	DURATION (HOUR)	DISTANCE (KM)	DISTANCE/HOUR (KM)
EKO/DIZEL AUTO	5,0	74	14,8
EKO/DIZEL AUTO	7,0	160	22,9
ORTA/DIZEL AUTO	8,0	207	25,9
EKO/DIZEL MAN	8,0	102	12,7
EKO/DIZEL MAN	3,0	70	23,3
EKO/DIZEL MAN	22,5	111	4,9
ORTA/DIZEL AUTO	5,5	37	6,7
EKO/DIZEL AUTO	7,0	85	12,1
ORTA/DIZEL AUTO	24,0	179	7,5
EKO/DIZEL MAN	34,5	125	3,6
EKO/DIZEL AUTO	7,0	97	13,9
ORTA/DIZEL AUTO	7,5	295	39,3
EKO/DIZEL AUTO	11,0	20	1,8
ORTA/DIZEL MAN	21,0	124	5,9
EKO/DIZEL AUTO	19,5	248	12,7
EKO/DIZEL MAN	2,5	73	29,2
EKO/DIZEL AUTO	22,0	290	13,2
EKO/DIZEL MAN	5,0	72	14,4
ORTA/DIZEL AUTO	3,0	30	10,0
EKO/DIZEL MAN	7,0	58	8,3
ORTA/DIZEL AUTO	5,5	86	15,6
EKO/DIZEL MAN	4,0	59	14,8
EKO/DIZEL MAN	48,0	125	2,6
ORTA/DIZEL AUTO	3,0	68	22,7
EKO/DIZEL AUTO	3,5	93	26,6
EKO/DIZEL MAN	8,0	90	11,2
EKO/DIZEL AUTO	4,0	60	15,0
EKO/DIZEL MAN	8,5	141	16,6
EKO/DIZEL MAN	8,0	127	15,9
EKO/DIZEL AUTO	5,5	48	8,7
EKO/DIZEL AUTO	24,0	104	4,3
EKO/DIZEL AUTO	3,0	41	13,7
EKO/DIZEL AUTO	4,0	80	20,0
EKO/DIZEL MAN	9,0	137	15,2
EKO/DIZEL AUTO	6,0	101	16,8
EKO/DIZEL AUTO	10,0	132	13,2
EKO/DIZEL MAN	6,0	145	24,2
EKO/DIZEL MAN	4,0	50	12,5
EKO/DIZEL AUTO	24,0	88	3,7
EKO/DIZEL AUTO	2,0	43	21,5
EKO/DIZEL MAN	5,0	50	10,0
EKO/DIZEL AUTO	8,0	73	9,1
EKO/DIZEL MAN	4,0	31	7,7
EKO/DIZEL AUTO	24,0	93	3,9
EKO/DIZEL MAN	5,0	67	13,4
EKO/DIZEL MAN	6,0	100	16,7

EKO/DIZEL AUTO	6,0	70	11,7
EKO/DIZEL AUTO	3,0	25	8,3
EKO/DIZEL MAN	5,0	110	22,0
EKO/DIZEL AUTO	6,0	45	7,5
EKO/DIZEL AUTO	8,0	60	7,5
EKO/DIZEL AUTO	5,5	93	16,9
EKO/DIZEL MAN	4,5	52	11,6
EKO/DIZEL AUTO	5,0	68	13,6
EKO/DIZEL AUTO	2,0	45	22,5
EKO/DIZEL MAN	3,0	35	11,7
EKO/DIZEL AUTO	5,0	91	18,2
EKO/DIZEL MAN	28,5	252	8,8
EKO/DIZEL MAN	6,0	67	11,2
EKO/DIZEL MAN	4,5	93	20,7
EKO/DIZEL AUTO	2,5	92	36,8
EKO/DIZEL MAN	6,0	58	9,7
EKO/DIZEL AUTO	3,0	24	8,0
EKO/DIZEL AUTO	3,0	104	34,7
EKO/DIZEL MAN	3,0	58	19,3
EKO/DIZEL AUTO	3,5	45	12,9
EKO/DIZEL AUTO	6,5	77	11,8
EKO/DIZEL AUTO	5,0	78	15,6
EKO/DIZEL AUTO	5,0	43	8,6
EKO/DIZEL MAN	4,0	116	29,0
EKO/DIZEL AUTO	4,0	13	3,3
AVERAGE	9	92	14

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