DANILO MACIEL DE BARROS

CAR SHARING: COMPARATIVE ANALYSIS OF EMERGENT BUSINESS MODELS

Trabalho de Formatura apresentado à Escola Politécnica da Universidade de São Paulo para obtenção do Diploma de Engenheiro de Produção.

São Paulo

2015

DANILO MACIEL DE BARROS

CAR SHARING: COMPARATIVE ANALYSIS OF EMERGENT BUSINESS MODELS

Trabalho de Formatura apresentado à Escola Politécnica da Universidade de São Paulo para obtenção do Diploma de Engenheiro de Produção.

Orientador: Prof. Dr. Roberto Marx

São Paulo

2015

FICHA CATALOGRÁFICA

Barros, Danilo Maciel de
Car Sharing: Comparative Analysis of Emergent Business Models / D. Barros -- São Paulo, 2015.
122p.

Trabalho de Formatura - Escola Politécnica da Universidade de São Paulo. Departamento de Engenharia de Produção.

1.Car Sharing 2.Business Models 3.Business Model Canvas I.Universidade de São Paulo. Escola Politécnica. Departamento de Engenharia de Produção II.t.

ACKNOWLEDGMENTS

This graduation thesis was developed as part of the Double Degree program between Escola Politécnica da Universidade de São Paulo (Poli-USP), in Brazil, and Politecnico di Torino, in Italy.

I would like to express my deepest gratitude to my family and friends for all the support and joy over the course of my graduation process.

I would also like to thank my academic supervisors, Prof. Roberto Marx, from Poli-USP, and Prof. Guido Perboli and Dr. Luca Gobbato, from Politecnico di Torino, for their guidance and support during my work on this thesis.

ABSTRACT

Car sharing emerges as an innovative mobility alternative, in which companies offer a fleet of shared-vehicles in a variety of locations for short term rentals. Its market has shown consistent growth and car sharing practices have gained attention of public and private sectors, motivated by its economic feasibility, social and environmental impacts.

This study approaches the main aspects related to the definition of different business models and operational characteristics in the car sharing market through the comparative analysis of selected car sharing operators, with the objective of identifying the main practices and solutions adopted in the market.

The findings that result from the comparative analysis are then applied in the analysis of a Brazilian car sharing company, Joycar, which allowed the identification of the main challenges and opportunities for the company and resulted in recommendations for the company to achieve its growth objectives, given in two different scenarios.

Key words: Car Sharing. Business Models. Business Model Canvas.

RESUMO

O *car sharing*, ou compartilhamento de veículos, prática na qual uma empresa oferece uma frota de veículos em locais variados para o compartilhamento através de aluguéis de curto prazo, surge como uma alternativa inovadora de mobilidade urbana. O mercado de *car sharing* tem crescido consistentemente ao longo dos últimos anos e ganhado a atenção dos setores público e privado, motivados pela viabilidade econômica e pelos impactos positivos nas esferas ambiental e social que esta alternativa proporciona.

Este Trabalho de Formatura tem como objetivo o estudo dos principais aspectos componentes dos diferentes modelos de negócio e formas de operação no mercado de *car sharing*, através de uma análise comparativa de diferentes empresas atuantes no mercado.

As constatações e resultados da análise comparativa são então aplicados à análise mais profunda da empresa de *car sharing* brasileira Joycar, permitindo a identificação de desafios e oportunidades relevantes para a companhia. Como resultado, são apontados dois cenários alternativos com recomendações estratégicas para a definição do modelo de negócios da empresa, considerando-se o seu objetivo de crescimento no mercado.

Palavras-chave: Car Sharing. Compartilhamento de veículos. Modelos de Negócio. Business Model Canvas.

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

BMC Business Model Canvas

CO2 Carbon Dioxide

CSO Car Sharing Operator

GHG Greenhouse Gas

ICS Car Sharing Initiative

IPCC International Panel of Climate Change

KPI Key Performance Indicator

RFID Radio-Frequency Identification

VKT Vehicle Kilometres Travelled

CONTENTS

1 INTRODUCTION

In this chapter, the context and relevance under which this work was developed are presented, followed by a brief explanation of the motivation of this research and its objectives. Lastly, the structure of the chapters is presented, introducing the logical sequence and the contents of this project.

1.1 Context and Relevance

Growing urbanization and the increase in greenhouse gas emissions (GHG) has created equally growing challenges for the efficient planning and administration of urban environments. In particular, the planning of an efficient transport system plays a very important role in urbanized societies, not only because of its social and economic importance in guaranteeing the accessibility of people to their jobs, education, and health services, enabling the supply of goods and services and allowing people to interact, but also because of the magnitude of environmental impacts it might generate (JUHEL, 2013).

According to the IPCC (International Panel of Climate Change), the transport sector was responsible for 11% of the increase in total annual anthropogenic GHG emissions between 2000 and 2010, estimated in 10Gt of carbon-dioxide equivalents – among the industries, transport is the sector with the fastest growth in GHG emissions, both in developing and developed countries. In 2010, 14% of world GHG emissions were released by the transport sector. Considering only urban areas, approximately 80% of global GHG emissions are originated in cities, to which a significant share corresponds to transports (FIRNKORN; MÜLLER, 2015; PACHAURI et al., 2014; THE WORLD BANK, 2010).

The importance of clean, efficient and safe transportation only increases with the growth in world urbanization. Approximately 54% of the population lives in urban areas, and the urbanization trend is expected to continue: estimates are that by 2045, the number of urban residents in cities will increase by 1.5 times to 6 billion, adding 2 billion more people living in cities. The speed and scale of urbanization add complexity to the challenges for cities to develop well connected transport systems (WORLD BANK, 2013).

The prevalence of private vehicle utilization for mobility purposes in cities with low-density development configures a largely irreversible pattern, which must be avoided in future

urbanization and reversed in many existing cities that suffer from the consequences of this development model. In the year of 2014, there were 1 billion passenger cars worldwide, and this number is projected to increase to 2.8 billion by 2050 (although this figure might not become a reality with changes in city planning and transportation systems). The consequences of predominant use of individual vehicles to the built environment in car-centric cities worldwide are well known, including congestion, noise, higher energy use, shortage in parking and inefficient use of public spaces, among others, while the consequences to the natural environment are pollution, waste and climate changes (FIRNKORN; MÜLLER, 2015).

Although policymakers struggle to find solutions as even experts disagree on complex transportation policies (FIRNKORN; MÜLLER, 2015), many initiatives have been taken in the search for more sustainable transportation systems, less dependent on private vehicles. Aside from investments in public transportation systems (subway networks, public buses etc.), policymakers in urban areas in Europe and other regions have been taking measures to restrict private vehicle utilization and diminish their impacts: examples are more strict emission, consumption and safety regulations, traffic-policy restrictions (for instance, restrictions on vehicles in inner cities, congestion charges and other road-use fees) and even more drastic measures as general vehicle-registration restrictions observed in some cities in China. As a result, there has been an increasing demand for alternative mobility services – not only limited to mainstream public transport systems.

Among the alternatives, car sharing is an innovative mobility option that arises as one of the answers for mobility improvement and reduction in private automobile utilization and environmental impacts resulting from the transport sector. The principles of car sharing are offering individuals temporary access to (as opposed to ownership of) vehicles on an as-needed basis, through short term rentals. Car sharing is understood as a modal complementary to other transportation alternatives to private automobiles, being characterized as a missing link among public transports, walking and cycling (KENT; DOWLING, 2013). There is a growing literature probing the positive impacts of car sharing utilization, considering the environmental, social and mobility spheres. Besides, one of the great strengths of car sharing is that unlike many forms of urban transport it can be profitable (LE VINE; ZOLFAGHARI; POLAK, 2014).

Consequently, car sharing has conquered increasing attention both from the public and private sectors. The car sharing market has consistently grown over the past years, expanding to more than 1100 cities in 26 countries across five different continents (SHAHEEN; COHEN,

2013). As car sharing emerges as a mainstream mobility alternative, there is an increase in competition among different players and in the motivation for the pursuit of further development of services and sources of differentiation between new competitors.

1.2 **Research motivation**

This work was developed under the scope of a broad research project conducted by DAUIN (Department of Control and Computer Engineering – Politecnico di Torino university, Turin, Italy), with the collaboration of Istituto Superiore Mario Boella (a research and innovation centre also located in Turin, Italy), as part of its "Smart Cities" strategic program. DAUIN's project aimed at building a high level knowledge of car sharing practices, markets and trends through an extensive review of the existing literature – which resulted in the creation and introduction of a taxonomy to categorize the existing literature –, the identification of gaps to be fulfilled and directions for future research. The author of the present study, during the course of a curricular internship carried at DAUIN, contributed to this project by tackling one of the gaps identified in the literature.

A second phase of this work, conducted with the collaboration of Joycar, a Brazilian car sharing company, was motivated by the possibility of applying the findings of the research to a comparative analysis of a car sharing company operating in the state of São Paulo, Brazil.

1.3 **Objectives**

During the literature review phase emerged, in particular, a gap in the existing literature regarding the business development of the market, since very few studies analysed the business aspects of shared mobility alternatives.

Hence, the scope of the research herein presented is the analysis of emergent business models in the car sharing market. This analysis is conducted through a comparison of different selected operating companies, with the goal of identifying the main aspects related to the definition of their business models and also which might be the best solutions and key aspects to take into consideration for the operation of car sharing companies as the service standards evolve.

Besides, this work aimed at applying its findings to the analysis of Joycar, a Brazilian car sharing company, with the goal of identifying possible improvements to the company's operations, given the practices observed in foreign and more mature car sharing markets, and

outlining possible future adaptations to its business model, mainly focusing in its market positioning and operational service model.

1.4 Chapter Structure

This study is structured as follows: in Chapter 2, following the Introduction, a review on the existing literature is presented, with the goal of summarizing the main aspects of the car sharing market pertinent to this study. First, a review on the history of car sharing is presented, followed by the current state of the market and its trends for the future. Next, the car sharing concept is explained in detail, and key aspects of car sharing services and operations are addressed. In addition, the impacts of car sharing utilization are revised. The literature analysis allowed the identification of gaps in the existing research in the area and a better definition of the scope of this study.

Subsequently, in Chapter 3 the methodology applied in the study is explained in detail, evidencing the theoretical foundations for the analysis and comparison of business models of a pool of different selected car sharing operators, as well as the methodology employed in the following, more detailed analysis of the company Joycar.

In Chapter 4, the car sharing operators included in the selected pool are presented and their business models are analyzed in detail. Afterwards, a comparative analysis of the companies is conducted, highlighting the main aspects of the companies' business models and how they contemplate different solutions in order to create value and competitive advantages through service differentiation.

Next, in Chapter 5, the previous findings on different car sharing business models are applied to a more extensive analysis of Joycar, a local car sharing company operating in São Paulo.

In Chapter 6, a discussion of the results obtained is conducted in order to drive the conclusions of this work. In this session, the limitations on the research approach are also addressed.

Finally, in Chapter 7 the conclusions devised from the critical analysis in the previous chapters are presented, summarizing the most relevant findings in this research, as well as possible continuations for further research on the contemplated subjects.

2 LITERATURE REVIEW

In this chapter, a review of the existing literature on car sharing practices is presented, in order to build an understanding of the car sharing market and practices. First, a review on the history of car sharing is provided, as well as an overview of the market and its current dynamics and trends. Next, key aspects concerning the business models of car sharing are presented. Finally, an overview of car sharing impacts and potential environmental, social and individual benefits is provided.

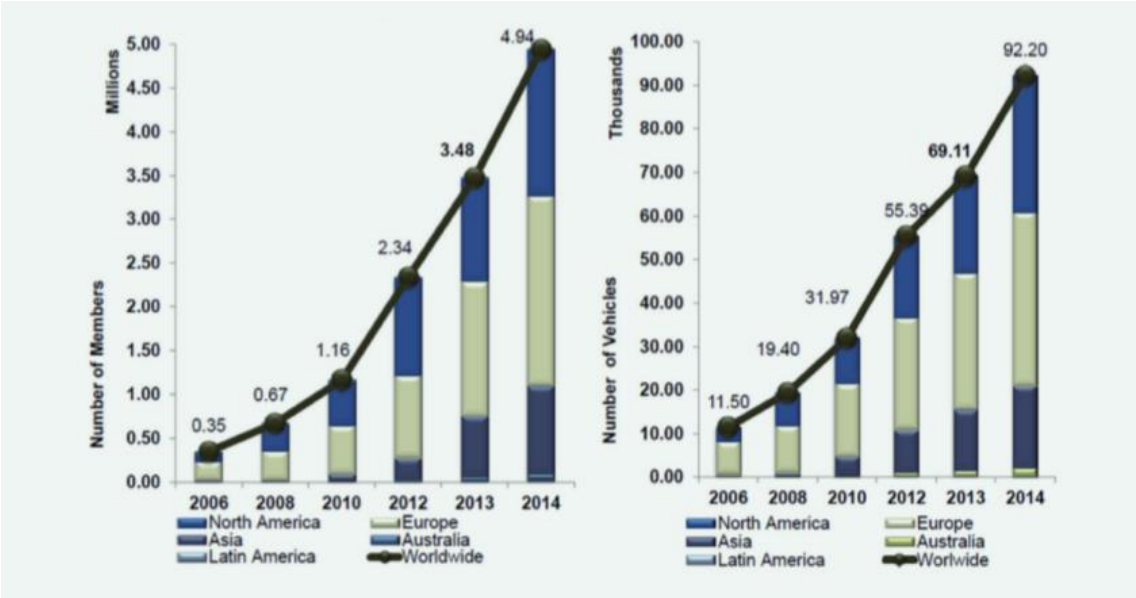
2.1 Car Sharing Market Overview and Trends

The history of car sharing goes back to the 1940s, when one of the first car sharing initiatives took place in Zurich, Switzerland, with the creation of the cooperative known as Sefage. Motivated by economic reasons, the cooperative was created for the shared use of vehicles by individuals who could not afford to purchase a car, and operated until 1998. Other car sharing experiments were attempted and later discontinued in Europe during the decades of 1970, 1980 and 1990, with organizations created in France, Netherlands, Sweden and Great Britain, with many variations on their forms and technologies applied. Among the reasons for failure, studies have indicated inadequate planning, marketing and financial management, the limited service areas and customer bases, besides the lack of support from local governments (MILLARD-BALL et al., 2005; SHAHEEN; COHEN, 2007).

More successful car sharing operations began in Switzerland, in 1987, with the founding of the first large-scale car-sharing programs, two cooperatives that were later merged to form Mobility Switzerland, which is still one of the largest car-sharing operators in the world. In the 1990s, central Europe concentrated most of the growth in car sharing operations, with numerous new initiatives and market players (initially more concentrated in Germany and Switzerland), while car sharing operations in Asia, North America and Australia only started more significant growth trends in the late 1990s and early 2000s.

From the years 2000s to present, car sharing activities have expanded worldwide. The graphs in Figure 1 evidence the evolution of worldwide car sharing market from 2006 to 2014, both in number of members and in number of vehicles deployed. In this period, the total number of members grew from 350 thousand in 2006 to almost 5 million in 2014, with significant growth in North American and European markets and, more recently, in Asia. New car sharing activities also started in Latin America and Africa.

Figure 1 - Growth in car sharing market



Source: Le Vine et al. (2014)

Shaheen and Cohen (2013) provided a global perspective of car sharing growth and emerging trends in the market, based on data collected on surveys conducted with 25 car sharing experts in 2010. The increase in car sharing membership in recent years was attributed by many experts to three main factors: cost savings; convenience of locations, use and access; and environmental awareness.

A series of trends was identified in the market. First of all, as car sharing continues to be established as a commercial mainstream, its market goes through a maturation process, with the entrance of new players, program mergers and market diversification (SHAHEEN; COHEN, 2013; SHAHEEN; COHEN; CHUNG, 2009). The commercial mainstreaming phase of worldwide car sharing started in 2007, marked by the merger of the American companies Flexcar and Zipcar, which resulted in the creation of the world's largest car sharing operator (it was estimated that in 2010, Zipcar concentrated 46.5% of car sharing members and 27.6% of shared vehicles in the world).

Other big players have joined the market since then, with particularly growing participation of traditional rental car companies expanding their operations and also the entrance of automakers in the business. Car manufacturers have played different functions in the market: incorporating car sharing technology (in-vehicle telematics, for example) in vehicles for car sharing operators; partnering with car sharing operators for vehicle supply, including alternative fuel vehicles; demonstration projects to present new vehicle technologies

and showcase car sharing; and finally, owning and operating car sharing programs (which might involve business partnerships with other entities) (SHAHEEN; COHEN, 2013).

Examples of car manufacturers in the car sharing market are Daimler, which launched the company Car2Go in Germany in 2009 and later established a partnership with the car rental company Europcar for its international expansion; BMW teamed up with Sixt, another car rental company, for the launch of the car sharing operator DriveNow in 2011; in Germany, Volkswagen operates the car sharing system Quicar, also created in 2011; Peugeot offers shared vehicles, scooters and bikes under the system called Mu in several European countries. Other examples of car manufacturers who entered the business are Honda and Toyota, with operations in Asia, and Ford Motor Company and General Motors, operating in North America. Among the rental companies, besides those that established partnerships with vehicle manufacturers, Avis-Europe was the first traditional rental car company to launch car sharing services, creating a number of different companies with independent brands around Europe since 2002, and Hertz also launched its Hertz On Demand services from 2009, offering shared vehicles in selected countries in Europe and North America (FIRNKORN, 2012; SHAHEEN; COHEN, 2013).

In recent years, some of the world's largest car sharing companies have expanded their operations, turning into large multi-national organizations. As a future trend, ongoing multi-national expansion can be expected, including the possibility of new mergers and acquisitions. Consequently, large scale growth-oriented car sharing companies are expected to retain the majority of members and vehicles deployed worldwide (SHAHEEN; COHEN, 2013).

Another observed trend in the market, motivated by technology development and growing competitiveness, is service differentiation. In particular, two new forms of car sharing services have been more recently introduced in the market: one-way car sharing, which enables a car sharing member to return a vehicle to a different location from that where the rental started, and peer-to-peer car sharing, which offers short-term access to privately-owned vehicles. Both service models are currently in expansion, being operated by a variety of car sharing companies around the world and raising the attention of traditional car sharing companies (a detailed explanation of car sharing service models can be found in section 2.2). In addition, car sharing operators have consistently shown a trend in the integration of electric and gasoline-electric hybrid vehicles to their fleets, following the launch of new generations of electric vehicles by automakers (SHAHEEN; COHEN, 2013).

The interactions between car sharing companies and the public sector are of great importance for operators and require careful management. In addition to the need of proper regulation and the definition of taxation policies, many car sharing services depend on privileged access to on-street or public off-street parking spaces, and free or reduced costs of parking, which are key enablers of car sharing expansion, as parking facilitates exposure and access to car sharing vehicles and might represent a key operating cost. Parking spaces on cities are typically managed by municipalities. This is a vulnerability point for car sharing operators, since local governments are usually fragmented, subject to changes in policy directions and under pressure to deliver a variety of positive outcomes which might be conflicting. Besides, municipalities are usually slower to deliberate and take actions when compared to the private sector, and have no obligations to establish agreements with car sharing operators. However, the interaction with car sharing companies also represents an opportunity for local governments to take policy initiatives for the support of sustainable mobility alternatives (LE VINE; ZOLFAGHARI; POLAK, 2014; SHAHEEN; COHEN, 2013).

Summarizing, further expansion is expected in the car sharing market, driven by increased mainstreaming of car sharing as a sustainable mobility option and entry into new geographic and demographic markets, motivated by unfulfilled market potential. There are key aspects underpinning market growth: the demand for innovative solutions to urban transportation, the ongoing diffusion of shared-vehicle awareness and the development of technologies and expertise supporting car sharing operations. Public policy developments and the increased interest in car sharing by policymakers are also expected to play an important part in car sharing expansion, since supportive and unsupportive policy approaches are key in guiding the growth of car sharing operations. Growing competition is also expected, with the expansion of multinational car sharing operators and the entry of new players on the market, as well as the service differentiation and the growth in one-way car sharing and personal vehicle sharing (SHAHEEN; COHEN, 2013, 2007; SHAHEEN; COHEN; CHUNG, 2009).

2.2 **Car Sharing Concept and Service Models**

Car sharing is an innovative mobility service which offers short term car rentals as an alternative to other forms of transportation in urban environments. Although there is not a unique standardised definition for “car sharing” in the literature and in the market, it is possible to identify a series of common factors among car sharing operators.

To begin with, car sharing companies require their customers to go through a registration process before conceding access to the service. Upon registration, customers must meet a few qualification requirements, for instance being in possession of a valid driver license and a credit card, which is usually the mean of payment. Customers with a notably bad history of car incidents might not be accepted by companies, for insurance reasons. The membership requirement is characteristic of car sharing companies, which differ from regular car rental companies in which members must go through registration processes for every rental.

A subscription fee may apply, as well as annual fees, but the main sources of revenues are the rental fees, which are charged proportionally to the time and distance travelled. Usually the fees are fixed in a per minute or per hour basis, although daily discounted fees may also be available. The rental fees comprehend not only the rental, but all the costs observed in car ownership, namely fuelling, cleaning, maintenance, insurance and taxes, which are all responsibilities of the service providers. For this reason, car sharing is well known for shifting the fixed cost structure of car ownership to a variable cost structure for vehicle utilization (MARTIN; SHAHEEN, 2011a).

Car sharing services are not limited by office hours and are based on a self-service structure in which customers can make reservations, access the car and return it at the end of the rental period without further assistance, although customer service is usually available in case of need. The vehicles are available in a variety of locations distributed in the area where the company operates, often in areas connected to other means of transportation, in contrast to traditional car rental companies in which vehicles are offered in a small number of locations (LE VINE; ZOLFAGHARI; POLAK, 2014).

Next, a detailed explanation of each of the main car sharing service models is provided.

2.2.1 Peer-to-Peer Car Sharing

The main aspect of peer-to-peer car sharing operators is that the vehicle fleet is not owned by the operator, but rather owned by private individuals which can offer their vehicles for rental during periods of non-utilization, which, for most of the cars, might correspond to 90% of the time. Hence, private owners can increase their vehicle utilization in exchange for a rental fee, which can be used to reduce the costs of car ownership (SCHMÖLLER, STEFAN, WEIKL, SIMONE, MÜLLER, JOHANNES, BOGENBERGER, 2015).

In this service model, the operator is responsible for connecting vehicle owners and clients in search for a rental vehicle through a communication platform, usually a website or a smartphone application. In most of the cases, the operator also offers insurance coverage for the vehicle owner during the rental periods, as the car sharing is not included in traditional private vehicle insurance contracts. In exchange for its services, the companies charge a percentage of the rental transactions realized through their platforms (LE VINE; ZOLFAGHARI; POLAK, 2014).

The rentals are offered for round-trip usage purposes, and the rental fees are charged proportionally to the rental period, the mileage covered or a combination of both. Peer-to-peer car sharing companies usually offer a wider variety of vehicles when compared to other types of car sharing companies because of the ownership decentralization, and rental prices can also vary considerably more, as in many cases the vehicle owner is responsible for setting its prices. The operations are characterized by relatively low technological complexity – occasionally the vehicles can be equipped with telematics devices allowing the car renters to access the cars with a membership card, while in other cases the car keys must be physically delivered between the two parties directly or through an operator office.

Examples of companies operating in the peer-to-peer car sharing market are Relay Rides, a company which started its operations in Boston in 2010 and, after attracting new investors, expanded its operations nationwide in the US, and easyCar Club, the biggest British peer-to-peer car sharing company inaugurated in a trial phase in London in 2013 and launched nationwide in 2014, which has already thousands of car owners registered in its network.

2.2.2 Round-Trip Car Sharing

Round-trip car sharing, also referred to as “traditional car sharing” in the literature, is the most common car sharing service model, and also the focus of most of the studies realized in the area. In round-trip car sharing, the operator owns or leases its own car fleet and offers the vehicles for short term rentals. The vehicle fleet is usually less varied when compared to peer-to-peer car sharing companies, and are commonly identified with a company visual identity.

The companies operate with dedicated private or on street conceded parking areas in which customers can access the car and to which they have to return the car after the rental period. Customers are usually required to make a previous reservation for the vehicles, through a call-centre, a website or a smartphone application, defining the place and the time for the car

pick-up, and depending on the company, might also be required to define in advance the rental period. The clients are charged for the whole rental period and for the distance travelled and must deliver the car in the same parking area where they started the rental.

The biggest round-trip car sharing operator is Zipcar, a subsidiary of Avis Budget car rental group which started its operations in the U.S. and has expanded its services to Canada and selected countries in Europe.

2.2.3 Point-to-Point Station-Based Car Sharing

Similarly to traditional car-sharing, point-to-point car sharing companies own or lease their vehicle fleets and operate with dedicated parking stations. However, in this type of service, customers are allowed to start the rental in one station and deliver the car at the end of the rental in a different station, enjoying greater flexibility. In some companies, customers might be required upon reservation to the determine in advance the duration of the rental and the delivery station, while in others customers can decide where and when to end the rental spontaneously during the rental period. As in the case of traditional car sharing companies, customers are charged according to the rental period and the mileage.

The increase in flexibility for customers creates new challenges on the fleet management. Since one-way trips are made available for customers, it can be expected that eventually spatial imbalances in the fleet distribution among the stations are created (SCHMÖLLER, STEFAN, WEIKL, SIMONE, MÜLLER, JOHANNES, BOGENBERGER, 2015). Therefore, the car sharing operator faces new complexities when trying to guarantee both vehicle and parking spots availability across the different stations for most of the time in order to cover customer demands. This might create the necessity for vehicle reallocation from full to empty stations, a process that not only increases operating costs but also generates unnecessary dislocations, increasing traffic and emission of pollutants.

The biggest point-to-point station based car sharing company is Autolib, a French operator present on the cities of Paris and Bordeaux and with international expansion plans, which will be part of the following analysis in this paper. Traditional car sharing operators are also accessing the impacts and difficulties of servicing one-way rentals: Zipcar, for example, is implementing point-to-point operations in a trial phase in Boston (LE VINE; ZOLFAGHARI; POLAK, 2014).

2.2.4 Free-Floating Car Sharing

The free-floating car sharing service model is the most recently created and most innovative among the existing types of services offered in the market. In this modality, instead of operating exclusively in fixed stations, the companies define an area for their operation in the city. Inside this area, customers can access the vehicles parked in practically any standard parking spot on the streets.

In order to operate in these terms, the companies usually must establish agreements or partnerships with the local municipalities or the local organizations responsible for the administration of public parking spots, in which they fix a certain amount which must be paid per vehicle or per fleet for the parking permits.

The companies own their vehicle fleets, which are usually standardized and composed by very few or only one vehicle model, in order to facilitate the identification of the vehicles parked on the streets. Although it is not always the case, the companies usually opt for compact urban cars, designed for easy driving and parking in urban areas. The rentals are charged per minute and generally include a limited mileage, although discounted rates for longer term (hourly or daily) rentals are also available in most cases.

Free-floating car sharing is the service model that grants the greater flexibility for customers: they can locate the vehicles available through smartphone application, website, call-centre or alternatively right on the streets, and are not required to make previous reservations (although they have the possibility to make a reservation, which is usually valid for a short period of time, after which it expires and the vehicle becomes available for all users again). Customers are also not required to inform the period of rental or the place where the car will be delivered, which can usually be any parking spots inside the coverage area. The companies might also offer private parking spots in locations where public parking spots are rarely available.

As a result of the higher flexibility offered to customers, this is also the service model with higher operational complexity. Given the fact that customers can pick-up and deliver the vehicles anywhere inside the service area, it is hard to predict accurately where the vehicles will be positioned, a difficulty inexistent in traditional car sharing, for example. Hence, according to local traffic patterns, the vehicles are subject to tidal flows which can result in the clustering of cars in a few areas in different periods of the day, which is inefficient and

inconvenient for both the customers and the operators (LE VINE; ZOLFAGHARI; POLAK, 2014). The companies are searching for optimized forms to deal with this challenge, in order to minimize operational costs and vehicle repositioning by the operator staff, which is costly and inefficient.

The biggest free-floating car sharing operator is Car2Go, a subsidiary of Daimler AG which was also the first company to launch this service model, in 2009. Other companies which traditionally operated in other forms of service (e.g. round-trip car sharing or one-way station based car sharing) are also studying the implementation of free-floating operations, as is also the case of Zipcar in a trial project in Boston. Since the successful launch of Car2Go, other free-floating car sharing companies entered the market, for example DriveNow, a BMW subsidiary operating in Europe and in the U.S., and Enjoy, a subsidiary of ENI Group operating in Italy.

2.3 **The Impacts of Car Sharing**

A variety of studies has been conducted to explore the impacts of car sharing utilization on the urban mobility, the environment and on the society as a whole. Although results vary significantly according to the methodologies applied, the type of service model adopted by the car sharing operators and also the local characteristics of the cities considered on the studies, for instance the demographics, local cultural factors and public and private initiatives towards car sharing, most of the existing studies have concluded that car sharing utilization has positive net effects for the urban mobility, energy use and the environment. Studies evaluating the impacts of car sharing usually rely on surveys conducted with car sharing users, in order to identify their shifts in vehicle utilization and ownership, in the utilization of public transports and other means of transport (e.g. walking, biking and carpooling) and in their mobility patterns.

2.3.1 Reduction in Vehicle Ownership

To begin with, a few studies have evaluated the impact of car sharing in vehicle ownership across members. Although results may vary according to the locations and samples considered in the analysis, studies have consistently identified a substitution effect from car ownership to car sharing usage: because the car sharing services fulfil existing gaps on active mobility alternatives (public transports, walking or biking) by providing access to vehicles for occasional needs, it increases the possibility of households or businesses to forgo one or more cars, or at least defer the acquisition of a new vehicle (KENT, 2014).

The study published by Martin, Shaheen and Lidicker (2010), based on a survey with over six thousand car sharing users in the U.S., where the companies mostly operated round-trip car sharing, compared car ownership of respondents before and after joining the services of a car sharing company, concluding that car sharing users in the U.S. reduced in 50% the number of vehicles owned. This result represented the substitution of 9 to 13 private vehicles per car sharing vehicle, including shed and postponed car purchases.

According to Shaheen, Cohen and Chung (2009), who conducted an extensive analysis on the existing literature in car sharing impacts in the U.S. (again including only round trip car sharing operators at that time), including third party and operator-led evaluations, different studies reported that a car sharing vehicle removed from 4.6 to 20 private vehicles from the transportation network. The variance in those results can be largely explained by differences in the methodologies applied for the calculations. According to the same studies, between 15 and 32% of car sharing users sold their cars, and between 25 and 71% of car sharing members avoided a new vehicle purchase due to the utilization of car sharing services. The variation in the results is explained by location-specific differences, stated intention bias and differences on the business models (SHAHEEN; COHEN; CHUNG, 2009).

A more recent study conducted by Firnkorn and Müller (2011) accessed the potential environmental impacts of free-floating car sharing based on a survey with Car2Go users in the city of Ulm, in Germany. Although the resulting impacts of free-floating car sharing operators may vary according to a complex series of factors, including market penetration, operation in bigger cities, the availability of efficient mobility alternatives according to local conditions, among others which should be accessed in further researches (FIRNKORN, 2012), respondents also indicated a propensity to reduction of car ownership: the authors estimated, based on stated intentions, a potential for 13.5% of the 17000 members (at that time) to reduce their vehicle ownership. In that scenario, every car sharing vehicle would replace up to 10 private vehicles.

The reduction in car ownership results in a more efficient use of the public space, which is really significant in urban environments with increasing space limitations. The substitution of private vehicles for car sharing utilization lessens the demand for parking spaces and also results in less congestion (BAPTISTA; MELO; ROLIM, 2014).

2.3.2 Reduction of VKT on Private Vehicles and Option for Active Mobility Alternatives

The literature also points out the effects of car sharing utilization in the total Vehicle Kilometres Travelled (VKT) in private vehicles by car sharing members and the changes in their mobility patterns motivated by the association to a car sharing company.

Considering the variable cost structure of car sharing utilization, in which the costs depend directly in the amount of utilization of the services, car sharing users tend to be more critical about their mobility options and plan their trips in advance, adjusting their travel behaviours and making a more judicious use of individual vehicles (CERVERO; GOLUB; NEE, 2006).

In a study conducted by Shaheen et al., (2009), through the analysis of a series of member surveys conducted in the U.S., the author calculated an average 44% reduction in VKT of car sharing members, based on studies that indicated reductions between 7.8 and 79.6% - the differences are explained by local factors, differences in member utilization and also survey methodologies. In the European scenario, on the other hand, other authors have indicated a reduction in VKT because of car sharing ranging from 26 to 45% (SHAHEEN; COHEN, 2007).

A study conducted by Cervero, Golub and Nee (2006) analysing car sharing members in San Francisco, U.S., showed a consistent reduction in private vehicle utilization by car sharing members, with a decrease of 67% of VKT in the long term (from 2001 to 2005), which could be explained by shifts to other mobility alternatives (particularly walking and biking) and shorter distances travelled daily. Although earlier car sharing adopters do not typically own a car, and hence a contrary effect might be observed for some users, with an increase in vehicle utilization, overall this effect is compensated by other car sharing members who reduced more drastically their private vehicle utilization, with positive net effects being identified in the long run.

Other studies have concentrated attention in the shifts of car sharing members to the utilization of other mobility alternatives. Martin and Shaheen (2011) indicated an increase in modal share of biking, walking and carpooling by car sharing members in the U.S., although they could observe a small, but statistically significant reduction in public transit utilization among car sharing members. This result is explained by the fact that early adopters of car sharing services are more likely carless households, which might shift from public transit options to the use of car sharing vehicles. However, other adopters that previously owned one

or more vehicles have proven to be more likely to shift towards public transit. Therefore, with the expected expansion of car sharing services and the attraction of a greater share of car-owning households, more positive effects are expected and greater shifts towards public transit could emerge.

2.3.3 Reduction on Greenhouse Gas Emissions

Researchers have also accessed the positive impacts of car sharing utilization on the emission of pollutant gases. As a result of the reduced car ownership and the reduced VKTs of car sharing members and the shift to other active forms of transportation, which generate less or even no emission of pollutants, positive environmental results have been identified. Another source of reduction in pollution resides on the fact that car sharing vehicles are less pollutant than average, since car sharing vehicles are usually smaller, newer and more energy efficient when compared to average fleets, besides the fact that car sharing vehicles usually carry more people (CERVERO; GOLUB; NEE, 2006; COHEN; SHAHEEN; MCKENZIE, 2008). The option for hybrid or electric vehicles by car sharing companies, which is increasingly common, only enhances those positive effects.

Martin and Shaheen (2011) studied the annual change in emissions of GHG from households joining car sharing in the U.S. based on a survey conducted with 9625 car sharing members (of which 6281 were considered in the final analysis after the filtering of the data). The authors concluded that the net car sharing emissions, on balance across all survey respondents, were negative and statistically significant for both the observed impact, defined as the actual reduction in emissions observed prior to car sharing utilization, and the full impact, which also accounts for new emissions which would have happened if car sharing was not made available. The resulting average reductions per household were -0.58t GHG/year (observed impact) and -0.84t GHG/year (full impact). The results cannot be generalized to all car sharing members because in cases of households which did not own a car prior to the utilization of car sharing services, emissions tend to increase. However, car sharing motivates larger reductions in emissions of other households, which compensate for the small increases observed, generating the positive overall impacts.

A study conducted by Firnkorn and Müller (2011) also evaluated the effects on the emission of carbon-dioxides by members of a free-floating car sharing company in Germany. The author concluded that 77 to 89% of car sharing members would reduce their emissions

(results reached for the worst-case and best-case scenarios, respectively), forecasting an average reduction per user of -146kg/year to -312kg/year. These results are an important indication that free-floating car sharing might result in environmental impacts similar to traditional car sharing. The reductions on emissions are in line with the impacts calculated for round-trip car sharing users – when dividing the impact calculated for a household using traditional car sharing of -0.58t GHG/year by the average number of 2.5 people per household on the considered area, the reduction corresponds to -232kg GHG/year (MARTIN; SHAHEEN, 2011b). These impacts, however, must be seen with criticism, given the fact that they might vary considerably according to survey methodologies applied, local specific factors, scales of operations of car sharing companies, user behaviours and other exogenous factors (FIRNKORN, 2012).

2.3.4 Social and Individual Benefits

In addition to the environmental benefits detailed above, researchers have also explored the social and individual benefits deriving from car sharing utilization.

Car sharing is understood as a complementary part of sustainable mobility systems in the urban environments (KENT; DOWLING, 2013; HUWER, 2004), and any car sharing system should be developed accordingly to the existent public transportation and mobility alternatives, as only integrated mobility systems can satisfy the variety of mobility needs of individual transportation (FIRNKORN; MÜLLER, 2011).

By providing a more economical and attainable mean of transportation, alternative to vehicle ownership, car sharing offers autonomous mobility and more accessibility to a more varied socio-economical group, overcoming part of the social inequities created by urban environments planned with focus on private vehicle mobility patterns. As a result, car sharing increases the access to jobs, services, schools, hospitals and other resources which otherwise are only available for vehicle owners (KENT, 2014).

Kent (2014) has also explored the potential health benefits resulting from car sharing adoption, reviewing an extensive existing literature on the relationship between vehicle utilization and its impacts in the individuals and in the societies. Because car sharing represents a link between active mobility alternatives, the utilization of car sharing results in a shift away from private car dependency and towards a healthier approach to mobility, based on active means of transportation (walking, cycling and public transports) complemented by the occasional access to vehicles. The reduction in vehicle ownership and on the demand of parking

spaces also allows the utilization of public spaces for the practice of physical activities and the creation of areas for social interaction. In addition, car sharing can result in the reduction of a series of problems related to car utilization, namely noise pollution, incidence of respiratory diseases and obesity, stress related problems, incidence of car accidents and mortality from car-related collisions, among other less tangible effects.

Finally, the utilization of car sharing might result in other individual benefits, among which one of the most relevant is the economic savings. Forgoing vehicle ownership and using car sharing can result in major savings, depending on the user profiles. Besides, car sharing also offers simplicity and freedom for previous car owners, since they transfer responsibilities for car maintenance, refuelling, cleaning, vehicle registration and tax payments, among others, to the car sharing provider (COHEN; SHAHEEN; MCKENZIE, 2008).

3 METHODOLOGY AND THEORETICAL BASIS

Following the literature review, it was possible to identify gaps in the existing literature and better define the scope of the present study. Although there are already extensive studies concerning the potential impacts of car sharing, the user behavior and potential demands and also case studies of operating companies, few studies have been conducted focusing on the business models of different car sharing companies and, more specifically, concerning the coexistence of different car sharing companies on the same environment and how they can operate and be compared in a competition scenario, a situation that becomes more common given the car sharing market growth and the entrance of new players in the market.

The present work was structured as follows: firstly, a comparative analysis between different car sharing companies is conducted. Secondly, a more detailed analysis of a Brazilian car sharing operator, including a comparison with other CSOs, is conducted to evaluate its business model, identifying possible improvements.

3.1 Comparative Analysis of Different Car Sharing Companies

A comparison between selected car sharing companies is conducted based on the identification of their main business aspects, which are represented with the utilization of the Business Model Canvas (BMC). An in-depth explanation of the BMC tool is given in Section 3.1.1.

The information about the companies included in the analysis, regarding their creations, strategies and business aspects were gathered in a variety of sources. Important sources of information were the companies' websites, scientific publications focused on the companies comprised in this study (when available), public contracts in case of publicly owned companies and also regulation contracts for the operation of private companies.

Other sources accessed during research were financial statements and other public data made available by companies listed in stock markets, besides published interviews with the heads of the considered enterprises and also a variety of news published in specialized media, covering eventual lacks of information in specific subjects.

The process of data gathering was time consuming, and unfortunately part of the information considered relevant for the analysis couldn't be found in reliable sources. Although

most of the information regarding the operations of the companies could be gathered directly through their websites, other relevant information was not always precisely available or updated, for example the vehicle fleet sizes and the number of customers of each company, which would be interesting for further analysis considering market potential and penetration of each of the considered companies in their operation localities, as well as the analysis of KPIs for car sharing operators, for example the number of registered customers per vehicle, which is an indicator of the service levels a company delivers to its clients.

Besides, information regarding the actual development and operational costs of car sharing operators was also not publicly available, as well as data related to their revenues. Therefore, this study has found limitations when trying to evaluate the companies' operations from an economic standpoint, since the data needed is usually considered strategic information, being protected by confidentiality clauses imposed by the companies.

The information related to Joycar, the Brazilian car sharing operator analysed in deeper detail, was gathered with the collaboration of Rafael Taube, the CEO of the company, who gave his personal contribution to this work. Additionally, information was gathered on the company's website, on its partners' websites and on other available resources on the internet. Representatives of large corporate companies of different economy sectors in Brazil were also interviewed in an effort to evaluate the current market acceptance and interest of corporate customer segments for car sharing services.

Next, the main strategic tools applied in the different analysis comprised in this study are presented.

3.1.1 Business Model Canvas

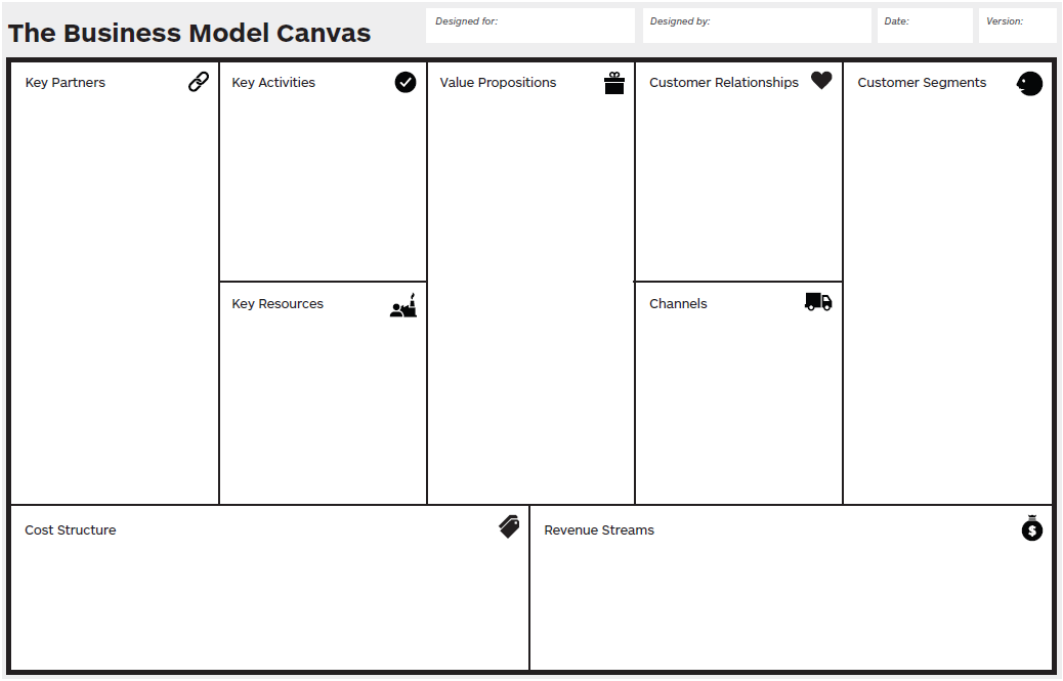
In this section, an explanation of the Business Model Canvas theory is presented. The BMC was the main tool used for the identification of the main aspects of the business models of car sharing operators.

The BMC is a strategic management and entrepreneurial tool, created by Alexander Osterwalder in 2008. It illustrates in a visual and practical template the business model of a company or organization, which describes the rationale of how an organization creates, delivers and captures value (OSTERWALDER; PIGNEUR, 2010). Therefore, this managerial tool is designed to contain the main useful information for the development of new business ideas, the

creation of innovative Start-Ups or the remodeling of an existing organization. Given its user-friendly display of information in a graphical template, it allows an easier understanding of a company, the creation of alternative scenarios and the evaluation of possible trade-offs between the elements that compose the system

The template is largely used in the Start-Up phase of new businesses, when it is necessary to collect and organize all the information and parameters which will consist in the backbone of the new business model in development. Given these characteristics, the construction of the BMC of each of the companies studied was considered a pertinent methodology to endorse a comparative analysis, as the car sharing market is relatively a new business and has been facing rapid changes. The success of the model can be explained by the immediate display of the main information needed to determine the areas in which the managerial team should concentrate and also the interrelationships between the elements of the organization and how they should be logically linked in an efficient manner during the business model elaboration.

Figure 2 - Business Model Canvas template



Source: www.strategyzer.com

The Business Model Canvas consists in nine different building blocks, which are defined as follows:

3.1.1.1 Customer Segments

The customer segments building block defines the different segments (of people and/or organizations) a company aims to reach and serve. The definition of the clientele an enterprise wants to serve is vital to its business model, given the fact that no enterprise can survive for long without profitable customers. For this reason, it is necessary to carefully understand the demand of each one of the customer segments, which are defined based in their common characteristics, behaviors and requirements.

The decision of which customer segments the company desires to focus on is the starting point for the design of a business model with a strong understanding of specific customer needs.

The segmentation of customers is based on the following parameters:

- Customers' requirements justify a distinct offer from the company;
- Customers are reached through different distribution channels;
- Customers' requirements for different types of relationships;
- Customers represent significantly different profitability for the company;
- Customers are willing to pay for different aspects of the offer.

3.1.1.2 Value Proposition

The value proposition of a company is the combination of products and services the company offers to satisfy its customer segments' needs. Basically, it determines why a customer chooses one company over another, according to how much value the company creates to the client with the mix of services and products delivered. The values might be quantitative (e.g. price, volume, speed of service) or qualitative (e.g. design, customer experience). The following list specifies some of the elements that can contribute to customer value creation:

- Newness
- Performance
- Customization
- Design
- Superior quality
- Price
- Brand/status

- Cost reduction
- Risk reduction
- Accessibility
- Convenience/usability

3.1.1.3 Channels

The channels building block describes how a company reaches and communicates with its customer segments to deliver a value proposition. The communication, distribution and sales channels comprise the company's interface with its clients, playing a very important role in the customer experience.

Channels are responsible for several functions, including:

- Raising awareness among customers about company's products and services;
- Delivering a value proposition to clients and helping them evaluate it;
- Selling services and products;
- Offering a post-purchase customer support.

A company should evaluate how the different customer segments want to be reached, how the channels are integrated, which channels work best and are more cost-efficient and how the channels are integrated with the customer routines. Designing the right mix of channels is very important to reach the customers base and deliver the value proposition to market.

3.1.1.4 Customer Relationships

The customer relationships building block describes the types of relationships a company establishes with specific customer segments. This block comprises how the company acquires new clients, retain clients and boost sales through the relationships with clients or potential clients.

The ways a firm chooses to connect with the different customer segments influence the overall customer experience. Therefore, the company should be aware of the demands of each segment and build its relationships with its clients accordingly. From time to time, given the knowledge the company acquires from the relationships with its clients, it should search for and

disseminate new initiatives, novelties in its products and services and also new value propositions in the market, in order to respond positively to changes in customer requirements.

There are several ways in which a company can establish its relationships with its customers segments, aligned with its business model:

- Personal assistance
- Dedicated personal assistance
- Self-service
- Automated services
- Communities
- Co-creation

3.1.1.5 Key Resources

The key resources building block enumerates the most important assets required to make a business model functional. In other words, the key resources are the assets needed to guarantee the company operation, the relationship with customers, the creation and offer of a value proposition and the earning of revenues.

Every activity is characterized by different key resources, which might be classified as follows:

- Physical assets, comprising manufacturing facilities, buildings, vehicles, machines, distribution networks, among others;
- Intellectual resources, namely the company know-how, brands, proprietary knowledge, patents, copyrights, partnerships and customer databases;
- Human resources, which are necessary in every enterprise, but particularly relevant in knowledge-intensive and creative industries or in the services field;
- Financial resources, comprising cash, lines of credits and stock options, which allow the company to operate strategically.

3.1.1.6 Revenue Streams

The revenue streams building block represents the revenues the company generates from the commercialization of its products and services to each of its customer segments. Through

the understanding of the demands and the willingness to pay of each customer segment, a firm can generate different revenue streams from its customer bases.

Some variables that should be taken into account are the price and payment methods, which are both fundamental to control the cash flows and turn the organization into a financially sustainable business.

There are several different ways to generate revenue streams:

- Direct sales of assets;
- Usage fees, proportional to the customer use;
- Subscription fees, allowing the customer to benefit from a product or service for a given period of time;
- Lending/renting/leasing a particular asset for a fixed period in return for a fee;
- Licensing the use of protected intellectual property in exchange for a fee;
- Brokerage fees charged for intermediation services between two or more parties;
- Advertising fees in return for advertising products, services or brands of customers.

3.1.1.7 Key Activities

The key activities building block describes the strategic activities a company should perform to make its business model work, operating successfully. In other words, this block displays the most important actions a company must take on a daily basis in order to offer a value proposition, reach markets, maintain customer relationships and earn revenues. Similarly to key resources, the key activities vary according to the firms' business model.

Key activities can be categorized as follows:

- Productive activities, typical of manufacturing companies in which it is indispensable to create, produce and distribute its own products continuously;
- Problem solving, typical of service business which have as a value proposition the creation of new solutions to existing customer problems;
- Platform/network activities, when they are a vital component of the value creation and delivery.

The key activities, together with the key resources, are those responsible for creating a competitive advantage for the firms.

3.1.1.8 Key Partnerships

The key partnerships building block determines the network of partners and suppliers necessary to make the business model operate correctly, increasing the chances of success.

There are four main types of partnerships:

- Strategic alliances between non-competitors
- Coopetition: strategic partnerships between competitors
- Joint Ventures to develop new businesses
- Buyer-supplier relationships to assure reliable supplies

Companies search for alliance opportunities in order to optimize their business models, reduce risk, acquire resources and complement their internal capacities, looking for synergies with their partners. Through the creation of partnerships, companies can optimize the allocation of resources and achieve economies of scale, reduce risk and uncertainty in the competitive environment, acquire particular resources and activities, compete in broader markets, promote their brands and reach new clients. When developing new business models, establishing partnerships is really important to leverage the chances of success.

3.1.1.9 Cost Structure

The cost structure building block defines the main costs incurred to operate a business model. In the Business Model Canvas design process, the cost structure is usually determined in the end, once it derives directly from the key activities, key resources and partnership blocks. However, in particular business models, the cost structure is vital for the value creation (e.g. in low cost airline companies). In spite of the fact that costs should be minimized in every business model, it is possible to distinguish two categories of business:

- Cost-driven business models focus on every possibility of minimizing costs, aiming at the creation and maintenance of the leanest possible cost structure from which it derives its low price value proposition.
- Value-driven companies are less concerned with cost reductions, focusing on value creation through innovation, personalized service and excellent quality of services and products, for example.

The business model cost structures may have the following components and characteristics:

- Fixed costs, which do not vary with the volume of products or services delivered;
- Variable costs, proportional to the volume of products or services produced;
- Economies of scale: cost advantages resulting from an increase in volumes, causing average price per unit to fall as output rises;
- Economies of scope: reduction of costs resulting from a larger scope of operations, taking advantage of existing capabilities to develop multiple products or services.

When determining the cost structure, it is vital to consider the key resources, partnerships and activities to determine if there are opportunities of cost reductions or if the costs are already optimized according to the aimed results. After this consideration, the cost structure must be compared to the revenue streams: the business model will only be sustainable if the revenues outweigh the costs.

Otherwise, it is possible that mistakes have been made when determining the prices for the products or services, when defining the payment methods, or in the utilization of resources in sub-optimal conditions. Focusing in these issues during the business model development permits the managerial team to anticipate mistakes and act correctively before the launch of the company in the market, saving costs and difficulties of correcting the same mistakes when the company is already operating.

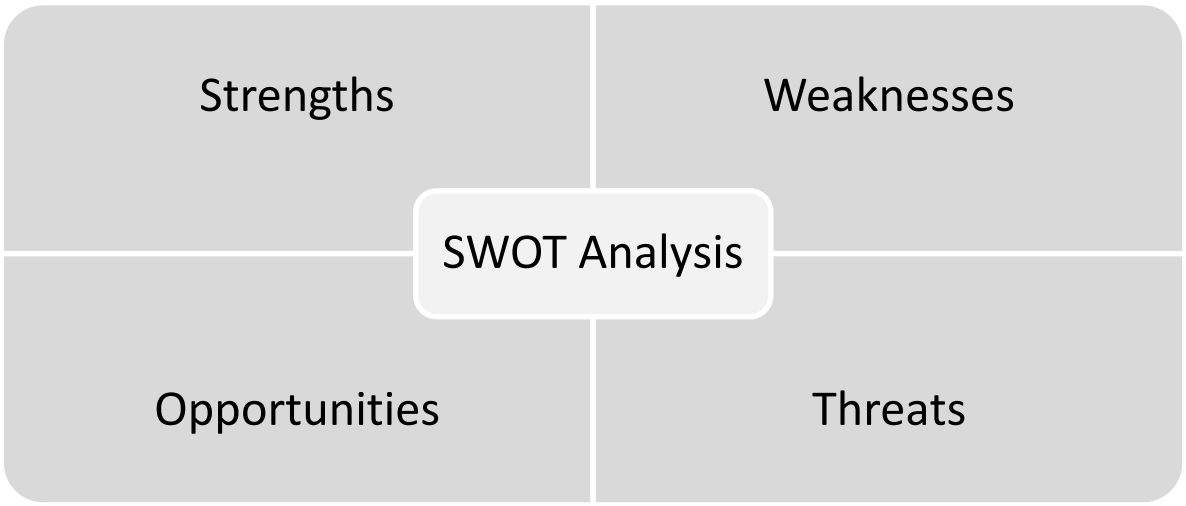
3.1.2 SWOT Analysis

A SWOT analysis is a structured planning method that allows the evaluation of the strengths, weaknesses, opportunities and threats of a company or project, taking into consideration the internal and external factors relevant to the business. The SWOT analysis represents a snapshot of a business' position and provides important information that are inputs for the strategic planning, giving the management an outline of the major issues affecting the industry and the business (FRIEND; ZEHLE, 2004)

The SWOT analysis is a commonly used tool, and has among its qualities the easy display of information, communication and understanding. The implicit aim in the utilization of this tool is achieving the optimum match of a firm's resources and competences with the environment, in order to identify opportunities to gain sustainable competitive advantage by:

building on the firm's strengths; reducing weaknesses or adopting strategies to avoid them; exploring opportunities, leveraging the firm's strengths; and reducing the exposure to threats, or countering them (FRIEND; ZEHLE, 2004). In Figure 3, a common SWOT analysis framework is presented.

Figure 3 - SWOT Analysis Framework

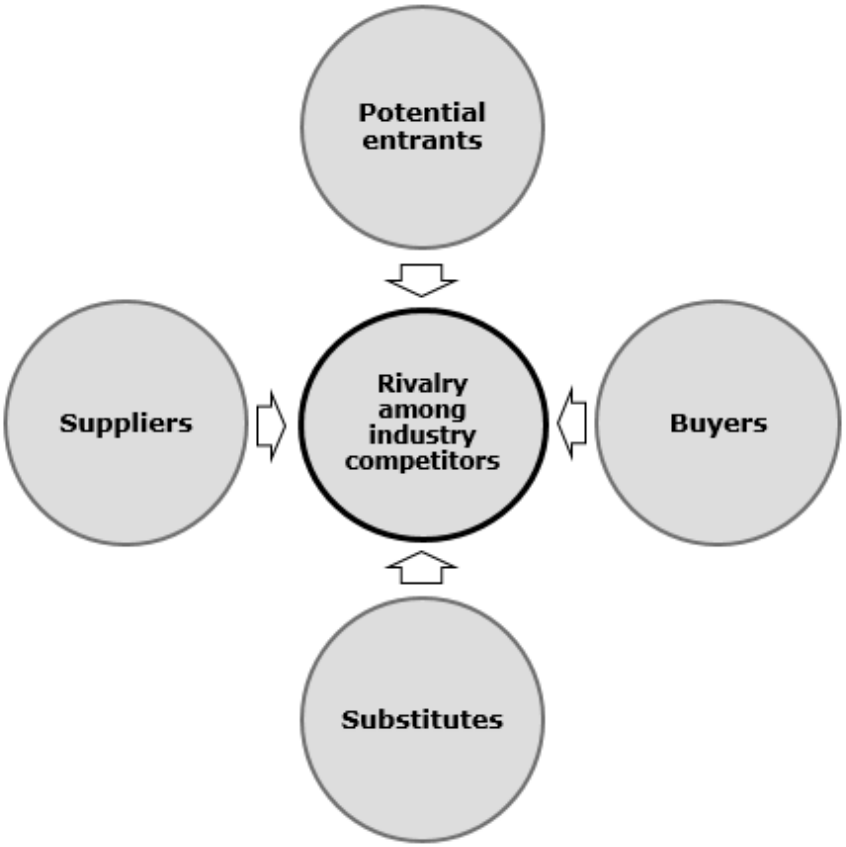


Source: adapted from Friend and Zehle (2004)

3.1.3 Porter Five Forces Analysis

Porter five forces analysis is a useful framework for the analysis of structural factors that condition competition and attractiveness in an industry, through the identification of five different forces that determine the industry profitability. The five forces, illustrated in Figure 4 as defined by Michael Porter (PORTER, 2008), are: rivalry among existing firms; potential entrants; substitutes; bargaining power of suppliers; and bargaining power of buyers.

Figure 4 – Porter Five Forces framework



Source: adapted from Porter (2008)

The rivalry among existing firms refers to the intensity of competition in the industry, which has a significant impact in the ability of the companies to generate profitable margins. The intensity of rivalry depends on a series of factors, such as the development of sustainable competitive advantages by different industry players, competition in prices, levels of product or service differentiation, the degree of concentration in the industry, industry dynamics and growth, among others.

The threat of new entrants refers to the risk or the possibility of new competitors entering the market, what might cause reductions in profitability if the addition in productive capacity overcomes the growth in demand. The threat of new entrants is low in cases where economies of scale are significant for the industry profitability, industries are capital intensive, access to primary resources are limited, access to distribution channels is difficult and buyers'switching costs are high (FRIEND; ZEHLE, 2004).

The threat of substitute products or services refers to the availability of products that perform the same functions or satisfy the same needs as the considered product, a threat that becomes more severe if the substitutes are more effective or more competitive in pricing. Factor influencing this force are the propensity of consumers to substitution and the ease of substitution, the availability of substitutes in the market and the perceived level of product differentiation.

The bargaining power of suppliers refers to the capacity of suppliers of capturing more value through increases in prices, reductions in product or services quality and their ability to pass on costs to buyers. This power is a function of the industry segmentation and the relative size of suppliers when compared to the companies in the industry. Factors influencing this force are the availability of substitute products or the number of competitors in the supplier market, the ease of substitution of inputs and its degree of differentiation, the relevance of inputs in product differentiation or production costs, among others.

The bargaining power of buyers, on the other hand, refers to the capacity of firms to pressure their suppliers to offer lower input prices and better product quality and overall service conditions, resulting in positive impacts on profitability. This power is conditioned by the relative size of buyers and suppliers and the dependency between them, the switching costs in the industry, the capacity of buyers of producing their inputs, the degree of dependency of existing distribution channels and the availability of substitutes in the market.

4 ANALYSIS OF SELECTED CAR SHARING COMPANIES

Five different car sharing companies were selected to become part of the comparative analysis. To begin with, this study had the scope of understanding the car sharing market dynamics in the city of Turin, in Italy, which went through a major change in the year of 2015, with the entrance of two new players, Car2Go and Enjoy. For this reason, the three operating companies in the city were included in the present study: Car City Club, Car2Go and Enjoy.

Another scope of the analysis of the companies' business models was to identify the resulting differences and similarities between different service models, including round trip car sharing, point-to-point station based car sharing and free-floating car sharing. Besides, the pool of companies includes different private sector and public operators in order to understand eventual differences in the business models of both sectors.

Furthermore, another scope was the understanding of the implications of the choice for electric vehicles in the business model of the companies. Therefore, two companies operating with electric only vehicles were included in the comparison, Autolib and Bee – Green Mobility Sharing.

As a consequence, a total of five different companies are included in the analysis, resulting in a varied pool which should allow a better understanding of the influence of many different factors in the car sharing companies' business models and operations: Autolib, Car2Go, Car City Club, Enjoy and Bee – Green Mobility Sharing. In Table 3, their basic characteristics are presented.

Table 1 – Car sharing companies comprised in the analysis

Company	Location	Service Model	Type of Vehicle	Type of organization
Autolib	Paris (France)	Point-to-point station based	Electric	Public-Private partnership
Car2Go	30 cities (Europe, North America)	Free-floating	Gasoline and electric	Private
Enjoy	Rome, Florence, Milan and Turin (Italy)	Free-floating	Gasoline	Private
Car City Club – Io Guido Torino	Turin (Italy)	Round-trip and point-to-point station based	Gasoline and electric	Public
Bee – Green Mobility Sharing	Naples (Italy)	Point-to-point station based and free-floating	Electric	Private

Source: companies' websites

In the following sections, the companies are presented in a higher level of detail, and then their Business Model Canvas are constructed and explained.

4.1 Car2Go

4.1.1 Company Overview

Car2Go is a subsidiary of Daimler AG, a German multinational automotive corporation. The company was founded in 2008 in the city of Ulm, in Germany, and by the end of 2014 offered car sharing services across 30 cities in 8 different countries in Europe and North America, serving over one million customers.

The company is one of the biggest players on the car sharing market worldwide, and over the years it has built strong brand recognition, benefiting from its pioneer position on the market (since it was the first company operating a free-floating car sharing service) and also

from the scale of its operations. A key element of Car2go strategy is operating in large scales in the cities, covering the most important central areas in terms of demand for transportation and travel fluxes and with an elevated number of vehicles on the fleet. As a result, the company aims to meet the customer demands with high availability of vehicles, generating greater revenues and guaranteeing higher customer satisfaction.

The characteristics of the vehicle fleet also play a key role on brand recognition. The fleet is completely composed of Smart ForTwo vehicles, produced by Smart Automobile, a division of Daimler AG, and marketed as "the ultimate city car". The model has a very characteristic compact design, with two seats and a small luggage compartment. All the vehicles of the fleet, in every country the company operates, have the same visual identity, being painted in white and blue and carrying the company name, logo and divulgation slogans. The creation of this strong visual identity enables the vehicles to serve the company as marketing channels, increasing the brand recognition.

The fleet combines gasoline and electric powered Smart Fortwo models. The recent introduction of electric cars in selected cities is an additional source of value creation to the company customers, who are usually more aware of the environmental impacts caused by the transportation alternatives, and fit well in the company values.

The business model is basically the same in every location the company operates. It offers free-floating rentals – instead of a centralized rental office, customers can locate and rent a car in designated parking spots or inside pre-determined areas covered in the city. After the utilization, the customer can park the car in any specially designated parking spot or in standard parking areas with a special permit from the local municipality, instead of being obligated to return it to the same place where he started the rental.

The company charges a subscription fee upon the registration of new customers. The service is charged in a per minute basis, although discounted hourly and daily rates are also available. In this innovative charging method, customers pay only for the time they use the car, and they are also not required to make previous reservations, enjoying greater service flexibility (the rental period can be of any length, and does not need to be previously determined). The rates include rental, fuel consumption, mileage, insurance, parking in authorized areas and maintenance. An extra fee per kilometre applies when the included mileage, which is usually 50 kilometres, is exceeded.

Customers can locate and reserve a vehicle through Car2go website, a smartphone application or directly on the street, where the car is parked (CAR2GO, 2015).

4.1.2 Business Model Canvas Building Blocks

4.1.2.1 Customer Segments:

The main customer segments Car2Go serves are private users and corporate clients who have a similar need for personal vehicles to complement their mobility needs in the cities covered by the service.

Among the clientele, further segmentation can be identified based on the frequency of use: clients can use the services regularly, as their workaday mobility service, or more eventually, complementing other transportation modalities. In order to fulfill the frequent users' demands, the company also offers monthly minute packages, with discounted per minute rates, in addition to the regular service plans with the standard fees charged per minute.

In particular, Car2Go has focused its marketing efforts in the segment of young adults, which corresponds to a relevant percentage of users – young adults are more likely to respond to innovative initiatives, usually have higher awareness of environmental causes and are also more likely to face higher budget constraints, thus searching more for alternative and economical mobility alternatives. More specifically, the company focuses on reaching university students, promoting marketing campaigns with information points and divulgation of services on universities.

4.1.2.2 Value Propositions:

Car2Go value proposition is based on delivering an innovative and environmental friendly transportation service, offering flexible urban mobility. The service has been designed in order to complement available transportation alternatives, meeting customer demands that are not satisfied with public transportation services or by the use of private vehicles.

The service of car sharing features a large fleet of Smart ForTwo gasoline and electric models available for free-float rentals, a source of differentiation that the company offers. Customers recognize value in the convenience and usability of the service, the availability of vehicles and the distinguished accessibility for car rental services that the company provides.

4.1.2.3 Channels:

The main channels to reach customers are the company website and smartphone application. Through the website, the company discloses its value proposition and all the information necessary relating to the services provided. Also in the web site, the company offers the registration process for new users and tools for account consultation and car reservation. In order to activate their account after registering in the website, customers must go to validation points in Car2Go or partners' offices.

Through the proprietary app or other third-party apps, customers can locate available vehicles, make reservations and consult account details.

Other channels to reach the population and conquer new clients are marketing campaigns launched in areas of high circulation of people in the cities, for instance the installation of information points in the city center for the divulgation of the service, especially when the company is starting its operations in a new site. Besides, Car2Go usually promotes marketing campaigns in universities, as one of its focused customer segments is university students.

4.1.2.4 Customer Relationships:

Customer relationships are basically automated, and the customer interface basically consists of the website and the application, which are developed to provide all the necessary means for customers to help themselves in a self-service basis. Customers must sign-up for the service, but there are no permanent engagements.

4.1.2.5 Revenue Streams:

Car2Go has basically two revenue streams: the fixed subscription fees that customers must pay once, when they sign up for the service, and the rental fees. Rental fees are charged per minute, hour or day of use, and also per kilometer above the included mileage per trip. The company also offers options of minute packages, with discounted prices. The price structure is the same in every market Car2Go operates, although prices may vary according to local currencies or market particularities.

The rental fees represent the most significant source of revenues. The company usually launches promotions in which it offers the subscription of new members for free, mainly when starting the operations in new sites.

4.1.2.6 Key Resources:

The key company resources required to make the business model work are the vehicle fleet, which nowadays comprises over 13000 vehicles, the designated parking spots, the service team, responsible for the relationship with customers and for the maintenance and supervision of the business, the website and smartphone application, which must operate continuously without flaws, and an integrated information system through which the company manages the service, including telematics devices installed in every vehicle.

4.1.2.7 Key Activities:

The main activity of the company, which represents its core business, is the car rental. Other key activities must be performed to keep the business running properly: the maintenance of the vehicles (including cleaning and fueling), the management of the fleet (vehicle repositioning, checking if cars were delivered in appropriate spots etc.) and the customer service (assisting customers in case of need).

The company aims to minimize its costs with fleet management. Instead of actively repositioning the fleet, the operation is projected so that the fleet can be managed more passively, with the customers being responsible for the majority of changes in vehicle positions. However, the company still has to monitor the placement of the fleet and eventually intervene moving vehicles according to demand unbalances, which raises its costs with personnel and represents inefficiency in the vehicle utilization, since it is making non-profitable journeys.

4.1.2.8 Key Partnerships:

In order to leverage its operations, the firm seeks to establish partnerships with local governments, which can collaborate giving in public spaces for designated parking areas or work on agreements for the use of standard parking spots by the company customers and the free circulation in limited traffic areas, common in city centers.

A key partnership has been established with Europcar, an international car hire company. The partnership was first initiated in a joint-venture for the launch of Car2go services

in Hamburg in 2011, and kept since. Car2go benefits from the extensive knowledge of the car rental company on the areas of fleet management and logistics, and also takes advantage of the extensive network of Europcar's rental shops to perform new customer registrations, complementing the services of Car2go own shops. Both companies also benefit from cross-selling and cross-marketing practices, referring to their partner services in their customer channels and offering advantages (usually discounts) for customers of both services.

The company also establishes a partnership with its own clients, stimulating them to refuel the vehicles in exchange for free minutes of the service, in order to save personnel costs and maintain the cars in usage conditions.

Other important partnerships might be negotiated locally with insurance companies and fuel distribution companies, which represent significant operating costs.

4.1.2.9 Cost Structure:

The main costs the company incurs are those related to the key resources and activities, namely: acquisition of the vehicle feet; maintaining, fueling and cleaning the vehicles; personnel costs and customer services; system operation and maintenance; insurance contracts; other expenses related to eventual improper use of the service.

The company, in agreement with the city municipalities, has also the obligation to pay city fees, which may vary according to the negotiated contracts. In Turin, for example, where the company started operating on April, 2015, it will have to pay an annual fee of 700€ per operating vehicle.

4.1.3 Car2Go Business Model Canvas

The company's BMC is presented in Table 2.

Table 2 – Car2Go BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• Europcar
• Local governments
• Company customers (refueling agreement)
• Insurance companies
• Fuel distribution companies</td>
<td>Key Activities

• Car rentals
• Vehicles maintenance
• Fleet management
• Customer service
• Marketing</td>
<td rowspan="2">Value Proposition

• Free-floating car sharing service with a large scale fleet
• Innovative and environmental friendly transportation service
• Flexibility and mobility
• Convenience, usability and accessibility of vehicles
• Smart ForTwo (gasoline and electric powered) vehicle fleet</td>
<td>Customer Relationships

• Automated services through the website and application interfaces
• No permanent engagements</td>
<td rowspan="2">Customer Segments

• Private users
- Frequent clients
- Ocasional clients
- Students
• Corporate clients</td>
</tr>
<tr>
<td>Key Resources

• Vehicle fleet
• Service team
• Integrated system, website and application
• Designated parking spots (where applicable)</td>
<td>Channels

• Website
• Application
• On site marketing campaigns and information points</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Vehicle fleet acquisition
• Maintenance
• Fueling and cleaning vehicles
• Personnel costs and customer services
• Insurance contracts
• Other expenses related to improper use of the service
• Municipality taxes</td>
<td colspan="2">Revenues

• Fixed subscription fees (only upon registration of new users)
• Rental fees (per minute, hour or daily rate)
• Extra fees per kilometre (above the included mileage per trip)</td>
</tr>
</table>

Source: author

4.2 **Enjoy**

4.2.1 Company Overview

Enjoy is a car sharing company created by ENI, a €63.4 billion Italian oil and gas company that operates in 85 countries. Enjoy started operating in Milan in the end of 2013 with great success: in its first month, the company registered 26k customers and serviced 35k rentals, numbers that rose to 80k and 0.5M rentals after 5 months of operation, while receiving great evaluations from both the customers and the media. After the promising launch, Enjoy is quickly expanding its operations: besides Milan, where over 640 vehicles are available, it is already present in Rome, with 600 vehicles, in Florence, with a fleet of 200 cars, and in the first semester of 2015 launched its services in Turin, Italy's forth biggest city, starting with a planned fleet of 400 vehicles. But the company ambitions are bigger, and it also plans to expand internationally in the future.

Enjoy business model is based on free-floating car rentals. Customers can register themselves for free in the company website and the service becomes immediately available. Vehicles can be located and reserved through the website or a smartphone application, or optionally directly on the streets. Customers can unlock the car through the company's smartphone application and start the rental. After its utilization, it is possible to park the car in any parking sport available inside the coverage area in the city. Enjoy charges a fee per minute of utilization, which already includes costs with fuel, parking, maintenance and insurance, and also offers a reduced fee during the period a driver choses to park the car without ending the rental (in which case the applied fee is only €0.10 per minute instead of the regular €0.25 per minute). Hourly and daily discounted fees are also available and include 50 kilometres of mileage, after which a fee of €0.25 per kilometre is charged. The company is responsible for refueling the vehicles, but in case of need, customers can refuel the cars in any ENI gas stations with a fuel card available inside the vehicle.

In agreement with local authorities, Enjoy vehicles are allowed to circulate in limited traffic zones in the city centers and can be parked in regular paid public parking spots, resulting in practicality and flexibility for users. The municipalities, on the other hand, usually fix a maximum limit for the number of vehicles operating on the fleet and charge an annual fee per active vehicle.

ENI main partners are Trenitalia, the state-owned main Italian train operator company, Fiat, an Italian car manufacturer, and CartaSi, a credit card company with which Enjoy has specific agreements for the payment systems and services. The vehicle fleet is mainly composed by Fiat 500 models, an iconic Italian compact car that sits four people, and in some cities there are also Fiat 500L models, which can sit five people – all supplied by Fiat company in agreement with ENI. All the vehicles have the same visual identity, being painted in red and carrying the company logo on the front doors.

Trenitalia and Enjoy offer complementary services for people who need both the train and a local transport modal – the companies have agreements for the integration of services and mutual collaboration. The partnership with Trenitalia is strategic for Enjoy in its focus on corporate clients – which represent an important customer segment. Both companies benefit from cross-marketing, as each company announces the partner services in their customer channels. Besides, through cross-selling practices the partners increase their revenues and reach a wider customer base: Trenitalia clients that subscribe to Enjoy services receive a bonus credit to use the service, equivalent to one hour of usage.

The company has also established partnerships with other supplier companies, e.g. a company specialized in vehicle cleaning, an uniform supplier for the service team etc. (ENJOY, 2015).

4.2.2 Business Model Canvas Building Blocks

4.2.2.1 Customer Segments:

The main customer segments Enjoy serves are, similarly to the other car sharing companies, private users and corporate clients.

As a result of the partnership with Trenitalia, among the client base it is possible to identify a specific segment of customers who must travel between cities every day and can benefit from an integrated service for both regional and local routes.

4.2.2.2 Value Propositions:

Enjoy aims to offer a free float car sharing service with optimal fleet availability and coverage areas among the cities it operates. It offers the iconic Fiat 500, a well-equipped and distinguishably designed Italian vehicle that sits four people.

The company has plans to expand its services and thus conquer gains of scale as a competitive advantage against the other operating car sharing companies. Its service has been well evaluated by customers and the media and Enjoy prices are among the most competitive in the markets.

Similarly to other car sharing companies, other value propositions are the accessibility, flexibility, practicality and environmental friendly characteristics of the service. Another source of value is the integration with the premium train services in Italy.

4.2.2.3 Channels:

Through Enjoy website, customers can make their registrations and create their account, find information about the service and also locate and reserve vehicles.

The company also developed a smartphone application through which customers can locate vehicles and access information about them (fuel level, car model), make reservations and also open the car, without the need of a card or a key. The cars can also be unlocked by sending a SMS with their identification code. The same functions can also be performed with the assistance of a 24 hour dedicated call-center, with no extra charges for customers.

Additional marketing channels to reach customers derive from the partnership with Trenitalia. Enjoy services are co-marketed on the train company website, benefiting from increased exposition.

4.2.2.4 Customer Relationships:

Customer relationships are basically automated, and the customer interface consists mainly of the website and the smartphone application, which are developed to provide all the necessary means for customers to help themselves in a self-service basis.

Optionally, customers can reach the company through the customer service call center, with no extra costs.

4.2.2.5 Revenue Streams:

Enjoy does not charge registration or fixed annual fees from its clients. Therefore, rental fees are the main revenue stream. The company charges an all-inclusive per minute fee, and also offers the clients the possibility to park the car without ending the rental period, in which

case a discounted per minute fee applies until the customer starts the engine again or decides to end the rental. Discounted hourly and daily fees are also available, including 50 kilometres of mileage, after which an extra fee per kilometre is charged.

Part of Enjoy's revenue streams are originated from new clients reached through the cross-selling operations in association with Trenitalia. Customers associated to Trenitalia loyalty programs are offered special conditions to subscribe to ENI's car sharing company.

4.2.2.6 Key Resources:

Enjoy key resources are the vehicle fleet, with over 1.5k vehicles so far; the service team responsible for the maintenance of the cars and client services; an integrated information system, that contains all the information related to customer base, payments, vehicle fleet etc., and is a key tool to the management of the company; the website and the smartphone application, which are the main channels for the customers to reach the service.

4.2.2.7 Key Activities:

Similarly to other car sharing companies, Enjoy's main activity, which represents its core business, is the car rental. A set of activities must be performed to keep the business running properly: the development and maintenance of the app and the website, the maintenance of the vehicles (including cleaning and fueling), the management of the fleet, and the customer service (assisting customers in case of need).

Other important activities are related to marketing campaigns and efforts to establish new partnerships, which are drivers for the success of the company expansion in new markets. It is also important for the company to ask customers for feedback, in order to best respond to customer demands.

4.2.2.8 Key Partnerships:

ENI main partners for the creation and operation of Enjoy are Trenitalia, Fiat Group and CartaSi. The company has also established partnerships with other supplier companies, e.g. an uniform supplier for the service team and a company specialized in vehicle cleaning.

Other important partnerships must be negotiated with the local municipalities for the regulation of the service and the guarantee of circulation and parking permits for service users

in standard public parking spots inside the area covered by the service. In exchange, Enjoy usually must pay an annual fee per operating vehicle.

4.2.2.9 Cost Structure:

The main costs the company incurs are those related to the key resources and activities. Among the costs, those with higher relevance are: the acquisition of the vehicle feet; maintaining, fueling and cleaning the vehicles; personnel costs and customer services; system development, operation and maintenance; insurance contracts; other expenses related to eventual improper use of the service.

Enjoy also incurs in paying municipalities annual fees in order to be allowed to operate and benefit from specific terms agreed with local municipalities, for example the possibility of parking the cars in any standard paid parking spot and circulating in limited traffic zones.

4.2.3 Enjoy Business Model Canvas

The company's BMC is presented in Table 3.

Table 3 – Enjoy BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• ENI
• Trenitalia (Italian train operator)
• FIAT (vehicle supplier)
• CartaSi (credit card company)
• Other commercial companies and suppliers
• Local municipalities
• Insurance companies</td>
<td>Key Activities

• Car rentals
• Vehicles maintenance
• Fleet management
• Customer service
• Marketing and establishing new partnerships
• Gathering customer feedback</td>
<td rowspan="2">Value Proposition

• Free floating car sharing rentals
• Fiat 500 fleet (design appeal, iconic car, four sits)
• Flexible, environmental friendly and economical mobility service
• Integration with train services</td>
<td>Customer Relationships

• Automated services through the website and application interfaces</td>
<td rowspan="2">Customer Segments

• Private users
- Ocasional users
- Frequent users
• Corporate clients
- Trenitalia loyalty program clients, including corporations</td>
</tr>
<tr>
<td>Key Resources

• Vehicle fleet
• Service team
• Integrated system, website and application</td>
<td>Channels

• Website
• Smartphone Application
• Customer service call-center
• Co-marketing with Trenitalia</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Vehicle fleet acquisition
• Maintenance, fueling and cleaning vehicles
• Personnel costs and customer services
• Insurance contracts
• Municipality taxes
• Other expenses related to improper use of the service</td>
<td colspan="2">Revenues

• All-inclusive rental fees (per minute, hour or daily rate)
• Extra fees per kilometre (above the included mileage per trip)
• Cross-selling (Trenitalia partnership)</td>
</tr>
</table>

Source: author

4.3 Car City Club – Io Guido Car Sharing Torino

4.3.1 Company Overview

Car City Club is a car sharing company operated by the Municipality of Turin, in Italy. It is an associate member of the Car Sharing Initiative (ICS), a national coordination structure promoted and sustained by the Italian Ministry of the Environment. The aim of the ICS is to offer support to local municipalities interested in developing local car sharing services, stimulating the creation of a national car sharing network and promoting sustainable mobility policies.

ICS offers financial, technical and legal support to the associated local companies, besides assisting the design of car sharing systems and services. Over the course of the companies' operations, it also provides the companies assistance during the launch of the program, communication, promotion and marketing services, technology and know-how for the fleet and service management and call-center services. The associated companies must comply with homogeneous standards regarding services, emissions and safety, in order to guarantee a minimum quality, the interoperability among the participant cities and common services and user procedures.

The local companies are responsible for meeting the standards, defining local pricing and marketing strategies, operating the business and promoting the integration with other mobility services. Car sharing services offered by the cities usually benefit from agreements with other municipality services, being able to differentiate their operations and offer advantages to users, for example the possibility to ride in limited traffic areas and parking the car in paid areas with no costs.

Given the standards and the know-how supported by the ICS, the associated companies' business model is basically the same, with similar operability. Seven provinces and 29 cities are currently ICS members, among which are Rome, Florence, Milan and Turin.

Car City Club was launched in November, 2002. As of the first semester of 2015, it had over 2700 active members and 78 parking areas, with a fleet of 126 vehicles. It offers two different rental possibilities: the classic modality, in which customers must deliver the car in the same parking area where they started the rental; and the one-way rental, in which the customer can deliver the car in a parking area different to that in which he started his journey. In both cases, customers must make a previous reservation, indicating the vehicle they want to

rent and the initial location (according to availability), the renting period and the location where they want to deliver the car at the end of the rental.

The company offers a varied fleet, with 11 different models of cars, including entry level models, an SUV, a 4x4 traction model, two cargo vans with different capacities and also an electric car. The company charges a fee per kilometre in addition to an hourly fixed fee – prices vary according to the vehicle chosen, the rental conditions (classic or one-way rental) and the period of the day (prices are cheaper between 22pm and 7am), and the fee per kilometre also decreases with the increase in the distance travelled. Daily rentals are also available, and given the integrated car sharing systems, customers also have the possibility of renting a car in the different associated cities, paying an extra fixed fee to access the service. Car City Club also charges an annual fee for the enrolment of its clients (CAR CITY CLUB, 2015).

4.3.2 Business Model Canvas Building Blocks

4.3.2.1 Customer Segments:

Car City Club main customer segments are private users, who use the service for locomotion in the city or for small trips, and corporate clients, who complement or substitute their fleet for the shared vehicles. Among the clients there are also public entities, e.g. the city municipality, which holds 72 activated accounts, distributed between its offices and partitions. Customer behaviors may vary according to usage frequency, average rental period and usage motivation.

4.3.2.2 Value Propositions:

The company's value propositions are based on the creation of a mobility alternative, complementing the other existing public transportation systems with a low environmental impact, offering its users the possibility of utilizing a private vehicle without the necessity of owning one.

Customers recognize value in the wide variety of vehicles in the company fleet, which allow them to choose a model according to its different needs, including the possibility of renting an electric model. Other sources of value creation are the convenience and usability of the service, the availability of vehicles and the distinguished accessibility for car rental services when compared to traditional car rental companies.

4.3.2.3 Channels:

The main channels to reach customers are the company website, a smartphone application and a call center. In the website, the company provides a detailed explanation of its services and offers the possibility for new customers to register their profile and change their account conditions.

The clients can make car reservations through the website, a smartphone application or a 24-hour available call-center.

4.3.2.4 Customer Relationships:

Customer relationships are basically automated, and the customer interface basically consists of the website and the application, which are developed to provide all the necessary means for customers to help themselves in a self-service basis. A 24-hour call-center is also available for customers to make or change reservations and solve other eventual doubts.

4.3.2.5 Revenue Streams:

Car City Club revenues consist basically on the annual fee charged from its customer base to keep their profiles active and the rental fees. Annual fees vary according to user characteristics (private or corporate clients) and to the service option chosen: users can choose to pay an annual fee to have full access to the service during the year, or alternatively they can choose to pay a smaller fixed activation fee every time they use the service (in addition to hourly and mileage fees).

Rental fees are the sum of two components: an hourly fixed fee and a fee per traveled kilometre. Prices vary according to the vehicle chosen and the period of the day.

4.3.2.6 Key Resources:

The key company resources required to make the business model work are the vehicle fleet, which nowadays comprises over 120 vehicles in the city of Turin, the exclusive parking spots, available in 76 different spots in the city, the service team, which is partially shared with the national initiative and partially proprietary, responsible for the relationship with customers and for the maintenance and supervision of the business, and the website and smartphone application, which must operate continuously without flaws to guarantee the service.

4.3.2.7 Key Activities:

As in every car sharing company, the main activity of the company, which represents its core business, is the car rental. In the case of Car City Club, rentals are offered for a fixed period of time, and the customer must decide in advance where to pick-up a car and where to deliver it (being constrained by the available designated parking spots and vehicle availability), in the moment of the reservation. Other key activities must be performed to keep the business running properly: the maintenance of the vehicles (including cleaning and fueling), the management of the fleet (vehicle repositioning, checking if cars were delivered in appropriate spots etc.) and the customer service (assisting customers in case of need).

4.3.2.8 Key Partnerships:

Car City Club main partnership is established with the national Car Sharing Initiative (ICS), in association with the Italian Ministry of the Environment. ICS provides technical, legal and financial support to its associated companies (as explained before). The company is part of a national car sharing network, and therefore offers an integrated service with other local car sharing companies.

Being a public service company run by the city municipality, Car City Club benefits of distinct advantages, namely the gratuity for customers to park in the streets while the service is active, the designated parking spots in public areas and the right for its cars to circulate in restricted traffic areas, as well as tax related benefits.

The company also seeks to establish further partnerships with other companies (e.g. retail stores, shopping malls, universities) thus offering exclusive parking spots in their parking areas and/or other combined agreements and promotions in order to reach new clients.

Car City Club has also established other partnerships or agreements with strategic suppliers, for example car manufacturers (the vehicle fleet is composed exclusively by Fiat Group cars), fuel distributors and insurance companies.

4.3.2.9 Cost Structure:

The main costs the company incurs are those related to the key resources and activities, namely: acquisition of the vehicle feet; maintaining, fueling and cleaning the vehicles;

personnel costs and customer services; system operation; insurance contracts; other expenses related to eventual improper use of the service.

Some of the costs are subsidized by the Italian Ministry of the Environment, in the scope of stimulating local municipalities to develop car sharing companies in association with the Car Sharing Initiative organization, in order to improve urban mobility with integrated, more effective and environmental friendly services.

4.3.3 Car City Club Business Model Canvas

The company's BMC is presented in Table 4.

Table 4 – Car City Club BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• Car Sharing Initiative (ICS) and Italian Ministry of Environment
• Car manufacturers, fuel distributors, insurance companies
• Retail companies, universities and other promotion partners</td>
<td>Key Activities

• Car rentals
• Vehicles maintenance
• Fleet management
• Customer service</td>
<td rowspan="2">Value Proposition

• Mobility alternative, integrated with other public transportation modals
• Economical, accessible and environmental friendly service
• Traditional and one-way station-based car rentals
• Varied fleet of vehicles, for different customer needs</td>
<td>Customer Relationships

• Self-service automated services through the website and application interfaces
• Optional call-center service</td>
<td rowspan="2">Customer Segments

• Private users
• Corporate clients
• Public entities</td>
</tr>
<tr>
<td>Key Resources

• Vehicle fleet
• Service team
• Integrated system, website and application
• Exclusive parking areas</td>
<td>Channels

• Website
• Application
• Call-center</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Vehicle fleet acquisition
• Maintenance
• Fueling and cleaning vehicles
• Personnel costs and customer services
• Insurance contracts
• Other expenses related to improper use of the service
The company is partially financed by the Italian Ministry of the Environment</td>
<td colspan="3">Revenues

• Annual subscription fees (or optionally an activation fee per use)
• Fixed rental fees (hourly or daily, according to the period of the day and type of vehicle chosen)
• Fees per traveled kilometre</td>
</tr>
</table>

Source: author

4.4 **Autolib**

4.4.1 Company Overview

Autolib is an electric car sharing company operated by the Bollorè industrial group, in association with Paris' Municipality. As a part of a Parisian plan of remodeling its public transportation system, in order to reduce traffic congestions, atmospheric and noise pollution, and following the launch of Velib (a successful bike-sharing service) in 2007, the City of Paris issued a call for proposals of an electric car sharing mobility service to be developed in the city.

The stated requirements for the service were: it should be based on electric cars and available for one-way journeys; it should be publicly accessible and shared; it should be auto-sufficient, meaning with no need of additional public staff; and it should also be accessible for charging of private electric cars. The successful proposal was Autolib, presented by the French investment and industrial holding group Bollorè, which didn't have experience in transportation services or in the car manufacturing industry, but had been involved in research and development of new battery technologies for over 15 years.

Autolib service is based on the use of full electric powered Bluecars, a model developed by Bollorè group in association with Pininfarina, the Italian automotive company, and produced by CECOMP, an Italian car manufacturing company. The car is equipped with lithium-metal-polimer batteries produced by Bollorè, which guarantee an average range of 250km per charge. The company offers one way point-to-point station-based rentals, and currently operates with more than 2500 vehicles and 875 parking stations, with over 4000 charging points – it was the first extensive public electric car sharing system ever created. The large scale of its operations is key to the company strategy and service proposal, which is to offer a practical, low environmental impact mobility alternative, complementary to other available public transportation services. The parking stations are strategically positioned in the Paris urban area and closer suburbs, according to the expected demand for short-distance trips in those areas.

The company started operating successfully in 2011, with an initial fleet of 250 vehicles and 250 rental stations. At the beginning, vehicle availability was an issue, since the number of subscribed clients exceeded the demand expectations. However, the company constantly expanded its operations, increasing the number of vehicles and rental stations to the level of service performed nowadays, with plans to reach the number of 3000 cars in circulation. In the end of 2013, Autolib expanded its operations in France, offering its services in Lyon, and at the

beginning of 2014 it also started operating in Bordeaux. In 2014, the company had reached over 150 thousand registered users. Bollorè group has also signed deals to start operating experimental offshoots of Autolib in Indianapolis (USA) and London (UK) in 2015.

Autolib clients can rent a car from any charging station and deliver it in any different station at the end of the rental period. Upon the registration for the service, customers have to pay a subscription fee, which varies according to its duration. Customers can opt among annual, monthly, weekly or daily service plans. Multiple drivers and corporate plans are also available. This way, the company aims to meet the demands of different segments of customers, comprising frequent users, occasional users, tourists and corporations, for example. Besides the subscription fee, the service is charged in basis of the utilization period, and the prices are calculated based on a per minute fee (a minimum fee corresponding to a period of 20 minutes of rental applies).

In addition, Autolib also offers the service of charging stations for private electric cars, motorcycles and bikes owners, which was an exigency imposed by the City of Paris during the company creation. Autolib offers parking spots with plug-in charging stations, and charges the service per hour. Customers have a limited time per day and per week in which they can park and charge their cars, and they also incur in paying an annual fee to have access to the service (AUTOLIB, 2015).

Although the company has reached a large customer base, it is not clear in which level the company has reached the goal of performing an “urban revolution”, as it refers to the expected benefits of its services. Autolib has faced political contestation, including the refusal of several municipalities in the suburban areas of Paris to become a part of the area serviced by the company, as they understood that Autolib’s proposal did not correspond to their mobility necessities and conceptions. Instead of characterizing itself as a mobility alternative integrated to other public transportation services, which was listed as one of the project objectives, the car-sharing service offered by the company is rather seen by many as an individual transport competing with public modals (HILDERMEIER; VILLAREAL, 2014).

4.4.2 Business Model Canvas Building Blocks

4.4.2.1 Customer Segments:

Autolib has the objective of meeting the demands of different customer segments. By offering a variety of service plans, the company reaches customers with different needs and characteristics.

Corporate plans are available from 25 hours/month and 10 subscribed drivers up to 2000 hours/month and 200 subscribed drivers, in order to meet the demands of different sized companies, from small and medium companies to large corporations. The service includes free-of-charge cost optimization: Autolib will charge for the services provided during the month based on the package deal that best fits to the client consumption in the period, thus limiting additional costs in which corporate clients could incur if the service use felt significantly under or over their initial estimations.

Autolib also offers annual, monthly, weekly and daily service plans, addressing different customer needs, from frequent users to occasional clients and tourists. Multiple users plans are also available for households or friends who wish to share the utilization of the service.

Another segment considered strategic is the one of students and young adults. According to Autolib's CEO, the company business model relies on changing mobility behaviors of predominantly young drivers, who would renounce to buy cars and use the car sharing services as an alternative. This particular customer segment has proven to be more aware of environmental causes and more opened to alternatives to traditional mobility solutions.

In addition to car-sharing services, Autolib also offers charging services for clients that are owners of an electric powered vehicle (either cars, motorcycles or bikes), who constitute a different segment of customers.

4.4.2.2 Value Propositions:

Autolib was created as part of the Parisian plan to remodel its urban transportation services, with the objectives of reducing atmospheric and noise pollution, cutting down traffic congestions caused by the extensive use of private vehicles and complementing the existing public transportation services.

The company was the first public electric car sharing service to operate in large scales in a big city. It aims to offer a carbon-free practical mobility alternative, widely available to customers and more logical, socially responsible and economical when compared to car ownership.

4.4.2.3 Channels:

Autolib is basically characterized by a self-service platform, in which customers can access the service by themselves in any Autolib station available. Therefore, the primary channels for the delivery of the service are the stations.

Besides, the company has a Reception Center with staff dedicated to the divulgation of Autolib and to customer service, solving users questions and helping them through the necessary process regarding the subscriptions. In addition, the company also has subscription kiosks in Autolib centers, where clients can adhere to the service.

The main channels accessed by customers, however, are the website and the smartphone application. Through these channels, the clientele can get all the information concerning the company, its services, fares, etc., find the closest Autolib's stations and check for available cars, parking and charging slots and make reservations. In the website, customers also have access to a personal account area which contains all the detailed information about their service plan, rentals and billing details. Also through the website, it is possible to go through the basic procedures for the subscription. However, to activate the account and receive the RFID card that gives access to the service, customers still have the need to go to a subscription kiosk.

In addition, Autolib also offers a 24h operating call-center, which can be contacted directly through the car, or optionally by telephone, in case customers need further assistance.

4.4.2.4 Customer Relationships:

Autolib services are designed to guarantee an efficient self-service platform for customers. The main customer interfaces are the website and the smartphone application, besides the Autolib stations – through which customers have access to all the usual functionalities necessary to run the service.

However, the company has a customer service team to assist users in case of need. The staff can be found on site at the Autolib kiosks or Reception Center, or optionally can be

contacted through the call-center. If necessary, the company will send a staff member to assist the clients.

4.4.2.5 Revenue Streams:

Autolib revenue streams are generated by the three different lines of services it offers: private user car sharing plans, corporate clients car sharing plans and charging station service plans. In all three service types, the company charges a subscription fee (valid for a defined period of time, renewable) and a fare per utilization.

Private users have access to a varied range of service plans, from daily to annual subscriptions. Rentals are charged per minute, but the minimum fee corresponds to 20 minutes of rental. The fares per use decrease with the increase of the service plan duration. For the first hour of rental the minimum fee applies, but for longer periods fares rise – this is to stimulate a higher rotation of cars among users, according to the service purposes.

Corporate clients can also opt for a varied range of service plans, which include a number of subscribers and hours of rental in the package – ranging from 10 subscribers and 25 hours of rental per month up to 200 subscribers and 2000 hours of rental per month. Exceeding hours of utilization or extra subscribed drivers are charged in addition to the service package price.

4.4.2.6 Key Resources:

Autolib depends on a variety of resources to keep its operations running properly. To begin with, essential resources are the vehicle fleet of more than 2500 Bluecars and the Autolib stations with parking spots and charging facilities, which are the basic assets rented.

In addition, the company relies on its website and smartphone application as the main customer interfaces, which are fundamental to deliver the service properly.

In order to manage operations, another key resource is an integrated information system, containing all the necessary information regarding revenue streams, customer profiles, reservations, car availability and positioning, among others, which are fundamental inputs for the correct operation of the service by the management team.

Other resources are the Reception Center and Autolib kiosks, through which the company reaches its customers and register new users, and the service team, responsible for many key activities, detailed below.

4.4.2.7 Key Activities:

Autolib's main activity is the provision of electric car sharing services for its subscribed customers. In order to keep its operations running properly, the company has to perform several back-up activities.

To begin with, the maintenance of vehicles is very important concerning the availability of the service. The management of the fleet and the recharging of vehicles are in part shared with the customer base, which is responsible to reconnect the cars in the charging stations to end the rental period. However, the company still has to manage the fleet and eventually reposition vehicles that might have been left in inappropriate places or that might be overly concentrated in some areas of the city, although this particular situation is more common in free-floating car sharing services.

Another important activity is the customer service. The service team must assist the users in any case of need and be available 24 hours a day.

The development and maintenance of information systems is also quite important for the managerial activities in the company. Besides, the development and maintenance of the website and the smartphone application are fundamental for the service performance, as these two platforms are the main customer interfaces.

In addition, marketing efforts, client surveys and interaction with customers are important to understand customer demands and reach a larger client base and better levels of service.

4.4.2.8 Key Partnerships:

Autolib is run by a public-private joint venture between the City of Paris and the Bollorè Group, which might be considered Autolib's main partners. The company has also established agreements with other partners during its development and implementation phases, among which the most important are Bluecar, Pininfarina, batScap, CECOMP and other French municipalities.

Bluecar company is the Bollorè's division responsible for the development and commercialization of the Bluecar electric vehicle, which comprises Autolibs fleet. Pininfarina is the Italian automotive and design company based in Turin, which was responsible for the design of the concept car Bluecar B-Zero, which originated the commercial version of the Bluecar. These are produced by CECOMP, an Italian automotive company responsible for the development and industrialization of all units comprising Autolib's fleet. The company batScap is a research center run by the Bollorè Group, dedicated to the development of efficient and high capability LMP batteries and supercapacitors that equip the Bluecar.

Besides the co-work with the City of Paris, Autolib has established partnerships with more than 40 municipalities in adjacent areas of Paris to which the company's services are extended. These partnerships are vital for the construction of Autolib's parking and charging points in public areas and also for regulation purposes.

4.4.2.9 Cost Structure:

Autolib's cost structure is directly related to the key resources and key activities on which the company depends to perform its services. Hence, it is possible to list the main costs as follows: Bluecar fleet acquisition, maintenance and cleaning; instalation of Autolib stations, information kiosks and reception center; managerial activities, including strategic and operations management; customer services and personnel costs; development and maintenance of integrated information system, website and smartphone application; insurance costs; other costs related to improper use of the service. Autolib has particularly faced problems with vandalism, which made the company incur in high costs of maintenance and also consider safety improvements, for example video surveillance of Autolib's stations

4.4.3 Autolib Business Model Canvas

The company's BMC is presented in Table 5.

Table 5 – Autolib BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• City of Paris
• Other 40 french municipalities surrounding Paris
• Bollorè Group
• Bluecar
• Pininfarina
• CECOMP
• batScap</td>
<td>Key Activities

• Car rentals
• Vehicles maintenance
• Fleet management
• Customer service</td>
<td rowspan="2">Value Proposition

• First large scale public electric car sharing service company
• One way point-to-point rentals
• Efficient and low environmental impact mobility alternative, complementary to public transportation services
• Flexibility, availability and economic efficiency when compared to car ownership</td>
<td>Customer Relationships

• Automated services through the website and application interfaces</td>
<td rowspan="2">Customer Segments

• Private users
- Frequent users
- Occasional users
- Tourists
- Young drivers
- Households
• Corporate clients
- Small
- Medium
- Large
• Owners of electric vehicles (charging services)</td>
</tr>
<tr>
<td>Key Resources

• Bluecar vehicle fleet
• Autolib stations, kiosks and reception center
• Integrated information system, website and application
• Management and service team</td>
<td>Channels

• Reception center and Autolib’s kiosks
• Website
• Smartphone application
• Customer service call-center</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Vehicle fleet acquisition
• Instalation of Autolib stations, kiosks and reception center
• Maintenance, cleaning and recharging
• Development and maintenance of website, app and information system
• Personnel costs and customer services
• Insurance contracts
• Other expenses related to improper use of the service</td>
<td colspan="3">Revenues

• Private user plans
- Subscription fees
- Rental fees (per minute)
• Corporate clients
- Service packages
- Additional fees per minute and per extra driver subscription
• Charging service plans for electric vehicle owners
- Subscription fees
- Usage fees</td>
</tr>
</table>

Source: author

4.5 Bee – Green Mobility Sharing

4.5.1 Company Overview

Bee – Green Mobility Sharing is a car sharing service created by NHP ESCo, a company that operates in the green economy sector, designing and manufacturing equipment that generates energy from renewable sources and realizing interventions for energy efficiency improvement. Bee started operating in 2013 in the city of Naples, in Italy, as the first electric car sharing company in Italy and the second in Europe.

It operates with a fleet of Renault Twizy vehicles, a compact model, powered by an electric motor, with a range of 80km per battery charge and capacity for two people, and also a few four-seat Renault electric cars. The utilization of electric vehicles is a key to the company strategy of offering a low environmental impact mobility alternative, in line with its creator company business philosophy. The fleet comprises 40 vehicles and the company has over 2500 active users in Naples.

Until 2014, the company operated with a point-to-point station-based business model. Customers could reserve the vehicles or directly find them in one of the 30 available Bee-Points, proprietary parking areas equipped with charging plugs spread in strategic areas in the city. Upon the reservation, it wasn't mandatory for customers to decide beforehand for how long they would use the car or where they would deliver it. When ending the rental, however, customers could only return the car in one of the Bee-Points.

The company had established an agreement with Naples municipality in order to propitiate the use of the cars in traffic restricted areas in the city center, in preferential lanes and also for the right of parking the car for free in standard parking spots in the streets, if users needed to park the car before ending the rental period. However, in 2014, the municipality revoked the agreement, forcing the company to pay an annual fee of €100 per vehicle for the authorization of circulation in the central area and cancelling the right for free parking in the streets – a political action related to the creation of a competitor company with the support of the municipality, that would start operating with only 12 vehicles and with all the benefits that were then denied to Bee.

As a consequence, the company stopped its operations in the second semester of 2014. After many rounds of negotiations, it conquered again the license for parking in the standard parking spots in the streets for free and circulating in the limited traffic zones, but only for an

experimental period until July, 2015, therefore preventing the company to make long term strategic plans or investments in the city.

The trajectory of the company proves how important it is for the success of car sharing business to be supported by the public power. Without the understanding of the municipalities that car sharing is an interesting alternative to complement often deficient transportation systems in the cities, and the resulting collaboration provided by public authorities and agencies to guarantee operability conditions and free competition in the market, many barriers are created, making it difficult for private car sharing companies to operate sustainably.

Bee, however, reinitiated its operations in the city with innovations in its business model: from October, 2014, Bee started operating in the free-floating model. In this new operation strategy, customers can start and end their rentals in standard parking spots on the streets inside the free floating area, without the obligation of parking in the Bee-Points (which have been reduced to 11 in 2015). The company is responsible for managing the fleet and charging the vehicles, but customers that rent the car for longer periods can recharge it anywhere, or alternatively in the available Bee-Points (for free).

New customers are required to register in the company website. Bee chargers an activation fee, offering different options to its clients: private users can opt for a one-year-long activation, for the price of €30, or alternatively a 3-day-long activation, which costs €10 and might be suitable for tourists, for example; corporate clients can opt for activating 1, 3 or 10 accounts, benefiting from discounts if choosing for more than one account (which costs the same as a private annual account - €30). Rentals are charged per minute and include maintenance, insurance, battery charge and parking. During the first hour, the fee is €0.15 per minute, and rises to €0.20 and €0.25 in the second and third hour, respectively. After this period, however, the utilization of the vehicle is free of charge until the reach of the maximum rental period, set in one day (BEE, 2015).

4.5.2 Business Model Canvas Building Blocks

4.5.2.1 Customer Segments:

The main customer segments Enjoy serves are, similarly to other car sharing companies, private users and corporate clients.

Bee offers different service plans for both segments, trying to suit customer needs. It also offers its customers the possibility of suggesting new tariffs and service plans on the website, in case they don't feel their necessities are met. The company then analyses the proposals, which can turn into a new service plan offered by the company.

4.5.2.2 Value Propositions:

Bee centers its value propositions in offering a low environmental impact mobility alternative. It operates with a free float model and a fleet of electric vehicles. As a consequence of the utilization of electric powered cars, operating costs are reduced, given the fact that electricity costs much less than gasoline, and therefore the company is able to offer very competitive fees when compared to other car sharing companies.

Customers recognize value in the environmental friendly philosophy of the company, but are also driven by the flexibility and practicality of the service, which provides them other benefits such as the possibility of driving inside the limited traffic zones in the city center, parking with no extra costs in the standard parking areas on the streets and also the possibility of parking at the Bee-Points, which is a great advantage considering the eventual difficulty of finding parking spots in the city. Bee vehicles are also allowed to circulate during periods in which all the other cars face traffic restrictions, when the city reaches high concentration of atmospheric pollutants.

4.5.2.3 Channels:

The main channels the company holds are the website, the call center and the smartphone application. Through the channels, customers can locate a vehicle in a map, also having access to information about the battery charge, and then make a reservation. On the map, it is also possible to identify the free floating area in the city and the location of the Bee-Points.

The registration of new customers is made in the website, where the company also keeps a space for customers to suggest new service plans and contact the company for any purposes (solving doubts, giving feedback, etc.). The call center is free of charge and operates 24h a day.

4.5.2.4 Customer Relationships:

Similarly to other car sharing companies, customer relationships are performed through the automated customer channels (mainly the website and the application, the main customer

interfaces), which are developed in order to guarantee customers the possibility of using the services without further assistance. Optionally, clients can also reach the company through the customer service call-center.

4.5.2.5 Revenue Streams:

Bee has basically two different revenue streams: subscription fees and rental fees.

The company chargers annual subscription fees from private users and corporate clients, with different options of service plans (starting from €30 and one driver account), and alternatively it also offers a 3-day subscription that might attend specific needs of private users, for example tourists visiting the city.

Rental fees are charged per minute of utilization. The prices are €0.15 per minute during the first hour, €0.20 per minute during the second hour and €0.25 per minute during the third hour of rental, after which the customer doesn't pay anymore for the service until reaching the end of the reservation period (limited to 24 hours). Additional fees are charged in cases of misfortunes or misuse of the service.

The fees are all-inclusive, and the customers don't face any extra costs with insurance, refueling (or recharging), maintenance, parking or customer services.

4.5.2.6 Key Resources:

Bee key resources are: the vehicle fleet, composed by over 40 electric vehicles; the Bee-Points, private parking areas with adapted infrastructure to recharge the vehicles; an integrated information system, used to manage the fleet, process reservations, manage rentals and revenue streams; the website and the application, which are the main company channels; the service team, responsible for the maintenance and client services.

4.5.2.7 Key Activities:

The main activity Bee performs is renting cars, operating with the free floating model of car sharing. In order to offer this service, which generates the company's revenue streams, Bee has to perform several different activities.

The company must keep its resources in good operating conditions, realizing the maintenance of the vehicle fleet (including recharging and cleaning) and of Bee-Points, and

also developing and maintaining the website and smartphone application, besides offering the customer service to assist clients during the service utilization. Bee has also the need to manage the service and the vehicle fleet.

Other important activities are related to the management of the company and the definition of its business strategy. It becomes imperative to understand customer needs to improve the service constantly, and also establish partnerships and agreements to maintain or improve the operating conditions.

4.5.2.8 Key Partnerships:

Bee has established important partnerships to guarantee the feasibility of its business proposition. The company's main partners are Renault, Siemens, ALD Automotive and TomTom Telematics.

Renault is a key partner, supplying the electric vehicles that compose Bee's fleet. Siemens is a global leader in smart grid and charging station technology, playing an important role in the development and installation of the Bee-Points. ALD Automotive, a global player in the full operational leasing and fleet management industry, and TomTom Telematics, global leader in professional service of vehicle tracking and tracing, with a particular point on on-board information, provide the company the know-how and technology necessary to vehicle location and fleet management.

Bee has also established local partnerships for the installation of Bee-Points in private areas. Another important partnership could be formed with an insurance company to cover the fleet and the service users.

The company has struggled to negotiate a long term agreement with Naples municipality, which has a lack of regulation of car sharing practices. This fact that has limited Bee's conditions to operate in larger scales and set long term strategy plans for investments and operations in the city.

4.5.2.9 Cost Structure:

Bee main costs are directly related to its key resources and the activities the company performs. Among the most relevant costs, it is possible to identify: the acquisition of the vehicle fleet; the installation and maintenance of Bee-Points; the development and maintenance of

integrated information systems, website and smartphone application; the operational costs related to maintenance, cleaning and recharging of the vehicle fleet, as well as its management; customer services and personnel; insurance contracts costs; other costs related to improper use of the service.

4.5.3 Bee – Green Mobility Sharing Business Model Canvas

The company's BMC is presented in Table 6.

Table 6 – Bee – Green Mobility Sharing BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• Siemens
• Renault (electric vehicle supplier)
• TomTom Telematics
• ALD automotive
• Local partners (installation of Bee-Points)
• Insurance companies</td>
<td>Key Activities

• Car rentals
• Vehicles maintenance
• Fleet management
• Customer service</td>
<td rowspan="2">Value Proposition

• First exclusively electric car sharing service company in Italy.
• Free float service for rental of exclusively electric cars (Renault Dwizy models)
• Efficient and low environmental impact mobility alternative
• Flexibility, availability and economic efficiency when compared to car ownership or other car rental services
• Competitive pricing</td>
<td>Customer Relationships

• Automated services through the website and application interfaces</td>
<td rowspan="2">Customer Segments

• Private users
- Locals
- Tourists
• Corporate clients</td>
</tr>
<tr>
<td>Key Resources

• Electric vehicles fleet
• Bee-Points (private parking spots with recharging plugs)
• Service team
• Integrated system, website and application</td>
<td>Channels

• Website
• Smartphone application
• Customer service call-center</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Vehicle fleet acquisition
• Instalation of Bee-Points
• Maintenance, cleaning and recharging
• Development and maintenance of website, app and information system
• Personnel costs and customer services
• Insurance contracts
• Other expenses related to improper use of the service
• Municipality taxes</td>
<td colspan="3">Revenues

• Annual subscription fees
• Rental fees (per minute or daily, no mileage limit)</td>
</tr>
</table>

Source: author

4.6 Comparative analysis of car sharing companies

The conducted studies concerning the car sharing operators' business models through the Business Model Canvas methodology has proportioned a deeper understanding of the companies' strategies and operations, allowing the comparison between the considered companies with focus on the nine building blocks that represent the main components of the business models. The objectives of the comparative analysis are to identify the advantages and limitations of the different strategies adopted by the companies and analyze the conditions in which the companies might coexist and compete in their shared markets.

To begin with, all five companies share value propositions inherent to the car sharing concept. Offering a mobility alternative with low environmental impact, complementary to the available public and private transportation modals and economically efficient when compared to car ownership is a value proposed by all of the analyzed companies. However, the degree in which the companies succeed in delivering these values to their customers depend on their operations characteristics.

One of the main sources of differentiation for car sharing operators is the service model adopted, which is also comprised in the companies' value proposition. The option for traditional round trip car sharing lessens the complexity of fleet management, since the vehicles are returned to the same dedicated parking spaces where they were initially rented. However, this form of operation provides less flexibility for the users, which must start and end their journey in the same parking spot and pay for the service during the entire time of rental. Besides, the company requests the client to make a previous reservation, upon which the rental period must already be decided, furtherly restricting service flexibility. Consequently, this operation model, adopted by the company Car City Club, is not the most convenient for the customers' routine needs of transportation, being more suitable for some types of occasional usage.

The point-to-point station based service model, on the other hand, grants customers more flexibility when compared to round-trip car sharing. In this type of service, customers can rent the car in one station and deliver it in any other station of the company. As a trade-off, the car sharing operators face more challenging logistic operations, since the positioning of the cars are subject to unbalances resulting from concentrated demands and usage patterns. It is a key-issue for the operators to deal effectively with this problem in order to increase the vehicle availability for customers. Car City Club offers this kind of service with higher fees when

compared to round-trip rentals, but still requests that users make a reservation defining previously the point of access to the vehicle, the delivery station and the rental period. Autolib also operates a point-to-point station based service, but offers higher levels of flexibility: customers can make a reservation for a vehicle up to 30 minutes before the beginning of the renting period or optionally access any available car directly on the stations. The rental period can be of any length and there is no need to define it in advance – to end the service, the client can consult the vehicle GPS system to find an available parking spot near its final destination.

The point-to-point free floating service model, offered by Enjoy, Car2Go and experimentally by Bee, is the car-sharing service that grants customers the greatest flexibility among the existing operation models. In this service model, customers can locate, optionally reserve and then access an available vehicle directly on the street or through the companies' websites and smartphone applications and use it for any period of time. At the end of the rental, the car can be parked in any standard parking spot on the streets inside the city area covered by the service. This form of operation reduces the need for dedicated parking spaces, but carries the highest fleet management complexity. Besides, the elimination of proprietary parking spaces might create difficulties for customers in areas where it is hard to find available standard parking spots. Bee, for example, has received customer complaints in the city of Naples when they changed their service from exclusively point-to-point station based model to the point-to-point free floating trials, since it is usually very difficult to find available parking spots in Naples central areas. This problem is usually addressed by the free-floating car sharing companies with the creation of designated parking spots in critical areas.

Point-to-point operation models are those with the highest potential to meet customer demands, complementing the available public or private transportation systems and possibly substituting the use of private cars. However, the fleet availability is an extremely important value that must be delivered by the car sharing companies if they wish to reach the afore mentioned objectives, especially if they aim for substituting car ownership, in which case the private car is practically always available for its owner. Autolib, Enjoy and Car2Go rely on large scale operations with large fleets to address this question, trying to minimize fleet management efforts and letting the spontaneous use of the service by customers to reposition the largest percentage of vehicles. Car City Club and Bee, on the other hand, are still experimenting their business models, having recently adjusted their service models, and operate in smaller scales.

The characteristics of the vehicles offered in the fleet are also a considerable value for customers. Usually, car sharing companies bet on compact urban vehicles, which are easy to drive and park in limited spaces. This is the case of Autolib, Car2Go, Enjoy and Bee, each of which offers only one standardized vehicle model. The standardization of the fleet provides the companies a stronger visual identity, increasing brand recognition by customers, and also facilitates fleet acquisition and partnering with vehicle suppliers, besides reducing maintenance costs. Car City Club, on the other hand, offers a variety of models, ranging from compact cars to sport utility vehicles and cargo vans, meeting different customer needs.

Autolib and Bee have opted for pure electric vehicle fleets, which are imperative for their strategic views. Bee was created by a company operating in the green energy field, while Autolib has among its main objectives the reduction of pollution originated from traffic in the city of Paris. Car2Go also offers fleets comprised of electric vehicles in selected cities (e.g. Amsterdam) Car City Club recently added to its fleet a few electric units. The option for electric vehicles is motivated by environmental purposes and also by the belief of further value creation for educated customers who are aware of the environmental impact caused by the extensive use of fossil fuels.

Building a large customer base and increasing the average service usage among customers is very important for the car-sharing companies: private sector operators must reach a minimum target of service hours to break-even and turn the operations into a sustainable business, while public companies must meet the public demands to create the aimed positive impacts on traffic, mobility and environmental spheres. The car sharing companies focus basically on three aspects to reach their customer bases, corresponding to three of the business model canvas building blocks: customer channels and marketing efforts; partnerships to target specific customer segments; and definition of service plans and billing strategies (which compose the revenue streams) to meet customer demands.

To begin with, all of the considered companies rely on common customer channels, reaching their clients through the divulgation of their services on proprietary websites and assisting their client base through smartphone applications, call center services for personal assistance and once again through the website, besides the social networking channels. Also, all the companies have applied similar marketing strategies for the divulgation of their services, realizing marketing campaigns in areas of high circulation of the cities where they operate, mainly during the launch of the services. However, the companies with stronger financial

positions (Autolib in Paris, Car2Go in Europe and North America and Enjoy in Italy) have been able to invest higher amounts in marketing campaigns.

Car2Go has a specific focus on the customer segment of young adults, which represents a high potential demand for car sharing. Given this fact, the company usually makes marketing campaigns in universities, offering the possibility of immediate subscription for their services and occasionally 100% discounts for the subscriptions. Besides, the company benefits from a relatively strong brand recognition, since it is presently the largest free-floating car sharing operator. Enjoy has also applied a similar strategy in Italy, realizing similar marketing campaigns in universities. Independently of the marketing investments, however, car sharing companies still depend heavily on word-of-mouth divulgation of its services to reach a majority of potential customers – one of the challenges of the car sharing market is the limited knowledge of the general population considering the existence and the characteristics of this type of service.

The definition of pricing strategies is also important when addressing different customer segments, given the fact that different price structures and models of service are more suitable for different customer needs. Among the five considered companies, only Enjoy does not have specific service plans directly targeted to corporate clients. All the other companies offer plans with multiple subscriptions and discounted rates to meet the demand of companies that might complement or substitute their private fleet with the car sharing services. Autolib, Bee and Car City Club offer daily or short term subscriptions in order to meet the demands of very occasional users or tourists, reaching a niche customer segment that might be economically interesting for the companies. In order to comply with requirements of frequent users, Autolib offers annual subscription plans with discounted rates, while Car2Go offers minute packages with promotional prices. Bee, Enjoy and Car City Club, on the other hand, do not have special offers or service packages for frequent users.

Enjoy is the only company that doesn’t charge subscription fees, although Car2Go usually makes marketing campaigns in which its one time subscription fees are also brought to zero. Autolib, Car City Club and Bee, on the other hand, charge annual subscription fees for their basic service plans. All the companies charge the service usage proportionally to the rental period, and the fees already include costs related to refueling or recharging, maintenance, insurance and parking.

Through the establishment of strategic partnerships, the companies might seek to reach specific customer segments. The company that has given most attention to this strategy is Enjoy. The Italian car-sharing operator has established a permanent partnership with Trenitalia, the state-owned main train operator in Italy, with the goal of reaching a preponderant share of corporate clients segment. Trenitalia has a large customer base which includes the segment of business clients that need to travel back and forth between their work places and their residences. Enjoy plans to meet the demand of this clientele for local transportation, complementing the train services – the company has an agreement with Trenitalia for the cross-marketing of its services through the train operator channels, and offers special bonus upon the subscription for new customers that are registered in Trenitalia's customer loyalty program. Car City Club, on the other hand, has established local partnerships with selected retail companies and universities in an effort to reach a larger customer base also through cross-marketing initiatives. Besides, the company has service agreements with local public entities and the Turin municipality.

The importance of partnering in the car sharing business, however, is not limited to attracting new customers. Car sharing companies can benefit from strategic partnerships to leverage their operations, complementing their internal capacities and reducing costs. The five considered companies have established buyer-supplier partnerships in order to assure a reliable supply of the main assets necessary for their operations. Particularly, the companies Enjoy, Car City Club and Bee have agreements with vehicle suppliers for the acquisition of their fleets, which represent significant fixed costs. Bee fleet comprises only electric vehicles supplied by the French automaker Renault, while Car City Club and Enjoy have the automotive company Fiat as a partner, responsible for the supply of the entire vehicle fleet of both companies. Given the larger scale of operations of Enjoy, it is expected that the company achieves higher economies of scale and relative cost reduction on the acquisition of the fleet.

Car2Go, on the other hand, is a subsidiary of the Daimler AG group, which produces the Smart ForTwo models that comprise its fleet. The Bollorè Group, which runs the company Autolib, has developed its own vehicle, the Blue Car, with the collaboration of strategic partners such as Pininfarina, the Italian design studio, and CECOMP, an Italian car manufacturer responsible for the production of the vehicles.

Other important partnerships concern the technology necessary for the operation of the business, including the development of integrated information systems for the fleet

management, which must be connected to the telematics installed in the vehicles, registration of users, billing process and other complex internal activities. Car2Go has established a partnership with Europcar, a traditional car rental company which provides the necessary know-how for the fleet management. Bee has as partners ALD Automotive, a global player in the full operational leasing and fleet management industry, and TomTom Telematics, global leader in professional service of vehicle tracking and tracing, which provides the company the necessary know-how and technology for the fleet management. Car City Club, on the other hand, has the support of ICS (Car Sharing Initiative), which supplies the associated public companies the information systems and technology needed for the performance of operations.

Finally, it is vital for the car sharing companies to establish partnerships with the local governments of the cities where they operate in order to align the services with the city regulations and also establish agreements granting the companies operational conditions, regarding the use of the public space and parking, taxations and other benefits. These agreements are, as expected, more easily handled by public operated companies (for instance, Car City Club) and public-private companies (the case of Autolib), whose strategies and operations are aligned with the public interests. However, even Autolib has faced difficulties to establish agreements for the operation of the company with other local municipalities in Paris adjacent areas, which believe that Autolib's proposition does not represent their mobility interests.

Privately operated companies, on the other hand, besides depending on proper regulation for their operations, also need to negotiate with the public authorities the use of standard public parking spots (especially in the case of free-floating companies), the right to use public spaces for the construction of fixed stations (in the case of station-based operations) and other benefits, for example the access to limited traffic areas. Some cases prove that the establishment of agreements with local authorities might be considerably complicated. Bee had its concessions for the access of limited traffic areas and for the use of public parking spots reviewed by the Municipality of Naples, which motivated the discontinuation of their operations in 2014, until new concessions were granted only for an experimental period. The city also lacks on proper regulations for car sharing services, which prevents the company from planning long term strategies. Car2Go has also faced varied difficulties in particular cities, mainly in Canada and in the United States, where many particular parking regulations apply. In these cases, the company usually offers a wider variety of designated parking spots, operating

a hybrid service combining characteristics of free-floating and one-way station-based car sharing operations, adapting its services to the local restrictions.

Regarding the key activities, structural similarities are identified among the analyzed companies. In all cases, the core activity is the offer of short period car rentals, and the backbone activities necessary for the business operation are the registration of users, management of reservations, billing operations, the fleet management, vehicles maintenance and the customer services. Differences in the basic operations arise according to the operational models – as mentioned before, free-floating companies face more complexity on the fleet management, for example.

The key resources commonly comprise the vehicle fleet, the integrated information systems developed to manage the fleet and the rentals, the websites and smartphones applications, which are the main customer channels, the service and management teams. Companies operating with a station-based service model (Car City Club, Autolib, Bee and occasionally Car2Go) also have their proprietary parking spots, including recharging facilities in case of operation with electric vehicles, as important resources.

The cost structure of car sharing companies is directly related to the key activities and resources that are necessary for their operations. It is characterized by a high portion of fixed costs, related to the fleet acquisition and the development of complex information systems to operate the business. Station based operators (Autolib, Car City Club and Bee) also incur in higher infrastructure costs for the installation of the stations, although free-floating operators also install proprietary parking spots in locations with lower availability of public parking spots.

Other common costs among the companies are related to maintenance, cleaning and refueling or recharging the vehicles, the management of the fleet (including vehicle repositioning), municipal taxes included in the agreements for the service authorization and the use of public facilities (as in the case of parking agreements established by free-floating operators, or the authorization for the circulation in restricted traffic areas), and personnel costs.

Unfortunately, due to the lack of available information regarding the costs in which the companies incur in each of its activities and resources, it was not possible to effectively determine how costs vary among the different service models and the different solutions applied by the companies in its operations.

In particular, it is also not clear yet what is the net effect of the option for electric vehicles. The electrification of fleets has some positive effects on costs: vehicles usually require less maintenance, since they are characterized by a much lower number of components and engine fluids, and running costs of electric vehicles are comprehensively lower than gasoline powered vehicles, given the fact that electricity is cheaper than gasoline. However, the utilization of electric vehicles raises the costs of fleet acquisition and the complexity of fleet management, given the limited range and the longer periods of time required for recharging, and also creates the need for proprietary charging stations. Given the limited data availability, it was not possible to determine and compare the extent of positive and negative effects of electric vehicle utilization, although Le Vine et al. (2014) indicates that overall, the operation of electric vehicles is less economic from the perspective of car sharing companies.

5 ANALYSIS OF JOYCAR

5.1 Company overview

Joycar is a Brazilian car sharing company created in 2012, operating in the state of São Paulo. Joycar is still configured as a small scale business, with a fleet of 3 proprietary vehicles and 8 vehicles supplied by its main operational partner, ALD automotive, a company that leases and manages vehicle fleets.

Joycar was firstly idealized as a car sharing company that would operate in large scale with individual end users, based on free floating car sharing operational models. However, due to difficulties created by the capital intensity demanded by this kind of operation and also difficulties in the relationship with public authorities to create operational conditions with the use of the public space, it had to start with a different model.

The company operates a round trip service model and focuses on two customer segments: corporate clients and residential condominiums. In both cases, vehicles are supplied for the exclusive use of the clients: companies' employees and condominium inhabitants, respectively. The vehicles are located in fixed stations (parking spots) in the clients' addresses, where rentals are started and finished.

Users must first register to the service in the company website in order to create their accounts (registering their credit cards to which the rentals will be charged), and then they receive their RFID cards that grant access to the vehicles. For renting a car, it is mandatory to make a reservation on the website, specifying the point and time of departure and arrival.

5.2 Business Model Canvas analysis

Similarly to the previous analysis of selected car sharing companies, the main aspects of Joycar's business model are identified with the aid of the Business Model Canvas tool. In each of the building blocks, comparisons are made to the different solutions and strategies adopted by the CSOs analysed in Chapter 4, enlightening the differences, similarities and possible consequences resulting from Joycar's business model definition.

5.2.1 Business Model Canvas Building Blocks

5.2.1.1 Customer Segments:

Joycar has focused its operations on two particular customer segments. The first segment is that of corporate clients: Joycar offers companies the supply of a certain number of vehicles to be exclusively used by employees of the client company, according to its demands – service contracts can be individually negotiated with each client. The utilization of the services is simple: the employees are registered in the company website and receive their individual login to make reservations through the website, and also their own card to access the vehicles.

Among the benefits of car sharing utilization, corporate clients can achieve cost savings with the reduction or substitution of private fleets, the reduction of taxi utilization and cut on costs with parking dependences. Besides, companies might benefit from higher employee satisfaction levels with the availability of the service and from the creation of a sustainability image demonstrated to the society.

The second segment in which Joycar has focused its efforts is the segment of condominiums and apartment complexes. The company offers its services to construction companies and real state incorporators, which can offer car sharing services to the inhabitants, who get access to cars exclusively allocated to the condominiums. In the service agreement, the condominiums are responsible for making available the parking spot for the shared vehicle, but the inhabitants do not incur in any extra costs for the service availability in the condominiums' monthly fee: the shared vehicle is characterized as a pay-per-use service, and only the active users will incur on the regular charges, with no downsides to other residents.

Besides these main segments, Joycar also offers its services to private individuals. However, private users have not been the main focus of the company's operations in its initial phase on the market.

When compared to the other analyzed companies, it is possible to notice significant differences and limitations considering the current customer focus strategy adopted by Joycar. All the foreign companies comprised in the present study offered special plans for corporate clients, without neglecting this important segment. However, the companies usually offer its corporate clients the access to the same vehicles used by individual end users.

In Joycar's model, in which it offers the exclusive access of vehicles for corporate clients, other individual end users, which represent a significant share of the market, end up forgotten by the company – currently, it offers only one vehicle with free access for individual end users that do not belong to the condominiums or companies served by Joycar.

5.2.1.2 Value Propositions:

Joycar centers its values propositions in offering an effective mobility alternative to the use of private vehicles or private corporate fleets, taxi services and public transportation modals. Among the benefits of its service utilization, it promotes cost savings when compared to other alternatives, a healthier lifestyle and a more sustainable and environmental friendly form of transportation.

Comprised in its value propositions is the offer of round trip car sharing services, which should be easily accessible and available for its clients and result in flexibility and ease of use for its customer base, which are values proposed by every car sharing company.

However, the company option for the round trip service model reduces the flexibility for customers, limiting the degree in which the service meets customers' demands for transportation. As observed in the previous analysis, one way car sharing services and, more specifically, the free floating service model, are those that guarantee the individuals the higher flexibility in vehicle utilization, increasing the potential demand for the service utilization.

5.2.1.3 Channels:

The main channel through which Joycar reaches its customers is the proprietary website. Through the website, customers can inform themselves about the services offered by the company, the service conditions and prices and even find news related to the car sharing theme published worldwide.

Also through the website, new customers can register to the service and create their personal accounts, or reach the company to negotiate service contracts, in the case of corporate or condominium clients. It is also the channel through which customers can check the availability of vehicles and make their reservations.

The company also offers its customers the possibility of being serviced by telephone, and maintain an active call center service to help clients in case of need.

The utilization of websites and call centers as channels to reach customers are a common factor among all the considered car sharing companies. However, most of the companies also offered its clients the possibility of accessing the services through smartphone applications, an option that is not readily available in Joycar's platform, limiting customers' accessibility to the services and flexibility in its utilization.

5.2.1.4 Customer Relationships:

Similarly to other car sharing companies, customer relationships are mainly performed through automated customer channels (mainly the website, which is the main customer interface in the case of Joycar). The website is developed in order to guarantee customers the possibility of using the services without further assistance. Optionally, clients can also reach the company through the customer service call-center.

This solution is a common factor among the analyzed companies, and has proven its efficiency by maintaining the ease of use through simple and logical customer interfaces and the reduction in operational costs, since the necessity for personnel is significantly reduced.

5.2.1.5 Revenue Streams:

Joycar revenue streams consists on the rental fees, subscription fees and annuities.

Car rentals have a minimum period of one hour, and customers pay a fixed hourly fee, to which a variable fee per kilometer is added. Alternatively, customers can opt for daily rentals, with discounted rates. The fees are all-inclusive, and customers don't face any extra costs with insurance, refueling, maintenance, parking or customer services.

When considering the revenue streams of other car sharing companies, differences in pricing strategies are usually associated with the adoption of different service models: companies that have adopted more flexible service models, without minimum rental periods, usually charge their services with variable fees per minute of utilization.

5.2.1.6 Key Resources:

Joycar key resources differ a bit from other car sharing operators, since the company relies on a partner for the supply of most of its vehicles.

One of the main resources of the company is its integrated information system (including car sharing software and hardware installed on the vehicles) supplied by Invers GmbH, through which it process reservations, manages the rentals and the vehicle fleet and control revenue streams and incurring costs of operations.

Another key resource is the company website, which is configured as the main customer channel through which the company reaches and serves its clients. Besides, other resources are the service team, responsible for assisting the clients in case of need, and the company's central office, where the management team is located.

When compared to other CSOs, it is possible to observe that Joycar operates with technological solutions similar to leader foreign companies. However, it doesn't leverage its technology in its full potential considering its simpler service model adopted and its limited scale of operations, with a small fleet of vehicles and points of departure.

5.2.1.7 Key Activities:

The main activity Joycar performs is the rent of its vehicles in the round trip service model, operating with a fleet composed by leased and proprietary cars. In order to offer this service, which is the core activity of the company, Joycar must perform a set of different supporting activities. To begin with, considering the rentals, the company must manage the reservations and guarantee that the vehicles are available and in good condition for the utilization of its clients, effectively managing the vehicle fleet.

The company is responsible for the maintenance and cleaning of its proprietary vehicles. The majority of the fleet, however, is leased from a partner company, which is in charge of all the maintenance necessary for those vehicles.

Another key activity of Joycar, especially considering its particular moment as a small company operating in a new market, is related to the divulgation of its services through marketing and networking efforts, in order to gather new clients and reach further expansion of its activities. In its current situation, it is imperative for Joycar to concentrate efforts in understanding the customer needs and preferences, in order to meet the demands of potential customers of different segments.

When compared to other CSOs, the main differences in Joycar activities are again related to the service model adopted, since only one other company operated with the round

trip service model, and with the outsourcing of the vehicle fleet through its partnership with ALD Automotive, through which the companies frees itself from the activities of vehicle maintenance and fleet management.

5.2.1.8 Key Partnerships:

The establishment of partnerships has played a very important role for Joycar in its focus on the segments of corporate customers and condominiums. The company has established a partnership with Gafisa, a Brazilian construction company, to offer its services in some of the residential condominiums recently inaugurated by its partner, and with Vitacon, a real state incorporator specialized in offering innovative apartments in urban areas, with special attention to the offer of urban mobility alternatives.

Another partner of Joycar, which falls in the corporate customer segment, is BASF, a multi-national chemicals manufacturing corporation. Joycar offers vehicles based in the partner's headquarters in São Paulo and also in industrial plants in Jacareí and Guaratinguetá, in the state of São Paulo, for the exclusive use of BASF employees.

In addition to its commercial partners, Joycar has also established an important partner from the operational standpoint: ALD Automotive. ALD is a global player in the full operational leasing and fleet management industry, and supplies most of the vehicles comprised in Joycar's fleet. The partner is also responsible for the maintenance of the vehicles.

Partnering with ALD Automotive was vital for Joycar because it reduces the capital investments necessary for the growth of its operations, since the company does not incur in the high expenses of capital as it would in the case of acquiring a proprietary fleet. Outsourcing the vehicle fleet and avoiding the responsibility for the fleet maintenance also allows the company to keep a lean staff, simplifying the company operation and organizational structure and enabling a simpler cost structure.

Joycar also shares with ALD the responsibility of capturing new clients on the corporate customer segment: ALD sales force offers, besides the other services provided by the company, the option of Joycar's car sharing services to its current and potential new clients. Joycar does not have its own structured sales and marketing team, having a limited capacity of attracting new customers.

Finally, end users might also be classified as Joycar's partners, since some of the necessary activities for the correct operation of the company are performed by its clients: they are responsible for refueling the vehicles during the rentals (in case of need) and also for giving proper feedback on the services performed.

When compared to other CSOs, it is possible to conclude that Joycar has established important operational partners, which have enabled the company to operate with systems and technologies comparable to big players in the car sharing market. However, the company could further explore commercial partnerships to expand its business. Besides, following the example of foreign CSOs, the company could negotiate with the local municipality for better operating conditions.

5.2.1.9 Cost Structure:

Joycar aims to maintain a lean cost structure, given the limited availability of working capital in its current phase, as the company is still configured as a small business. For this reason, the company has opted for outsourcing most of its vehicle fleet through a commercial partnership with ALD Automotive, which is also responsible for the fleet maintenance.

A significant cost in which Joycar incurs is the cost with car sharing software and hardware (in-vehicle equipment), which are supplied by Invers GmbH with exclusivity in Brazil. Other costs are those related to the acquisition and maintenance of proprietary vehicles; fuel costs; insurance contracts; personnel costs with the service and management team.

Many similarities can be identified between the cost structure of Joycar and that of the other CSOs comprised in this study, since the cost structure is directly related to the key activities and key resources of the business, which also have similarities among the different players in the market. The main difference identified is that Joycar outsources most of its vehicle fleet (together with its maintenance and management) through the partnership with ALD Automotive. However, since data on incurring costs from the companies were not available, it was not possible to determine the net effects on costs of this alternative when compared to the cost structures of the other CSOs.

5.2.2 Joycar Business Model Canvas

The company's BMC is presented in Table 7.

Table 7 – Joycar BMC

<table>
<tr>
<td rowspan="2">Key Partnerships

• ALD automotive
• Gafisa (construction company)
• Vitacon
• BASF
• End users</td>
<td>Key Activities

• Management of rentals and vehicle fleet
• Customer service
• Marketing, networking and search for new clients</td>
<td rowspan="2">Value Proposition

• Efficient and low environmental impact mobility alternative
• Flexibility, availability and economic efficiency when compared to car ownership or other car rental services</td>
<td>Customer Relationships

• Automated services through the website</td>
<td rowspan="2">Customer Segments

• Corporate clients
• Condominiums
• Private users</td>
</tr>
<tr>
<td>Key Resources

• Integrated management system
• Website
• Management and service team
• Proprietary and leased vehicle fleet</td>
<td>Channels

• Website
• Customer service call-center</td>
</tr>
<tr>
<td colspan="3">Cost Structure

• Insurance contracts
• Acquisition and maintenance of proprietary vehicle fleet
• Costs with car sharing software and hardware
• Personnel costs with the service and management team</td>
<td colspan="3">Revenues

• Subscription fees and annuities
• Fixed rental fees (hourly or daily)
• Variable rental fees (additional fee per kilometer)</td>
</tr>
</table>

Source: author

5.3 Industry analysis

In order to perform a more accurate analysis of Joycar's business model and strategy, it is important to understand the local structure of its industry. Hence, in this session, the characteristics of the car sharing market in the state of São Paulo and in Brazil are explored, complementing the industry overview presented in session 2.1. This analysis is structured with the aid of Michael Porter's five forces framework, applied in the identification of structural factors that condition competition within the industry.

5.3.1 Industry competitors and rivalry among existing firms

The car sharing market in Brazil is still incipient, with very few and recent initiatives. According to Shaheen and Cohen (2015), by January, 2015, there were 3686 active car sharing members and 49 shared vehicles operating in the country, very timid numbers when compared to other markets (the evolution in the Brazilian car sharing market can be observed in Figures 5 and 6 – the data was collected in July of each year, except for 2015). The city of São Paulo accounts for most of the car sharing members and vehicles: in São Paulo, there are currently two car sharing operators, Joycar and Zazcar, another car sharing company operating with the round trip service model, and more focused on individual users, with around 60 operating vehicles and 45 stations.

Figure 5 – Evolution in the car sharing market in Brazil - membership

Source: adapted from Shaheen and Cohen (2015)

Other three cities have shown interest in developing public or public-private car sharing operations: Curitiba, Rio de Janeiro and Recife. Among these cities, only Recife has launched a trial phase in 2015, with three stations and a fleet of three fully electric vehicles available for 30 selected people, for testing purposes, in a project that also involves shared bicycles. The municipality of Curitiba, well known in Brazil for its efficient projects in mobility alternatives, initiated a project in 2014 with the goal of operating a scheme with 600 electric vehicles in the city. However, the project is still under development. The municipality of Rio de Janeiro has also called for companies interested in developing a public-private car sharing scheme in the city, which would operate with electric vehicles in public parking spots. Five private groups showed interest, and the winner is now developing viability studies and designing the project – if the project is considered viable, a public bidding will be opened.

Considering the local characteristics identified above, there is still a great market potential to be explored in the state of São Paulo and in Brazil, with many opportunities of service differentiation and growth. Although Zazcar, the main and direct competitor of Joycar, operates in a larger scale than Joycar, competition should not be a big issue for both companies while there is still a large market to be created and explored.

5.3.2 Potential entrants

Potential entrants might represent a risk for the sustainable operation of car sharing companies in Brazil and, particularly, for Joycar. The car sharing industry is characterized by a relatively high capital intensity (mainly in cases in which companies have proprietary vehicle fleets and information systems and technology), and companies usually take advantage of economies of scale to leverage their investments on their operating systems and other developed competences.

Hence, the entrance of new small players represents a relatively small risk for the operating companies. However, as seen in session 2.1, the internationalization and expansion of the main global car sharing players is an expected trend, and emerging markets are characterized as a potential new focus of those companies. If this observed trend proves itself to be real, Brazil and São Paulo could be targets for the expansion of operations of those companies, which have high capital availability, market experience and competences to leverage their operations.

For this reason, local operating companies should be looking for growth and consolidation opportunities, in order to build a more comfortable position in the market in the case of the entrance of new large scale operators.

5.3.3 Substitutes

The car sharing concept was created as a new mobility alternative, with the goal of complementing and substituting other available mobility options. The main substitutes in the market are, depending on the usage motivation, the utilization of privately owned or leased vehicles (considering individuals or corporate end users), public transportation alternatives (e.g. bus and metro services), taxis, rented cars from traditional rental companies, bicycle sharing systems, cycling and walking.

The potential competitive advantage of car sharing services when considering its substitutes is to perform the same functions and satisfy different mobility needs with competitive costs and higher suitability to customer preferences, with attractive costs of utilization, in order to guarantee a good cost benefit for users. Hence, car sharing operators must seek the understanding of mobility needs in different local markets and design their services to effectively complement other transportation alternatives and create greater value for customers. The price positioning also plays an important part in this process.

5.3.4 Bargaining power of suppliers

Joycar main suppliers are ALD Automotive, a partner company which supplies the majority of Joycar's vehicle fleet, and Invers, which supplies the car sharing technology, software and hardware used by Joycar. In both cases, the suppliers are much larger than the company, and presumably are relatively more powerful in the industry.

However, ALD Automotive and Joycar are partners, sharing the results obtained with the rentals of leased vehicles. Besides, there are other big players in the industry offering leased vehicles, and there is also the option of acquiring proprietary fleets. Hence, the power of this particular supplier does not represent a threat to the company.

Considering the case of Invers, there are fewer companies on the market offering integrated technological solutions for car sharing operators, and switching costs are not negligible, since Joycar's information systems would have to be adapted to a different operating software, and the hardware installed in the vehicles would also need to be substituted. Hence,

Joycar is dependent on Invers services, a fact that empowers the supplier company. However, both companies have made a contractual agreement, and Joycar has the right for the exclusive utilization of Invers services in Brazil, lowering the supplier bargaining power.

5.3.5 Bargaining power of buyers

Joycar has focused its operations in the customer segments of corporate clients and condominiums. As a result, their main clients and sources of revenue are large corporations and construction companies. In cases where buyers are large compared to the supplying industry, they have a significant power of bargain, being able to pressure suppliers for lower prices and higher quality of services delivered.

Besides, switching costs for buyers are low, considering their service contracts, which are usually renewable for fixed periods of time. Another factor that must be taken into consideration is that corporate clients can easily switch to substitute services such as regular leased vehicles or the utilization of taxi services. Hence, Joycar must pay attention to the quality of its services and explore differentiation opportunities in order to be able to charge relatively higher prices and maintain customer loyalty and satisfaction.

5.4 **SWOT Analysis**

After analysing the industry scenario and identifying the key characteristics of Joycar's business model, it is possible to make a diagnostic of the company's current position in the market. For this purpose, the SWOT analysis is applied, allowing the clear identification of Joycar's strengths, weaknesses, opportunities and threats.

5.4.1 Strengths

To begin with, Joycar has as a strength its position as a first mover in a market with high growth potential, together with its main competitor, Zazcar. It has already conquered important partnerships with corporate clients, defining an initial customer segment focus which has allowed its growth until the present.

Another strength of the company is its car sharing software and in-vehicle equipment, supplied by Invers with exclusivity in Brazil. The software and the company's information system products are among the most technologically advanced solutions available in the market, and are already prepared for different models of service, being compatible with one-way and

free-floating service models. This characteristic grants the company flexibility when considering different possibilities of service differentiation.

In addition, a strength of the company resides in its value proposition, which consists in offering an innovative mobility service that has a great potential to complement the mobility needs in urban environments.

5.4.2 Weaknesses

The company must be aware of its weaknesses to act correctively and take into account its current limitations in the definition of its strategy. One of the company's main weaknesses is it small scale of operations and low market share compared to its direct competitor. Joycar still operates a reduced fleet of vehicles (comprised by 12 cars, including leased and proprietary units) and depends on a small number of corporate clients and partners. As a consequence, the company has relatively weak balance sheets and limited cash flows, constraining its operations.

As a strategy to consolidate its position on the market and achieve growth, the company has focused its operations almost exclusively on corporate clients and construction companies and incorporators, responsible for residential condominiums. However, it has faced difficulties to conquer new clients in this segment.

A sample survey was conducted with representatives of a few large corporations headquartered in São Paulo with the objective of understanding the difficulties and limitations of car sharing services to meet the demands of corporate customers. A few reasons were identified: the existing market offer is limited in its size and does not correspond to the mobility needs of big corporations; some companies have longer term contracts with other service providers (e.g. leasing companies), and hence would not consider other mobility options in the near future; the characteristics of the car sharing services offered in São Paulo, which comprise only round trip options, was also pointed as a factor of limitation; companies in São Paulo traditionally offer corporate vehicles for the personal use of its employees from a certain hierarchy level, a benefit incorporated in the companies' culture and already configured as a vested right for employees, which would hardly be removed; finally, service awareness was low among the interviewed companies.

As a consequence, it can be expected that Joycar keeps facing difficulties to achieve a larger client base if no changes are made to its current services and strategies. Another weakness

identified resides in the fact that the company does not have a marketing or sales team, and the networking efforts to conquer new clients are basically performed by the company owners, who rely on their partner ALD Automotive to get new corporate clients to their business.

Another factor identified as a weakness is the fact that the company has not established any kind of agreement or partnership with the public sector, which is usually very bureaucratic in Brazil, limiting the company's operational possibilities.

5.4.3 Opportunities

The company might take advantage of its position as a first mover to consolidate itself as a strong player, looking for different growth and differentiation opportunities in the market. As seen in the analysis of different CSOs, companies have explored many different alternatives for the creation of differentiation and competitive advantages which could serve as examples for Joycar.

Among the opportunities, one of the possibilities is to create service differentiation through the introduction in the local market of different operational models, since in Brazil car sharing operators are still limited to round trip car sharing services.

Considering partnering possibilities, the company could further explore partnerships with commercial companies, looking for capitalization through cross marketing and cross selling and raising brand recognition of the company, as well as the divulgation of the car sharing concept on the market.

The company could also approach local public authorities, negotiating for better operational conditions in São Paulo. As seen in examples of foreign companies, CSOs have managed to negotiate the support of public authorities to its operations, raising public awareness to the benefits of car sharing and guaranteeing a few operational advantages considering the use of the public space.

Other opportunities for market growth are related to macroeconomic factors that could favorably shape the market. Although the recent downward trend in the economy conjuncture has negative effects on access to credit and on the confidence of investors and consumers, it could actually benefit the car sharing market if the population is actively looking for opportunities to cut on expenditures – the acquisition and the running costs of a vehicle represents a significant amount of costs, and usually represents a family expending that is only

second to the acquisition of a house or rent expenses. The sales of new vehicles in Brazil has dropped by 21% when compared to the previous year (January – September 2015 vs. 2014, in number of new licenses of light vehicles) according to ANFAVEA (ANFAVEA, 2015). If the drop in new vehicle sales confirms itself as a trend, it might benefit the demand for substitutes like car sharing services.

5.4.4 Threats

There are important threats to take into consideration when defining the company's strategy, placing challenges faced in the business. First of all, the possibility of new entrants in the market, especially considering the potential entrance of multinational players, which can operate in large scale with differentiated services, represents a threat for the sustainable operation of Joycar.

Besides, Joycar should avoid entering price wars with its main competitor, which currently has higher market share and operates in larger scale. A competition in pricing wouldn't benefit either of the companies, which are aiming at substantial growth and could be seriously affected by margin reductions.

Another threat is that the potential market growth for car sharing services does not materializes. Car sharing is a new mobility concept that demands a change in customers' habits and a high consciousness and awareness of potential clients, which might be difficult to achieve, particularly taking into consideration the characteristics of the Brazilian market, where car ownership is still strongly related to an image of success.

5.5 **Strategy scenarios**

After analyzing Joycar's business model, identifying its main strengths, weaknesses, opportunities and threats, and accessing the characteristics of the market in which it is inserted, it was possible to identify different opportunities for the company to improve its operations and orientate its strategy to achieve the main company objective of growth.

In this session, the author presents suggestions that could be applied in the search for service differentiation, performance improvement, market growth and gains in market share. The suggestions are presented in two different scenarios: the base scenario, which contains less radical actions and changes in the business model and is less risky, and the aggressive scenario,

which would demand deeper transformation in the company's business model, with higher risks but also higher potential gains in the market.

It is important to point out that the actions suggested are based in the comparisons with different CSOs and in the analysis of the market herein conducted. Hence, they could be understood as guidelines for future consideration by the company, but would still demand deeper analysis to prove their viability and potential return in the market.

5.5.1 Base Scenario

The Base Scenario aggregates actions that could be taken by the company to improve its current operations and results, taking into consideration the opportunities identified in the previous analysis, with limited efforts, capital investments and risks for the current operation of the company.

Maintain current customer segment focus: the current focus on the customer segments of corporate clients and condominiums has, as a downside, the negligence of the individual end user segment. However, an effective car sharing operation with focus on this segment demands larger scales of operation, with vehicle availability and capillarity across the areas serviced by the company, which are demands that the company cannot meet in its current situation. The focus on the segments of corporate clients and condominiums, which also represent an already high potential market, allows the company to grow organically while incurring in less risks and investing significantly lower amounts of capital – new vehicles are added to the company fleet only when there are demands from commercial partners and corporate clients. Besides, in this model of service, the company does not incur in costs with fixed stations or parking spots to offer its vehicles, since they are granted by its customers in their private installations – while in the case of operations focused on individual end users, that is another cost in which the company has to incur.

Hence, in its current phase, it is suggested that the company maintain its current customer focus, while adopting new practices and exploring different opportunities to achieve growth and higher returns in the segment.

Create sales and marketing team in the organizational structure: through the analysis of the company, it became clear that it lacked on sales and marketing efforts to expand its operations and gain scale with a larger customer base. The low awareness of possible

customers about the existence and the characteristics of car sharing services and the limited recognition of Joycar's brand in the market are problems that should be tackled.

Nowadays, the company relies almost exclusively on its partners' sale force to offer its services for corporate clients, and it has no control on how this process happens in practice. The creation of a dedicated sales and marketing team would enable the company to establish direct contact with their potential clients and potentially increase more effectively their customer base, creating more service awareness and brand recognition on the market.

Explore marketing and commercial opportunities: through the creation of the sales and marketing team, the company would be more capable of exploring new marketing and commercial opportunities. As diagnosed as a weakness in the SWOT analysis, the company and the car sharing concept are still unfamiliar to most of its potential clients, a problem that results in severe limitations to the company's operations and should be tackled by the management.

The company could explore marketing opportunities through customer channels that more directly reach corporate clients, for example announcing their services on adds on the lifts of corporate buildings in the city. Besides, Joycar could explore new channels on the internet, for example with social media activity and promotions, to reach a large customer base through inexpensive marketing channels, an opportunity already explored by other CSOs, including its competitor in São Paulo.

The sales team would be focused on looking for new commercial opportunities and negotiating new partnerships with commercial and corporate clients, being responsible for contacting potential client companies and creating a more active participation of Joycar in the search for new clients to expand its customer base.

Develop a proprietary smartphone application: the development of a proprietary smartphone application, as seen in the comparison among different CSOs, is an important action to increase the service accessibility. Through the application, customers would have access to a new channel through which they would be able to check vehicle availability and make reservations, consult their accounts and control their expenses, besides the possibility of contacting other registered users and occasionally share a vehicle. The development of a smartphone application is an important step in service improvement and to the automation of customer services, with a relatively low cost of implementation.

Negotiating operability conditions with the public authorities: the first action suggested to the company is to reach the São Paulo Municipality in order to negotiate better operability conditions in the city. As seen in examples in foreign markets, and even in other Brazilian municipalities which have already demonstrated interest in car sharing practices, car sharing solutions should be an integrating part of an efficient transportation system in the urban environment, being complementary to other public and private mobility alternatives. The company could concentrate efforts in convincing the local public authorities of the benefits of car sharing and negotiate better operability conditions, following the example other CSOs.

Among the companies analysed in this study, there were other privately operated companies that managed to negotiate benefits for the use of the public spaces which enhanced significantly the companies' operations. Examples are the possibility of utilization of bus lanes by car sharing vehicles, a right already granted for taxis in the city of São Paulo, or agreements for the rights of using paid public parking spots in the case of free floating operators, or to create exclusive parking spots for car sharing vehicles in cases of companies operating with station based service models.

5.5.2 Aggressive Scenario

The Aggressive Scenario aggregates actions that could be taken in addition to those outlined in the Base Scenario, in order to accelerate the growth of the company through more radical transformations in the business model of the company. The actions herein suggested demand higher capital investments and represent more risk to the company, but could also result in higher returns, repositioning on the market and significant growth.

Partnering with an external investor: the little capital availability has limited the capacity of the company to offer more differentiated services. Partnering with an external financial investor could enable the company to transform its business model through the offer of a new service model that included the possibility of one-way trips. The author believes that the launch of a one-way service model would have strong positive impacts with the expected increase in the demand for its services, with the growth in the car sharing market and the gain in market share.

Offering a new service model: there are two different possibilities for the offer of one-way services: the free-floating service model, and the one-way station-based service model. The free-floating service model has the higher operational complexity, increasing the necessary

efforts on the fleet management, as seen in Session 4.6, and would demand different agreements with the vehicle supplier partner or optionally the acquisition of a proprietary vehicle fleet. The vehicles should be of one or very few standardized models, in order to proportionate economies in vehicle maintenance, better negotiating conditions for the acquisition or leasing of the fleet, besides allowing the creation of a strong visual identity of the company.

In addition, operating free-floating car sharing services demands that agreements are made with the local public authorities, negotiating the use of paid public parking spots, which is fundamental for the operations especially in areas where the availability of regular parking spots is limited. As seen before, the company should also negotiate with the public authorities for further support, for example for the right to the use of exclusive public bus lanes.

On the other hand, fewer changes would have to be implemented in the car sharing hardware and software solutions adopted by the company, since the systems offered by its supplier, Invers, are compatible with one-way station-based and free-floating service models, resulting in the necessity of relatively smaller efforts to adapt the company's operations on the technology field.

As pointed out before, a successful operation of free-floating car sharing services demands a significant coverage area that comprises the main regions and points of interests among the potential clients, and also a vehicle fleet compatible with the user demands, in order to guarantee vehicle availability for customers.

Alternatively, the company could opt for operating a one-way station-based service model, especially if it fails to thrive in negotiating better operational conditions and the utilization of the public space with the municipal authorities. The operation of one-way station based car sharing services adds on the need for exclusive stations across the coverage area, possibly forcing CSOs to incur in significant costs of installations (especially in the case of electric car sharing companies). One possibility for Joycar to deal with this issue is through the establishment of commercial partnerships with supermarkets, shopping malls, clubs and shops, for example, to offer parking spots for the exclusive use of car sharing customers. This solution has already been applied successfully by foreign operators, and could be replicated by Joycar.

The success of the company in the case of operating with the one-way station-based service model would also depend on the achievement of a high capillarity of vehicles and

stations across the service area. The offer of an efficient service with vehicle and parking availability for customers are vital for the company to attract and retain new customers.

In both cases (free-floating or one-way station based service models), the development of a smartphone application gains importance. Through the application, customers would have an easier access to the company's services, which is critical especially on cases of spontaneous utilization, when customers access the vehicles without previous reservations. Besides, the investment in marketing campaigns would also be of great importance to the company: it would have to communicate efficiently to their possible customers, introducing this new concept of mobility with which the population is still unfamiliar – the investments on service differentiation would not be worthy without and efficient communication of the new services to potential customers.

It is also important to highlight that the offer of a new service model would not mean that the company would stop servicing their current customer segments, but only extend its focus to the segment of individual end users, which represent a high share of market potential that has been currently neglected by the company. As seen in the cases of other CSOs that operate with these service models, the companies do not offer exclusive vehicles for corporate client companies (as is the case of Joycar today), but also meet the demands of corporate clients by offering differentiated products and special service plans for multiple users, with discounted rates, a practice that is also suggested for Joycar in this scenario.

6 CONCLUSION AND FINAL CONSIDERATIONS

Car sharing is an innovative mobility alternative applicable in urban environments, characterized by its positive social and environmental impacts and economically feasibility. It consists in offering the service of short term vehicle rentals for registered members, who have access to a fleet of shared-use vehicles in a variety of locations. Customers pay for the service proportionally to the period of utilization and mileage, and benefit from the occasional utilization of a personal vehicle without incurring in the costs and responsibilities of owning a car.

The car sharing market has shown consistent growth, attracting the attention of both the public and the private sectors, with the entrance of new players on the market worldwide, including competitors sharing the same markets. As a consequence, competition has also grown, increasing the complexity for companies to succeed in more challenging markets.

This study has focused on the business models of different car sharing companies and how the definition of the business model characteristics contribute to service differentiation and creation of competitive advantages, which are important to conquer higher market shares. The growth in the customer base and customer satisfaction are important drivers for the success of car sharing companies in reaching their goals, as varied as they can be: local public companies might focus on leveraging mobility, environmental and social impacts of car sharing, while multinational for-profit companies depend on growth to improve their economic results.

Five different car sharing operators were analyzed with the conception of their Business Model Canvas, and then compared. The definition of the service model was identified as one of the most important aspects of their business models, as it defines the basic operations of companies and is directly related to the type of customer demands they are focused on meeting. One-way car sharing and, more specifically, free-floating car sharing service models are those who have received most attention from new entrants in the market and also from already established companies who used to offer exclusively traditional car sharing services. This trend is motivated by the increase in flexibility for customers and the potential of increasing the demand for car sharing services, although one-way service models add on costs and operational complexity, and are only possible with technologic improvements and new forms of cooperation between car sharing operators and public sectors.

Hence, the establishment of partnerships with local municipalities was also identified as a key attribute to guarantee car sharing companies' operability conditions. The companies depend on the public authorities not only for an appropriate regulation of car sharing services – since it is an innovative service, often there are no previous existing regulations for the sector – but also on negotiating conditions for their operation, related to taxes and eventual subsidies and incentive policies, and on negotiating concessions and other agreements for the use of public spaces. Further partnerships were also identified as essential for the viability of car sharing operators, for instance buyer-supplier relations with automakers and technology companies for the supply of vehicle fleets and necessary in-vehicle telematics. Commercial partnerships are also important for the promotion of car sharing services and the reach of a large customer base.

Car sharing companies rely on different aspects of their business models when seeking for the creation of competitive advantages through service differentiation. Examples are the definition of the vehicle models (including the option for electric models) and size of vehicle fleets, pricing strategies and promotional campaigns focusing in different customer segments. Marketing efforts are also decisive for the divulgation of their services, creating customer awareness and increasing brand recognition.

However, in cases in which companies tend to converge to similar business models, service differentiation becomes more difficult to achieve. In such cases, the success in customer attraction and retention is expected to depend on less tangible characteristics, being noteworthy the perceived quality by customers regarding the companies' operations. Hence, the success of companies' operations is expected to depend heavily in efficient management and operations.

The findings and results obtained in the comparison of selected car sharing companies were applied in a deeper analysis of Joycar, a CSO operating in São Paulo. Through the analysis of the company's business model and of the market environment in which it is inserted, it was possible to evaluate the business strategies adopted by the company and suggest possible actions for the improvement of the company's operations, enlightening solutions explored in foreign markets that could be reproduced by the company in two different strategic scenarios.

The suggestions outlined were made based on the study of car sharing market trends and of the business models and solutions adopted by different car sharing companies operating in more mature markets. Viability studies and a deeper analysis of the local factors affecting the

operations of the company are necessary for a more cautious definition of a strategic action plan.

This study represents an initial exploratory approach of the car sharing market and CSOs' business models. The aim of this research was not necessarily to present the right answers, but highlight the most important questions and issues that should be explored by car sharing companies in the strategic definition of their business models, taking into account the trends in the market and the local factors affecting the companies.

It is also important to mention some limitations of this study. During the research phase, it was possible to observe that the public availability of data on car sharing operators is very limited. Besides, the data available is not standardized or gathered together by reliable sources, making it difficult to be accessed. As a result, the limited availability of data regarding the costs and revenues of car sharing companies, the terms of partnership agreements and other strategic issues, as well as data regarding the companies' performed services (e.g. number of customers and rentals over time), made it difficult to determine how the different conceptions of business models reflected on the companies' performances through a quantitative approach. Further studies concerning different business models of car sharing operators could benefit from agreements with car sharing companies to have granted access to publicly unavailable data and hence have the opportunity to investigate in more in-depth levels the key strategic aspects of car sharing operators' business models and operations and how they reflect on the companies' performances.

This evaluation could be done through different approaches. The performance could be evaluated in economic terms, searching for the reflexes of strategies applied by companies in their financial results, or alternatively through an evaluation of the quality of the services performed. This analysis could be done through the definition of adequate KPIs for car sharing operators, which have not been defined and explored sufficiently by the existing body of literature. However, this possible research continuation would also depend on data availability for the calculation of indicators and target levels on the market.

7 REFERENCES

ANFAVEA. **ANFAVEA**. Disponível em: <http://www.anfavea.com.br/tabelas.html>. Acesso em: 4 nov. 2015.

AUTOLIB. **Autolib**. Disponível em: <https://www.autolib.eu/en/>. Acesso em: 12 jul. 2015.

BAPTISTA, P.; MELO, S.; ROLIM, C. Energy, Environmental and Mobility Impacts of Car-sharing Systems. Empirical Results from Lisbon, Portugal. **Procedia - Social and Behavioral Sciences**, v. 111, p. 28–37, 2014.

BEE. **Bee - Green Mobility Sharing**. Disponível em: <http://www.bee.it/it/index.html>. Acesso em: 12 jul. 2015.

CAR CITY CLUB. **Il car sharing di CarCityClub**. Disponível em: <http://carsharingtorino.it/>. Acesso em: 12 jul. 2015.

CAR2GO. **Car2Go**. Disponível em: <https://www.car2go.com/it/torino/>. Acesso em: 12 jul. 2015.

CERVERO, R.; GOLUB, A.; NEE, B. San Francisco City CarShare: Longer-term travel-demand and car ownership impacts. 2006.

COHEN, A.; SHAHEEN, S. A.; MCKENZIE, R. Carsharing : A Guide for Local Planners. **Transportation**, n. 530, 2008.

ENJOY. **Enjoy - home**. Disponível em: <https://enjoy.eni.com/it/torino>. Acesso em: 12 jul. 2015.

FIRNKORN, J. Triangulation of two methods measuring the impacts of a free-floating carsharing system in Germany. **Transportation Research Part A: Policy and Practice**, v. 46, n. 10, p. 1654–1672, 2012.

FIRNKORN, J.; MÜLLER, M. What will be the environmental effects of new free-floating car-sharing systems? The case of car2go in Ulm. **Ecological Economics**, v. 70, n. 8, p. 1519–1528, 2011.

FIRNKORN, J.; MÜLLER, M. Free-floating electric carsharing-fleets in smart cities: The dawning of a post-private car era in urban environments? **Environmental Science & Policy**, v. 45, p. 30–40, 2015.

FRIEND, G.; ZEHLE, S. **Guide to Business Planning**. London: The Economist, 2004.

HILDERMEIER, J.; VILLAREAL, A. Two ways of defining sustainable mobility: Autolib' and BeMobility. **Journal of Environmental Policy & Planning**, n. February 2015, p. 1–16, 2014.

HUWER, U. Public transport and car sharing - benefits and effects of combined services. **Transport Policy**, v. 11, n. 1, p. 77–87, 2004.

JUHEL, M. **The Way We Move Will Define our Future | Transport for Development**. Disponível em: <http://blogs.worldbank.org/transport/way-we-move-will-define-our-future>. Acesso em: 7 jul. 2015.

KENT, J. L. Carsharing as active transport: What are the potential health benefits? **Journal of Transport & Health**, v. 1, n. 1, p. 54–62, 2014.

KENT, J. L.; DOWLING, R. Puncturing automobility? Carsharing practices. **Journal of Transport Geography**, v. 32, n. 2013, p. 86–92, 2013.

LE VINE, S.; ZOLFAGHARI, A.; POLAK, J. Carsharing : Evolution , Challenges and Opportunities. n. September, 2014.

MARTIN, E.; SHAHEEN, S. The impact of carsharing on public transit and non-motorized travel: An exploration of North American carsharing survey data. **Energies**, v. 4, n. 11, p. 2094–2114, 2011a.

MARTIN, E.; SHAHEEN, S. Greenhouse gas emissions impacts of carsharing in North America. **Ieee Transactions on Intelligent Transportation Systems**, v. 12, 2011b.

MARTIN, E.; SHAHEEN, S. A.; LIDICKER, J. Carsharing's impact on household vehicle holdings: results from a North American shared-use vehicle survey. **Transportation Research Board**, p. 150–158, 2010.

MILLARD-BALL, A. et al. **Car-Sharing: Where and How it Succeeds**. [s.l: s.n.].

OSTERWALDER, A.; PIGNEUR, Y. **Business Model Generation - A Handbook for Visionaries, Game Changers, and Challengers**. Hoboken, New Jersey: John Wiley & Sons, 2010.

PACHAURI, R. K. et al. **Climate Change 2014 Synthesis Report**. [s.l: s.n.].

PORTER, M. E. **Competitive Advantage: Creating and Sustaining Superior Performance**. Reprint ed.[s.l.] Simon and Schuster, 2008.

SCHMÖLLER, STEFAN, WEIKL, SIMONE, MÜLLER, JOHANNES, BOGENBERGER, K. **Empirical analysis of free-floating carsharing usage: The Munich and Berlin case**. Disponível em: <http://ac.els-cdn.com/S0968090X1500087X/1-s2.0-S0968090X1500087X-main.pdf?_tid=c4f4dfa2-e9a3-11e4-9961-00000aacb35d&acdnat=1429785212_49de43b9b526a8259b369af5692d8bff>. Acesso em: 23 abr. 2015.

SHAHEEN, S. A.; COHEN, A. P. Carsharing and Personal Vehicle Services: Worldwide Market Developments and Emerging Trends. **International Journal of Sustainable Transportation**, v. 7, n. 1, p. 5–34, 2013.

SHAHEEN, S.; COHEN, A. Growth in Worldwide Carsharing: An International Comparison. **Transportation Research Record**, v. 1992, n. 1, p. 81–89, 2007.

SHAHEEN, S.; COHEN, A. INNOVATIVE MOBILITY CARSHARING OUTLOOK - Carsharing Market Overview, Analysis, and Trends Summer 2015. p. 1–4, 2015.

SHAHEEN, SUSAN A.; COHEN, A.; CHUNG, M. North American Carsharing: A Ten-Year Retrospective. **Transportation Research Record**, v. No. 2010, n. January, p. 35–44, 2009.

THE WORLD BANK. Cities and Climate Change: An Urgent Agenda. p. 1–92, 2010.

WORLD BANK. **Planning, Connecting, and Financing Cities—Now: Priorities for City Leaders**. Washington, DC: World Bank. DOI: 10.1596/978-0- 8213-9839-5. License: Creative Commons Attribution CC BY 3.0: World Bank, 2013.