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**The identification of key success factors and challenges
for the implementation of car sharing business models
in the Republic of Croatia**

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Abstract

The topic of smart urban development is attracting research interest from both academics and practitioners due to the increasing urban lifestyles of the population. However, studies show a lack of research in certain regions of Europe, including the South-East European (SEE) region, resulting in limited investigation of regional smart solutions. This study contributes to filling the identified research gap focused on the field of smart mobility in the SEE region, taking a private business perspective with a closer look on car sharing in the Croatian region. The research question is: What are the key success factors and challenges for the implementation of successful car sharing business models within the smart mobility ecosystem in Croatia? By analysing the specific external environmental characteristics of the Croatian market and the internal factors of regional and international implementations through a case study, this research was able to provide actionable insights for private investors and stakeholders.

Key words:

Smart development - Smart Mobility - Car sharing – South-East Europe – Business Model

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Abbreviations

AI	Artificial Intelligence
ICT	Information and Communication Technology
MaaS	Mobility-as-a-Service
SEE	South-Eastern Europe

1 Introduction

1.1 Introduction and Problem Statement

It is predicted that 66% of the global population will be living in urban areas by the end of 2050, a significant increase from the 30% recorded in 1950 (United Nations, 2015, p. 7).

The rapid pace of urbanisation underlines the importance of developing smart cities to ensure a high quality of life in cities. The topic of smart development is of importance to various stakeholders and has become a major field of research, attracting considerable interest from academics and practitioners, including members of the corporate and public sectors. Despite the increasing interest in smart development, studies highlight a lack of focused research in South-Eastern Europe (SEE) region, resulting in limited smart implementations and a lack of tracking for final concepts and solutions in research studies focused on that region. (Ninčević Pašalić et al., 2021, pp. 1–2)

Moreover, as a large proportion of pollutants are caused by urban transport, the focus on sustainable mobility, which involves redesigning transport systems to improve efficiency, integration and sustainability, is crucial as part of the development of a smart city (Slavić et al., 2020, p. 251). Population growth in cities and the resulting increase in environmental damage caused by inefficient mobility structures will inevitably lead to the need for new algorithms to optimise routes for vehicles and people, traffic control to minimise congestion, and the further improvement of logistics processes (Paiva et al., 2021, p. 1). The resulting demand for smart mobility services is offering new business opportunities (Pulkkinen et al., 2019, p. 17). However, while the existing literature mainly focuses on the government perspective, the topic of smart mobility in the SEE region is not sufficiently analysed from the business perspective (Ninčević Pašalić et al., 2021), especially since private investment can be a driver of development alongside government regulation (Paiva et al., 2021, p. 16).

This work is intended to enhance the visibility of the SEE region in the field of smart development, as well as facilitate the identification and implementation of solutions to the current challenges posed by conventional mobility solutions, while adopting a private sector perspective.

1.2 Research topic and objective

This study contributes to closing the identified research gap in smart mobility within the SEE region, particularly from a business perspective. The research takes a focused approach by

focusing on a specific region and business model. Accordingly, the objective is to facilitate and support the development of successful car sharing business models in Croatia by answering following research question:

What are the key success factors and challenges for implementing successful car sharing business models within the smart mobility ecosystem in Croatia?

By examining the specific environmental characteristics of Croatia and analyzing both regional and international implementations, this research seeks to provide actionable insights for private investors and stakeholders.

To fulfill the outlined objectives, specific milestones have been set to:

- Examine the specific environmental characteristics of Croatia to identify common external opportunities and threats for car sharing business models.
- Identify common internal strengths and weaknesses of car sharing business models in Croatia by analysing regional and international implementations.
- Provide actionable insights for private investors and stakeholders to promote advanced-level smart implementations beyond the pilot phase.

1.3 Definition of the scope of the study

As mentioned above, this thesis aims to contribute to reducing the research gap in the field of smart development in the SEE region. The research focuses on the concept of smart mobility, which is one of the six characteristics of a smart city. In order to achieve more precise and accurate results, the region under consideration was narrowed down to the Republic of Croatia. As there are many different business models in the field of smart mobility and since market and competitive framework conditions can also change depending on specific business models within the smart mobility sector, this work is limited to evolving business model of car sharing. Specific best practices from car sharing provider of European cities as well as evolving car sharing provider in Croatia are selected for the case study, which are representative based on specific conditions that will be presented later in the thesis. This work can be further used as a basis to develop key driving factors for further smart mobility business models and in other SEE regions.

1.4 Methodological approach

In order to address the research question, a combination of methods will be used as part of a case study, to conduct an in-depth analysis of the car sharing market in Croatia. Initially, research is conducted to gather both quantitative and qualitative data regarding the six aspects of PESTEL, which is then used to describe the current external macroenvironment with the help of a PESTEL analysis. Next, the Porter's Five Forces Framework will be applied to identify profitability within the analysed industry. Additionally, regional and international car sharing services will be examined using the Business Model Canvas, as well as a Customer Review Analysis, to identify factors that support or hinder the business.

1.5 Structure of the work

Further to the introduction, which defines the subject and objectives of the thesis as well as its structure and contribution, the second section introduces smart mobility in the context of smart city, explains the meaning and characteristics of smart mobility, and provides an overview of the basic concept and the key technologies. Furthermore, the concept of car sharing and its business opportunities will be introduced, followed by the existing car sharing initiatives in Croatia. The following section deals with the common business model analysis frameworks: Business Model Canvas, PESTEL Analysis, Porter's Five Forces. Section number 4 then presents the methodological approach of a case study that has been used in Section 5 analysing the macroenvironment, competitive environment and internal aspects of car sharing businesses in Croatia. The discussion with the identification of key success factors and challenges can be found in Section 6, followed by the conclusion of the study in the last section before presenting the list of academic references that support this work.

2 Theory: Smart Mobility

Smart mobility is a widely used term these days. This chapter explains how smart mobility fits in the context of smart city, provides a better understanding of the term and its basic concept and presents the key technologies before it dives into the business of car sharing.

2.1 Smart Mobility in the context of Smart City

The concept of the "smart city" addresses the challenges of increasing urbanization, environmental concerns and economic growth (Gracias et al., 2023, p. 1719).

However, there are many and varied examples of cities that describe themselves or are described by others as “smart”, as this idea is currently in a constant state of development and it is applied in cities with unique characteristics. The development depends on factors such as the technology, social and economic factors of a city as well as size and governance arrangements and political and economic authorities. Variations of the term such as intelligent city or sustainable city or knowledge city are also possible, but the term smart is the most common and used both in Europe and globally. (Manville et al., 2014, pp. 21–22)

Enhancing urban living and promoting sustainability should be achieved with the goal of creating an efficient and effective operating environment by using digital and communicative technologies and data analyses (Gracias et al., 2023, p. 1724). For a city to be labelled smart, it must address one or more of the following characteristics in a future-oriented way: Smart Economy, Smart People, Smart Governance, Smart Mobility, Smart Environment and Smart Living (Giffinger et al., 2007; Manville et al., 2014, p. 24).

2.2 Smart Mobility: Definition and concepts

2.2.1 Basic concept

A fundamental component of a smart city is dealing with the mobility of the city. Smart solutions can not only better connect various places of a city and ensure mobility of more citizens, but also improve the quality of life from an economic and ecological perspective (Mutavdžija et al., 2024, p. 1).

Smart mobility is not a single project, but rather many projects and measures that can differ in terms of objectives, issues and technology level. Most smart mobility approaches focus in particular in

- reducing pollutant emissions,

- shortening congestion times,
- increasing road and people safety,
- reducing noise emissions,
- enhancing speed of transfer and
- lowering costs of transfer. (Dameri, 2017, pp. 86–88)

Smart mobility is still at an early stage of development and the definition of the term varies, as researchers have not yet agreed on a definition of "smart mobility" (Bıyık et al., 2021, p. 1). The term smart mobility applies to a wide range of attributes (cf. Figure 1). It refers to sustainable, safe, and networked transport and logistics systems for public transport, cars, bicycles, and pedestrians, either individually or in combination and is supported by information and communication technology (ICT) (Manville et al., 2014, p. 28). The focus on improving commuting efficiency, saving time and costs, and reducing CO2 emissions is achieved through access to real-time information (Manville et al., 2014, p. 28) enabled by the high level of connectivity of the entities in the network (Paiva et al., 2021, p. 13). Solutions that prioritize non-motorized options are preferred in the development of smart mobility (Manville et al., 2014, p. 28) to promote cleaner operations with minimal emissions (Paiva et al., 2021, p. 13). A high degree of flexibility is offered, allowing users to select integrated, consistent route plans from multiple modes of transport, enhancing the user experience (Paiva et al., 2021, p. 13).

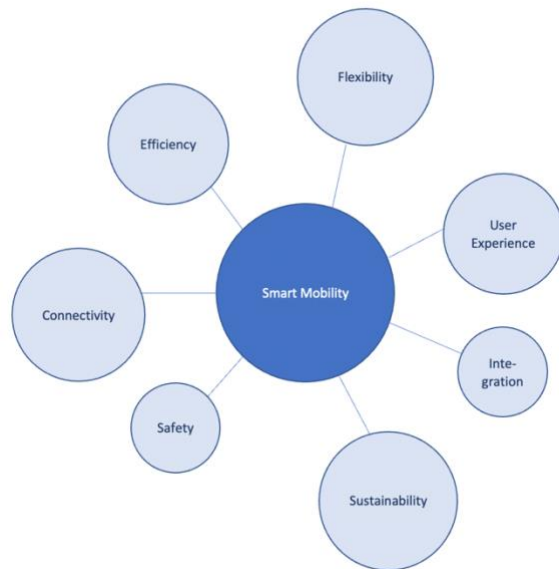


Figure 1: Attributes of smart mobility. Source: Own figure based on Paiva et al., 2021, p. 13.

The numerous attributes facilitate a multitude of combinations of content and resulting applications. During the preliminary research phase of this study, it became evident that a comprehensive representation of the concept of smart mobility, encompassing the diverse initiatives across multiple industry sectors and the key players behind them, was lacking. Consequently, this paper begins by illustrating the interrelated factors in order to foster a shared understanding of the complex nature of smart mobility (cf. Figure 2).

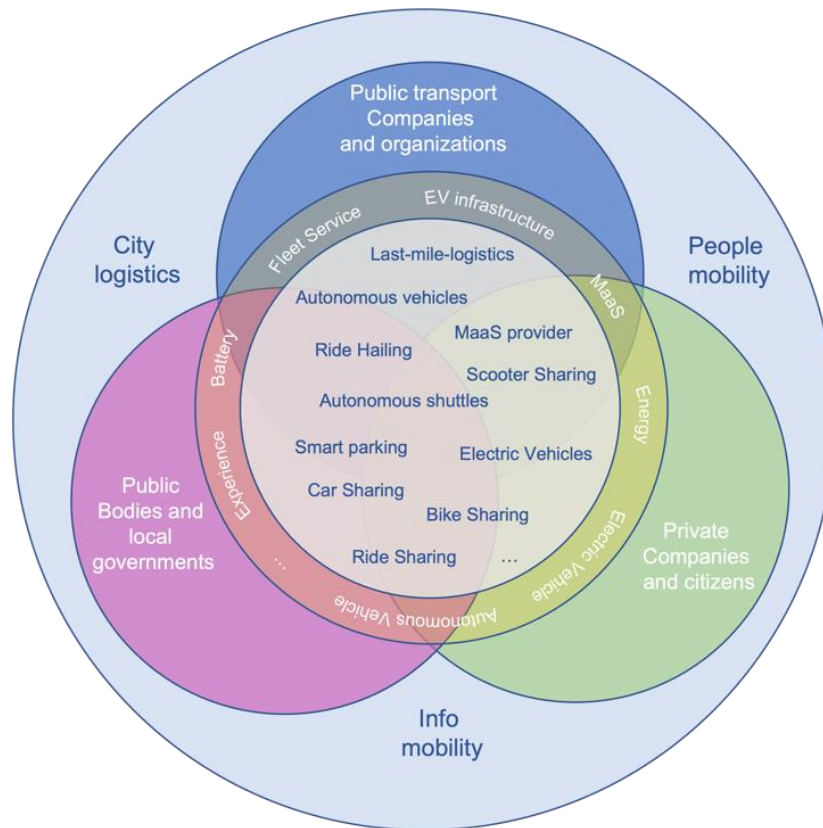


Figure 2: Illustration of smart mobility divided into subareas, key players, industrial sectors and business models. Source: Own figure.

An initial differentiation of smart mobility can be made by dividing it into three sub-areas:

- city logistics,
- people mobility and
- info mobility.

City logistics refers to the improvement of logistics operations in urban areas by reconciling the needs of businesses with the constraints of transport infrastructure, geographical considerations and environmental factors. The people mobility category is concerned with innovative and sustainable methods for transporting people in urban areas. The aim of the info mobility category is to identify methods for the distribution and utilisation of selected dynamic and cross-mobility information. This should improve traffic and transport efficiency and ensure a high quality of journeys for the user. (Neirotti et al., 2014, p. 28)

The initiatives and solutions that emerge in the contexts of city logistics, people mobility, and info mobility can be classified into four categories according to the key players involved (Dameri, 2017, p. 89):

- Companies and organisations in the public sector offering transport services

- Private sector companies and citizens developing and implementing innovative mobility solutions
- Public organisations and local authorities setting up policies and infrastructures for smart mobility
- Cooperation between all three sectors implementing Intelligent Transport Systems (ITS)

The key players come from various industrial sectors, each of which addresses specific aspects of mobility. The mobility environment is currently undergoing major social, technological and economic change. While new sectors are opening up, existing sectors are gradually disappearing or undergoing substantial reorganisation. (Simpson et al., 2019, p. 3)

For the private sector, collaboration, and especially the combination of cross-sectoral capabilities, is a key driver for enduring mobility solutions (Simpson et al., 2019, p. 21).

The focus is on well thought-out and networked partnerships of major size in order to create large so-called ecosystems. These ecosystems offer greater benefits for businesses than simple partial partnerships and increase market competitiveness in the field of smart mobility. (Heineke et al., 2021, p. 9)

In other words, there is a shift away from linear value chains in the transport industry to a complex cross-sectoral network of interconnected value chains (Simpson et al., 2019, p. 15) .

The sectors encompassed by the smart mobility ecosystem include:

- Electric vehicle and electric vehicle infrastructure for the development of electrically powered vehicles and the construction of their charging infrastructures;
- Energy generation and distribution to support all energy-driven solutions;
- Battery generation and management for energy storage of e.g. electric vehicles;
- Fleet service for the efficient management of vehicle fleets;
- Autonomous Vehicle for the development of self-driving vehicles adapted to efficient mobility solutions;
- Experience focusing on improving the user experience when using mobility solutions;
- Mobility as a Service (MaaS) supporting the shift towards service-based transport solutions.

(Simpson et al., 2019, p. 9,15)

A networked ecosystem allows companies to gain a deeper insight into and respond more effectively to the needs of end users. This is particularly important in the context of the future

mobility sector, where a customer-centric approach and the ability to address critical customer pain points are crucial for success. This holds true for companies that have direct customer contact as well as those with more peripheral customer relationships, such as suppliers. (Heineke et al., 2021, p. 9)

There are various smart mobility solutions from the different industrial sectors, from private companies as well as public transport companies and the local government, approaching info- and people mobility as well as city logistics.

A number of business models and opportunities exist for the private sector. These include:

- MaaS provider
- Smart parking solutions
- Car sharing services
- Ride Hailing services
- Autonomous vehicles
- ... (cf. figure 2)

2.2.2 Key Technologies

Smart mobility solutions are enabled by the development of key technologies (cf. Figure 3) including the Internet of Things (IoT), Big Data and Artificial Intelligence (AI) (Paiva et al., 2021, p. 30).

The Internet of Things (IoT) describes the connectivity of a wide range of objects, from everyday objects to industrial systems, which can exchange information independently via communication networks. This enables intelligent applications and automated processes. (Bundesnetzagentur, 2024, paras 1–2)

In the field of mobility, the use of the Internet of Things (IoT) contributes to the gathering of data. It is being employed to facilitate the real-time recording and collection of traffic and mobility data pertaining to vehicles and inhabitants. This data can then be used for efficient and smooth mobility management. (Paiva et al., 2021, p. 30)

Big data can be defined as: “Information assets characterised by such a high volume, speed and variety that they require specific technologies and analysis methods to convert them into value”

(De Mauro et al., 2015, p. 103). Focusing on volume, variety, speed and veracity, big data gives companies the opportunity to optimise decision-making processes and increase performance, which can provide a competitive advantage in the digital market (Schroeck et al., 2012, pp. 4–5).

The big data component represents an integral element of the smart mobility ecosystem. The aggregation of the voluminous data (cf. Figure 3) produced by IoT devices offers insights into the respective object and its surrounding environment, employing big data technology and analysis methodologies. (Paiva et al., 2021, p. 31)

Artificial intelligence (AI), as a technology that simulates human intelligence and problem-solving skills using computers and machines (IBM, 2023, para. 1), can be used to develop AI-based algorithms that autonomously make decisions and predictions based on the data gathered. It can concern a variety of mobility-related services and also assist in the implementation of customer-oriented target marketing, thereby enhancing the viability of business models. (Paiva et al., 2021, p. 30)

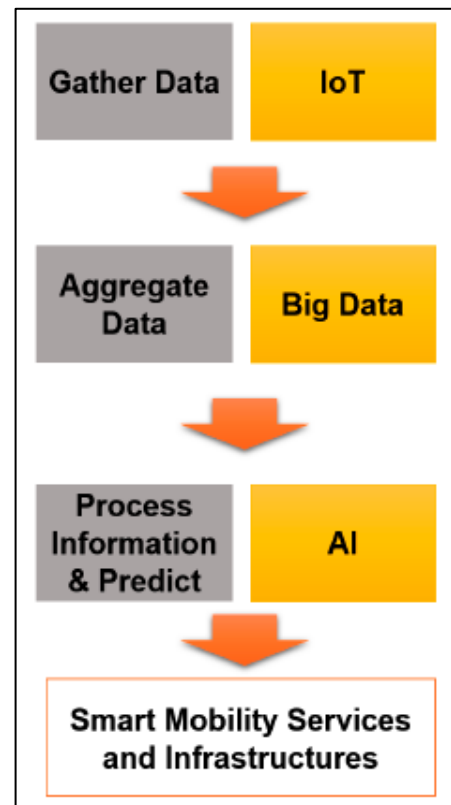


Figure 3: Contribution of key technologies to smart mobility. Source: Paiva et al., 2021, p. 31.

2.3 Business Models in Smart Mobility: The concept of Car Sharing

Successful business models are those that recognise the extent of the changes early on, identifying new opportunities as they arise and adapting their business models accordingly (Simpson et al., 2019, p. 3).

Changes in the mobility environment are primarily due to changing consumer preferences based on sustainability aspects, which are leading to a shift away from the private car, which still dominates the roads with 60%, towards the use of more sustainable alternatives involving sharing and multi-modal transport, i.e. the use of different means of transport on the same route. Furthermore, in support of the consumer preference, the change is driven by the high level of technological progress in the mobility sector. (Heineke et al., 2024, pt. 1)

As previously stated, the field of smart mobility encompasses a multitude of solutions and concepts. The following section will examine the rapidly spreading business model for private investment in the smart mobility ecosystem addressing the sub-area of people mobility: Car Sharing.

2.3.1 The concept of Car Sharing

Car sharing can be summarised, along with other business models such as bike sharing, scooter sharing, ride hailing, etc., under the term of shared mobility (Statista, 2024b, sec. Marktstruktur). The term "car sharing" is understood in a somewhat different manner in various regions. The most prevalent interpretation of the term in Europe is as follows:

Car sharing is employed to describe a system in which vehicles are made available for use by the general public on a shared basis. These vehicles are intended for occasional use. (Erceg, 2014, p. 183)

They can replace car ownership and offer at the same time comfort and cost-effective personal mobility options (Erceg, 2014, p. 192). Car sharing differs from conventional car hire (Erceg, 2014, p. 184).

It is a membership-based service (Duncan, 2010 as cited in Erceg, 2014, p. 184), for renting a car by the minute or hour, usually via a smartphone app, whereby drivers are charged for the time they use the car, or for the distance they travel, or for a combination of both (Cohen & Kietzmann, 2014, p. 283). Car sharing and car rental often differ in that users prefer car sharing for quick rides, while they rent a car for longer distances (Lu, Han and Cherry, 2013, as cited in Erceg, 2014, p. 184).

Car sharing began with little groups of citizens who wanted to share their private vehicles. Today, this form of sharing is known as peer-to-peer. Later, concepts were introduced based on vehicle fleets that can be used by the hour and must be brought back to the same point after use. Today we speak of station-based car sharing. In recent times, a number of major companies in the mobility industry have introduced free-floating services on a global scale across a variety of cities. These services permit a shared car to be parked in any location within a designated service zone.

The phenomenon of sharing can be attributed to a number of factors, including demographic and cultural changes, social mentality towards the ownership of goods, as well as evolving technological advancements. It has resulted in a reduction in the number of private vehicles

purchased by private households, accompanied by the normalization of not owning a car. (Machado et al., 2018, p. 2)

It is crucial to highlight, that individuals must alter their lifestyles if car sharing, wherever implemented, is to be efficacious. This represents a significant obstacle to the further expansion of car sharing utilisation in regions that have not yet been reached. (Erceg, 2014, p. 190)

2.3.2 Car Sharing as a promising Business Opportunity

There has been a considerable increase in car sharing in recent years. This type of business model generates enormous added value for users and has a major impact on local transport networks. Studies have shown that for every car sharing vehicle used, there are nine to thirteen fewer vehicles on the road (Martin et al., 2010, as cited in Cohen & Kietzmann, 2014, p. 283), and thus contributes to the common mobility goals of greater sustainability and less traffic congestion.

The global turnover of the car sharing industry was 11 billion euros in 2022 and is expected to rise to 15.25 billion euros in the following five years. The European car sharing market is also expected to grow from €4.17 billion in 2022 to €5.49 billion in 2027. The amount of car sharing users globally is forecasted to rise by 28 % between 2017 and 2022 and is forecasted to increase further from ca. 50 mio. in 2022 to 63 mio. by 2027. In Europe, there were 16.3 million car sharing users in 2022 and this number is expected to reach around 20.7 million by 2027. (Statista, 2023, pp. 3–12)

Private companies offer most shared mobility services. The number of examples of purely public services in the area of shared mobility is limited. (Cohen & Kietzmann, 2014, pp. 291–292)

Moreover, the global car sharing industry has evolved out of small businesses into a market supported by car hire services, vehicle suppliers, public organisations and companies. (Berman et al., 2013, as cited in Erceg, 2014, p. 188)

In 2022, the German company Share Now had the largest share of the European car sharing market with a market share of 16 per cent, followed by Zipcar, an American subsidiary, with a share of 11 per cent.

The leading countries with the most car sharing users, free-float or station based or a mix, are Germany (3.16 million users) and Italy (2.09 million users), followed by Spain (1.95 million users) and the UK (1.88 million (Statista, 2023, pp. 13–23)

The Croatian car sharing market is still in its infancy, but with increasing urbanisation and growing environmental awareness, rapid growth is expected in the coming years. (Statista, 2024a, sec. Highlights)

2.3.3 Car Sharing Initiatives in Croatia

Initial initiatives to establish a car sharing company in Croatia took place in 2011, when Autodivision Croatia launched the "ODDO Carsharing" project, which was cancelled due to a lack of willing investors, but big investments required for beginning with that business (Erceg, 2014, pp. 189–190). The implementation of the concept was also dependent on the support of the city council, as it had to ensure the provision of public parking lots and cooperation with local transport (Kukec, 2011, as cited in Erceg, 2014, pp. 189–190).

However, the city did not yet understand the concept at this point. Car dealers were also not very interested in a partnership to get this project off the ground and other strategic partners could not be convinced either. Due to the increased interest in this popular service worldwide, the company Orix Rent-a-Car considered another initiative to introduce a car sharing programme in Croatia. (Erceg, 2014, pp. 189–190)

However, a market study conducted by the company, which found as a result for the Croatian market that it was not yet prepared for this type of concept as there were not enough potential members that would be required to start the service (Bičak, 2013, as cited in Erceg, 2014, p. 190).

In 2016, Spin City was launched by Urban Mobility d.o.o. as the first car sharing service in Croatia. A free-floating concept was implemented in the Croatian capital, Zagreb. With a fleet of 30 vehicles, 10 of which were electric, registered users in the city centre and surrounding area were able to utilise the shared service via a mobile phone application. (Urban Mobility, 2015, para. 1)

The website has been deactivated and there has been no activity on social media, which suggests that this service was discontinued without notice in 2023. The service will be analysed in greater detail later in the thesis, in order to gain a deeper understanding of the challenges associated with this type of business model in the Croatian region.

The only currently active business in the Croatian car sharing sector is the station-based service called "Avant2Go". Avant2Go is currently operational in Dubrovnik and Zagreb, enabling registered users to rent vehicles for short periods via a mobile application. Once the ride has completed, the vehicle must be returned to one of the nearest stations.

During the investigation into carsharing implementations in Croatia, no instances of a peer-to-peer car sharing business model were identified.

Given the findings of the state-of-the-art research conducted, which revealed a very low representation in Croatia of the globally widespread and high-revenue business idea of car sharing, it is of particular interest to determine which factors could lead to success and what challenges private investors could face in implementing this business model in the future in Croatia.

3 Theoretical Framework: Business model analysis frameworks

After taking a closer look at smart mobility and the world of car sharing, a general understanding of a business model and the basic framework of a successful business strategy will now be presented in order to find out how to determine the key success factors and challenges that influence the long-term success of a business. Following this, the analytical tools used in the case study are presented.

“The essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit.” (Teece, 2010, p. 172)

This concept highlights the underlying purpose of a business model: the creation of value. Porter (1998a, pt. XXI–XXII) offers a complementary perspective, emphasizing that the long-term success of a business is determined by its ability to secure a competitive advantage, which arises essentially from the value that a company is able to create for its buyers. The competitive advantages to be achieved result from the practical application of generic strategies by a company.

The figure 4 shows the fundamental framework of strategy as an intermediary between a firm and its industry environment (Grant, 2018, p. 9). This framework states that strategy enables the firm to find its place in the environment through strategic decisions. The ultimate objective of these decisions is to increase value creation and superior profitability, as a fundamental objective for any organisation, regardless of its size or growth path (Porter's speech), which ultimately leads to the achievement of a competitive advantage and thus to long-term success. In order to be able to assess the strategic value of the company or identify opportunities to create value, a comprehensive analysis of the environment should be carried out.

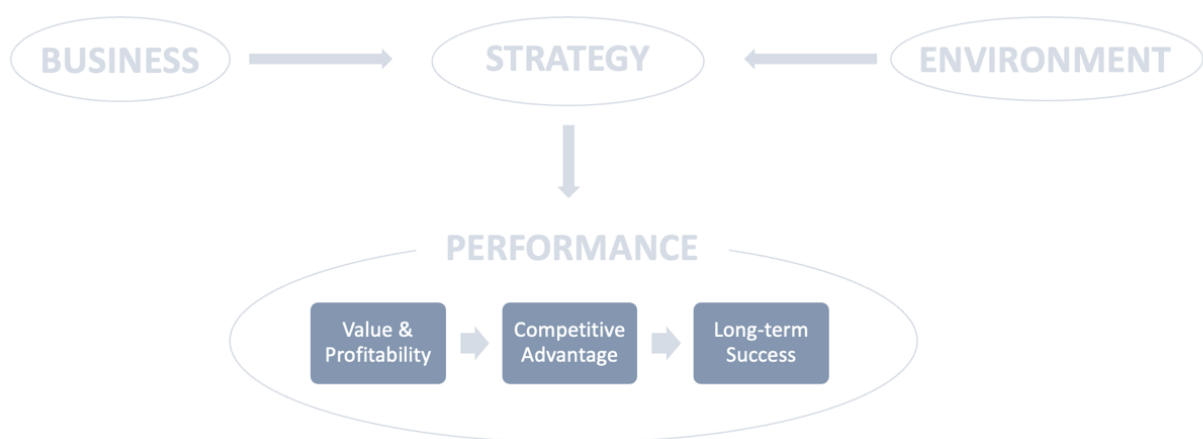


Figure 4: Fundamental Framework of Strategy. Source: Own figure based on Blanco Callejo, 2023a, p. 23.

3.1 Strategic internal Analysis

Strategic internal analysis focuses on factors which are micro-based and within the control of the organization (Çitilci & Akbalık, 2020, sec. Abstract). To be able to analyse the internal environment of a business, it makes sense to take a closer look at the business model. Business models are defined as "the basic principle of how an organisation creates, delivers and captures value" (Osterwalder et al., 2010, p. 14).

3.1.1 Business Model Canvas

The Business Model Canvas enables the description, analysis, and adaptation of business models to make new strategic decisions and innovate successfully. It is a tool to examine internal elements of a business and has the advantage of being simple, relevant and intuitively understandable, without oversimplification of the complexity of business operations. The framework describes a business model using nine basic building blocks that indicate how a company intends to achieve profitability by addressing the four main areas of the business: customers, supply, infrastructure, and financial profitability. The nine building blocks are: key partnerships, key activities, key resources, value proposition, customer relationships, distribution channels, customer segments, cost structure, revenue streams. (Osterwalder et al., 2010, pp. 14–15)

Figure 5 shows a business model canvas template with further explanation of each of the nine blocks.

<i>Key Partners</i> The network of suppliers and partners that make the project work	<i>Key Activities</i> Most important activities to perform for the project to work	<i>Value Proposition</i> Product or services that create value for the Customer Segment	<i>Customer Relationships</i> The types of relationships established with the Customer Segment	<i>Customer Segments</i> The different groups of people or organization that the projects aims to serve
	<i>Key Resources</i> Most important assets to make the project work		<i>Channels</i> How the projects communicate and reach the Customer Segment to deliver the Value Proposition	
<i>Cost Structure</i> All costs incurred in the development and operation of the project		<i>Revenue Streams</i> Revenues generated from the Customer Segments		

Figure 5: Business Model Canva Framework. Source: Tanda & De Marco, 2019, p. 4

3.2 Strategic External Analysis

Environments are relevant factors that come from outside the company, define the context in which the company operates, can have a significant impact on the success of its strategy, and that the company cannot control but can try to influence or change (Blanco Callejo, 2023a, p. 23). The purpose of analysing the environmental factors carefully is to identify opportunities and threats to create value and hence to generate a competitive advantage (Çitilci & Akbalık, 2020, sec. Abstract).

The issue of the environment is that it is large, with many variables that can affect the company, uncertain and unpredictable, and very dynamic, due to globalisation, technological change, the removal of international trade barriers, changes in society's culture, environmental and ethical values. The management needs to determine the level of uncertainty, which is defined by key variables such as stability, complexity, diversity, and hostility, as well as the causes of uncertainty and how to adapt strategies to changes. (Blanco Callejo, 2023a, p. 23)

Figure 6 shows how the environment can be further subdivided. The competitive environment, which is predominantly characterised by customers, suppliers and competitors, has the greatest influence on the business. The broader environment, but still relevant, is the general environment, which is characterised by the political, economic, social, cultural, ecological, technological and legal context in relation to the business. The irrelevant environment has largely no influence on the company. (Blanco Callejo, 2023b, p. 5)

Irrelevant environment

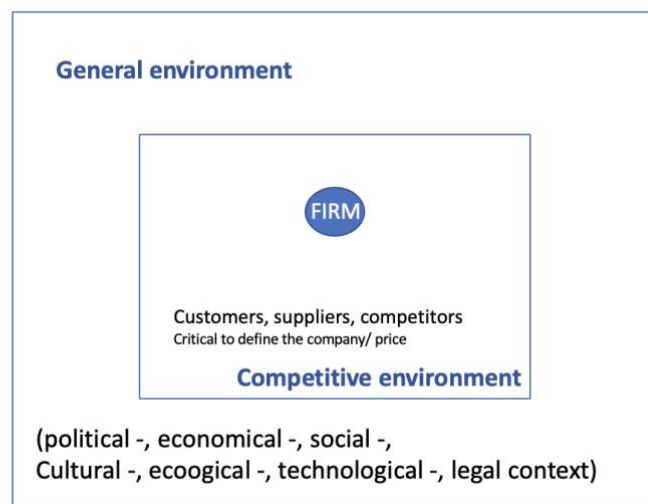


Figure 6: Subdivision of the external environment.

Source: Own figure based on Navas & Guerras, 2013, p.82 as cited in Blanco Callejo, 2024, p. 5.

3.2.1 General Environment Analysis: PESTEL

Businesses can use PESTEL as an analytical tool to investigate the general environment and to find out how key outside variables affect their operations, thereby enabling them to become more competitive in the market. This approach considers a country's or a market's characteristics and investigates the ways in which political, economic, sociocultural, technological, legal, and environmental factors impact the consumer. (Hall, 2023, sec. PESTLE Analysis)

Table 1 serves further definition on the six factors.

Table 1: Six factors of the PESTEL Analysis. Source: Own figure based on Çitilci & Akbalık, 2020 and Hall, 2023, sec. PESTLE Analysis

P	Political	tax and employment law (-changes), government regulations, political risk or (in) stability, trade restrictions etc.
E	Economical	growth, interest rates, exchange rates, inflation, etc.
S	Social	consumer demographics, population, culture, lifestyle etc.
T	Technological	innovations, changes in technology, ways of using technology in different industries etc.
E	Environmental	climate, weather, nature, raw materials, pollution etc.
L	Legal	labor laws, legislation, consumer rights/ law, copyright etc.

3.2.2 Competitive environment Analysis: Porter's Five Forces

According to Porter (Porter, 1998a, p. 1), competitive strategy involves seeking a favourable competitive position within an industry to ensure long-term profitability. This is achieved by considering the fundamental factors of competition. Porter (Porter, 1998a, p. 1) presents a framework for analysing the main five forces to help a company understand its industry, identify competitors and its own position, and apply this analysis to a competitive strategy for a specific business (Porter, 1998b, Chapter Preface XXII).

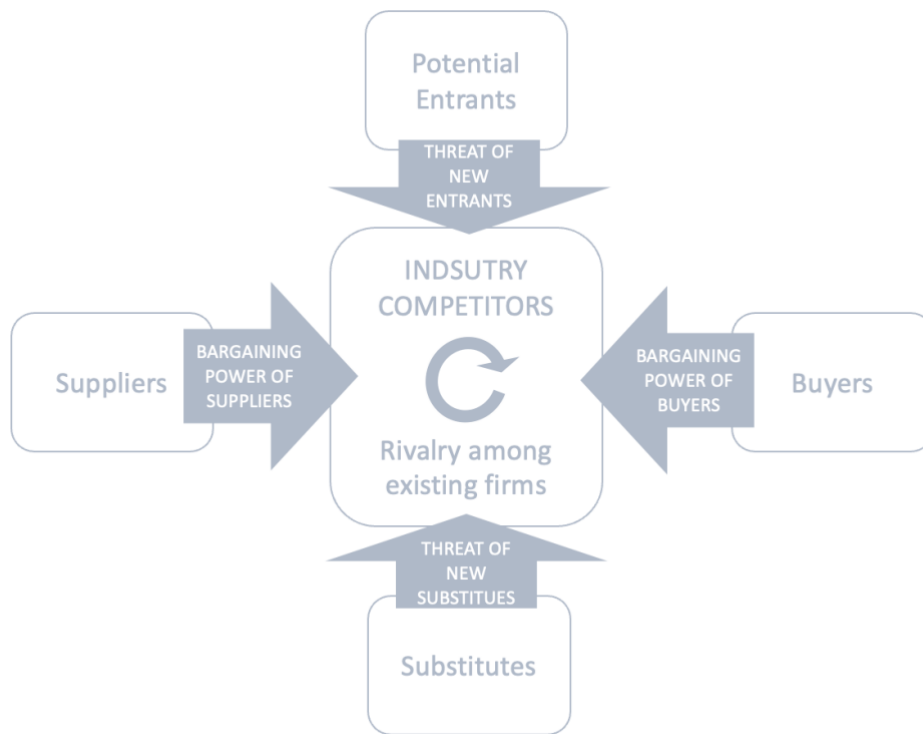


Figure 7: Forces Driving Industry Competition. Own figure based on Porter (1998a, p. 6).

Figure 7 shows the five competitive forces - the entry of new competitors, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers and rivalry among existing competitors – that determine the ability of companies to achieve an average return on capital. The strength of the five forces, and thus profitability, differs between industries and can change over the course of an industry's development. (Porter, 1998a, p. 4)

The profitability of an industry does not depend on the type of product or whether it is high-tech or low-tech, it depends on the structure of the industry. These five forces influence the profitability of an industry as they affect the prices, costs and investments required by companies in the industry. Through their strategies, companies can influence the five forces and shape the structure of the industry, which can change the attractiveness of an industry. The model states that if the forces have a “high” intensity the possibility of obtaining higher levels of profitability decreases making the industry less attractive. On the other hand, if the behaviour of the forces is “benign” (low intensity) the industry is more profitable and attractive.

It is important to note that not all five forces are equally important in all industries. Using the 5-factor model, an organisation can understand the complexity and identify the factors that influence its competitiveness and profitability. (Porter, 1998a, pp. 5–7)

4 Methodology

The chapter on research methodology defines the methodological approach of a case study and describes the methods used. In addition, quality criteria are mentioned that must be observed when carrying out qualitative methods in order to ensure the quality of the research.

4.1 Definition Case Study

A case study is defined as an empirical research to analyse a contemporary phenomenon in which the researcher draws on multiple sources of evidence and uses previously developed theoretical models to organise data collection and analysis (Yin, 2007, pp. 13–14). A case study can be used in a variety of ways (Borchardt & Göthlich, 2007, p. 35). The primary methodology employed in case studies is qualitative research (Borchardt & Göthlich, 2007, p. 34). This approach aims to provide an in-depth understanding of an issue through non-standardised data collection and non-statistical analysis (Endres, 2018, para. 2). The case to be investigated can be among others an individual, group, organisation, a part of a society or an occurrence (Brüsemeister, 2008, p. 58).

4.2 Qualitative research in case studies

Qualitative research is distinguished by a comprehensive and interpretive approach to data collection and analysis (Pfeiffer, 2019, para. 1).

In contrast to quantitative methods, it does not allow general conclusions to be drawn about a population, but is intended to depict the social reality in the area under investigation in all its complexity by qualitatively capturing a phenomenon in its context (Borchardt & Göthlich, 2007, p. 36). In a case study, the topic under investigation is often still very unknown and in need of explanation (Brüsemeister, 2008, pp. 56–58). Qualitative research is particularly suitable for areas that have not yet been extensively researched (Brüsemeister, 2008, pp. 56–58), and while the large numbers of cases required for the application of quantitative research methods are not yet available (Borchardt & Göthlich, 2007, p. 36).

Qualitative research follows an inductive approach based on the principle of exploration and openness. This means that assumptions are not used to start with, but are developed based on the research findings. (Scheufele & Engelmann, 2009, p. 27)

4.3 Case study as a methodological approach

A case study is not, in and of itself, a method in the strictest sense. Instead, it represents a procedure for combining and integrating different methods (Brüsemeister, 2008, pp. 56–58).

Since this thesis deals with a market in a region that has not yet been investigated much about in the literature, as described in chapter 1, the methodological approach of a case study was chosen here to provide concrete insights and practical examples.

No specific methods are assumed for a case study, as the choice of methods depends on the topic to be researched (Borchardt & Göthlich, 2007, p. 37). The specific case to be investigated can be an individual, group, organisation, part of a society or an event (Brüsemeister, 2008, p. 58).

The purpose of this case study was to analyse the macroenvironment and competitive environment of car sharing business models in Croatia and to gain internal business insights into success factors and challenges. The frameworks PESTEL analysis, Porter's five forces and Business Model Canvas described in FMT's section 3 were used for this purpose. Furthermore, due to the lack of information regarding one of the business models under investigation, a content analysis of Google reviews has been conducted instead of the planned business model canvas. An illustrated overview of the case study carried out and the following discussion can be found on figure 8.

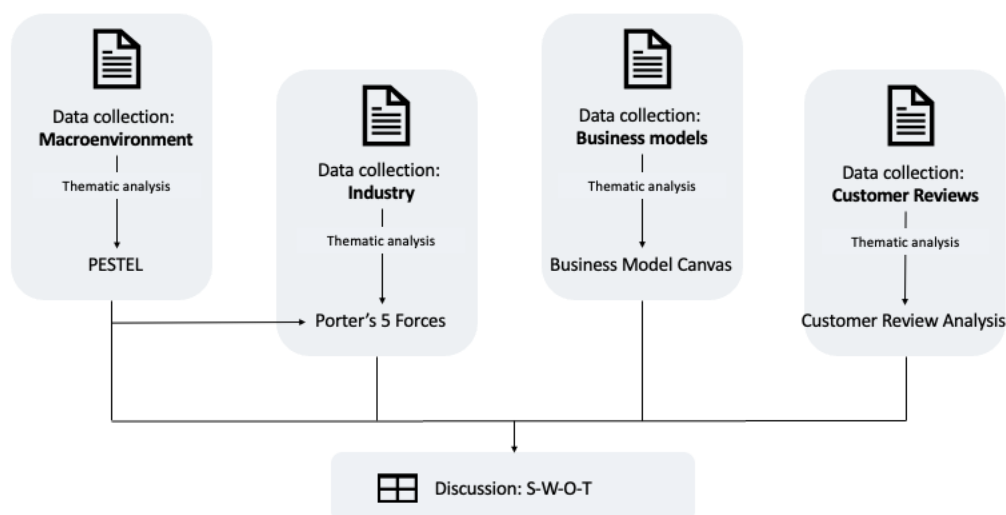


Figure 8: Overview of the steps taken in the case study. Source: Own figure.

All four analyses are based on the systematic approach to gather, categorise, and analyse data using a thematic analysis. With the help of a thematic analysis, patterns and key information should be recognised (Braun & Clarke, 2006, p. 5).

The steps to be carried out are based on Braun and Clarke's six-phase guide and were adapted accordingly. First, various documents and websites are reviewed according to the topic and initial codes are generated to abstract the content. The coded content is then assigned to overarching themes, either predefined or generated. Once all the overarching themes have been identified, the results are presented categorised by their themes. (Braun & Clarke, 2006, pp. 18–23)

The coding was done using the MAXQDA coding programme.

The overarching themes were adopted as following:

- PESTEL analysis (predefined): Political, Economic, Social, Technological, Environmental and Legal
- Porter's Five Forces (predefined): Customers, Substitutes, Suppliers, New Entrants, Competitors
- Business Model Canva (predefined): Key partners, Key Activities, Key Resources, Value Proposition, Customer Relationship, Customer Segments, Channels, Cost Structure, Revenue Streams
- Customer Review Analysis (not pre-defined): Fleet, Service, Costs, Technology, Training Programme, Charging, Other

4.4 Quality criteria for qualitative research in a case study

The quality criteria of qualitative research are not fully compatible with the conventional criteria of quantitative research: reliability, validity and objectivity (Steinke, 1999, as cited in Flick, 2022, p. 534).

This is because, in the sense of quantitative research, objectivity requires strict adherence to a structure. Conducting qualitative research, on the other hand, requires a structure that is as open as possible in order to expand prior knowledge (Steinke, 2009, pp. 264–265).

It follows that the direct adoption of quantitative quality criteria tends to be rejected due to the fundamental differences between quantitative and qualitative research (Lüders & Reichertz, 1986, p. 97, as cited in Flick, 2022, p. 535). The qualitative quality criteria compiled by Steinke

(2009, pp. 270–279) include the indication of the methods, empirical anchoring, generalisability, intersubjective comprehensibility, relevance and ethical procedure.

In order to evaluate the qualitative research conducted within this thesis in accordance with established quality criteria, these quality criteria are integrated into the research process, and subsequently analysed to determine whether they have been met and the research can thus be classified as qualitatively appropriate. A detailed explanation of the individual criteria is not provided here, as they are assumed to be generally known.

5 Case-Study

The case study concerns the car sharing market in Croatia, with the objective of conducting a comprehensive analysis of the market. As previously stated, the term "car sharing" encompasses three distinct concepts: free-floating, station-based, and peer-to-peer. It should be noted that conventional rent-a-car services are not included in this definition.

A variety of documents were consulted in order to enable the analysis of the market.

5.1 Macroenvironment Analysis

The results considered essential for the comprehensive mapping of the macroenvironment of car sharing in Croatia were initially categorised according to the six characteristics (political, economic, social, technological, environmental and legal) and are summarised in table 2.

Table 2: Data collected as basis for the PESTEL analysis. Source: Own representation.

Political
Croatia's accession to the EU and the adoption of the euro contributes to simplifying international business, making it easier for foreign carsharing companies to introduce their business in Croatia. The country is currently seen as politically stable. (GOV.UK, 2023, para. 1) The accession also promotes tourism, an optimal target group for car sharing services identified by Danielis et al. (2012, p. 106) due to the fact that tourists rarely drive their own vehicle to their holiday destination, and car sharing's flexibility makes it an ideal solution. In accordance with the European Union Directive 2014/94/EU, the Republic of Croatia has enacted a national policy framework for the development of infrastructure for alternative energy resources. This framework establishes the legal and strategic foundation for integrating alternative fuels into the national transport system. With regard to car sharing, the proposed measure is to promote the use of electric vehicles in shared services. (MMIP, n.d., Chapter 1,6) It is evident that municipal and governmental awareness campaigns play a pivotal role in promoting carsharing (Vanheusden et al., 2022, p. 12). One example of this is the CIVITAS DYN@MO project in Koprivnica, a small town in Croatia, which has introduced an electric municipal car sharing system for city institutions and companies.
Economic

In general, the sharing economy is seen as a key factor for national economic growth. This results from investment in start-ups, which is followed by governmental support aimed at transforming various sectors and offering consumers new, competitive products and services. (Woskow, 2014, as cited in Cherry & Pidgeon, 2018, p. 941)

In Croatia, the number of early-stage investors is severely constrained, which presents a significant challenge for entrepreneurs seeking venture or start-up capital (Dumančić & Čeh Časni, 2021, p. 95).

In 2016, at the launch of Spin City, the Deputy Minister of Entrepreneurship and Crafts highlighted the significant challenge of accessing financing for entrepreneurs, particularly in Croatia, where the market for venture capital funds and other alternative sources of financing is underdeveloped (Total Croatia News, 2016, para. 4).

In 2022, 60 business angels were registered in Croatia (EBAN, 2023a), and investments by the angel network were made in a single company (EBAN, 2023b). The amount of early-stage venture capital raised in the same year was 68.1 million euros (Statista, n.d.)

Over recent years, there has been a consistent increase in economic output in this country, accompanied by a rise in disposable income and consumer expenditure. (Statista, 2024a, para. 1)

Social

On Statista it can be found that in Croatia, there has been a notable increase in the number of customers who are selecting car sharing because of comfort and affordability of those services. Croatia has 80,000 car-sharing users, ranking 23rd in Europe.¹ It is anticipated that the amount of users in the car-sharing market will get to 105,100 by 2028. The user penetration rate of 2.4% in 2024 is forecasted to increase to 2.7% by 2028.¹ A trend in the car sharing market in Croatia is the integration of car sharing services with other modes of transportation.¹ (Statista, 2024b, para. 1)

In contrast to this upward trend, Martinović et al. (2023, pp. 379–380) found in their study investigating how Millennials and GenZ in Croatia think and act in the sharing economy that the respondents would rather choose the concept of carpooling, but less car sharing. The respondents also showed concerns about the cost-effectiveness (Martinović et al., 2023, pp. 379–380) and according to Dumančić & Čeh Časni (2021, p. 95), a third of surveyed Croatians expressed a lack of trust in online transactions.

¹ Included: Free-floating, Station-based; Excluded: Peer-to-Peer; Rent a car

The context of socialization was mentioned as a further aspect, that is amongst Croatians, in contrast to studies in other regions, seen as a negative aspect of the sharing economy (Martinović et al., 2023, pp. 379–380). Dumančić & Čeh Časni (2021, p. 96) posit that the sharing mentality in Croatia remains comparatively underdeveloped in comparison to other EU countries.

Recommendations from others are seen as very important, especially from people who have already used a product or service. Reviews on the Internet are also taken very seriously, while it is less important if a famous influencer recommends sharing services. Half of those surveyed believe that the sharing economy helps the planet and reduces waste. (Martinović et al., 2023, pp. 379–380)

Grubišić and Podrug (2023, p. 119) found that Croatians prioritise fast, accurate, straightforward, and secure access to vehicle availability when sharing transport services.

Technological

Spin City and Avant2Go represent the first services of free-floating and station based carsharing projects in Croatia. The implementation has introduced a range of technological innovations in Croatia, including mobile apps for booking and managing vehicles, car location tracking and navigation.

The implemented services also combined advanced battery technology with shared vehicles and contributed consequently to the development of a charging infrastructure in the city to ensure smooth operation of the service. The further advancement of an electromobility ecosystem supporting car sharing services with electric vehicles is facilitated by enterprises like Greenway, which is engaged in the construction and supervision of vehicle charging infrastructure in Croatia. (GreenWay, 2024)

Croatia is ranked ninth in the EU for human capital, with a higher-than-average level of digital skills among the population. A total of 63% of the population has attained at least a basic level of digital proficiency, while 31% have demonstrated an advanced level of digital expertise. The proportion of ICT specialists in Croatia is below the EU average, but the country performs well in terms of the number of ICT graduates. The penetration of high-speed internet services, Very High Capacity Networks, and 5G coverage in Croatia is relatively low. A growing number of Croatian businesses are adopting new digital technologies. For instance, 35% of companies are utilising cloud-based solutions, 43% are employing e-invoicing systems and 9% are embracing artificial intelligence (AI) technologies. The usage of Big data in enterprises is identical with the average of the EU

with 14%. Measures are in place to further enhance key technologies such as big data and AI, to promote the growth of high-tech start-ups, to raise security awareness and to provide high-quality services in line with the Cybersecurity Act. (European Commission, 2022, pp. 6–15)

Environmental

The aim of car sharing is to achieve more efficient use of underutilised vehicles and thus establish a more sustainable form of consumption that reduces resource consumption and carbon emissions. (Heinrichs, 2013; Martin, 2016, as cited in Cherry & Pidgeon, 2018, p. 941).

If the composition of car-sharing services comprises electric vehicles, it aligns with the aforementioned national policy framework, which promotes the use of electric vehicles and infrastructure for charging points.

To mention is, that the globally leading position in electric vehicles of the Croatian company Rimac Automobili focusing on the reduction of carbon emissions and promotion of sustainable transportation rises awareness and supports the positioning of electric shared services as environmentally friendly.

Nevertheless, it is important to acknowledge that critics have expressed concern that the inexpensive and convenient option may result in a general increase in car use (Schor, 2016, as cited in (Cherry & Pidgeon, 2018, p. 941). This is because while some users have significantly decreased their car usage, for many others, enhanced accessibility to a vehicle has resulted in greater carbon emissions (Martin and Shaheen, 2011, as cited in Cherry & Pidgeon, 2018, p. 941).

Cherry and Pidgeon (2018, p. 941) asserted that the sustainability of sharing initiatives has yet to be empirically proven, and that the existing studies on the subject have yielded conflicting results.

Legal

The criticism of the sharing economy in general can be summarised as a lack of clarity regarding the regulatory framework, a deficit of government supervision, and a perceived lack of security regarding the information of online platform users. Furthermore, the European car sharing industry encounters a multitude of challenges due to discrepancies in legislative frameworks across distinct geographic regions. (Roblek et al., 2021, p. 2)

In Croatia, there are according to Dumančić & Čeh Časni (2021, p. 94) no existing legislations applying specifically to the sharing economy, neither parliamentary debates or

off parliamentary initiatives developing new laws. Legal questions are arising because of the new type of service regarding consumer and data protection, labour and obligation law, competition law, taxation, and others.

Following the initial presentation of data pertaining to the macro environment of car sharing in Croatia, a PESTEL analysis was subsequently conducted, whereby the preceding information was summarized in table 3.

Table 3: PESTEL analysis of macroenvironment of car sharing in Croatia. Source: Own representation.

P	▪ EU accession and the adoption of the euro simplifies international business, aiding foreign car sharing companies' entry. ▪ Croatia is politically stable, promoting tourism as a key target group for car sharing. ▪ National policy framework aligned with EU Directive 2014/94/EU supports alternative energy resources, promoting electric vehicles in car sharing. ▪ Municipal and governmental campaigns, such as CIVITAS DYN@MO in Koprivnica, promote car sharing.
E	▪ Sharing economy is crucial for national economic growth, driven by start-up investments and government support. ▪ Limited number of early-stage investors. ▪ Market for venture capital funds is underdeveloped. ▪ Increase of economic output and disposable income.
S	▪ Growing number of car sharing users due to convenience and cost-effectiveness. ▪ Millennials and Gen Z prefer carpooling over car sharing, with concerns about cost-effectiveness and online transaction trust. ▪ Negative view of socialization in the sharing economy in Croatia. ▪ Recommendations and online reviews significantly influence consumer behavior.
T	▪ Services like Spin City and Avant2Go introduce technological innovations, such as mobile apps and vehicle tracking. ▪ Development of charging infrastructure planned. ▪ High digital skills among the population; growing adoption of digital technologies by businesses.

	Measures to enhance AI, big data, and support for high-tech start-ups and cybersecurity.
E	- Car sharing aims to reduce resource consumption and carbon emissions. - Integration of electric vehicles aligns with national sustainability policies. - Rimac Automobili supports awareness and adoption of environmentally friendly car sharing services. - Concerns about potential increase in car usage and emissions; sustainability of car sharing initiatives yet to be empirically proven.
L	- Lack of specific legislation and government supervision for the sharing economy. - Legal issues in consumer and data protection, labor law, competition law, and taxation. - Varying legislative frameworks across regions pose challenges. - No specific laws or parliamentary debates addressing the sharing economy in Croatia.

5.2 Competitive Environment Analysis

Following the previous study, a detailed analysis of Porter's Five Forces was carried out to enable a precise assessment of the profitability of the car sharing industry in Croatia. In order to ascertain the potential of the Five Forces, it is first necessary to identify the relevant players (cf. table 4). This was achieved by filtering information from the PESTEL analysis and conducting further research.

Table 4: Identification of Five Forces. Source: Own representation.

Buyers
A concrete profile of the Croatian user groups could not be identified. The following characteristics were identified in the Pestel analysis: the sharing mentality is still not widely evident in Croatia. Costs are a decisive factor, with online forms of payment being less trusted. The exchange of experiences plays a major role, as does the safety and reliability of the service. The two unimplemented car-sharing projects mentioned in section 2.3.3 concentrated on the target group of tourists and businesspeople. In addition to leisure

users, Avant2go also focuses on companies that enable their employees to use a car-sharing vehicle.
Substitutes
Car sharing services can be substituted by a well-functioning public transportation, affordable taxi and ride-hailing services (e.g. Uber, Bolt), car ownership, carpooling and for shorter distances micro mobility vehicles (e.g. scooters, bikes).
Supplier
The service is dependent on vehicle suppliers. In addition, the providers of the requisite technology, including mobile applications connected to vehicles, integrated GPS tracking systems, and developers of charging infrastructures, are essential. These are also businesses offering platforms for the fleet management (e.g. WeGo Carsharing). In addition, the government can be regarded as a supplier of necessary regulations, a provider of parking spaces, and a supporter of the expansion of charging infrastructure.
Potential Entrants
The market might be entered by further new car sharing providers or rent a car providers that expand der services to car sharing.
Industry competitor
At present, the only competitor of free-floating, station-based, or peer-to-peer providers in Croatia is Avaant2Go. It is possible that firms that have apparently discontinued their business, such as Spin City, may resume operations and continue their activities. Existing firms: Avant2Go

The results of the potential of the Five Forces can be found in figure 9. The analysis shows that the bargaining power of buyers, and the threat of substitutes and new entrants is high. The bargaining power of new entrants was evaluated as medium to high. The rivalry amongst competitors is expected to be high as it is in other European countries, competing especially on the factors survey respondents (cf. PESTEL analysis) have mentioned. Also, because of the growing forecast that is predicted for the car sharing business in Croatia. Currently, direct competition for Car-Sharing companies in Croatia is low, as there is not many competing.

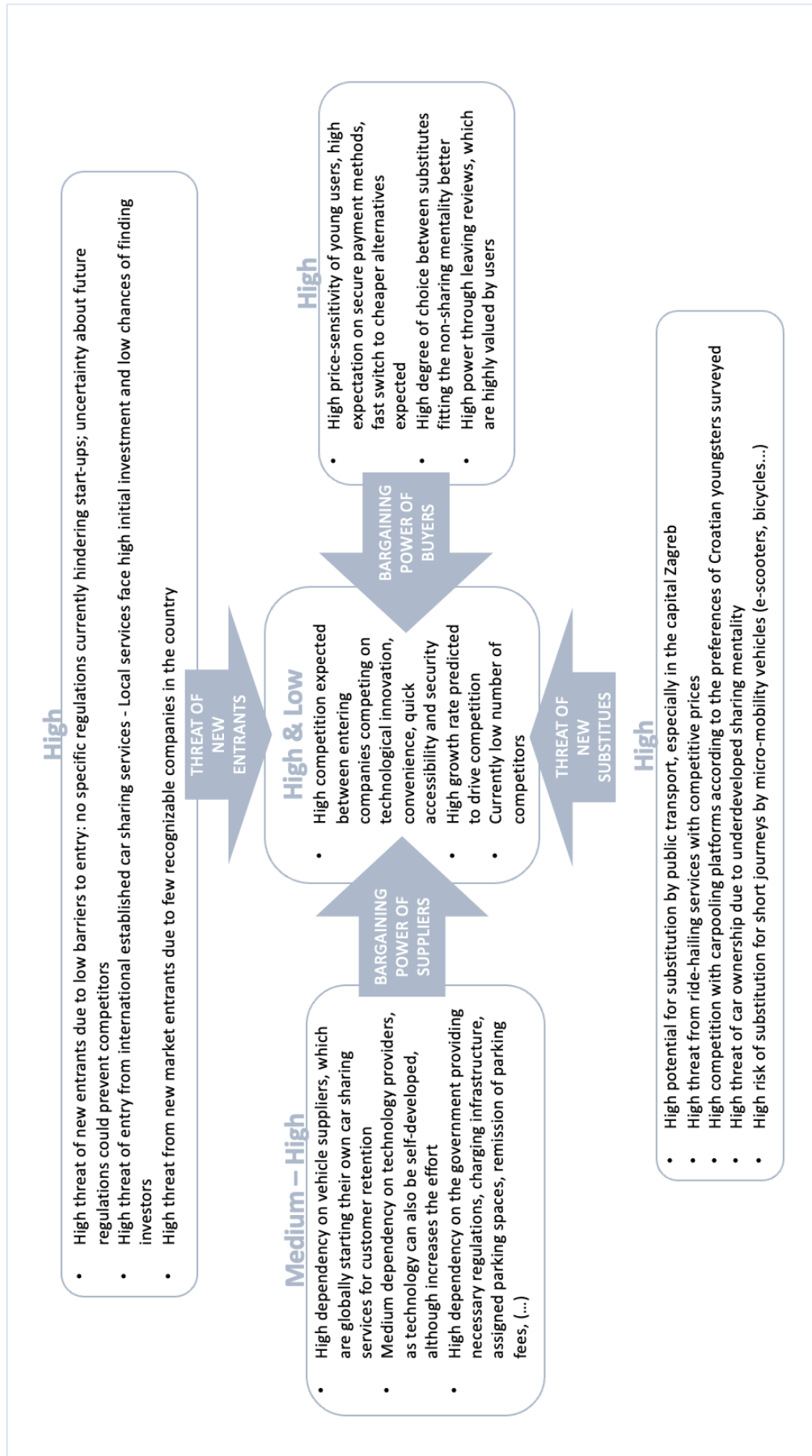


Figure 9: Porter's Five Forces of the Croatian car sharing industry. Source: Own figure based on Porter, 1998a, p. 6.

5.3 Internal Analysis

In order to gain a deeper insight into the factors that contribute to the internal success of a car sharing business and the challenges it faces, three enterprises have been selected for further analysis:

1. ShareNow, the current market leader in the European car sharing sector
2. Avant2Go, the current operator of a car-sharing scheme in Croatia
3. SpinCity – car sharing, a former operator in the Croatian market, appears to have discontinued business

The analyses were carried out using the company's own websites. As the website of the car sharing company Spin City – car sharing was deactivated and therefore very little information was available, the Google reviews that could still be found were analysed in more detail. This was intended to help identify difficulties faced by the company in particular, in order to identify practical key success factors and challenges that arise in the Croatian region when running a car sharing company.

5.3.1 Business Model Canvas: ShareNow, Avant2Go

ShareNow is a joint venture of the BMW Group and Mercedes Benz AG (prev. Daimler AG). It is operating in 15 cities in Germany, Austria, Italy, Spain, France and the Netherlands. The service operates on a free-floating sharing model with a electric and non-electric vehicle fleet. The fleet comprises following brands: Peugeot, Opel, Fiat, Ctiröen, Alfa Romeo, BMW, Smart, MINI.

The following table 5 will apply the nine aspects of the Business Model Canvas to ShareNow.

Table 5: Nine aspects of the Business Model Canvas to ShareNow. Source: Own representation.

Business Model Canva: ShareNow
Key Partners: Business partner: Free2move Car fleet providers: Peugeot, Opel, Fiat, Ctiröen, Alfa Romeo, BMW, Smart, MINI Roadside assistance provider: ADAC Partner fuel stations: Shell, Aral, OMV, etc. IT service providers Public transport operators Local governments

Payment service providers: N26 Tourism service provider: Lufthansa, Louis Hotel Insurance partners
Key Activities: Maintenance and service of vehicle fleet; Operation of mobile application; Implementation of subscription plans and discounts; Customer service; IT support; Marketing
Key Resources: Fleet of premium and electric vehicles: Peugeot, Opel, Fiat, Citroën, Alfa Romeo, BMW, Smart, MINI Mobile application connected to vehicles (IoT) Charging infrastructure Partnership with fuel providers Parking spaces free of charge Trained workforce for operation and customer support
Value Proposition: Mobile Application for short-term or long-term rent usable in all six countries 24/7 Vehicle access across 7 countries/ 15 cities Cost avoidance of car ownership and maintenance Cost avoidance of parking spaces in the city centre Premium experience with high quality vehicles Availability of environmentally friendly vehicles Cost-effective Reduced minute rates through monthly subscription plans
Customer Relationship: Monthly subscription plans offering cost reduction ShareNow Deals and rewards Partnership offering product advantages for users 24/7 customer support via mobile application and customer service channels Mobile application with automated service
Channels: Mobile Application Website Customer service channels

Social Media: Instagram, Facebook, LinkedIn, Tiktok
Customer Segments: Individuals with preference of no car ownership Companies requiring the provision of vehicles to employees Touristic or business travelers requiring transport service to and from the airport Environmentally conscious users
Cost Structure: Fleet maintenance; IT platform; Customer service; Staff costs; Marketing
Revenue Streams: Usage fees: Pay-per-minute (0.09 EUR to 0.19 EUR per minute depending on subscription plan) Subscription fees: Monthly fee options (no fee to 139.99 EUR per month) Airport charge Partnership Deals

Avant2Go is a car-sharing service provided by the internationally established rental car company AVANT CAR. The service is currently available in Slovenia, Austria and Croatia. In Croatia, it commenced in Dubrovnik in 2019 and was subsequently expanded to Zagreb. The service operates on a station-based model with a 100% electric fleet. The fleet comprises BMW i3, Renault ZOE, Smart ForTwo and Smart ForFour vehicles.

The following table 6 will apply the nine aspects of the Business Model Canvas to Avant2Go.

Table 6: Nine aspects of the Business Model Canvas to Avant2Go. Source: Own representation.

Business Model Canvas: Avant2Go
Key Partners: Car fleet providers: Renault, BMW, Smart Insurance: Croatia osiguranje IT service providers: Voyego by Comtrade Public institutions and companies: RTC, Luka Dubrovnik, Dubrovnik Airport Payment service providers: Mastercard Telecommunications company: Hrvatski Telekom Tourism service provider: One Suite Hotel

Key Activities: Fleet management; managing vehicle maintenance; developing infrastructure of charging stations; providing parking spaces; set up partnerships with public institutes; developing mobile application and maintenance; customer service; marketing; user registration; user education; IT support; call centre;
Key Resources: Mobile Application connected to vehicles (IoT) Fleet of electric vehicles: BMW i3, Renault ZOE, Smart ForTwo and Smart ForFour vehicles GPS tracking system Infrastructure of charging points Trained workforce for operation, training of users and customer support IT support
Value Proposition: Pay-as-you-go model: cost efficiency for the user Electric vehicles available for convenient rent through mobile application at any time short-term rentals, long-term business rentals No ownership and maintenance costs for the user Contribution to reduction of CO2 emission
Customer Relationship: 24/7 customer service Comprehensive education on correct usage of the product prior initial utilization
Channels: Mobile Application for vehicle rent and management Website for information: https://avant2go.hr/en Social Media Accounts on Facebook, Instagram and LinkedIn Customer Support Centre: Mail, Telephone, Online Form On site offices in Dubrovnik and Zagreb
Customer Segments: Local and city residents, environmentally conscious, using for leisure and business Travelers: especially from and to the airport Business companies: provision of fleet management solution
Cost Structure: Fleet maintenance; IT platform; Customer service; Staff costs; Marketing campaigns

Revenue Streams:

Registration fee (for the promotional period: €29)

User-fee (Pay-per-use): minute/ hour/day

Packages: GOBasic+ for 5 €, GO29 for 29 €, GO100 for 100 €, GO200 for 200 EUR of usage

- Payment is only made for actual use and the cost of a ride depends on the duration, distance and type of vehicle. The price includes insurance, charging at the Avant2Go station, vehicle maintenance and parking at the Avant2Go points.

Fleet management service for business companies

Deals with Key Partners

In the following, identified key success factors and challenges faced by the two companies, ShareNow and Avant2Go are summarised.

ShareNow builds its success on a very large fleet of premium vehicles with the aim of providing customers with a high-quality experience. It uses an advanced and sophisticated mobile application that can be used in all countries where ShareNow operates. In order to offer a wide selection and well-functioning infrastructure of refueling and charging stations and optimal breakdown assistance, ShareNow has strong partnerships with well-known companies. For customer loyalty, ShareNow also offers monthly subscription plans with price offers, customer support and 24/7 access to the vehicles.

As a big fleet provider, ShareNow is facing high operational costs in a very competitive market. This challenge has already been confirmed in the past when the BMW Group and Mercedes Benz AG (prev. Daimler AG) of DriveNow and Car2Go merged to form a joint sharing provider. ShareNow's other permanent business partner is now Free2Move, demonstrating that there is still a strong battle for market share. As Sharenow is active in various countries, the company is also subject to different legislation, which it has to comply with.

Avant2Go has a limited but 100% electric fleet and is therefore focusing strongly on being environmentally conscious. Avant2Go relies on well thought-out partnerships. They provide customers with flexible service offers, from rental periods and prices to customer support. Avant2Go is currently only active in three countries and therefore has a smaller market. The business model of Avant2go has the disadvantage for customers that a registration fee is due, as well as introductory training before the first use.

5.3.2 Customer Review Analysis: Spin City – car sharing

As previously stated, the car-sharing initiative Spin City, operated by Urban Mobility d.o.o., has removed its online presence. Consequently, the online sources yielded only limited information. Nevertheless, in order to obtain information about the business model and its progress, the Google reviews were analysed in more detail.

A total of 41 reviews could be found, with 28 of them containing text reviews. The majority of the reviews were written in Croatian, which suggests that the service was primarily utilized by local residents. The reviews were initially translated into English and then coded. They were then grouped under the overarching themes of fleet, service, costs, technology, training programme, charging and other. The resulting themes are presented below in table 7.

Table 7: Customer Review Analysis of the car sharing business Spin City. Source: Own representation.

Customer Review Analysis of Spin City – car sharing
Fleet: On the one hand, users report a satisfactory fleet of electric vehicles, mentioning positively the environmental aspect and good vehicle maintenance (cf. sections 8, 14, 27, 30, 34). Conversely, customer reviews indicate that vehicle maintenance is inadequate, the fleet is small, and vehicles are difficult to locate and have technical charging issues (cf. sections 2, 18, 19, 32).
Service: The service and customer support are often described as satisfactory, with a short registration time and assistance with problems provided (cf. section 1, 4-8, 10, 11, 14, 28, 30, 31, 34). Conversely, there are reports of unsatisfactory customer service, delayed or non-existent refunds, and difficulties with the service itself, such as the inability to locate booked vehicles (cf. sections 2, 17, 18, 20, 21, 36 and 40).
Costs: The service was described as affordable and satisfactory, with the cost being less than that of Uber or taxis (cf. sections 8, 10, 12, 26, 42). Some respondents expressed discontent with the registration fee, the lack of transparency regarding costs, and the fact that the service was either more expensive or equally costly as ride-hailing alternatives (cf. section 38, 44).
Technology:

The technology of car sharing via a mobile app was identified as an area of interest, characterised by simplicity and the implementation of regular updates, which facilitate ongoing improvements (cf. section 9, 29, 30).

Training Programme:

The training programme that was mandatory before the first usage was perceived as unnecessary and as adding complexity to the service (cf. section 35, 38).

Charging:

Users have reported issues with refuelling and the lack of available charging options (cf. sections 18 and 19).

Other:

Other considerations included the convenience and quickness of accessing vehicles and the overall user experience (cf. section 12 and 14).

The key findings reveal a mixed user experience with Spin City. While many users were satisfied with the:

- excellent service,
- friendly customer support,
- affordable pricing,
- and quality of electric vehicles,
- constantly improved technology, and
- convenience,

a number of challenges were noted as well.

Users complained about:

- overcharging,
- poor customer service response,
- a small fleet size,
- charging infrastructure,
- poor vehicle maintenance, and
- mandatory trainings.

6 Discussion

The results of the case study will be discussed and evaluated by categorizing into strengths and weaknesses as well as opportunities and threats to answer the initial research question of what the key success factors and challenges are for implementing successful car sharing business models within the smart mobility ecosystem in Croatia.

Opportunities:

The results of the macro environment analysis of the business of car sharing in Croatia with the help of the PESTEL analysis indicate that politically Croatia nowadays has the advantage of being a member of the EU and trading with the euro. The membership not only simplifies for international established sharing companies like ShareNow to expand to Croatia, but also through the political stability the customer base can be extended by a larger amount of tourists, which are seen as a great target group. A further positive aspect can be seen in the growth of economic output and disposable income in the country, which indicates a higher purchasing power for citizens. The technology for car sharing businesses in Croatia has already been implemented and the charging infrastructure is also being expanded in the larger cities, making implementation easier. There is a generally high level of digital literacy among the population, although the proportion of ICT specialists in Croatia is below the EU average, which affects the ability of companies to integrate digital technologies. However, the country performs well in terms of the number of ICT graduates, suggesting a possible future increase in ICT expertise. The growing number of Croatian companies utilising new digital technologies such as the use of cloud-based solutions, AI and big data is showing promise. The country is also working on measures to further develop key technologies and support high-tech start-ups and cybersecurity, which will lay the foundations for the further development of successful business with advanced technology. Electric Vehicles get promoted by the government, and also big players in the automotive industry are raising awareness in Croatia, which can simplify the promotional work for car sharing businesses based on an electric vehicle fleet. Nevertheless, an important key finding was, that the sustainability aspect of car sharing businesses has yet to be proven, which could in the future raise concerns towards this type of business and turn into a threat.

Threats:

Indicators for strong political support as one of the driving factors of promoting car sharing could hardly be found, which indicates low support from the governmental side for sharing entrepreneurs. Economically, the amount of early-stage investment providers in Croatia is little and the market for venture capital funds underdeveloped, which shows major challenges for entrepreneurs to start a business. Socially it must be mentioned that the results varied. While Statista presents a growing number of car sharing users, globally and in Croatia, particular studies show that especially the young generation, which is assumed as the common target group, prefers carpooling over car sharing in Croatia. Other factors that are threatening the business are concerns of surveyed Croatian citizens with online transactions and an underdeveloped sharing mentality. The negative attitude towards the socialisation aspect may be due to political attitudes and is not expected to change in the near future. It is important to mention, that further research should be carried out with a larger number of respondents to get more generalisable answers. As there is currently no concrete legislation regarding car sharing in Croatia, it raises concerns as to how the legal situation will change and whether restrictions are to be expected in the future. It remains a threat as long as a legal framework hasn't been properly set by the government. As mentioned above in the PESTEL analysis, there are different legal regulations in the various countries, which makes it difficult for companies that operate internationally, such as ShareNow and Avant2Go, to do business. Not only is it difficult to adapt, but such companies also rely heavily on brand recognition in order to attract regular customers abroad. This is made more difficult if different services can only be offered due to different legal situations. Therefore active co-operation with the supervisory authorities is recommended. The direct competition of car sharing companies in Croatia is currently very low, although the threat of substitutes and new entrants is high according to the Porter's Five Forces analysis. In general, it can be said that the industry is highly competitive and less attractive for companies. A further current issue is the low penetration of high-speed internet services, very high capacity networks and 5G coverage in Croatia, which could be hindering business in many parts of the region

Strengths:

The analysis of ShareNow and Avant2Go provides a good basis for comparing an established business in the European market with a similar provider in Croatia and presents successful strengths of that type of businesses. One identified key strength is a large number of

partnerships from fleet and IT provider, insurances and payment service provider to public institutions.

For customer loyalty, big players in the market are offering monthly subscription plans with price offers, they strive for multiple channels for customer support and offer 24/7 access to the vehicles. According to the Customer Review Analysis, Croatian customers can be convinced by an electric vehicle fleet. In regions where the car sharing market is still less developed as it is in Croatia, it is advisable to position yourself broadly and offer flexible services, as Avant2Go does by offering both long-term and short-term rentals, as well as for private individuals or companies. In a city like Dubrovnik or Zagreb, the company could consider expanding its service with other sharing offers. However, the profitability would have to be analysed separately and in more detail. Also, according to the arising tendency in the car sharing market in Croatia towards the integration of car sharing services with other modes of transportation (cf. PESTEL analysis) Avant2Go could partner up with providers of other transportation modes and enhance its position in the mobility ecosystem.

Weaknesses:

Weaknesses that can arise in the car sharing business emerge from the customer review analysis. Small start-ups in Croatia in particular have low investment capital as seen in the PESTEL analysis, which means that the fleets also consist of fewer vehicles due to high investment for every car. However, this can quickly lead to dissatisfaction among customers, as it contrasts with the marketed offer. Free-floating companies in particular advertise the fact that a car can be selected nearby and driven off quickly at any time. However, if the fleet is very small and the city is large, overbooking can quickly occur, or vehicles can be spread very thinly, and many customers cannot find cars in their area and therefore cannot quickly access and rely on the service. Other weaknesses that can arise for small companies with financial bottlenecks are that the maintenance of the cars is not a central focus or is simply too expensive and therefore no appropriate range of cars can be made available. Furthermore, companies that are only active locally have a lower recognition value. For the target group of tourists in particular, however, this would be an important factor for using a car sharing provider abroad.

The primary goal in developing a business model for car sharing in Croatia should be to move beyond the pilot phase and achieve long-term success. As outlined in Chapter 3, long-term success is achieved through a competitive advantage, which is realised when value is created. To achieve this performance, strategic decisions must be made based on analysing the

company's strengths and weaknesses as well as the opportunities and strengths of the environment. The analysed strengths, weaknesses, opportunities and threats are therefore the key success factors and challenges that should be considered and included in the strategic development of a business model for car sharing in Croatia.

7 Conclusion

The last chapter will reflect on the case study conducted, the adherence to quality criteria and the limitations of the case study. This is followed by a brief summary of the research work and suggestions for future research.

7.1 Reflection on the case study

The case study method was used to specifically analyse the car sharing market in Croatia. The case study proved to be successful in researching this still relatively unknown market. Both the external environment and internal business model insights were analysed from several perspectives with the help of the mix of methods that have been used. Success factors and challenges in the form of strengths and opportunities as well as weaknesses and threats were filtered out.

To ensure the quality of the research, the quality criteria of qualitative research were taken into account. In particular, to intersubjective comprehensibility was paid attention to a precise description of how the research was conducted and how the results were obtained, thus making them largely comprehensible to the reader. Secondary collected data was labelled with sources and raw data was appended in the appendix. Attention was also paid to the indication of the methods in order to create transparent research. In the context of this case study, the qualitative criterion of generalisability can only be partially implemented. As already mentioned in the case study, statements refer to studies conducted with a limited number of respondents. In order to increase generalisability, it is important to conduct primary research with a larger mass. It should also be noted that when transferring the study results to other regions, the Croatian region-specific factors cannot be transferred without further research. The quality criteria of relevance was successfully implemented by demonstrating the relevance of the research topic, creating a common understanding of the researched topic area with the help of the preceding theoretical analysis, and using relevant documents and methods to answer the research question. Furthermore, Porter's Five Forces is a common tool to determine the profitability and attractiveness of the industry. It should be mentioned that, among other limitations, it has the problem of focusing on existing players. The case study has shown that it causes difficulties when the analysed industry does not yet have many players and thus the result could be distorted.

7.2 Summary and Future Research Suggestion

The aim of the study was to contribute to the topic of "smart mobility" in the SEE region. The first step was to create a common understanding of the sub-areas into which the term smart mobility is further subdivided and how the developing business models can be categorised in the field. Why the topic of smart mobility is currently growing so strongly was explained based on how smart mobility is being created with the help of the latest technologies, IoT, big data and AI. Car sharing, which is still very uncommon in Croatia although the first projects were launched several years ago, was identified as the business model to be analysed. In order to find out which factors lead to success, a theory-based approach was first presented to derive how long-term business success is achieved. It was shown that the environment and internal factors of a company play a very important role. Based on that, internal and external analyses were then carried out, from which it can be summarised that the Croatian region offers both opportunities and risks and that business models of this type have both strengths and weaknesses to consider. Those four factors represent the resulting key success factors and challenges that are asked about in the research question.

Of interest were regional factors that car sharing companies have to face in order to be successful in the country. Among other reasons, it turned out that there is not only a lack of investment for entrepreneurial ideas, but also that the mentality of citizens is not yet fully ready to embrace the idea of sharing. It should be mentioned that although the technological and car charging infrastructure has already been introduced in the country, the high-speed internet infrastructure is not yet widespread, which limits the current scope of action. The high level of digital skills among the population and the increase in companies using new digital technologies are evidence of future opportunities in the country.

Limited generalisable findings were found about the profile of a typical user of car sharing in Croatia, which could require further investigation. A deeper look should also be taken into Croatian politics in order to better assess and eliminate the uncertainties that currently exist due to the lack of regulation. The interaction between the individual key players in the mobility ecosystem in Croatia could also be investigated, for example whether resources such as big data collected by individual companies are available as open data.

In order to contribute to the further development of the mobility ecosystem in Croatia, other business models could also be included in a more in-depth analysis. To further explore the SEE region, research on smart mobility and the development of smart cities in general should be focused on other regional parts.

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Appendix

Spin City – car sharing – Google reviews (Status: 03.07.2024)

- Translated into English -

1	Excellent Service
2	Poorly maintained cars, poor customer service, small fleet
3	All good
4	Top service, I recommend!
5	Thank you for your service!!! :) :)
6	Great experience and good deja, happy with the service!
7	Excellent service, balanced package of options to use the car, definitely recommend.
8	Amazing electric vehicles at an affordable price, run by friendly and helpful people. If you ever want to try out electric vehicles or just need a car, this is the place to go.
9	Extremely interesting technology, certainly something new and interesting in the metropolis. I recommend giving it a try
10	Satisfied with the customer approach and the price! I will definitely stay loyal and only rent a car with you
11	Great service and customer support! Highly recommend!
12	Great idea, I use it often, very convenient and affordable. Praise!!!

13	Excellent idea ... if more of us used similar transport channels there wouldn't be so many crowds. The big 5
14	Excellent service, quick access to vehicles throughout the city. Electric vehicles are available for five, I definitely advise everyone to try them out!
15	Unfortunately this company has to get a very big DSAT and a bye from me. Excellent idea that works amazingly in other parts of Europe.
16	In Croatia it's just a bad Croatian business.
17	The first time I had an appointment, nobody came. No answer after 5 calls.
18	In the ten times we've rented the car, we've had eight serious problems. Including: overcharge, never refunded, Zoe car that dropped from 80% to 6% after one hour of use, we booked for 5 hours, no refund, no apology. No offer to collect/charge the au-tos....
19	Car/refuelling problem which also resulted in the chargeable service not being used and no refund, no apology.
20	Today we spent over 30 minutes looking for a car that didn't exist on the website as far as the location navigator was concerned. No support from CS, no call back. No apology.
21	Terrible CS, no support, no one to call. No one to pick up the phone. No replies to emails.
22	Would not recommend.
23	I'm sorry and good luck Spin City.
24	I have been a regular user for over three years and this is undoubtedly the best way to rent a car in Zagreb.
25	Once you've registered, there are no forms, no reservations, no deposits, no opening hours and no set pick-up and drop-off times. You simply find a car in the app, unlock it on your mobile phone and drive off.

26	- Hourly/daily packages are among the cheapest rental options in Croatia.
27	- Vehicles are well maintained and regularly cleaned/disinfected.
28	- Customer service answers calls at all times and does its best to patiently solve any problem.
29	- The mobile app is constantly being improved through regular updates.
30	Excellent service and customer support, easy car hire via the app. Very cool electric cars, especially the E-Golf.
31	I used the car hire service, which I was very happy with. The email communication was satisfactory. They fulfilled everything we had agreed, plus the team is very flexible and we agreed on everything without any problems. I will definitely use their services again if required.
32	The idea is good, but since there are only twenty cars in circulation for the whole of Zagreb, it's hard to call it a serious service. It's Sunday afternoon and there isn't a single car in Novi Zagreb.
33	An excellent and necessary service for a modern 21st century city. If more of us shared a car, Zagreb would be more pedestrian-friendly and cleaner. Like many European cities, they would leave the centre to pedestrians, bicycles and possibly electric cars.
34	Every time I sit in a Spin City car, I am grateful for this excellent service. It is an understatement to say that I am satisfied with the maintenance of the vehicle and the attitude towards the users and that it is a real pleasure to drive around the city in an electric car. I recommend this excellent service and thank the Spin City team for their support and patience in answering all my questions.
35	I imagined Spin City as follows: I need a car - I sign up - I take the first available car - now - because now I need a car. "After checking this out, you'll soon be able to enjoy the rides of Spin City." That's what it says on the "How to use Spin City" page. However, it's not quite that simple, because first you have to complete a training programme. The information should be clearly visible there.
36	As we had already paid HRK 99 when we registered, we had to request a refund of this amount. After almost two weeks and several emails sent, the money was refunded.
37	I know car sharing services all over Europe and thought to myself: "Come on, I'll register here too."

38

After registering, you first have to pay HRK 99 for registration. Okay, everyone does that. Then I should have done a training course. The training takes place in the car park opposite the town hall and I did it myself. The so-called education was basically pointless as you have to do a lap around the car park with the "instructor" in the passenger seat.

39

And there is a problem precisely because of this training: there is no documentation that I did the training (or so I was told on the phone). In this case, nothing from SpinCity. I could have thrown 99 kuna out of the window...

40

The worst customer behaviour ever. I've been trying for 4 months to contact anyone to correct the account, but nothing. But that's why they know how to send a warning. A good idea for business, but with this kind of customer service and behaviour towards us who use this service and want to help with development, it will only lead to bankruptcy and the job market. Shame!

41

Great service and experience! Easy registration in a few minutes. When I arrived at ZG after picking up the car, the technical support person was waiting for me, explained how it works and recommended their package which was the most favourable for me.

42

I used the car to go to several locations such as Ikea and Sv Nedjelja for a business meeting and to the centre itself... Cheaper than Uber and taxi and still free to use the service according to my needs.

43

I can highly recommend my dalmos to use Spin City when they go to ZG!

44

A good idea, but the implementation of the application is rather clumsy and unclear and there is no connection to the user account. Only 10 bonus minutes are granted for charging the car for about half an hour. The price of the corresponding trip is usually higher or at best equal to the taxi service (Bolt, Uber, etc.), so the question arises why, except in some exceptional cases, I would use the service for local transport and the taxi drops me off at the address, I have no risk of damage due to a possible collision and I do not have to look for a parking space. In addition, Spin-n-Save packages are more expensive per minute than prepaid packages and, unlike prepaid packages, they have an expiry date, so it is not clear where the savings are. In general, I might recommend hourly rental packages, for 3 or 9 hours only, but be careful as there is a mileage limit.

45