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Exploring the Role of Digital Platforms in the Growth of Peer-to-Peer Car-Sharing in Italy

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Abstract

The over-reliance on private cars has created an urgent need for alternative mobility solutions. Car-sharing, enabled by technological progress, offers a potential solution by allowing individuals to rent vehicles for a limited period without ownership. Peer-to-peer (P2P) car-sharing emerged around 2010 as a model that connects private users through a digital platform operated by an intermediary company, enabling people to rent their personal vehicles. This study examines the development of this form of shared mobility in Europe and the US, with a particular focus on the characteristics of the services offered in Italy, based on interviews with managers of two P2P car-sharing companies operating in the country. The results show that in Italy, P2P car-sharing is still in its early stages, primarily hindered by unclear tax rules for private car owners, inadequate insurance coverage for users, and limited public awareness of P2P services. Based on these findings, the study provides policy recommendations to support the development of this promising form of mobility and encourage active participation from key stakeholders.

Keywords: peer-to-peer car sharing; digital platforms; shared mobility; sustainable transport.

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1. Introduction

Excessive dependence on private cars significantly impacts the quality of urban life and human well-being. One of the most concerning consequences is the rising levels of air and noise pollution, particularly in European urban areas where three-quarters of EU citizens live. According to the European Environment Agency (EEA), air pollution contributes to 250,000 deaths annually, with an estimated economic impact of around €40 billion per year (EEA, 2024). Additionally, the widespread use of private cars has profoundly altered mobility patterns, with more individuals opting for single-occupancy vehicles in pursuit of greater comfort and independence (Mesimäki et al., 2025). This trend has resulted in a substantial increase in the number of journeys, often over short distances, contributing to traffic congestion and putting pressure on road infrastructure (Rahman et al., 2022). According to the TomTom Traffic Index (www.tomtom.com), of the 243 European cities monitored, 110 experience average travel times exceeding 20 minutes, while 154 cities see more than 50 hours per year lost to traffic jams, with vehicles traveling at an average speed of less than 10 km/h. This phenomenon is further exacerbated by the structural deficiencies of public transport, which struggles to meet the growing demand for timely and reliable services, particularly in the face of decreasing public funding. As a result, public transport often presents a poor alternative to private cars (Hrelja et al., 2020).

It is essential to offer mobility alternatives to private vehicle use, particularly those that complement public transport services where these cannot be provided in an economically sustainable manner. One promising solution is car-sharing, which falls under the broader concept of "shared mobility" (Barbour et al., 2020; Dill et al., 2019; Münzel et al., 2019). From 2019 to 2024, the number of car-sharing users in Europe increased from approximately 14 million to 19 million, with projections indicating growth to 22 million users by 2029. However, car-sharing services offered by fleets owned by private operators have proven viable mainly in large, densely populated metropolitan areas. In these areas, the high turnover of vehicles generates enough revenue to cover the substantial investments and operational costs. In contrast, in medium- to small-sized cities, the standard car-sharing model requires significant public subsidies to remain viable. The only exception is tourist destinations, provided that the demand from tourists is sufficiently large and not subject to seasonal fluctuations.

It is only recently, largely due to the widespread use of information technology, that a new form of car-sharing service—peer-to-peer (P2P) car-sharing—has emerged. This model enables private car owners to share their vehicles with others via a digital platform (Münzel et al., 2019; Piras et al., 2019). P2P car-sharing is particularly beneficial in small and medium-sized urban areas, extending shared mobility beyond large cities and even into rural regions. It aligns with the broader servitization trend, which has been fostered across many economic sectors through the growth of the sharing economy. This trend highlights the role of economic agents as "prosumers," simultaneously acting as both producers and consumers. The potential for increased efficiency in the mobility system is high, given that cars are parked 95% of the time, representing an expensive yet underutilized asset in many European countries, particularly Italy, which has the highest car ownership rate in the EU. Indeed, the advantages of P2P car-sharing over traditional car-sharing models are clear: no need for investment in a new fleet, no maintenance costs, and no costs associated with relocating cars within serviced areas. Shaheen (2024) reports that users of peer-to-peer carsharing tend to increase their use of public transit and non-motorized modes of transportation. Additionally, some users sell their personal vehicles

or delay future vehicle purchases as a result of their carsharing membership. These modal shifts contribute to a reduction in greenhouse gas emissions associated with private car use.

In countries such as the UK, Germany, the Netherlands, and the United States, peer-to-peer car sharing has seen broader adoption and has proven effective in reducing traffic congestion and air pollution, while also enhancing social inclusion by expanding mobility options for underserved populations. Despite its promising potential, however, this form of shared mobility has not yet gained significant traction in the Italian market. Given the country's persistent challenges related to urban congestion, environmental degradation, and the demand for more sustainable transport alternatives, it is particularly important to investigate the factors that influence the adoption of peer-to-peer car sharing in Italy. Such an analysis can yield valuable insights for policymakers, platform operators, and urban planners seeking to foster more efficient, inclusive, and environmentally sustainable mobility systems.

The aim of this study is to analyze the reasons behind this slow uptake, focusing on the development of P2P car-sharing in Italy and examining the characteristics of the only two Italian digital platforms currently offering the service. To the best of our knowledge, no other studies have analyzed the role of digital companies in the growth of the P2P car-sharing market in Italy.

The paper is structured as follows: Section 2 summarizes the most recent research on P2P car-sharing; Section 3 presents the characteristics of P2P car-sharing services offered in Europe and the US through existing digital platforms; Section 4 examines how the service is provided in Italy and discusses the critical issues hindering its development; finally, Section 5 concludes by summarizing the main findings and the policy implications of our analysis.

2. Literature Review

Since its launch in the US and Europe around 2010, peer-to-peer car-sharing has attracted growing scientific interest, in identifying the profiles, motivations and barriers of current and potential users (Prieto et al., 2022; Valor, 2020). Operating within a triad framework, intermediary companies connect car owners (supply) and renters (demand) through digital platforms. Consequently, understanding the interaction between supply and demand and how intermediaries can improve their platform services is crucial for the development and growth of the P2P car sharing market. However, most studies have primarily focused on only one side of the market, with limited attention given to the interaction between supply and demand (Rotaris, 2021a).

2.1 Demand and supply's socio-economic characteristics and travel behaviour.

The majority of existing studies indicate that the main characteristics of actual and potential P2P car sharing users include being young (under approximately 40 years of age) and male (Barbour et al., 2020; Prieto et al, 2022; Shaheen et al., 2019), having higher education (at least a bachelor's degree) (Münzel et al., 2019; Shaheen et al., 2019), living in urban areas (Prieto et al., 2022), and having a higher annual income compared to the average population (Barbour et al., 2020; Rotaris, 2021a; Shaheen et al., 2019). However, some gaps remain in understanding the relationship between household composition and the presence of children and P2P car sharing use, as noted by Amirnazmiafshar and Diana (2022).

Several studies also examine the travel behaviour of users. For example, Prieto et al. (2022), who surveyed 2,159 licensed drivers in London, Paris and Madrid, found that potential car owners who drive less frequently are more likely to rent out their car. Similarly, Rotaris (2021a) found that less frequent car use was positively associated with potential renters, suggesting a similar trend for both groups. The propensity to use public transport also plays a role in car renting, as the use of alternative mobility options reduces reliance on private vehicles (Münzel et al., 2019). Finally, Ramos et al. (2023) highlight in their survey of 1,121 respondents in Germany that P2P car sharing is preferred for short trips.

2.2 Motivations and barriers for demand and supply.

The literature highlights the different motivations and barriers that influence P2P car sharing use among users.

For car owners, the main motivations include the opportunity to generate additional income by renting out an underused car (Dill et al., 2019; Li et al., 2024; Olaru et al., 2021). However, there are also a number of concerns, particularly for potential car owners, such as the fear that a vehicle will not be available when needed, a reluctance to share their car due to potential damage, hygiene concerns and the additional costs associated with insurance (Li and Feng, 2025; Rotaris, 2021a). Recent findings by Yao et al. (2022) suggest that the imposition of a minimum rental duration by the platform can reduce owners' willingness to accept requests, even when their current availability would yield a higher expected payoff.

For renters, key motivations include not owning a car, the convenience of renting compared to maintaining a personal vehicle, and the flexibility of P2P car sharing compared to public transport (Ramos et al., 2023). Not having a private garage or parking space is also an important incentive (Rotaris, 2021b; Uteng et al., 2019).

In general, a lack of awareness of how the service works and its availability remains a significant barrier to P2P car sharing adoption (Rotaris, 2021a).

Finally, factors influencing the uptake of P2P car sharing may vary according to the territorial context and national policy orientation. Münzel et al. (2020) found that P2P car sharing services are booming in France compared to the United Kingdom, maybe for English stricter insurance regulations, which may hinder the development of P2P car sharing.

2.3 Personal values and psychological attitudes for demand and supply.

Subjective perceptions and psychological attitudes also play a crucial role in influencing the decision to engage in P2P car sharing.

Environmental awareness is an important driver for P2P car sharing adoption. Studies by Münzel et al. (2019), Prieto et al. (2022) and Rotaris (2021a) found a positive correlation between environmental awareness and intention to become a user. More recently, Witte et al. (2024) found that environmental motivations are more influential than financial ones in the context of car sharing, whereas social motivations appear to have a negligible impact. Interestingly, Prieto et al. (2022) also found that individuals with a stronger attachment to personal ownership are more likely to become renters than providers.

Emotions and political views also influence P2P car sharing use. Valor (2020) investigated emotional barriers to P2P car sharing use in Spain through interviews with 200 non-users. The study found that the service was perceived as stressful, with respondents reporting negative emotions such as fear, anxiety and discomfort. Furthermore, studies by Shaheen et al. (2019) and Münzel et al. (2019) suggest that individuals with liberal political views or who support green parties are more likely to use P2P car sharing.

Trust, altruism and social values also play an important role in joining a P2P car sharing service. Trust in the service and other users (Li and Feng, 2025) and the practice of privately lending cars to friends and relatives (Münzel et al., 2019) further increase the willingness to rent or rent out a car through P2P car sharing. Neifer et al. (2024) and Postorino and Sarnè, (2023) identify the establishment of trust between peers in the absence of physical interaction as the primary barrier in the P2P carsharing market. However, they argue that scoring systems can facilitate trust-building and provide valuable guidance on their optimal design. Finally, the peer effect - the influence of decisions made by others in one's social network - may also influence participation in P2P car sharing (Jain et al., 2021; Li et al., 2024).

Brand experience sharing serves as a positive mediator in the relationship between customer satisfaction and word-of-mouth recommendations for P2P carsharing. Additionally, Gong et al. (2023) find that customer satisfaction positively mediates the impact of price, product quality, service quality, and convenience on users' word-of-mouth recommendation behaviour.

Therefore, while existing research has primarily focused on users and the dynamics within the P2P car sharing market, it has largely overlooked the role of intermediary companies. This study aims to fill this gap by examining the key intermediary companies that connect P2P car sharing users.

3. Methods and data

3.1 Data Selection.

Data for this research was primarily collected from the official websites of P2P carsharing platforms and publicly available sources such as news articles, industry reports, and academic publications. A structured data extraction template ensured consistency across platforms.

Platforms were selected based on three criteria:

- Geographic reach: Platforms operating in diverse countries and cities to capture varied market conditions.
- Market presence: Platforms with a significant number of users and available cars to ensure a representative sample.
- Data availability: Platforms with publicly available data on key variables.

The following platforms were included for analysis: Getaround, Turo, SnappCar, Hiyacar, Volvero, GoMore, Auting, 2EM, and Ogogo. Koolicar (France) and Karshare (UK) were excluded due to inactivity, while Sharoo (Switzerland) and Drivy (France) were excluded because they were acquired or merged with other companies.

We gathered data on seven key topics, as reported in the remainder of the paper.

3.2 Platform Characteristics.

Platform headquarters are globally distributed, reflecting the international expansion of P2P carsharing. US-based platforms like Getaround and Turo have a significant international market presence, while European platforms such as SnappCar (Netherlands), Hiyacar (UK), Volvero (Italy), Auting, Ogogo (Italy), GoMore (Denmark), and 2EM (Switzerland) serve mainly regional markets, showing the adaptability of the P2P model to diverse contexts.

Founding years range from 2005 (GoMore) to 2021 (Ogogo), highlighting different stages of market maturity. Early platforms like GoMore, Turo, and Getaround helped shape the market, while newer platforms like Ogogo likely experiment with innovative features to stand out and compete with the incumbents.

Platform size varies significantly, with Turo (350,000+ cars) and Getaround (60,000 cars) dominating the market, while others like SnappCar (30,000), GoMore (33,000), and Auting (5,000) are medium-sized players. Smaller platforms like Hiyacar (2,000), 2EM (2,200), and Volvero (200) target niche markets.

Most platforms focus solely on P2P carsharing (e.g., Getaround, Turo, SnappCar, Auting, 2EM, Ogogo). Others, like GoMore, include ridesharing or leasing, while Hiyacar can also operate its own fleet. These mixed strategies increase operational complexity but enable platforms to better target different market segments and strengthen their competitive positioning.

A wide variety of vehicle types are available across platforms, every platform indicates economy cars, SUVs and premium cars among the ones available. The majority of the platforms also include vans, small trucks and off-road cars, while others include luxury and sports cars (Getaround, Turo, GoMore,2EM). Lastly, the only one that also includes motorbikes and even boats is Ogogo. In general terms, the availability of diverse car types allows users to select vehicles that meet their specific needs and preferences.

3.3 Geographic Reach and Market Penetration.

Platforms vary in geographic reach. Getaround operates widely across the USA and Europe (UK, Belgium, Germany, France, Spain, Austria, Norway, 1,000+ cities). Turo is available in the USA, Australia, France, the UK, and Canada. SnappCar is focused on the Netherlands, Sweden, and Germany. Hiyacar operates mainly in the UK (Greater London, Bristol, Brighton, Edinburgh, Oxfordshire, Swale). Volvero and Auting are concentrated in Italy, with Auting covering most medium and large cities. GoMore is present in Denmark, Spain, and Sweden. Ogogo is mainly in central-southern Italy, and 2EM covers 60+ cities in French-speaking Switzerland. This variation likely reflects strategic market decisions.

In terms of number of registered users, Turo leads with 14 million users, followed by GoMore (2.7 million) and Getaround (1.6 million). SnappCar has 1 million users, while Hiyacar has 150,000. Volvero has over 2,000, and Auting and 2EM have 40,000 and 35,000 users, respectively. These figures highlight the significant differences in market adoption and brand recognition.

While the number of registered users is publicly available for most platforms, data on annual rentals and average rental duration is inconsistently reported and rarely published.

The only available information is that GoMore reports over 65,000 rentals annually. These figures are sensitive, as they directly impact the competitive advantage of the platforms and are therefore closely guarded and seldom disclosed.

3.4 Rental Terms and Conditions.

Management strategies also differ significantly when it comes to rental terms and conditions. Each platform strives to meet latent demand, continually adjusting its service offerings to align with changing user needs and counter the dynamic marketing strategies employed by competitors. For example, kilometre policies vary across platforms. Getaround offers 100 miles per rental day, with a maximum of 600 miles per trip, charging additional fees for exceeding the limit (£0.15 for economy, £0.17 for comfort, and £0.25 for premium vehicles). Hiyacar provides 150 miles per day, while Auting allows 150 km per day (500 km weekly, 2,000 km monthly). Turo lets hosts set their own mileage limits, and SnappCar leaves the arrangements to the renter and owner. Therefore, although clear and standardized kilometre policies are crucial for managing user expectations and preventing disputes, rental terms are highly heterogeneous within the market.

Fuel policies also vary significantly across platforms. Volvero, Auting, and GoMore require renters to return the car with the same fuel level as at the start of the rental. Also Turo asks renters to refill the gas or recharge the battery to the same level as at check-in, while Hiyacar does not include fuel in the rental price and SnappCar leaves fuel arrangements to be agreed upon by the renter and owner.

3.5 Rates and Platform Fees.

Average daily or hourly rates vary significantly, reflecting differences in vehicle types, insurance coverage, and market demand. Turo prices range from $50 to $100 daily, while Getaround ranges from $35 to $45 daily. SnappCar shows a broad range from $11 to $560 per day. Hiyacar (the only one providing data per hour) charges an average of £4 per hour, Auting charges 30 euros daily, and 2EM charges 65 CHF per day. These price variations indicate the diverse service levels and target markets of each platform.

Most platforms charge fees to both car owners and renters, including Getaround, Turo, SnappCar, Hiyacar, Auting, and 2EM, an exception is found in GoMore, where only the renter seems to pay the platform fee and Ogogo, where information has been found for the renter only. This fee structure is crucial for platform revenue generation and operational sustainability.

Car owners' fees also vary widely. From 25% to 40% of rental rates by Getaround and Hiyacar to only 13.5% (16% for vans) with a minimum of €5 by SnappCar. Auting charges around 30% of rental rates, GoMore takes about 20.5%, and 2EM charges 22%. A different story is when looking for Turo rental rates, where the fee is based on a percentage of the vehicle price chosen by the host depending on the level of protection, starting from a 7.5% fee with zero protection to a 40% fee with the maximum of protection.

The fees charged to renters vary significantly across different platforms as well. For instance, Getaround imposes a minimum fee of 3%, with an additional one-time charge of 1 euro (In Europe) or $10(In the US). Turo charges a platform fee of 10%, along with an extra Value-Added Services fee. SnappCar applies a 6.75% fee plus 7.5% of the daily

rental price, with a minimum charge of €6. Auting's fees range from 2% to 4%. Ogogo has service fees of around 10-15%, with optional charges for transportation and cleaning. In contrast, Hiyacar and GoMore do not charge renters any fees. Generally, P2P car-sharing platforms tend to charge higher fees to car owners than to renters. Transparent and competitive fee structures are crucial for attracting both car owners and renters.

3.6 Insurance.

Clear and comprehensive insurance policies are crucial in fostering trust and ensuring the safety of users, as they define the scope of protection available during rentals and minimize the risks involved. Platforms typically partner with insurance providers to offer coverage during rentals. For example, Getaround partners with Allianz; Turo with Aioi Nissay Dowa, SnappCar with Allianz, Hiyacar, GoMore, Auting with Reale Mutua, and 2EM with an undisclosed provider. Car owners must maintain a personal auto insurance policy and adhere to all relevant registration and insurance laws and regulations. If vehicle damage occurs during a trip, renters are required to report the incident within 24 hours of the trip's conclusion in order to begin the resolution process.

Insurance coverage varies significantly across peer-to-peer car-sharing platforms. Getaround provides insurance through Allianz, which covers third-party liability, vehicle damage, fire, and theft. In the event of an accident, the driver is responsible for repair costs up to the excess limit, which varies based on the selected plan.

Turo, instead, offers two protection plans for UK guests—Premier and Standard—which address financial responsibility for vehicle damage during a booking. Both plans include third-party liability insurance, covering bodily injury and property damage to others while driving the booked vehicle. However, Premier Plan limits out-of-pocket expenses for physical damage to the booked vehicle to £250. It also includes flat tire coverage, capping guest charges at £50 per incident. While Standard Plan limits out-of-pocket expenses for physical damage to the booked vehicle to £750 and does not include flat tire coverage. Hosts are required to maintain a personal auto insurance policy and comply with all applicable registration and insurance laws and regulations. In the event of vehicle damage, hosts must report the incident within 24 hours after the trip ends to initiate the resolution process. In the US Turo offers a much more comprehensive system with five distinct vehicle protection plans. Each plan provides varying levels of coverage and host earnings, allowing hosts to choose the option that best matches their preferences and risk tolerance. All plans, except in some states and airports where local regulations may apply, offer up to $750,000 in third-party liability insurance. Physical damage protection, which covers vehicle damage costs during a trip, is subject to the deductible specified in each plan. E.g., in the 60 Plan, hosts receive 60% of the trip price. This plan offers the highest level of coverage, including $750,000 in third-party liability insurance and comprehensive physical damage protection with no deductible. The 75 Plan allows hosts to earn 75% of the trip price and includes $750,000 in third-party liability insurance along with physical damage protection that has a $250 deductible. The 80 Plan provides hosts with 80% of the trip price and includes $750,000 in third-party liability insurance and physical damage protection with a $750 deductible. With the 85 Plan, hosts earn 85% of the trip price and enjoy $750,000 in third-party liability insurance and physical damage protection with a $1,625 deductible. In the 90 Plan, hosts receive 90% of the trip price, and while it includes $750,000 in third-party liability insurance, it does not provide

physical damage protection. In this case, hosts are responsible for all costs related to physical damage to the vehicle.

SnappCar charges an insurance fee for each rental, with the amount varying based on the specifics of the booking. The fee is determined by the risk profile of both the car and the renter. Factors such as the renter's age and the car's value influence the cost, similar to standard car insurance. For higher-risk bookings, such as those involving high-value cars, the insurance fee is €20.00 per day. The coverage includes protection for the vehicle, with a technical insurance value of up to €90,000, as well as third-party liability. This also extends to extra drivers, theft, and embezzlement. In some cases, a deductible may apply for damage to the car. The coverage may also vary depending on the rental period.

Hiyacar's insurance covers up to £40,000 for vehicle damage and up to £20 million for third-party property damage, which includes accidents and theft. This extensive coverage helps ensure both the renter and owner are protected during the rental.

Finally, Auting, in partnership with Reale Mutua, provides coverage for driver-caused damage, with a maximum of €20,000. This policy also includes a road assistance package.

3.7 User Demographics and Requirements.

Representative profiles of car owners and renters are not available for any of the platforms studied. This information is typically withheld as a business strategy to protect the platforms from competitors. However, some relevant details about minimum age requirements for renters are disclosed. Turo and GoMore both set the minimum age at 21, while SnappCar requires renters to be at least 21 with a minimum of one year of driving experience. Auting also sets the minimum age at 21, whereas Getaround allows renters to begin at 19. These age restrictions are typically enforced for insurance and risk management purposes.

3.8 Regulation and supporting policies.

To the best of our knowledge, no public data is available regarding how rental income taxation and tax payments are managed by each platform. Further investigation is also needed to detect whether any public subsidies or economic factors are granted by local administrations or national governments to support these platforms, as such information is not provided on their websites, nor has it been found in news articles, industry reports, or academic publications. More research is also required to determine which public policies may support the operation of P2P car-sharing platforms.

4. P2P carsharing in Italy

To gain a deeper understanding of the specific characteristics of peer-to-peer (P2P) car-sharing in Italy, we interviewed the managers of the only two P2P car-sharing platforms operating in the country: Auting and Volvero. In the remainder of the paper, we summarize the key information gathered from the interviews.

Both platforms were initially launched in medium-sized cities in the northern part of the country—Auting in Bologna and Volvero in Padua—before expanding to cover the

rest of the Italian territory. Auting operates exclusively in Italy and is present in almost every region, with a significant number of vehicles. The platform focuses on a hybrid model that combines P2P carsharing with rentals from local rental agencies and small businesses. In contrast, Volvero covers a similar number of provinces across Italy, but with a smaller fleet. Interestingly, although Volvero's operations are primarily within Italy, there are a few vehicles available outside the country, albeit on a very small scale.

Another key difference between Auting and Volvero is the inclusion of two-wheeled vehicles on Volvero's platform, which are not available for rent on Auting. While turnover figures and employee numbers are not publicly disclosed, LinkedIn lists 15 employees for Auting and 11 for Volvero. Interviews suggest that both platforms are expanding gradually, with local factors influencing their growth. However, their operations remain on a much smaller scale compared to the established car rental services in Italy.

4.1 Platforms' evolution: from inception to present.

Auting's initial model was primarily based on peer-to-peer carsharing. However, the platform has since evolved into a more hybrid service, with 70-80% of the cars now managed through agreements with local rental companies or small entrepreneurs. This evolution reflects the challenges Auting faced in convincing private owners to rent out their vehicles and in reaching the critical mass necessary to attract sufficient demand from renters. The shift away from the original P2P model was driven by concerns about economic sustainability, ultimately leading to a more stable and professional service offering.

Volvero's origin story is rooted in both personal need and a romantic tale. The founder, working in Luxembourg and needing transportation to visit his girlfriend in Milan, found traditional car rental services inconvenient and unsatisfactory. This frustration sparked the idea of creating a platform to connect individuals willing to rent out their vehicles. The journey from inception to launch was lengthy, with significant delays caused by funding challenges, technological setbacks, and the movement restrictions imposed by the COVID-19 pandemic. The platform's app was finally launched in May 2022, and it became operational in Padova, Italy, in December 2022 (Table 1).

Table 1: Timeline of Peer-to-Peer Car Sharing Development in Italy.

Year	*Event*
2017	Foundation of Auting
2020	Post-COVID growth: surge in user registrations
2022	Launch of Volvero
2023	P2P platforms active in over 100 Italian cities

Source: Authors' elaboration.

4.2 Platforms' business model.

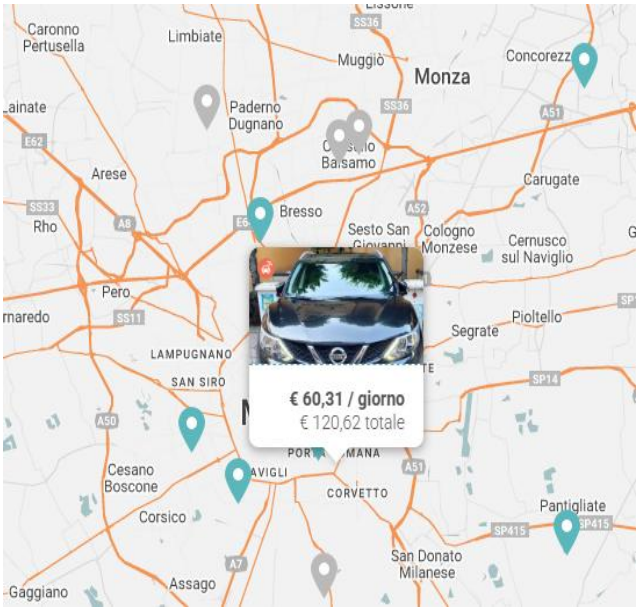
Auting and Volvero operate using quite different business models. While Auting provides a more structured, digitally enhanced service, Volvero offers a user-driven, flexible model that caters to different segments of the car-sharing market.

In fact, Auting positions itself as a premium, digitally-driven service, offering 24/7 support and flexible pricing based on market demand. Rentals range from €20 to over €150 per day, with an average of €40-50, and renters pay a 5.66% platform fee. Each rental includes 150 km per day, with options to purchase additional kilometres at the owner's set price.

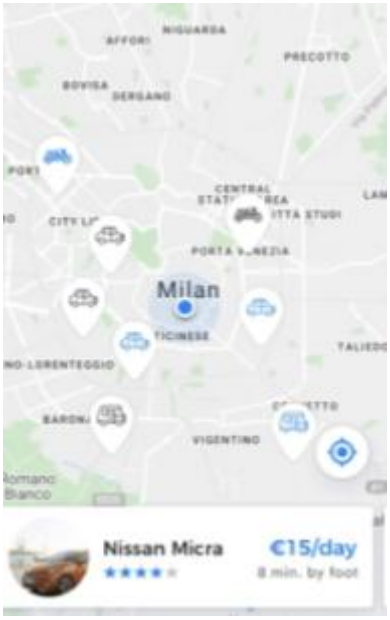
In contrast, Volvero emphasizes simplicity and flexibility. It charges a fixed daily fee to vehicle owners of €3.65 for cars and €3.27 for scooters and motorbikes. Volvero also supports a wider variety of vehicles, including two-wheeled options like scooters and motorcycles, in addition to the four-wheeled vehicles found on both platforms, such as vans, campers, sedans, SUVs, and sports cars.

Both platforms offer similar pricing, with rentals starting at €1 for scooters and €6 for cars (Volvero), and going beyond €150 per day, with an average of €40-50. They both primarily operate on a daily rental model, although Volvero's founder reported an average rental duration of 2.5 days.

Volvero is smaller in scale, with around 70 registered vehicles, 1,000+ app downloads, and about 1,500 users, compared to Auting's 500+ vehicles and 10,000+ app downloads. This size difference is reflected in additional features: Volvero lacks automatic unlocking technology, instead focusing on facilitating direct communication between owners and renters for vehicle handover (Figure 1).



(a)



(b)

Figure 1: Example of car listings in the city of Milan of Auting (a) and Volvero (b)
Source: https://auting.it/it and https://volvero.com/prenotaauto/

4.3 Market penetration.

The geographical distribution of vehicles on these two peer-to-peer car-sharing platforms reveals distinct patterns shaped by demand, tourism, and regional dynamics. Auting shows a higher concentration of vehicles in large metropolitan areas and tourist hotspots, with Southern Italy holding the largest market share and experiencing price increases during peak summer demand. The platform's highest vehicle counts are in Palermo (99 cars), Catania (79), Cagliari (69), Naples (62), and Bari (58). The central regions follow, with Rome (49), Bologna (39), and Florence (18) ranking highest. In the north, Turin (44), Milan (28), Bergamo (25), and Verona (23) are the most well-served cities.

Volvero, with a smaller fleet, is primarily concentrated in the Veneto region, particularly in Padua, where it offers 40 vehicles—half of its total fleet. Its presence in other regions is more scattered, with a higher number of vehicles in the central and southern areas than in the north. Interestingly, Volvero also operates in Lisbon (1 vehicle), Valencia (1), Brussels (1), and Malta (1).

4.4 Vehicle listing requirements and owner participation.

Although both platforms offer free registration for owners, Auting and Volvero have distinct requirements and processes for listing vehicles. Auting charges owners around 30% of the rental price, covering both platform fees and insurance costs. Owners can list various vehicle types, including cars and minivans. They must provide details such as the vehicle's year, mileage, registration and insurance information, driving features, and pickup/return location. To list a vehicle on Auting, owners must be at least 21 years old, and the vehicle must be registered for private use, weigh less than 3.5 tons, accommodate a maximum of 9 people, and be less than 15 years old. It must also have mandatory insurance coverage and pass inspection by the Motorizzazione Civile. Auting does not require a security deposit to car owners.

Volvero, on the other hand, allows owners to list not only cars but also motorcycles and other vehicles. Similar to Auting, owners must provide details about the vehicle's condition, features, and pickup location, and they must be at least 21 years old. While there is no set limit on the maximum kilometres the vehicle can be driven, some owners may specify this. However, unlike Auting, Volvero requires a security deposit of €79, with insurance provided by Europe Assistance included in the rental price. Volvero also differs in that it does not charge owners any platform fees, but only renters (Table 2).

Table 2: Comparison between Peer-to-Peer and Fleet-Based Car Sharing Models.

Feature	*Peer-to-Peer (e.g., Auting, Volvero)*	*Fleet-Based (e.g., Enjoy, Share Now)*
Vehicle ownership	Private individuals	Company-owned fleet
Geographical coverage	Broader but less dense	Concentrated in major urban areas
User cost	Variable, often lower	Fixed per minute/hour
Booking flexibility	Higher (can be booked for multiple days)	Short-term use (minutes or hours)
Social inclusion potential	Higher (available in more diverse areas)	Limited to areas served by operators

Source: Authors' elaboration.

4.5 Critical issues.

Insurance costs and arrangements are among the most critical issues for this type of business, with both platforms struggling to secure appropriate coverage in a market where traditional insurers are hesitant to adapt, and where historical data for pricing policies is scarce. Indeed, Volvero took four years to develop an insurance product in collaboration with an insur-tech company, highlighting the difficulty in creating tailored solutions for this new sector.

Auting integrates insurance costs into its pricing model, retaining 30% of each transaction to cover both platform fees and insurance expenses. The insurance, provided by Reale Mutua, offers tiered options, allowing renters to choose from various coverage levels, with deductibles ranging from €250 to €750, depending on the selected plan.

In contrast, Volvero requires all vehicles listed on its platform to be insured by their owners but supplements this with an additional insurance policy paid by the driver during the rental period. The cost of this policy varies based on the vehicle type and is transparently disclosed as a legal requirement. For instance, if a car is rented for €50 per day with an insurance fee of €5 per day, the total cost for a two-day rental would be €110 (€50 + €50 + €10).

Despite these structured approaches, both platforms face broader challenges in managing insurance. Traditional personal auto insurance policies often exclude coverage for commercial use, requiring platforms to partner with insurers for temporary commercial policies during rentals. Rising premiums, driven by factors like advanced vehicle technology, higher second-hand car prices, and increased theft risks, have led some insurers to reduce their willingness to cover peer-to-peer rentals. Moreover, in Italy, where the P2P car-sharing market is still in its early stages, there is a lack of data on car accidents involving platform rentals. As a result, insurance companies face challenges in designing policies that are sufficiently protective for car owners, affordable for renters, and still profitable for the insurers. Platforms must proactively manage these risks and maintain strong relationships with insurers to balance competitive pricing with adequate coverage. Transparency in pricing and adherence to regulatory requirements are crucial for building user trust and ensuring legal compliance. However, the complexities of navigating insurance markets remain a significant barrier to scaling operations sustainably in this evolving sector.

Another key issue for both platforms is the limited availability of cars, as convincing private owners to list their vehicles is challenging due to insurance concerns and

perceived risks that are difficult to mitigate. Tailored economic incentives could help attract more car owners, but in Italy, cars are still viewed as a status symbol, to the point that, paradoxically, Italians seem more willing to share their homes than their vehicles (Punzo et al., 2022; Semi and Tonetta, 2021).

User behavior also poses complications, such as renters incurring fines without paying them. Seasonal demand fluctuations further amplify these issues. Auting experiences high demand in summer but faces fierce competition from traditional rental companies during the off-season. Finally, regulatory and liability concerns are also significant, as P2P car-sharing platforms often operate in legal gray areas. Critics argue that these platforms bypass taxes and safety regulations that apply to traditional rental companies, leading to legal disputes in some regions and uncertainty about liability and insurance coverage for both owners and renters. Moreover, many vehicles on these platforms lack ratings or comprehensive safety checks, raising concerns about consumer protection.

4.6 The role of local authorities and policy makers.

Collaboration with public administrations is crucial for the success of peer-to-peer car-sharing platforms like Auting and Volvero, as it can help overcome initial scepticism and position these services as sustainable mobility solutions. When discussing the matter with Auting's management it was highlighted the importance of measures such as access to restricted traffic zones (ZTLs), discounted parking for shared vehicles, and public awareness campaigns to promote the environmental and economic benefits of car sharing. These initiatives could enhance the service's appeal and present it as a viable alternative to private car ownership.

Volvero's management has engaged with local authorities, including the municipality of Padova, which has expressed interest in supporting car sharing through incentives. However, working with the public sector requires significant time investment, and turning intentions into concrete actions often takes longer, leaving much of the potential support unrealized.

The managers of both platforms stress the need for clear regulations on insurance and liability in P2P car sharing, as well as government backing for tailored insurance products. Such regulatory clarity and financial incentives could encourage more participation from both vehicle owners and renters, addressing supply issues and fostering trust in these platforms. By aligning with urban mobility goals and partnering with public entities, these platforms could help reduce traffic congestion, lower CO_2 emissions, and optimize urban parking. However, without timely and concrete support from policymakers, the growth and adoption of peer-to-peer car-sharing services may be hindered by regulatory uncertainties and limited public awareness.

5. Conclusion

P2P car-sharing has proven to be a viable and efficient solution for complementing public transport and reducing both the ownership and use of private vehicles in many European countries. In Italy, however, its development remains in the early stages. Several factors have contributed to the disappointing evolution of the market. On the one hand, this new form of car-sharing was launched in Italy just before the COVID-19 pandemic, which dramatically impacted the entire "shared mobility" sector, especially

car-sharing. It was the only sector not receiving compensation subsidies to mitigate the demand collapse caused by government-imposed mobility restrictions.

Another significant barrier is that many Italians are still unfamiliar with car-sharing services, particularly P2P car-sharing (2021a). This lack of awareness is both a consequence and a cause of the limited number of vehicles available for rent on the two digital platforms serving the Italian market. Compared to other European countries, the number of Italians willing to rent out their cars is significantly lower. In Italy, cars are still seen as a status symbol, and somewhat surprisingly, Italians are more willing to rent out their homes to strangers via platforms like Airbnb than their cars. In Italy, apartments rented through Airbnb represented 1.3% of the total housing stock in 2023, with concentrations of up to 20% in some tourist cities (Agnoletti et al., 2024).

Part of this reluctance may be attributed to uncertainty regarding the taxation of rental income, as the Italian government has not yet provided clear guidance on this issue, leaving the legal framework unclear. Additionally, there is a perception that car owners would be overly exposed to the risk of damage to their vehicles. Indeed, Italian insurance companies have not sufficiently developed tailored insurance products for this service, lacking data on accident frequency and the value of damages caused.

Finally, P2P car-sharing faces significant competition from both traditional car-sharing services and car rental companies. On the one hand, traditional car-sharing services offer greater flexibility with short-term and on-demand rentals. On the other hand, car rental companies provide medium- and long-term options for users who need extended access to vehicles, often at very low rental fees. This dual competition leaves only small, uncovered segments of the market to be served by P2P car-sharing.

The outcome is a classic "chicken and egg" scenario: with a limited supply of cars, demand remains marginal and unprofitable, discouraging both digital platforms and insurance companies from entering the market or offering strong support.

What can be done to relaunch this service in Italy, given its potential positive externalities for the community as a whole? Both managers we interviewed emphasized the need to increase the visibility of existing platforms and endorse the reliability of the services currently offered. A viable strategy for local administrators to achieve this goal could be to integrate this mobility solution into the transportation services included in Italy’s regional MaaS (Mobility as a Service) framework.

Additionally, similar to the approach taken for standard car-sharing services, local administrators could grant P2P car-sharing users access to urban Traffic Limited Zones, dedicated bus lanes, and designated parking spots. Parking fees and urban access charges could be reduced or exempted for P2P car-sharing users. Car ownership taxes could be lowered in proportion to the frequency with which the car is rented.

It is also crucial to clarify the fiscal framework for income derived from P2P car-sharing. Clear and transparent fiscal policies would reduce uncertainty, encourage greater participation from car owners, and stimulate supply.

Private companies also have a role to play. On the one hand, digital platforms that match supply and demand should carefully define the fees paid by car owners and renters. Since, at this stage of market development, the supply side is the weakest, the largest cost of using the platform should be borne by the renters rather than the owners. The exact amount to be charged should be carefully studied, which could be a task for future research. On the other hand, insurance companies need to provide more alternatives and support the development of contracts that adequately guarantee protection for all parties

involved: car owners, renters, and digital platforms. Ultimately, it is also in their own interest to increase the uptake of the service.

In conclusion, the sharing economy is offering potentially efficient solutions to promote the social and environmental sustainability of the mobility sector, with P2P car-sharing being one of the most promising. However, each economic actor must play its part convincingly to achieve the expected outcomes—an ambitious goal, but one that is essential for success.

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