Think Mobility Over: A Survey on Car2go Users in Milan

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Abstract In a moment when city rethinks mobility and users redefine urban transport practices, car sharing takes on a strategic function. However, the ability to develop a shared mobility encounters different resistances—cultural, social and economic—that need to be considered for a truly effective service design. The chapter analyzes the case study of the car2go car-sharing service in Milan based on data collected from a representative sample of users (N = 3758).The analysis shows that the most frequent users are young (under 35), employed, male, with higher education, residents in the city and with limited mobility needs related to the family. They are attracted by the flexibility and convenience of the service, in terms of access to limited traffic areas or free parking. The affordability of the service sets car sharing as a potential replacement of car ownership. Moreover, the price is the factor that most affect the level of overall satisfaction of the users. This doesn't mean costumers asking for a lower price, rather eliminating price-burdens and, at the same time, elaborate more transparent pricing policy. The inter-modality is the most important challenge for the service configuration, with the coverage of areas and times when the public service is most lacking and the provision of integrated subscriptions.

1 The Rise of Urban Sharing Mobility

The city is living a new phase of renewal as a space for innovation and sociopolitical experiment (Le Galès 2002). One of the most relevant challenges of urban governance (Fainstein 2001) is rethinking urban mobility and redefining urban transport practices. Access to the city and the problems of urban mobility are a

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The chapter is the result of a joint work of the two researchers. However, Sects. 1, 2 and 6 can be attributed to Ivana Pais, while Sects. 3, 4 and 5 can be attributed to Davide Arcidiacono.

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priority in the political agenda. The ability to travel into the metropolitan time-space (Boltanski and Chiapello 1999) is an indicator of the quality of urban life. The urban sprawl has stretched time and commuting costs due to the agglomeration of residents in the municipalities along the metropolitan belt. According to Eurobarometer data (2013), in this growth of movement in and out of the city, the private car continues to be the most popular means of transportation (about 50% of motorised trips), and particularly in some countries such as Italy (66%), Ireland (68%) and Cyprus (85%). However, a private vehicle is being driven on average about an hour a day with an average load factor of 1.4 people (Handke and Jonuschat 2013), and it remains underutilised for about 80% of its life cycle.

Sharing mobility systems (SMSs) fit into this scenario as an articulated transport system based on a digital infrastructure capable of flexibly sharing both vehicles and trails, optimising the use of resources and fostering collaboration within the mobility chain: producers of transport equipment, providers of mobility services, municipal agencies and consumers. The transition from mobility predominantly based on ownership to that based on access could be defined as a socio-technical transition (Geels 2002) because technology has played a key role in making this innovation much more competitive, flexible and able to better integrate with other traditional means of transportation.

Car sharing was the first organised form of sharing mobility, which appeared for the first time in Switzerland in 1948 by the Sefage cooperative, but it only became a more popular practice after 2008, when we saw a real rise in the car-sharing service where it has become active in more than 600 cities in 18 countries (Shaheen and Cohen 2008). Today, it represents the more developed shared mobility system, thanks to the push of the car manufacturing companies and the national railway firms which are increasingly investing in the development of these services.

When we talk about car sharing, even if there is some peer2peer car sharing (i.e. Turo or Getaround in the USA, Tamyca in Germany, Buzzcar in France or Auting.it in Italy), we refer mainly to on-demand market services managed by companies that offer their own cars.

We can distinguish the more traditional *station-based systems*, whereby vehicles are parked in designated areas, from the more actual *free floating systems*, where vehicles can be picked up and deposited everywhere in a predefined urban area. This service is based on access to a vehicle shared among a plurality of users, and any user can rent the vehicle shared. So a negative reciprocity mechanism prevails (Bardhi and Eckhardt 2012), whereby only one subject (in this case the provider) appropriates most of the benefits generated by the transaction. The outcomes recognised by the use of this system are mostly of optimising the vehicle fleet, with important effects on the level of urban traffic congestion (Cervero 2003), or improving the ecological impact of urban mobility because most of the shared vehicles are newer and in some cases also electric with zero emission (Ademe 2015).

The majority of the studies available on this topic are concentrated on its environmental impact (Cervero 2003; Rydén and Morin 2005; Martin et al. 2010), while few studies (Bardhi and Eckardt 2012; Ball 2000) have examined how the

user experience could be a key element of the success and failure of car sharing and how this is a critical factor. The ability to develop mobility sharing encounters different resistances—cultural, social and economic—that need to be considered for a truly effective service design. As argued by Daconto (2017), mobility choices are confronted with the opportunity of options available, the access conditions but also the individual skills and capabilities, or even the presence of any economic or social barrier.

The following paragraphs in this chapter attempt to address this issue, presenting the results of a research study carried out among the users of one of the most successful car-sharing services in Milan.

2 Objectives and Methods

The presented study aims to analyse the car-sharing service from the perspective of users and their customer experience. The research aims to answer the following questions on car sharing:

- What are the main reasons for using the service: comfort, cultural exploration or affordability?
- What is the impact of this sharing practice on the use of other means of transport? Is there a substitution effect or a complementary effect?
- Are there elements of the service design that are critical for the user experience? If so, what are the solutions proposed by users?

In order to achieve these objectives, a survey was conducted through a representative sample of users of car2go in Milan. The questionnaire was administered using the CAWI method (Computer-Assisted Web Interview) through the Qualtrics software. Data were processed with a specific statistical analysis programme (SPSS) using factor analysis for the detection of specific user segments.

For the analysis of users' customer satisfaction levels, a range of scales were used (with a score from 0 to 10), compared to four fundamental dimensions of the service: the Service Delivery mode; Affordability and Sustainability; Vehicles; Customer Services and Complaints. This measurement system was inspired by different customer satisfaction assessment tools, such as the TRIM-Index model (Jankal 2003) and the SERVQUAL (Parasuraman et al. 1985).

The survey was conducted from 21 March 2016 to 18 April 2016, and it was completed by a total of 3,758 users.

Respondents (68.9%) are male and the remaining 31.1% are female. The profile of the sample by gender is consistent with that of the entire customer base of car2go in the city (M: 64.5%; F: 35.5%). Moreover, 27.2 of those interviewed are under 35 years old, while the most significant segment of respondents is between 36 and 45 years (32.5%), followed by those between 46 and 55 years (26.9%) and those over 55 years (13.4%). Also, in this case, the sample is sufficiently consistent with

the customer base: the age group 36–45 years is still the most significant (almost 30%), followed by those between 46 and 55 years (22%).

The analysis of the results will be developed as follows: in Sect. 3, the different user profiles and their motivation will be described; in the next paragraph, the impact of car sharing on mobility styles will be examined; finally, customer satisfaction items will be analysed. In the concluding paragraph, the most critical issues and prospects for improvement are discussed in order to provide specific highlights that are useful for mobility service designers.

3 User Profiles and Their Motivations: Comfort, Cultural Exploration or Affordability?

The user profile analysis allows us to highlight some salient features about the access and the use of the service that could be useful to understand their motivations.

More than a third of users live in two-people households (32.5%), with the addition of nearly one-third of respondents who are single-person households (28.5%). Families with three members are 19.7%, while those with four or more are 19.3%. Clearly, this is related to the age of our sample, where almost a third is less than 35 years old, in a country where people usually get married and have their first child only after thirty years old.

Our respondents (63.8%) have a university degree, while a third have a high school degree. Those with a lower level of education (middle school, elementary, vocational qualification) are residual (4.3%). According to census data for the Province of Milan, the incidence of people with at least a diploma is about 64.2%, with a prevalence for high school graduates compared to graduates from university. In our study's sample, the proportion of highly educated people is overturned, confirming that the use of car sharing is largely widespread among those with a higher human and cultural capital.

87.7% are employed, when the percentage of gainfully employed persons between 20 and 60 years old is around the 70% in the Province of Milan. 35.7% are self-employed (entrepreneur, freelancer, professional, etc.), while those who have a dependent job make up 56.7% of the sample. Inactive persons (housewives, students and retired people) represent only 7.7% of the sample. It is easy to see how the mobility needs of the latter are more limited, also because car sharing requires a certain degree of economic capital.

The main reasons for using the service (Fig. 1) are mainly linked to its flexibility and versatility in terms of freedom of movement (46%) or even to guarantee greater freedom of transit in restricted traffic zones (38%). Twenty-two percentage use the car-sharing service because they do not own a car. If the pragmatic reasons are prevalent, these are also explorative motivations, such as the desire to experiment some new forms of urban mobility (37%). Comfort and cultural experimentation

Fig. 1 Reasons for subscription to the car2go service (multiple choice %)

seems to prevail over affordability: 14% of the sample use the service because of car ownership running expenses (cleaning, taxes, fuel), 13% because it allows them to save money when compared to other means of transport (i.e. their own car, or a taxi service) and 10% because of its affordable price. Finally, the environmental motivation appears to be the least significant (8%), although communication and rhetoric on shared mobility systems are often centred on this feature. Conversely, this result appears entirely consistent with what emerged in other surveys on the sharing economy, highlighting how ethical and environmental drivers take a lower weight than the more pragmatic or economic ones (Nesta 2015; Owyang and Samuel 2015).

The reservation service is almost exclusively via apps (95.6%), and only a residual part is via the Internet (4%) or call centre (0.4%), demonstrating how mobile systems and the always-on connection represent a crucial revolution that allowed the car-sharing system to spread so rapidly in recent years, making it even more dynamic and flexible for daily commutes. Despite the potential, the overall levels of use are still only modest. In the sample interviewed, only 20% claim to have used it at least once a week, while the vast majority uses it monthly (almost 66%).

A factor analysis and subsequent clustering through the use of the K-medium method were carried out in order to identify a specific customer segment. The following types of users were identified (see Table 1):

1. *Flexible Moving Families (27%)* mainly use it for its flexibility (48.8%), versatility and potential of access in urban areas with traffic restrictions. There is a slightly higher usage profile among inactive persons such as housewives or retirees (13.6%), or the self-employed (49.2%) aged over 46 years (39%), married persons (73%) and in families with 4 or more members (21.8%). It is not surprising that they have become aware of the service through the printed media (33.6%), considering the comparatively older age of this consumer

Table 1 User profiles (cluster—%)

	Flexible Moving Families (27%)	Smart Workers (46.4%)	City Users (26.7%)
Gender	Female (32%)	Male (72.3%)	Female (36.3%)
Age	Over 46 (39%)	26–45 (64.5%)	18–25 (13.9%)
Education	University degree (65%)	University degree (65%)	High school degree (37%)
Number of family members	Four or more (22%)	Single (29%)	Three members (33%)
Employment status	Unemployed housewives or retirees (13%)	Dependent worker (85%)	Unemployed students (13%)
Level of use	Less than once a week (83%)	Less than once a week (83%)	Weekly (30.6%)
Motivation of subscription	Movement flexibility (49%)	Experience a new way of mobility (40%)	Economic affordability (30%)
Main mobility style	Use their own car (86%)	BlaBlaCar user (51%)	Subscribers to public transport (47%)

profile. These are people who largely have signed up to the service since its opening in 2013 (47.2%), but they are not intensive users (83.2% use it less than once a week). They are residents in the municipality of Milan (83.8%), and they prefer to use their own car (85.8%), so car sharing remains a residual option.

2. *Smart Workers (46%)* are the most common profile. They are users with a strong experiential approach to mobility and who love to experiment with new ways of mobility (39.4%). We call them "smart" because they adopt multiple layered styles of mobility: they use carpooling and ride-sharing services (50.5%); they are also active users of the main competitor (Enjoy—74.1%), and they have a strong preference for public transportation (47.4% are subscribers to public transport). They are mostly men (72.4%), employed (99.3%) in a dependent job (84.7%), between 26 and 45 years (64.5%), and slightly more present among those without a car (19.3%). They are often one-person families or young couples. They heard of the service mostly through the Internet (44.4%) and joined from the beginning (61.6%) even if they are not intensive users.

3. *City Users (27%)* are the lowest component but also the ones that use the car-sharing service the most (more than a third uses it at least once a week), driven mostly by economic reasons (about 30%). They predominantly live in the province outside Milan (11.9%), so they are City Users for study (13.9%) or work, and as self-employed (41%). They are under 26 years of age (14%), often graduates, some of them live in the family home or share a flat with colleagues. Their use of car sharing is combined with traditional public transport (47%). They consider car sharing especially playful and designed to meet their leisure (35.4%) and consumption (14.9%) needs.

This typology, therefore, enables the linking of motivations to users' socio-economic profiles and their frequency of service use: "Flexible Moving Families" are motivated predominantly by comfort, "Smart Workers" by cultural exploration and "City Users" by affordability. It is important to note that the latter are small in number but make an extensive use of the service.

4 The Impact of Car Sharing on Mobility Patterns: Substitution or Complementary Effect?

The study of the socio-environmental impact of car sharing is one of the most debated issues in mobility research, but the results are ambiguous. Elliot et al. (2010) suggest that car sharing would eliminate between 90,000 and 130,000 cars from the roads. In a comparison between the European and the American use of car-sharing services, Shaheen and Cohen (2008) show how the effects on the number of vehicles removed would be higher in North America, but also with wider variation levels (between 6 and 23 cars for each vehicle shared), compared to the European market (between 4 and 10).

Several studies have also sought to assess the car-sharing enviromental impact and, in particular, if it could reduce the use of private cars or promote the use of collective transport (e.g. bus, train, metro). Some studies show, for example, certain vehicle traffic reductions in terms of vehicle kilometres (vkm): in some cases with a station-based system, the reduction is minimal and it is almost 6% (Cervero 2003); in others, it appears more substantial, up to 45% (Rydén and Morin 2005). Deviation with the free floating system is less extensive and would be between 6 and 16% (Martin et al. 2010). The same study has also highlighted that the impact of car sharing depends on the number of vehicles owned: on average, users that do not own a car use the car-sharing service more than users who own a car; if the user owns more than one car, that user drives much less when compared to other drivers registered with a car-sharing service. Moreover, the survey carried out by the *French Environmental Protection Agency* (Ademe 2015) shows how, after joining a car-sharing service, journeys on foot increase by 31%, cycling by 30% and the use of urban public transport by 25%.

An analysis of movements in car sharing in Milan shows that 90% of journeys are between 1 and 11 km (average 6.27 km) and on average last for 19.28 min (not including stops), a result very similar to the mobility path made with a personal car (Onsm 2016).

Users interviewed do not live in large families, and therefore, they do not have a large number of vehicles available: nearly half of them only own a single car and about 22% do not own one. This feature also appears consistent with the use of their vehicle, mostly for a few days per week; only 23.2% of the sample declares an everyday use of their own car. This evidence is confirmed by the fact that more than

half reported low mileage with their car, even less than 10,000 km/year. Therefore, car-sharing users are mainly those people who already make lower use of their car.

In terms of access to the service, this is direct (56%) in the majority of cases, reaching the shared vehicle without other means of transport. Moreover, the adoption of diversified mobility patterns is evident. When matching mobility needs and the means of transport used (Fig. 2), the private car is the main means of transportation. Public transport is the main alternative to a private car and is especially used for trips to/from home/school or work (33.8% versus 38.2% of those who mostly use a private car), or for business trips (30.7% versus 34.1% of those who would rather use a private car). However, car sharing occupies a relevant place in mobility patterns that are mostly for fun or leisure reasons (29.2% use it to go out at night, 11.7% to visit friends and relatives and 7.7% to go shopping). The functional reasons related to work are less relevant (only 2.6% use it as the predominant means of transportation for home/work commuting, and only 4.6 for business trips). Therefore, car sharing is the more suitable option for people who have a very active and rich social life, hold many activities with friends, go out relatively often and frequently visit a café or restaurant.
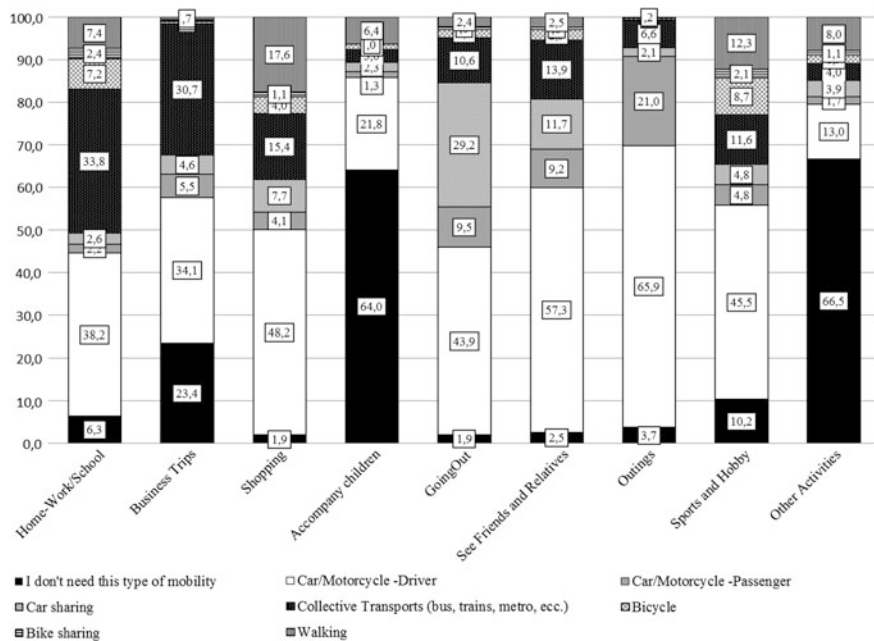

Fig. 2 Which kind of transport do you mainly use for the following trips? (%)

However, it should be noted that in most cases, users, despite being frequent consumers of public transport services, do not subscribe to them on an annual or monthly basis (almost 54.8% say they buy tickets as needed). Only 40% say they routinely use public transport with a monthly or annual subscription; the majority of them (76.8%) have signed a subscription before joining a car-sharing service, while the remaining 23.2% stated that they subscribed to the public transport service at the same time or even after joining the car-sharing service. It is an important result that demonstrates a certain potential in car sharing for the development of an intermodal urban mobility system. These data confirm the results of another study (Ademe 2015), rejecting the major fears about car sharing as a deterrent of the use of public transport and other collective means of transport, adversely impacting on urban traffic congestion. However, data confirm the flexibility of the car-sharing mechanism, especially with the free floating system (the one adopted by car2go), in developing intermodality.

When assessing the impact of car sharing on individual mobility, it seems interesting to evaluate whether the experience of the use of this service somehow contributes in some way to changing the mobility patterns adopted. When we asked how users would go about commuting had there not been a car-sharing service option, 48% of respondents stated they would turn to the public service, confirming the concerns on the negative impact of car sharing that would deviate from the use of public transport. However, a third would opt for a higher use of their own car, with the addition of a further 14% who would use a taxi. The answers should also be analysed in combination with another question (Fig. 3) which aims to highlight
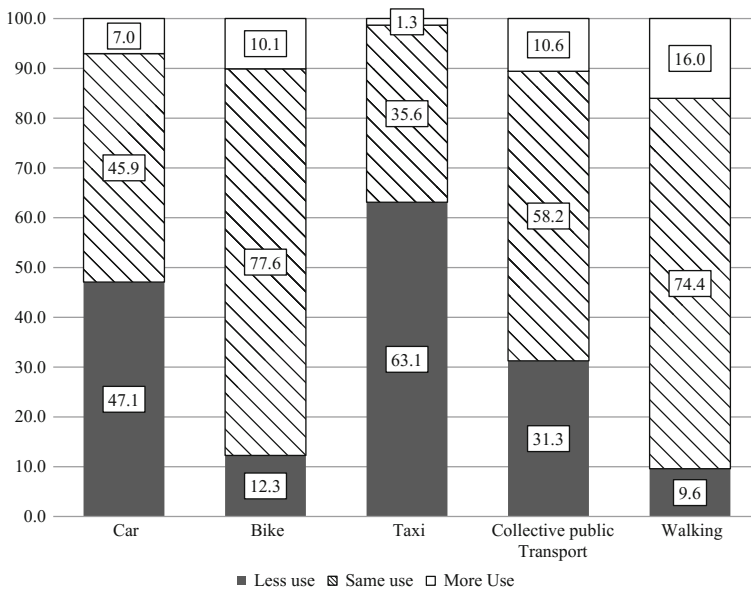

Fig. 3 How have your mobility choices changed since you started using car sharing? (%)

how the use of car sharing impacted on the frequency of use of other available transport modes. Clearly, the use of the car-sharing service led respondents to declare a less extensive use of private cars (47.1%) and taxi services (63.1%). Comparatively, there is a lower impact on the use of public transport services (31.3%) which, on the other hand, is one of the outcomes promoted by shared mobility (slightly more than 10% say they started using public transport more often after they began to use the car-sharing service), exceeded only by the option of those who would decide to commute on foot more (16%).

Milan is one of the city centres where sharing mobility services are being favoured by users and it is also testified by the plurality and competition of car-sharing suppliers. It is known how low access costs in the launch phase of many of these services have legitimised a multi-provider strategy among many users. Actually, in Milan, competition seems to be consolidated between car2go and Enjoy. In fact, 70% of respondents are also users of the Enjoy service. Share'Ngo (with electric vehicles), with approximately 17.4% of the active users interviewed is the third service provider, followed closely by Guidami (the only car-sharing station based in Milan), used by 14.8% of respondents. Interestingly, Guidami is the service with the highest percentage of non-active users (19.2%), confirming a consolidated preference for the free floating system.

Considering the other forms of shared mobility available in the city, respondents were asked if they were members of services such as BikeMi (the bike-sharing service in Milan) and BlaBlaCar (the most popular carpooling platform in Europe). The results gathered highlight a clear preference for BikeMi service (43.3%), which is used again mainly for needs related to sports and hobbies (2.1%), but also for trips to/from home/work. It is significant to note that 19.2% of users have also adopted the carpooling service, demonstrating just how structured shared mobility services are in an increasingly varied and synergic supply, to respond more effectively to the different mobility needs in the urban space.

On assessing whether there could be some kind of connection between the use of the service and the future intention of buying a car, 21.6% already decisively declared they are not going to purchase a new car, but 51.9% said that they would buy one. 22.8% stated they would obtain it through arrangements such as long-term rental, 16.4% declared a preference for lease purchasing, and 2.5% would consider buying the car together with other owners.

On discussing this issue (Fig. 4), 20.3% stated that they have already given up at least one of the family cars, with another 24.5% saying they might consider it. Just over half (55.2%) excluded this possibility.

All the results that emerged in our study confirm the limited impact of car sharing on influencing the future choice of purchasing a new car (11%), in contrast to other surveys in North America and Canada (Martin et al. 2010), that demonstrate a possible impact where between 25 and 71% of respondents have decided against buying a new car in the future. Therefore, a lower impact in renouncing a change in the use of a car seems to highlight the importance of car ownership in a country with an individualistic model of urban mobility, more culturally anchored on the use of private cars. In the Italian case, the preference for the private car is not
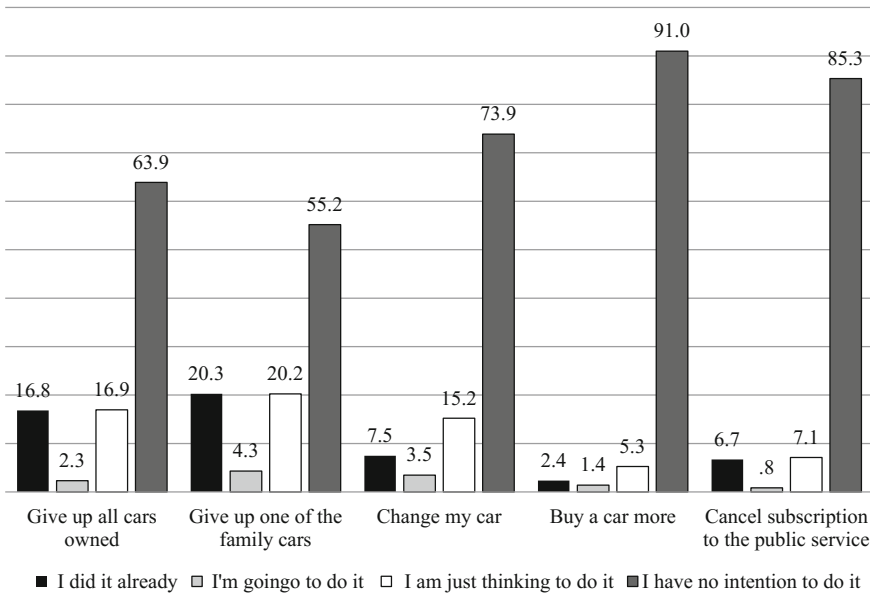
Fig. 4 Now that you can use car sharing, should you…(%)

always a free option but the result of cultural and infrastructural constraints, although Milan is one of the cities where the network and the quality of mobility services are more developed in the country (Arcidiacono 2017). This decision is not related to any of the user profiles analysed that show a similar preference to not give away their own car despite using the car-sharing service.

In conclusion, the impact of the car-sharing service on mobility choices seems limited: on the one hand, there is a reduction in the use of taxis and private cars, while on the other, some users also state that they would use the public service more often in the absence of car sharing, thus highlighting an undesirable risk of a substitution effect.

5 Satisfaction and Quality of the User Experience: Inputs for Service Design

The analysis of satisfaction and user experiences was based on a range of scales from 0 (least satisfied) to 10 (most satisfied), organised into four dimensions (Service Delivery, Affordability and Sustainability, Vehicles and Customer Care), each composed of three or four analysed items (Fig. 5).

A fairly high level of overall satisfaction was registered among the users interviewed: the majority express scores above sufficiency (mean 7.28, standard deviation score 1.66). The high level of satisfaction is also confirmed by 84.6% of
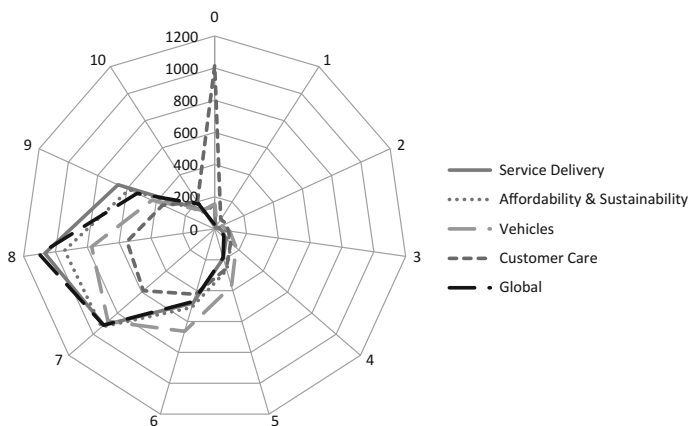
Fig. 5 Customer satisfaction dimensions of the car2go service

the sample who declare that they would recommend the car2go service to a friend. Looking at the rate of dissatisfaction (i.e. those who express a value below the sufficiency level) in the three user profiles, it is possible to highlight that in the *Flexible Moving Family* and *City User* profiles, dissatisfied clients represent 8.2% and 9.5% of users, respectively, while they rise to 12.7% in the *Smart Workers* profile. This user profile, more oriented to the experiential and explorative dimension of car-sharing services, and also more experienced in the use of other shared mobility services, seems to be significantly more attentive to all the intrinsic features that compose it, while the other two profiles, motivated more by comfort or savings, seem to concentrate mainly on the dimensions that best match these characteristics.

The most interesting results concern the comparison between the different dimensions that highlight how customer care and vehicles offered are the most critical aspects of the service.

The first dimension is *Service Delivery* composed of four different items: ease of booking, vehicle availability, car locating, car pickup/car return. The data show a higher satisfaction with the booking system (mean score 8.19, SD 1.68). 46.4% assess the service as being excellent with scores between 9 and 10. The pickup/ return system (mean 7.79, SD 1.71) and the ease of locating the car system (mean 7.45, SD 1.91) registred a lower leve of satisfaction. Vehicle availability is the item with the lowest satisfaction level, having an average below the sufficiency level, but also with a higher level of variability in the distribution of scores (mean 5.50, standard deviation 2.24, and only 4.9% who consider it to be excellent and expressing a score between 9 and 10). The criticality of this item is also reported by another question in our survey: about 77% of respondents say they often do not find a car available. Considering this feature of the service, there are no significant differences between the different user profiles, where the percentage of satisfied (which expresses a score above sufficiency) is, in any case, between 80 and 83%.

The second dimension analysed satisfaction with the *Vehicles*. This is the dimension that registers the lowest value of satisfaction, albeit with ratings very differentiated with respect to the different items taken into account: onboard equipment, maintenance and cleaning, and models available. Onboard equipment, comparative to other items in the dimension analysed, records a slightly higher satisfaction level (average 7.31, standard deviation 1.93, but only 25% of respondents expressed high satisfaction ratings between 9 and 10). Maintenance and cleaning of vehicles (mean 6.71, SD 1.97) is lower, but the most critical item is the type of vehicle offered (average 6.32, standard deviation 2.50 with 19% of high satisfaction ratings between 9 and 10). Again, there are no significant differences with respect to the user profile, with the exception of a slight and comprehensible greater presence of dissatisfied among *Flexible Moving Families*.

The second dimension is *Affordability and Sustainability* of the service, divided into four items: transparency of price and service conditions, method of payment, cost of the service and environmental sustainability. The method of payment is the item that records the highest level of satisfaction (mean 8.28, standard deviation 1.74, where just over 50% expressed great reviews between 9 and 10). The level of satisfaction on sustainability follows, albeit at a distance from the previous one and with a higher variability (average 7.21, standard deviation 2.12). However, the feedback on the other two items registred a lower level of satisfaction: transparency of price and service conditions (mean 7.01, SD 2.30), but mostly the cost of the service (mean 5.52, SD 2.26). Only 5.3% expressed very high satisfaction (between 9 and 10) with respect to this last item. This result confirms the perceived value of the service which emerged in another question: 66% of the sample considers the cost as adequate but over one-third (31%) complain that it is too expensive. In this case, the least satisfied are *City Users* (about 5% compared to the other two) because they are the ones that use the service most and are likely to expect a more rewarding price system for intensive users.

The last dimension is the *Customer Care* service. In this area, the courtesy of staff is the item that has the highest level of satisfaction with 30.7% of the highest valuations (9–10) (mean 7.39, SD 2.13). The quality and timeliness of assistance for vehicles follow (mean 6.58, standard deviation 2.35). The remaining two dimensions—the possibility of expressing a complaint (average 6.01, standard deviation 2.61) or suggest a proposal (average 5.69, standard deviation 2.59)—are the most critical ones. These two components are substantially complementary in the perspective of customer relationship management, since the possibility of combining voice and the creative effort of clients are increasingly important in service management in terms of perceived value and customer loyalty. In this case, the least satisfied are the more educated Smart Workers who also use the service for professional reasons and, therefore, have higher expectations of a service *surplus*: unsatisfied users total more than 44% when compared to 40% of *City Users* or 37% of *Flexible Moving Families*.

In order to explore these critical issues, we analysed the content of the free proposals/comments section included in our questionnaire.
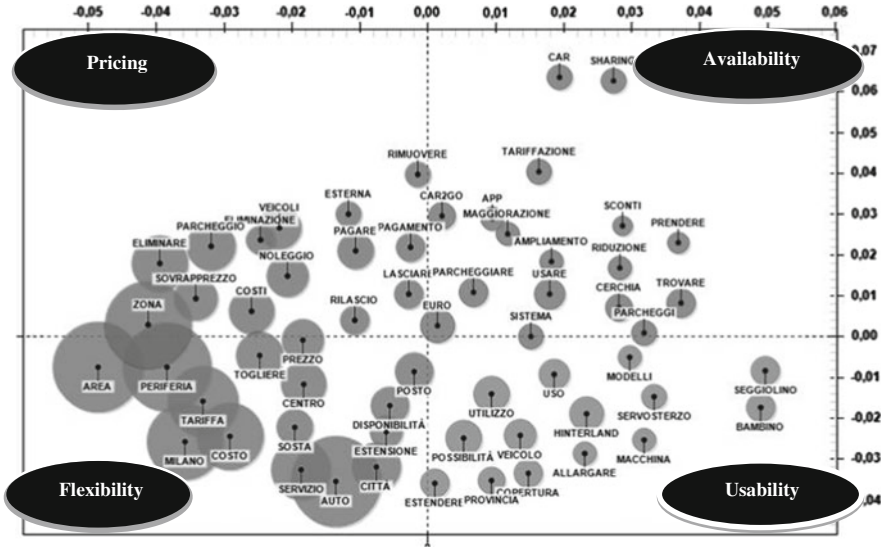
Fig. 6 Thematic map co-occurrence of improvements suggested by car2go users

The occurrence of words such as periphery (135), cost (102), delete (74) and surcharge (49) explains the lower scores in relation to the *Affordability and Sustainability* dimension. Going into further detail in the analysis of the other proposals for improvement noted by users, we also carried out a co-occurrences analysis, reconstructing the thematic map (Fig. 6) of clients' proposals and identifying four possible areas for improvement:

(a) *Flexibility*: users want a more flexible service through a redefinition of the boundaries between the centre and the peripheries, extending the central area in order to encourage a more extensive use of the service, especially by those who live just outside the core centre of Milan.

(b) *Pricing*: the users highlighted the question of tariffs and surcharges, linking it to the issue of flexibility and parking areas. At the same time, they ask for a reward system for all the frequent users or the most virtuous or those with a collaborative attitude (leaving the interior clean, providing fuel, etc.), penalising instead those who are obstructing the "sharing" process, for example those who park the car in a private and inaccessible courtyard.

(c) *Availability*: this requires a larger availability of cars and the possibility of free parking zones.

(d) *Usability*: improving the comfort on board with additional services (child seat, towel for those who transport animals, power steering, etc.) or providing a larger variety of vehicles in order to satisfy all the potential mobility problems and needs of clients.

In the areas for improvement analysis, it seems that availability and pricing are the most relevant issues: more than 69.3% proposed increasing the number of available vehicles, and 56% want more promotions and offers. Some users would also prefer a possible modular rate that considers the number of passengers (41%). The opportunity to develop strong partnerships with public transport services (47.6%) is also strongly welcomed. The potential complementarity is stressed by users who asked for some possible incentives: 51% propose a discount for those who already have a public transport subscription, and 66% suggest introducing some form of economic incentive for car-sharing users like the one provided in Paris for those who use a bicycle to move around the city.

In conclusion, it can be said that the car-sharing service generally generates a high level of satisfaction among its users who particularly appreciate the innovative mode of delivery, enjoyment, its flexibility and convenience. The price is not a critical factor, probably also due to the medium-high social profile of users. However, *City Users* are pushing for a more customisable pricing model that can enhance and reward those who use it more often. Conversely, *Flexible Moving Families* are more interested in being able to use different types of vehicles (even larger and more comfortable to travel in with more people) and with special equipment that meets their needs (for babies or animals). Finally, *Smart Workers* are much more attentive to service add-ons requesting more assistance and customer care.

6   Conclusive Remarks

The conducted analysis shows that car sharing is a phenomenon that could play a strategic role in urban mobility governance. Although data indicate that interest for this service is growing, the National Observatory (2016) estimates that the weight of this practice is still less than 0.3% in the overall mobility market. In large cities like Milan, these numbers are growing and almost reach 0.6%. However, the situation may be quick to change and the car-sharing service could be destined to be more than just a niche product. Perhaps, current data do not suggest that car sharing is destined to become the third dominant mobility mode in society (Frenken 2013) after the private car and the public means of transport, but the increasing returns and number of new users could make car sharing more attractive on the supply side, by lowering costs and widening the variety of shared vehicles. In a sort of self-reinforcing process, it will increase its own dissemination, also creating a new style trend, especially among young people, where using the car less is a new way of standing out (Davis and Dutzik 2012).

The analysis of user profiles highlights how these forms of mobility are developing among specific categories of consumers: mainly men, young, employed and higher educated. As regards the rest of the citizens, these services remain inaccessible due to the absence of an adequate economic and cultural capital. This implies that innovative urban mobility is not only the result of a political choice in

terms of physical infrastructure, or simply in the variety and complementarity of transport options, but also requires working on inclusiveness and the socio-cognitive factors of mobility.

Economic and cultural accessibility to the shared mobility system is a fundamental issue that could inspire specific public policies: educational programmes for digital literacy among adults and senior citizens, aimed mainly at ensuring access to collaborative and sharing markets; the elimination of extra charging in non-central areas; the provision of reduced rates for car-sharing services for socially vulnerable categories of users; fostering the involvement of companies and employers to promote corporate car-sharing or carpooling programmes; even promoting new forms of peer2peer car sharing, which is less developed in Italy when compared to other markets such as Germany or the UK.

Looking at mobility management and urban governance, the expansion of the car-sharing system clearly emerges from the ability to integrate it within the traditional urban and suburban transport system, promoting intermodality in an integrative and more complementary logic rather than a competitive one. Shared mobility, thanks to its flexibility, is able to perfectly fill the mobility "gaps" that develop through the two main means of transport used: the private car and public transport. Possible measures need to be developed to promote a complementarity between car sharing and this other two means of transport: covering areas and times when the public service is most lacking, the provision of forms of integrated subscriptions; and, agreements with garage networks or parking services. Moreover, other forms of integration can also develop between the different forms of shared mobility: from bike sharing to car pooling, from ridesourcing to the micro-transit, etc.

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