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# *HOW CAN AUTOMOTIVE MANUFACTURERS LEVERAGE THE CARSHARING TREND AMONG YOUNG ADULTS?*

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**Abstract**

With the rise of the sharing economy, a cultural shift from property ownership towards sharing systems is being observed, with services like carsharing displaying significant growth. This change poses a challenge to the automotive industry, since its core business relies heavily on car ownership. A lower preference for car as the personal mean of transport of choice among young people is being observed; as young adults are expected to be the car owners of tomorrow, carmakers should draw attention to these phenomena.

With the broader goal of understanding how automakers can leverage the carsharing trend among young adults, a survey was conducted among 291 respondents aged 18-35, aimed at understanding the attitudes of young segments about carsharing, the reasons to engage in carsharing schemes, perceived (dis-)advantages of carsharing and the profile of young users. In addition, perceptions about car ownership were audited, as well as to which extent their carsharing experience influenced their connection with car brands and their car purchase intentions. This survey was preceded by consumer and expert interviews, as well as bibliography review on the topic.

The results revealed that a series of variables influence the participation in carsharing schemes among young people, among which the ownership of a vehicle. But while young car sharers are less likely to own a car, they do intend to buy one in the future, and here lies and opportunity for car makers to provide a comprehensive mobility offer, that turns young people into carsharing users and later into car buyers, thus enhancing the lifetime value of these customers and shrinking their consumer decision journey for car purchase.

Keywords: carsharing, sharing economy, automotive, mobility services

**Table of contents**

## 1. Introduction

During recent years, the sharing economy became a prominent topic, especially boosted by the economic crisis and an unprecedented growth of online communities. The emergence of sharing platforms has enabled individuals to share personal assets such as cars, houses and household products (EY, 2015). In particular, carsharing and ridesharing have grown in popularity, as they allow for great flexibility, while lowering the costs and decreasing the environmental burden of personal transportation (Shaheen, Sperling, & Wagner, 1998). In addition, a cultural shift from ownership towards sharing systems is being observed, especially among younger people, who are turning to services that grant access to goods and assets, without the onuses associated with ownership (Goldman Sachs, 2016). As a consequence, access-based services, where customers are charged according to the usage of a certain good, are growing (Wilhelms, Merfeld, & Henkel, 2016).

The growth in the carsharing market, along with this cultural shift, poses a significant challenge to the automotive industry, since ownership has been at the core of its business model for many years. Although cars are not likely to be replaced as the personal mean of transport of choice, this preference is lower among young consumers (Viechnicki, Khuperkar, Fishman, & Eggers, 2015). Since younger segments are expected to be the car owners of tomorrow, special attention should be drawn to the carsharing trend among youngsters.

In spite of a recent surge of attention for the carsharing topic, there is little knowledge about the motivations for the young people to participate. What are the underlying reasons for young consumers to initiate in carsharing schemes? What are the characteristics of users and the perceived benefits that lead young users to engage? The following study aims to understand what are the motivations for the consumption of carsharing services among young people, with the broader goal

of obtaining actionable insights that can help car manufacturers leverage the carsharing trend among young adults.

In order to do so, firstly, a literature review will be conducted in order to outline the underlying context, issue and core concepts associated, and to understand the knowledge already established on the topic.

To obtain further insights, qualitative data in the form of consumer and expert interviews will be collected. At this point, we should have enough basis to develop relevant hypotheses. The next step will be to collect quantitative data in order to test them and gather costumer intelligence. After in-depth analysis of the data, we should be able to understand what are the perceived benefits and drawbacks of using such services for young segments, and what attributes are valued among consumers and prospects. This will provide insights on how car makers can target these segments more effectively and reframe their positioning as mobility providers.

In addition, the preferences of respondents regarding car ownership will be audited, as well as the factors which weigh in their purchase decision, in order to understand possible correlations between car purchase intentions and carsharing consumption.

## 2. Literature review

### 2.1. Sharing economy landscape

The sharing economy has grown exponentially over the past few years (EY, 2015). The sharing economy, also phrased in literature as collaborative economy or collaborative consumption, peer-to-peer, access economy, is defined, according to the Oxford English Dictionary, as "an economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the Internet". PwC (2015) adds that "in this way, physical assets are shared as services".

The economic crisis, along with the modern technology boom, created the ideal environment for the rise of this concept. This has led 67% of consumers to start sharing goods and services (BlaBlaCar, 2016). Besides, the technological landscape, ignited by the increase in access to internet, cheaper electronic devices and, especially, by an increase in online communities, has allowed this concept to take shape and become a part of our daily lives, essentially through sharing platforms and online marketplaces, where people can share goods and services like cars, houses, household products and services. Technology is, in fact, critical to the concept of sharing economy, since it allows for greater scale and economic impact (EY, 2015).

## 2.2. The development of the carsharing market

### 2.2.1. Major trends in the automotive industry

The automotive industry is a prominent sector in the global economy, being one of the key drivers of technological advancement and economic growth (Klink, Mathur, Kidambi, & Sen, 2013), with important multiplier effects due to links to other sectors (European Commission, 2017).

Despite its prominence, this industry is currently undergoing significant changes, which highly impact existing business models and have the potential to disrupt the whole industry. According to Gao, Kaas, Mohr, & Wee (2016), four main disruptive trends have risen in the automotive sector: diverse mobility, autonomous driving, electrification and connectivity (Exhibit 1). If these trends prevail, a high-disruption scenario will be faced, where recurring revenues from new services, such as shared mobility (e.g. carsharing, e-hailing) and data-connectivity services (e.g. apps, remote services, software updates) are expected to grow from $30 billion to $1500 billion, as seen in Exhibit 2 (Gao, Kaas, Mohr, & Wee, 2016). These predictions highlight the economic importance of these disruptive trends.

In addition, PwC (2016) predicts a shift in the automotive revenue pool. Under this scenario, shared mobility will evolve from a mere 3% of the auto industry's $5 trillion revenues to 10% of a $7.8 trillion revenue, meaning it will take a bigger slice of a bigger pie (Exhibit 3).

### 2.2.2. The shared mobility trend

The rise of shared mobility services poses a rather significant challenge to automotive incumbents. The concept of ownership, which has been at the heart of many well-established automotive business models for a long time, is undergoing a shift towards sharing economy systems. In Exhibit 4, we can take the example of Uber, which is now valued at $69bn, surpassing traditional car manufacturers, such as Ford and General Motors (Chen, 2015). As a consequence of this cultural shift, car manufacturers are expected to reposition themselves as mobility providers, and not merely vehicle manufacturers (PwC, 2015).

According to a survey conducted by Nielsen (2014), "more than two thirds of consumers are willing to share or rent their personal assets for financial gain", while "two thirds of consumers are likely to utilize the products and services from others in a share community". In addition, a PwC (2015) survey found that 8% of adults have participated in some form of automotive sharing. This shows that while consumers are increasingly receptive to the idea of sharing personal assets, there is still room for growth concerning sharing cars.

In the personal transportation space, several platforms emerged, as a result of "the convergence of technologies such as mobile communications, cloud computing, geospatial analysis and social media" (Deloitte, 2014), making it convenient for any individual to commute from A to B.

The existing shared mobility models can be split in two broad groups: ridesharing and carsharing solutions. The term ridesharing is used when two or more people share a car trip. Among the ridesharing solutions, one can distinguish two different types of models:

- E-hailing on-demand services (e.g. Uber, Lyft, Cabify): consumers are allowed to find verified drivers in their area, who are willing to drive them to their destination, in exchange for a rate set by the platform;
- Carpooling platforms (e.g. BlaBlaCar): consumers are matched according to their destination, being thus allowed to share a ride, upon the payment of a fee usually set by the driver;

Ridesharing is essentially different from carsharing, as we will see in the following section.

### 2.2.3. The concept of carsharing

Carsharing is a model where consumers rent cars for short-term use, with or without a reservation. In such model, consumers have access to cars distributed over a network of locations within a certain metropolitan area. Prices usually include a flat service fee and a variable fee, charged according to time and distance travelled. Nevertheless, the price covers parking fees, fuel, cleaning, maintenance and taxation costs. In consequence, carsharing emerges as a more affordable personal mobility option when compared to car ownership (Seik, 2000), that involves significant overhead and fixed costs in order to keep an asset that will, on average, sit idle 95% of the time (Morris, 2016). The benefits of carsharing also include time savings and on-demand access for its users, as well as environmental benefits and a more efficient utilization of cars (Victoria Transport Policy Institution, 2000). In fact, carsharing is largely based on the notion that "the number of vehicles required to meet the demand of a group of individuals is less when they share a single vehicle than when each has his or her own vehicle" (Katzev, 2003).

### 2.2.4. Existing forms of carsharing

Currently, a number of carsharing options are available. Understanding the differences between them is important because "there is a great variability in the customer experience, typical use cases, and in the wider consequences" (Vine, Zolfaghari, & Polak, 2014). Considering a criteria of ownership, two broader types of carsharing systems can be distinguished:

i) Peer-to-peer carsharing platforms (e.g. Drivy, Turo, RideLink): consumers are matched with private car owners in their area, who are willing to rent out their car for a certain period of time, for a daily fee, to which mileage fees can add up. Rides are round-trip and pre-reservations are necessary, leading to low flexibility. In addition, this type of carsharing demands the existence of a smart card or exchange of actual keys between the owner and the renter. The interactions are C2C, although mediated by a carsharing operator which provides an online marketplace to connect owners with prospective renters.

ii) Inventory-based carsharing (e.g. Zipcar, Car2go, DriveNow): the car fleets are centrally owned by the carsharing operating entity, but shared among users. This type of carsharing includes two subtypes, namely:

a) Station-based services (e.g. Zipcar): cars are available for pick-up at designated stations, and must be left off at the same station they were picked up (for round-trip services) or at another station within the network (one-way trip services). A registration fee must be paid, as well as monthly fee and a price per time and/or distance traveled. Depending on the provider, trips may or not have to be booked in advance.

b) Point to point free floating services (e.g. DriveNow, Car2Go): users are able to unlock the car with a smartcard and drive right away. The car is picked up and left parked within a certain urban area. This service presupposes the payment of a registration fee and

rides are charged based on their duration. Reservations and exchange of keys are not necessary, allowing for a more flexible experience.

### 2.2.5. Carsharing users

Albeit existing evidence is fragmentary, and most studies are context specific, some distinctive traits have been commonly mentioned by researchers regarding carsharing users' socioeconomic profile. Carsharing users are usually well educated and environmentally conscious (Burkhardt & Millard-Ball, 2006; Lorimier, 2011; Loose, 2009; Vine & Polak, 2017). The majority of users is between 25 and 45 years old (Carplus, 2014) and lives in middle or middle/upper income households in urban neighbourhoods. The average user lives in a car-less or single-car household and is a moderate to heavy user of other means of urban transport, such as public transport, walking and cycle (Vine, Zolfaghari, & Polak, 2014). According to Shaheen, Sperling, & Wagner (1998), carsharing systems are particularly beneficial to low-income households and college students, and carsharing is more effective than car ownership for users traveling from 10000 to 16000 km per year. A recent study has also suggests that carsharing reduces the net number of vehicles owned (Shaheen & Martin, 2016).

### 2.2.6. Relationship between carmakers and carsharing operators

Carsharing operators stand at an important touchpoint, as they connect customers with manufacturers, and have the advantage of a continuing physical relationship with users (users interact with the provider's booking and in-vehicle interfaces, as well as in-vehicle telematics). Considering the socio-economic profile of carsharing users, they are part of many carmakers' primary target (Vine, Zolfaghari, & Polak, 2014). This proximity can be beneficial for automotive companies, as carsharing entities bear the potential to help OEMs better reach and communicate

with their customer segments. With the right offering, carmakers can reach new drivers and foster brand-specific loyalty.

In fact, car manufacturers are currently faced with the additional hurdle of obtaining data about its users: while today's cars come with a bulk of intelligent software, most of its scope is purely mechanic, showing vulnerability technologically (Haddad, 2017). In the era of the connected car, the development of driving related functionalities offers a great differentiation potential to OEMs, but in order to build them, driving-related data is needed (Wee, et al., 2015). In order to build these functionalities while plotting their way into the mobility services market, automakers may choose to partner with entities that already possess the required expertise and data. Carmakers may benefit from partnering with carsharing companies, as many of these operators have been collecting data over the years, in order to access driving related data that can help them develop new driving related functionalities and convey an enhanced mobility experience.

In addition, it is worth highlighting that carsharing services are slowly reshaping the transportation landscape in urban areas, generating new opportunities for automakers to expose their brand to a younger, urban segment, who demands affordable vehicle mobility, but is not ready to purchase an automobile yet. If automakers are able to create brand connections with young urban consumers today, they may be able to capitalize on them in the future, when those very same consumers settle in suburban areas to raise families and become ready to purchase a personal car to support their lifestyle (Car2Go, 2017). In fact, many carmakers seemingly recognize the importance of these brand connections and have rolled out different types of carsharing subsidiaries.

## 3. Methodology and data analysis

In the following section, the research methodology will be outlined, as well as the used methods. Additionally, data will be collected and analysed, in order to follow an empirically validated

approach. The main aim is to find underexplored opportunities for carmakers to monetize on the carsharing trend.

### 3.1. Qualitative research

Firstly, exploratory research, in the form of interviews will be conducted with industry experts and consumers, so that we can have a broader understanding of the carsharing customer base and industry landscape and contextualize it within the shift in the automotive industry, where automakers are becoming mobility providers. This research also serves the aim of obtaining insights and inputs for the quantitative research to be conducted afterwards, helping better define the research problem and variables of the study.

#### 3.1.1. Expert interviews

Semi-structured interviews with open-ended questions were conducted with industry experts (Exhibits 5-8), both from the carsharing and automotive industries. The main goal of these interviews was to understand the challenges facing the automotive industry brought up by the rise of carsharing players, the underway shift in young consumers' mentality from personal car ownership towards shared mobility, and underexplored opportunities for carmakers to leverage this trend.

There is an overall consensus among experts that the way consumers look at mobility is steering away from the traditional model of car ownership, although this shift is not happening at the same pace in different countries. This shift poses challenges to traditional automotive players, among which were recognized: the need to re-think their distribution models, adapt to new technologies and consumption habits. There is also uncertainty about which new mobility forms will succeed and prevail. On the other hand, opportunities for carmakers have also been recognized, such as the increase in the vehicle usage rate (higher increases in vehicle mileage, inciting faster replacement)

and the opportunity for original equipment manufacturers (OEMs) to supply cars to carsharing entities and to invest in different mobility models, ensuring exposure to and opportunities to capitalise on the future "winning" model in the mobility space. In addition, the consumers of these mobility solutions are largely young adults, which will eventually be the car owners of tomorrow, so there are opportunities for car makers to target them at the very beginning of their consumer decision journey.

### 3.1.2. Consumer interviews

Structured interviews among carsharing consumers and prospects, composed by a set of open-ended questions, were conducted to serve the exploratory goal of obtaining insights and inputs for further research (Malhotra, 2010). The choice of a structured interview, in which each interviewee is asked exactly the same questions in the same order, was founded in the goal of helping streamline results' analysis, ensuring answers can be aggregated and comparisons can be reliably made between sample subgroups. Keeping the questions open-ended aims to allow us to obtain complete explanations, allowing respondents to freely express their feelings, attitudes and knowledge about the subject. Insights from exploratory research will be subject to verification through conclusive research.

The choice of participants was non-random, since some knowledge on the research issue was required, and a convenience sample was used. The sample is characterized as follows:

| *Sample size* | *Participation in carsharing* | *Gender* | *Age* | *Car Ownership* | *Residence* | *Location* |
|---|---|---|---|---|---|---|
| 10 | 60% users<br>40% non-users | 50% male<br>50% female | Average of 26 | 50% Own car<br>30% No car<br>20% Household vehicle | 50% city center<br>50% suburbs | 100% Barcelona |

The interviews provided insightful results about several different variables, which can be consulted from Exhibit 11 to 34. From these, it is worth highlighting that: although car ownership is lower among carsharing users than among non-users, 33% of carsharing users possess a car, which suggests that carsharing is not necessarily a substitute of car ownership, but can rather be a complement (Exhibit 11); car is more likely to be the mode of transportation of choice for non-users than for users (Exhibit 13); the most frequent usage occasions (among users) and possible usage occasions (among non-users) are city escapes, one-way trips to the airport, transportation of heavy goods, reaching places with bad connection via public transport and replacement of private car when it is not available (Exhibit 21); the usage occasions are fundamentally different between peer-to-peer carsharing and station-based carsharing (Exhibit 23), seemingly reflecting the differences in the minimum rental period (usually one day for peer-to-peer carsharing and one hour for station-based carsharing); among the perceived benefits of carsharing, the most commonly recognized among interviewees were mobility, low cost, convenience and ease of use (Exhibit 25); the most common motivations for carsharing users to initiate were its convenience, proximity and low cost (Exhibit 27); attending general purchase criteria, carsharing users appear to be more price-sensitive than non-users (Exhibit 28); technology usage appears to be heavier for carsharing users than for non-users (Exhibit 29), as well as adoption of sharing economy apps and services (Exhibit 30); finally, more than half of the respondents stated that a carsharing experience can influence brand connection (Exhibit 32) and purchase preference (Exhibit 33) towards a specific car make.

### 3.2. Quantitative research

#### 3.2.1. Data collection

In order to collect relevant data, a survey was developed and distributed online among carsharing users and non-users, with its construction largely founded on the consumer interviews previously

conducted. This survey serves a descriptive goal, aimed at gaining more knowledge about carsharing users and prospects perceptions about carsharing. The choice for an online survey was mainly due to its low cost and high reach. The survey was distributed online by means of social networks and online databases, and all data has been obtained through "Qualtrics" software.

The survey was divided in several parts, inquiring its respondents on the perceived (dis-)advantages of carsharing and car ownership, their travel preferences and patterns, carsharing usage and motivations for consumption, the degree to which their carsharing experience affects their connection with car brands, technology and sharing economy services consumption, as well as demographic information. The questionnaire included single and multiple choice questions, as well as Likert scales. By adjusting the questions' display logic, different design flows were presented to carsharing users and non-users (Exhibit 66).

### 3.2.2. Sample characterization and descriptive statistics

- **Demographics**

The questionnaire obtained 638 responses in total. However, a part of them were just partially filled out and, therefore, excluded, shrinking the sample size to 370. In addition, respondents above 35 years old or without a driving license were filtered out, leaving a sample of n=291 respondents. From these, 64 were carsharing users (22%) and 227 were non-users (78%) (Exhibit 35).

Out of 291 respondents, 110 were male and 181 were female, resulting in a sample with 37.8% men and 62.2% women (Exhibit 36). This gender proportion was relatively similar in the carsharing users' subsample, with 22 out of 64 carsharing users (44%) being males and 42 (66%) being females (Exhibit 36).

In addition, the majority of respondents were very young, with 207 out of 291 respondents between 18-25 years old (71.1%) and 84 respondents aged 26-35 (28.9%) (Exhibit 37). Once again, the

proportions were consistent when looking at the carsharing users particular subsample (Exhibit 37), with 44 out of 64 carsharing users aged 18-25 (73.4%) and 15 users aged 26-35 (26.6%). Moreover, 26 out of 291 respondents had a high school degree or less (8.9%), 84 respondents had a bachelor's degree (28.9%), 155 respondents had a master's degree (53.3%), and 26 respondents had a PhD (8.9%) (Exhibit 38). The carsharing users' subsample presented itself as highly educated as well, with only 7.8% of carsharing users not possessing university education (Exhibit 38). The young age and high education levels of the respondents reflect the choice of the researcher to target college students and recent graduates, in order to obtain knowledge about young consumers.

Furthermore, most respondents lived in urban or suburban areas, with 209 out of 291 respondents living in urban areas (71.8%), 63 respondents living in suburban areas (21.6%) and only 19 respondents living in rural areas (6.5%) (Exhibit 39).

Regarding the respondents' household monthly gross income, for 61 out of 291 respondents (21%) it was below 2.500€, for 88 respondents it was between 2.500€-5.000€ (30.2%), for 79 respondents it was between 5.000€-7.500€ (27.1%), for 49 respondents it was between 7.500€-10.000€ (16.8%) and for 14 respondents it was above 10.000€ (4.81%) (Exhibit 40Exhibit 40). For the carsharing user subsample, this distribution was slightly skewed towards higher income levels, with 10 out of 64 users stating an income of less than 2.500€ (15.6%), between 2.500€-5.000€ for 12 users (18.75%), between 5.000€-7.500€ for 16 users (25%), between 7.500€-10.000€ for 19 users (29.69%) and above 10.000€ for 7 users (10.9%) (Exhibit 40).

Regarding car ownership patterns, 103 out of 291 respondents (35.4%) possessed a car, while 188 respondents (64.6%) did not own a vehicle (Exhibit 41). Among carsharing users, 15 out of 64 (23.4%) possessed a car, while 49 respondents did not own a vehicle (76.6%) (Exhibit 41), meaning that 26.5% of carsharing users are utilising carsharing services in parallel with their own car, while 73.4% of carsharing users forego car ownership. From the respondents who did not own a car, only

13 out of 188 respondents did not intend to own a car in the future (6.9%), with the vast majority showing interest in possessing a car either in a near future (34%) or later on (59%) (Exhibit 42). A similar trend was observed on the subsample of carsharing users who did not own a car, with 44 out of 47 respondents (93.6%) indicating that they intend to purchase a car in the future (Exhibit 42).

It is worth remarking that the carsharing users' subsample characteristics were consistent with those described by carsharing organizations managers in the expert interviews conducted previously, who reported that the majority of their users consisted of young adults who live in urban areas (Exhibit 5, Exhibit 6), are well educated and relatively wealthy (Exhibit 5). It is also consistent with previous research on carsharing users, mentioned in the bibliography review on page 10 (Burkhardt & Millard-Ball, 2006; Lorimier, 2011; Loose, 2009; Vine & Polak, 2017; Carplus, 2014; Vine, Zolfaghari, & Polak, 2014).

- **Perceived (dis-)advantages of carsharing**

Moving on to the analysis of the perceived advantages of carsharing, the main advantages chosen among respondents were: convenience, selected by 59 out of 291 respondents (20.3%), sustainability, selected by 38 respondents (13.1%) and low cost, selected by 30 respondents (10.3%) (Exhibit 43). These results are consistent with previous studies about the perceived benefits of the sharing economy: according to PWC (2015), consumers agreed that sharing economy services make life more convenient and affordable, and are better for the environment. Regarding the perceived disadvantages of carsharing, the main disadvantages chosen among respondents were: the need for planning, selected by 84 out of 291 respondents (28.9%), the fear of damaging the car, selected by 68 respondents (23.4%) and the lack of familiarity with the car, selected by 47 respondents (16.2%) (Exhibit 44).

- **Perceived (dis-)advantages of car ownership**

Considering the perceived advantages of car ownership, the main advantages recognized among respondents were independence, chosen by 99 out of 291 respondents (34%), flexibility, chosen by 29 respondents (10%) and comfort, chosen by 27 respondents (9.3%) (Exhibit 45). On the perceived disadvantages of car ownership, the main disadvantages recognized among respondents were financial costs, chosen by 83 out of 291 respondents (28.5%), parking, chosen by 58 respondents (19.9%) and traffic, chosen by 56 respondents (19.9%) (Exhibit 46).

- **Travel patterns and preferences**

Regarding respondents' travel patterns and preferences, a majority of 210 out of 291 respondents (72.2%) spent up to one hour on their daily commutes (Exhibit 47). In addition, there was a clear prevalence of car as the mode of transportation of choice, chosen by 147 out of 291 respondents (50.5%), followed by the subway, chosen by 59 respondents (20.3%) and walking, chosen by 45 respondents (15.5%) (Exhibit 48).

- **Carsharing usage**

Regarding carsharing usage, as aforementioned, 64 out of 291 respondents were carsharing users (22%) and 227 were non-users (78%) (Exhibit 35). Among non-users, the most commonly stated reasons for not having used the service before were the lack of information about the process and concept, indicated by 68 out of 227 non-users (30%), unfamiliarity, stated by 58 non-users (25.6%) and lack of sufficient offer, stated by 41 non-users (17.8%) (Exhibit 49). Out of 227 non-users, 134 (59%) see themselves using carsharing services in the future, displaying opportunities for growth of the carsharing market (Exhibit 50). Among carsharing users, only 2 out of 64 users (3.1%) use carsharing more than once a week, 5 users have said to use it once a week (7.8%), 33 users utilize it once every two weeks (51.6%) and 24 users use it once a month or less (37.5%) (Exhibit 51). In addition, most carsharing users have shown to be satisfied with the carsharing services they have used, with 55 out of 64 carsharing users (85.9%) rating their experience with 4 or 5 points out of 5

(Exhibit 52). Among the main motivations for the adoption of carsharing services, the most popular were convenience, selected by 9 out of 64 carsharing users (14.1%), efficiency, selected by 7 users (10.9%) and low cost, selected by 6 users (9.4%) (Exhibit 53). In addition, the most common usage occasions indicated by carsharing users were to go out, indicated by 21 out of 64 carsharing users (32.8%), one-way trips to the airports, indicated by 16 users (25%) and weekend trips, indicated by 15 users (23.4%) (Exhibit 54). Regarding the most frequently used carsharing providers, Car2Go was the most popular, indicated by 17 out of 62 respondents (27.4%), followed by CityDrive (22.6%) and RideLink (11.3%) (Exhibit 55). Most carsharers (71.8%) revealed that they do not take into consideration the car make when they are picking a carsharing service (Exhibit 56). Notwithstanding, 57.4% of respondents stated they are likely to develop a stronger connection towards a brand they had experienced through carsharing (Exhibit 57). In addition, 55% stated that they are likely to feel positively inclined towards the purchase of a car if they had previously experienced it through carsharing (Exhibit 58).

- **Technology usage**

Regarding technology usage patterns, the results indicate that carsharing users' consumption of technology and sharing economy services is relatively higher than the average sample (Exhibit 59, Exhibit 60).

### 3.2.3. Hypothesis testing

In order to better understand the profile of young carsharing users, whether they represent an opportunity for carmakers and how they can be targeted, it is important to understand which demographic and behavioural variables influence whether youngsters engage in carsharing schemes or not. Based on the insights obtained through consumer and expert interviews, there are a few variables which seem to influence the participation in carsharing schemes, namely: the

ownership of a car, the level of education, the gross monthly household income, the level of technology usage, and the usage of other sharing economy apps. Given this, our goal will be to understand whether these variables are independent from the participation in carsharing schemes or not, by performing a contingency analysis, also known as an independence test. In the following, we will be testing H0 for the aforementioned variables, where H0: The variable is independent from the participation in carsharing, H1: The variables are not independent. Whenever the test statistic is larger than the critical Chi-Square value, there is enough evidence to reject the null hypothesis, meaning that the variables are not independent.

| Variable | df | Test statistics | Critical value | Decision |
|---|---|---|---|---|
| Car ownership | 1 | 4.6 | 3.84 | Reject H0 |
| Level of education | 3 | 10.19 | 7.81 | Reject H0 |
| Gross monthly household income | 6 | 21.43 | 12.59 | Reject H0 |
| Technology usage | 6 | 3.27 | 12.59 | Do not reject H0 |
| Use of other sharing economy apps | 1 | 124.43 | 3.84 | Reject H0 |

This analysis confirms there is some degree of dependence between the participation in carsharing and the ownership of a vehicle, the level of education, the gross monthly household income and the usage of other sharing economy apps by consumers. However, there is no significant evidence of the influence of the level of technology usage on the participation in carsharing. These results support previous findings regarding the existence of a change on vehicle holdings for carsharing members (Shaheen & Martin, 2016), as well as the dependence relation between carsharing participation and the level of education, income and usage of other sharing economy apps suggested by the expert and consumer interviews conducted (Exhibit 5). By looking at the data

collected, one can conclude that the average carsharing user is less likely to possess a car and more likely to have a higher education and income level, and to use more sharing economy services than a non-user.

### 3.3. Discussion of results and recommendations

While car ownership is likely to be lower among young carsharing users, according to the obtained data, a significant part of these (93.6%) intends to purchase a car in the future (Exhibit 42). This opens an opportunity for carmakers to position themselves as mobility providers, by offering carsharing solutions aimed at young customers, who can be later converted into car buyers. In fact, a user is more likely develop a connection with the brand and eventually purchase a vehicle later on if he has previously experienced it through carsharing (Exhibit 57, Exhibit 58). By offering this consolidated mobility solution, carmakers will be able to increase the customer lifetime value of their customers, both by generating a stream of profit before the actual car purchase takes place, and by reducing the cost of customer acquisition for car sales, as they would only have to foster engagement with the brand and customer retention over time, because the brand would likely already be a part of the initial consideration set for the car purchase. As young car sharers see cost as an important purchase decision factor, carmakers can adjust the pricing of their offers progressively, following the predictable increase in customers' income throughout their lifetime. In fact, the whole brand positioning can evolve to respond to the changing needs of the customer: in early ages, customers are typically price conscious and will look for an affordable, convenient mobility solution, while later on in their lives they are more likely to seek a car that serves their lifestyle. Taking this into consideration, there is an opportunity to target young customers and to offer them the convenience and mobility of carsharing early on, even if at a lower price point, in order to foster the connection with the brand to later reap the profits when they decide to buy a car

to support their lifestyle. This will also help automotive companies to close the gap between their traditional target, who is typically an individual between 30 and 50 years old, and younger segments. It is important to do so without damaging the brand, so that existing customers can be retained, while the new younger customers are being acquired. To ensure this, it might be thoughtful to create a sub-brand for innovative mobility offerings in order to minimize risks, avoiding confusion among customers and preventing the brand from being damaged may any problems arise with the carsharing arm.

The most significant challenges arising from the introduction of new mobility offerings are how to target young customers and how to retain them, fostering brand specific loyalty. This can be translated into building a strategy along the lines of turning young non-users into carsharing users and later into car buyers. With more than 83% of young customers spending more than one hour online per day (Exhibit 59), their consumption and purchase decisions are increasingly influenced by their exposure to online communities and social media channels, as well as word-of-mouth marketing and advocates. This implies that, if car brands want to target this kind of customers, they must build a solid online presence in order to reach them and promote their mobility offerings. In an industry where it is common to rely on offline mass advertising to communicate with customers, the bet on digital advertising implies building new capabilities in order to convey the image of a convenient, efficient and affordable mobility option (Exhibit 53). On the other hand, most carsharing players rely heavily on online communication to reach their customers (Exhibit 5, Exhibit 6, Exhibit 7), so automotive companies may consider establishing partnerships with these entities and take advantage of their ability to reach and acquire young carsharing customers. Another option would be to supply carsharing operators' fleet, but this would mean a more passive degree of involvement by the automotive company, where they would have low control over the level of service that is provided to the customers, involving thus higher risks. It is worth remarking

that the establishment of partnerships with carsharing entities bear potential for automakers to improve their collection of customer data, and management of customer relationships, as mentioned in page 11 of this paper. The second challenge, of engaging carsharing consumers and convert them into carsharing users, involves focusing on the development of a relationship between the consumer and the brand, by means of a more emotional approach, focusing on affective aspects, as opposed to functional aspects, which have shown to be important to get consumers to initiate (Exhibit 53). The development of brand specific loyalty serves the aim of shrinking the consumer decision journey when the time to buy a car comes, since the brand is likely to be already a part of the initial consideration set and the user has had the opportunity to gather information to actively evaluate it. In order to foster loyalty among carsharing users, besides providing an exceptional service of carsharing, the brand should cross-promote its offering of car models, for example by rewarding the carsharers with higher amount of kilometres/hours driven with test drives for higher-end models, delivered at their door. This would be an incentive for customers to use that specific carsharing system, in detriment of others, promoting loyalty, and word of mouth as well, as it is a unique offer. It would, in addition, reinforce the brand as a candidate for car purchase and persuade the user to visit a dealership, guiding him towards an important touchpoint. The car dealership would, indeed, have a very important role, as this is where the gap between the carsharing and car purchase is closed, so dealers should be trained to provide an exceptional experience to customers.

### 3.4. Limitations

Looking at the demographic characteristics of the sample, it cannot be taken as representative of the population of young adults, given the prominent percentage of female respondents, and also the fact that a rather well educated and urban cohort was questioned.

Furthermore, it is important to note that in order to obtain highly relevant data for decision making, data collection should be focused within a single specific geography. Since the carsharing market displays different levels of maturity, growth and relative size in different regions, it is important to account for these differences. By looking at aggregate results with respondents from many geographies and types of areas (rural, suburban, urban), one risks to overlook the idiosyncratic characteristics of each individual market.

In addition, it would be valuable to study users according to the type of carsharing they use, as there are many fundamental differences between different carsharing types, as discussed previously. Dividing user profiles according to heaviness of use could also bring added value and help to get more precise results, as well splitting people using the services privately or within a business context.

Furthermore, all of these variables need to be put in perspective with each automotive company's strategic goals. For more precise recommendations, it would be ideal to apply the study to a single automaker. This is especially true for automotive players which are involved in the carsharing space (e.g. BMW, Daimler) which may be pursuing the proposed strategy to some extent.

## 4. Conclusion

Carsharing services are a market with large opportunity for growth among youngsters and constitute a great opportunity for carmakers to enhance the lifetime value of their customers by offering a comprehensive mobility solution, which closes the gap between younger segments and their traditional customers. The ability of automotive companies to make a profit from this trend is largely dependent on their ability to position themselves as mobility providers and to constantly adapt to consumer needs and deliver excellent service, fostering consumer loyalty and successfully converting carsharers into car purchasers.

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