

FROM BERLIN TO LISBON: IS CAR SHARING A FAD?

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ABSTRACTS

Car sharing is a market that has been in existence since the early 1950s. It entails members within a given society sharing cars to reach their destination and as such, saving up on costs, time and parking space. Car sharing reduces congestion within cities and as such, making it an important and impactful aspect in the protection of the environment. This paper seeks to evaluate the comparison of the car-sharing industry within Germany and Portugal and how it is influenced by millennials. It looks at a number of aspects such as the role of technology, the preservation of the environment, costs, income, and other factors. The survey that is included in the research focuses on Lisbon and Berlin and the millennials that live within them and how they integrate car-sharing services. The results that are realized indicate that Berlin has had the car-sharing industry for some time and as such, making it more prominent as compared to Lisbon. Nonetheless, the car sharing industry within Portugal is also developing at an alarming rate and as such, making the two areas competitive to some degree when it comes to this industry.

Key Words – Car Sharing, internet, technology

RESUMOS

“Car sharing” é um conceito que existe no mercado desde os anos 50. Significa que, membros de uma mesma sociedade, partilhem automóveis para chegar ao seu destino, e ao mesmo tempo também poupem dinheiro, tempo e estacionamento. O “car sharing” reduz o congestionamento dentro das cidades e tem um impacto importante na proteção do meio ambiente. Este trabalho tem como objetivo avaliar e comparar o mercado de “car sharing” entre Portugal e Alemanha e como este é influenciado pelos “millennials”. Analisa uma série de aspetos como o papel da tecnologia, a defesa do meio ambiente, custos, o rendimento, entre outros. O estudo incluído neste trabalho concentra-se nas cidades de Lisboa e Berlim e nos “millennials” residentes nestas cidades que utilizem este serviço de “car sharing”. Os resultados mostram que Berlim possui a indústria do “car sharing” há mais tempo e daí ser mais familiar e popular do que em Lisboa. No entanto, o “car sharing” em Portugal está a desenvolver-se rapidamente o que torna esta área cada vez mais competitiva na indústria.

Palavras-chave – Car Sharing, internet, tecnologia

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LIST OF ABBREVIATIONS/GLOSSARY

CSO – Car Sharing Organization

B2C – Buyer to Consumers

C2B – Client to Business

VULOG – Car Sharing company

OLX – an E-commerce company

P2P – Peer to Peer

GNU – Operating system

EU – European Union

CO₂ – Carbon (IV) Oxide

NO₂ – Nitrogen Oxide

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EXECUTIVE SUMMARY

The table seeks to present a comparison towards the car-sharing niche within Germany and Portugal. It focuses on specific but major cities within the two countries that are Berlin and Lisbon. It targets millennials, assessing the reasons as to why they may seek to use car-sharing services as compared to purchasing their own cars. It evaluates their behavior patterns in using car-sharing services in relation to technology, environmental conservation and also the costs and income. The study, even though it adopts a comparative aspect or view, focuses on proving whether the car-sharing niche is here to stay or whether it is just a passing by aspect. The research instrument that is used in this case is the survey and it targets the millennials with an online forum for answering the questionnaire.

CHAPTER 1: PURPOSE OF THE RESEARCH

1.1 Introduction

A carsharing service generally gives its members access to a fleet of vehicles, which can be leased for brief periods. Car-Sharing Organization has been growing in Europe and other parts of the world, focusing on effective and efficient ways in which people can travel. For instance, people prefer using the services of carsharing organizations since they do not have to worry about parking within the globalized and congested modern cities.

As such, Car Sharing organizations generally offer portability to their members whereby they ensure that the clients only have to worry about getting to where they are going and not on other aspects such as fueling, parking, and traffic. It lessens the burden that one has to worry about when they own a private car. There are basically two sorts of carsharing services. They are mostly aligned with the type of trip that the clients may want to go. They include; the round-trip car-sharing service, in which clients must restore the car to the point that they got it from, and the one-route car-sharing service, in which clients may drop off the car at any given place within a given territory.

The round-trip car-sharing services are for the most part utilized for errands or shopping since the leasing plan makes them unsatisfactory for driving or for other long-term exercises. On the other hand, the one-way car-sharing services are more adaptable to most individuals. The one-way car sharing services pose a harder challenge when it comes to overseeing them as the clients are given some form of flexibility which creates a form of skepticism when leasing off the cars. Nonetheless, the rates of car sharing across the world have been growing significantly with masses of people preferring the services rather than having to squeeze for parking spaces within cities.

1.2 Purpose of the study

The study aims at assessing the viability of the carsharing market within Germany and Portugal more so within Berlin and Lisbon, which are among the largest and busiest cities within the country. Over the years, a number of industries and markets have come up and after a short period, performed poorly. In addition, some have even become obsolete to a point that they are no longer known or very few people use them. Examples of these markets include the analog cameras, which have seen companies that were huge in the 1990s such as Kodak fall off the market. In

addition, other devices such as the Play Station Vita which was a segment of the Sony PlayStation platform are also additional examples of items that have had reduced functionality (Thorpe, 2018). In this case, the study will assess the viability of the carsharing industry within Berlin and Lisbon using data collected from these two cities.

1.3 Research Question

Rather than owning at least one vehicles, family units may opt to get a fleet of vehicles on an as-required premise. Carsharing might be considered as a form of car-rental service to satisfy certain needs of families that may need the quick use of a car but they might not have it. Therefore, it is an industry that offers a form of car-rental service to families but the question is, is it an industry that is here for the long run? People access vehicles by joining associations that keep up a fleet of vehicles in a system of vehicle areas. For the most part, members pay a utilization charge each time they utilize a vehicle. Carsharing gives the possibility to lessen the expenses of vehicle travel for the person and for society. At the point when an individual is offered the car, a great part of the cost of owning and working the vehicle is settled. The variable cost of utilizing the possessed vehicle is generally low, and accordingly, the driver has a motivation to drive more than is financially normal.

A carsharing service, as a result, changes the settled expenses of vehicle proprietorship into variable expenses. Carsharing is best and appealing when seen as a transportation mode that fills the hole amongst travel and private cars, and can be connected to different modes and transportation benefits as a portability bundle. It replaces other services such as using a family owned car, flying via air, using rail or subways, and renting cars or even others such as walking or riding a bike. Nevertheless, for middle travel exercises, even routine ones, one may utilize a mutual vehicle or as it had come to be known, carsharing services. It can likewise fill in as versatility protection in crises, and as a method for fulfilling intermittent vehicle needs and wants, for example, conveying products, driving to a game as a team, or taking the family on a vacation. The benefits and extensive impacts that the car-sharing industry can be viewed to be a lot and as such, the evaluation of its viability, in the long run, can be assessed based on a number of aspects.

Over the previous decade, carsharing has turned out to be more typical, particularly in Europe and North America. For the most part, it includes the common utilization of a couple of vehicles by a gathering of people. Vehicles commonly are sent in a considerable measure situated

in an area, a worksite, or at a travel station. A dominant part of existing carsharing projects organizations still deals with their administrations and activities physically because of a low measure of cars. Clients put a vehicle reservation ahead of time with a human administrator, get their vehicle key through a self-benefit, physically controlled key box, and record their own mileage and use information on shapes that are put away in the vehicles, key box, or both. As carsharing programs grow past 100 vehicles, physically worked frameworks end up costly and badly arranged, subject to botches in reservations, access and charging, and helpless against vandalism and burglary (Millard-Ball, 2005).

Car Sharing services across Europe have gained ground extensively. The bigger European carsharing organizations (CSOs), particularly in Germany and Switzerland, have begun to send a suite of programmed advancements that encourage the task of administrations, offer more noteworthy comfort and adaptability for clients, and give extra security to vehicles and key administration frameworks. As such, the study is more focused on assessing the viability of car-sharing services within Germany and Portugal, particularly within Berlin and Portugal.

CHAPTER 2: BACKGROUND

2.1 Introduction

This chapter will look at the background of car sharing within Europe. It will provide a little history as well as evaluation of the various approaches that are used when it comes to the car-sharing industry. In addition, it will help in evaluating whether the industry is a niche or whether it is here to stay.

2.2 Background

Most carsharing endeavors stay on a scale that they can control and mostly centered within Europe. For instance, the earliest European openings with carsharing can be traced back to a CSO known as Sefage that began in 1948 in Switzerland (Prettenhaler and Steinnger, 1999). Financial matters essentially inspired participation in Sefage. It pulled in people who couldn't stand to buy an auto however who discovered sharing one engaging. Somewhere else, a progression of "open auto" tests was endeavored, yet fizzled that entailed carsharing activities that were referred to as Procotip. The Procotip was in France within the years between 1971, which prompted another opening in 1973 within a different country in 1973. The second one was within Amsterdam and this saw the increasing spread of carsharing within Europe immensely (Katzey, 2003).

Sweden was not also left behind as a CSO that was referred to as Vivalla bil began in 1983. However, although it was operational, in 1998, its members chose to stop tasks when the association's executive surrendered and a few families chose to leave in the meantime. Vivalla bil was a generally small CSO with thirty-five family units sharing five vehicles. Albeit being small, the CSO roused the greater part of the current Swedish carsharing associations. This association has 180 family units, fourteen vehicles, and a thirty percent yearly development rate (Shaheen, Cohen, and Roberts, 2006). Much more effective encounters with carsharing started in Europe in the late 1980s. Roughly, two hundred CSOs are dynamic in over 400 urban communities all across Europe, which includes a number of countries including Germany and Portugal. These carsharing nations, all things considered, claim a membership of more than 125,000 people. The European CarSharing Service (ECS which began in 1991 helped steer carsharing campaigning and marketing endeavor (Ciari, Blamer, and Axhausen, 2008). In June 1998, the German carsharing affiliation converged with ECS to shape the new German carsharing affiliation, known as Bundesverband

Car Sharing. Most BCS part associations likewise have a place with ECS. Until a couple of years prior, for all intents and purposes all CSO new companies were financed with open subsidizing, with a couple of upheld by corporate endowments. Albeit numerous associations got start-up stipends, regularly operational expenses were not financed car sharing organizations within Europe. The two most established and biggest carsharing associations are Mobility CarSharing Switzerland, which has over 1000 vehicles and also Stadtauto Drive that has over 300 vehicles to operate with (Glottz-Richter, 2012). This was mainly in Switzerland, commencing at around 1987 but it still is spread across a number of countries within Europe. The coverage also has seen to cover a large area within Europe, including or covering more than 200,000 people on a daily basis, and as such, making certain that the industry is widely operational. making it a viable and lasting industry that is here for the long run based on past assessments.

Conversely, Stadtauto Drive was propelled as a college investigate task to show that carsharing could offer a suitable transportation elective for Germany. These two associations are perceived worldwide as current pioneers of carsharing. Both developed around 50 percent for every year until 1996 (Ciari, Blamer, and Axhausen, 2008). According to Martin, Shaheen, and Lidicker (2010), *“Versatility CarSharing Switzerland keeps on developing around 25 percent for each year, while Stadtauto Drive's development rate has impeded all the more impressively”* (Martin, Shaheen, and Lidicker). Stadtauto Drive properties three explanations behind this stagnation: First, numerous individuals have moved out of the internal city to the wide open where open travel is restricted. This has constrained numerous people to buy private autos on the grounds that they can never again effectively get to carsharing vehicles and travel.

Second, other groups acknowledge the wake of being part of the CSO industry in that they just require a mutual vehicle on uncommon events. Numerous in this gathering drop out in light of the fact that the yearly CSO enrollment charges do not legitimize periodic utilization. At the display, Stadtauto Drive individuals have two charge choices: they can pay 192 stamps for every year or maintain a strategic distance from a yearly expense by paying a one-time commencement expense and higher use rates in view of mileage. On the off chance, that a person's vehicle utilize is under 200 imprints annually, this individual will normally drop out of the association and utilize customary auto rentals to satisfy their infrequent vehicle needs. Finally, different individuals require vehicles so frequently for a trip trying to hold and access shared-utilize autos turn out to

be excessively awesome a weight. Frequently these people leave the CSO on the grounds that they lean toward devoted private vehicles to carsharing.

For the principal gathering of people—the individuals moving across the continent —no particular organization has been found to ensure the viability of the CSO industry. To recapture their previous customers and create new markets, Stadtauto Drive has begun some new activities, which are portrayed in the segment "Developing Through a CSO Lifecycle." Both associations are getting ready to enter an era of modernization, moving from manual "key box" tasks to an arrangement of keen card advances for making programmed and bookings ahead of time, getting to vehicle keys, anchoring vehicles from burglary, and encouraging charging. The move to shrewd cards improves vehicle access for clients and facilitates the organization and administration of huge frameworks. Be that as it may, the huge venture required for the new correspondence and reservation innovations puts weight on these associations to keep growing to create income to square away these speculations (Shaheen, and Cohen, 2013).

A couple of savvy shared-utilize vehicle tests have just been executed in Europe. Lufthansa Airlines founded programmed rental frameworks at the Munich and Frankfurt airplane terminals in 1993, in which a PC discharges a key and begins the charging. After the auto is restored, the vehicle conveys remove set out and fuel devoured to a focal PC framework. Before the finish of 1994, 12,000 workers at the two German airplane terminals approached this "carpool" framework. Lufthansa apparently has spared over \$20 million in abstained from stopping framework costs (Truffer, 2003). These cost reserve funds have been utilized as an avocation for corporate appropriations of the program. Starting in 1999, the framework is being modernized with a well-informed card framework and facilitated with nearby travel administrators (Steininger, Vogl, & Zettl, 2010).

Another part of Europe that also steered the way for Car Sharing was France. In the country, it began in around 1997 where a CSO referred to as Praxitele, which began as a program initially began with fifty Renault electric vehicles that were leased and driven between travel stations and office squares (Shaheen, and Cohen, 2007). After almost two years of inactivity, the program finished in June 1999 because of high expenses and brought down the request. Volkswagen, a leading car manufacturing company in Germany also propelled a savvy carsharing program in the country, mainly focusing on decreasing utility costs and also the expansion of their vehicle

utilization. Although it was a marketing strategy, it could also have been viewed as a number of other aspects such as the inclusion of CSR by the company and also, paving of the car-sharing program across the continent (Truffer, 2003). At the exhibit, they are creating programmed data frameworks that empower auto drivers to rapidly and effortlessly exchange to open transportation, especially when streets are congested. As of now, Volkswagen presently has two carsharing organizations (Shaheen, and Cohen, 2007). The first one operates in a loft, which shares a few automobiles that operate within a building while the other one, is a business association that shares a scope of vehicles. In the two cases, a client fee is collected, which is not huge (Shaheen, and Cohen, 2007).

Alongside these examples of overcoming adversity are numerous disappointments. Most associations have thought that it was hard to make the change from neighborhood-based projects into reasonable business ventures. They misinterpret the number of cars required, put excessively incredible an accentuation on trend-setting innovation, or exhaust reserves for advertising with little return. A significant number of the fizzled associations have combined or been gained by bigger European CSOs. As of late, a two-year venture, referred to as “*Pay-As-You-Drive Carsharing (PAYDC)*” (Truffer, 2003), was finished to investigate shared use as an elective transportation mode in three European countries with the inclusion of the UK, Netherlands, and Portugal. As a component of this program, a few pilot ventures were arranged and actualized. These undertakings worked between a half-year and one year, finishing at around 1998 (Shaheen and Cohen, 2013). One test case program was conveyed in every area. According to Shaheen and Cohen (2007), “*CampusCar, which was executed in England, contemplated a grounds use of carsharing. CarSharing Delft went for fortifying the outline of private carsharing models*” (Shaheen and Cohen, 2007). Either Private Carsharing includes at least one person who share an auto that is claimed by one individual or the greater part of the members altogether. This undertaking concentrated for the most part on private family carsharing, as opposed to business endeavors, due to the restricted information with respect to this model in the Netherlands.

Finally, Co-operation Car in Ireland concentrated on a station auto use of carsharing. These pilot ventures gave brief, yet striking background from which every one of the three areas has profited. The last undertaking part included improvement of a strategy for success for a start-up association in Edinburgh, called Edinburgh City Car Club. It was a standout amongst the most

exceptional carsharing framework in Europe, utilizing onboard PCs and GPS advancements for approving use, information accumulation, and vehicle security. City Car Club wants to have up to 100 vehicles in its armada, provided by Budget Rent-a-Car, before the finish of its first year. A full operational dispatch, with an underlying armada of five autos, happened in March of 1999. City Car Club had around fifty members as of June of 1999. It is hard to gauge interest in new advancements and new traits when clients have no involvement with those items and qualities (Millard-Ball, 2005).

Deciding the interest for shared autos is particularly troublesome in light of the fact that it suggests some redesign of a family unit's movement examples and way of life. What amount of burden are individuals willing to acknowledge as a byproduct of less cost? Some market thinks about have been led in the United States, however, are too conditional to ever be demonstrative. More advanced examinations are in progress at the University of California, Davis, and Switzerland (Martin, Shaheen, and Lidicker, 2010). Several reviews of clients have been led in Europe and North America via carsharing associations. Albeit the vast majority of the reviews have little examples, did not utilize control bunches nor venture out journals to gather travel information, and utilized straightforward surveys, they do give valuable experiences. A study in Portugal and Germany found that clients were between 25 to 40 years old with better than expected instruction, will probably be male, earned an underneath normal salary to a limited extent because of the low normal period of members, and were touchy to natural and activity issues (Shaheen and Cohen, 2007). In a different report, Stadtauto Drive detailed comparative qualities: 65 percent male; the normal age of 33; accomplished; and humble earnings. Pretenthaler and Steininger (1999) found that men have a more noteworthy inclination than women to request a bigger, more assorted armada of vehicles for an extensive variety of trek purposes.

In another European investigation, Millard-Ball (2005) overviewed people who have not taken an interest in carsharing in Europe. He found that the essential purposes behind not taking part were the amateurish picture of numerous CSOs, a lacking assortment of items and administrations, higher expenses than travel, a framework that was "entangled, illogical and tedious," and vehicles not promptly accessible close home. Versatility Carsharing Lisbon anticipates a substantial rural market in Portugal. They trust that they can catch 12 percent of drivers, huge numbers of them in semirural zones. Interestingly, Ciari, Balmer, and Axhausen

(2008) describe carsharing as a dominantly urban marvel in Germany. They gauge a potential market of 3 percent of the populace roughly 2.45 million individuals. In light of a later survey of the carsharing writing, Glotz-Richter (2012) additionally portrays business carsharing as an urban wonder, with critical investment by people between 25 to 40 years old. Katzey (2003) infers that "rustic" carsharing approaches are more casual and helpful. Situated in little, scattered networks, they have a tendency to draw in higher female interest and are regularly used to substitute for the buy of a second family vehicle.

The model CSO is one in which the vehicles are utilized seriously by clients who separately drive pretty much nothing. The CSO needs high use to keep per-utilize costs low, however, CSOs are financially alluring just to the individuals who are not concentrated vehicle clients. Sadly, it is hard to assess the financial matters of existing CSOs to decide under what conditions and to what degree CSOs are monetarily effective. Monetary information is inadequate and not very much archived because of the restrictive idea of quite a bit of this information, the easygoing association of numerous CSOs, and their relative youth. The way that for all intents and purposes all CSO new companies were financed as of not long ago, and that many have fizzled or been obtained, additionally perplexes a financial investigation. The monetary information and discoveries for clients and administrators announced here help to parameterize the traits of an ordinary CSO in Europe. These numbers ought to be viewed as characteristic, not authoritative. The biggest CSOs, going for a harmony between high vehicle usage and high client accommodation as far as closeness and accessibility, assert that they can ensure their clients more than 95 percent vehicle accessibility. They achieve this level of accessibility by giving around one auto to every 15-20 individuals. In view of an investigation of the respectably vast Dortmund CSO in Germany, Katzey (2003) found that a bunching system of three vehicles for every area gives ideal vehicle accessibility and simple physical access. The ideal is characterized here more as far as purchaser comfort than largely financial aspects.

2.3 Importance of CarSharing Service in Germany Vs Portugal

In assessing the importance of the carsharing services within these countries based on their two cities, Lisbon and Berlin, the most important aspects to consider including the congestion of the cities, the population, and also the household incomes of the regions. To begin with, the population of Berlin is approximately 3.47 Million living in an area of 891.8 km² (Hofer, Kauczor,

and Stargardt, 2018). On the other hand, the population of Lisbon is 506,892 in a 100 KM² (Saint-Maurice and Pintassilgo, 2018). In a survey that was conducted in 2017, the top 10 cities across Europe with the highest congestion ratios included Bradford-Leeds in the UK, Munich, Berlin, Marseille, and Vienna in Germany (Thorpe, 2018). This means that as far as carsharing service is concerned, Berlin needs it more as compared to Lisbon since it is greatly congested. In addition, the average income per household within Lisbon is greater as compared to Berlin and as such, people within Lisbon tend to own cars and prefer car sharing services slightly lesser than people living in Berlin do.

CHAPTER 3: LITERATURE REVIEW

3.1 Challenges in the automotive industry

When it comes to the automotive industry, a wide range of scenarios or aspects present themselves based on features such as materials. There is a genuine sense inside the car business that colossal change is inevitable. Regardless of whether these will be as expansive as some, anticipate stays to be seen, and whether they will be great or awful remains a matter of genuine belief. Therefore, this section will look at the challenges within the automotive industry based on a variety of aspects. It will look at a variety of organizations such as Tesla and its legal disputes, the competition and other features (Geerken, Vercalsteren, and Borup, 2009).

3.1.1 Industry Lifecycle

Carsharing falls under the automotive industry, which has experienced over the most recent couple of years, critical financial changes. It is almost certain that these progressions have conveyed to the enormous worldwide players, which are world-presumed vehicle producers, various advantages. The car business is as of now, separately sooner rather than later, faces because of new patterns, new difficulties that will importantly affect the imperativeness of the individual automakers. Item life cycle is typically partitioned into five noteworthy stages or stages: improvement, showcase infiltration, development, item advertise immersion and consequent decrease (Mohr, Muller, Krieg, Gao, Kaas, Krieger, and Hensley, 2013). These life cycle truly exist and can be utilized for various items or administrations. All periods of the item life cycle amid the deal offer an assortment of chances, challenges yet additionally issues, in this manner, every one of these stages requires an alternate system for financing and advertising, other assembling, acquiring and HR to such issues could adapt. The normal life cycle as per another source incorporates the venture stage, benefit stage, and decrease stage (Wilson, 1995). In the event that an organization needs to keep its item portfolio in the course, they should continually improve and offer diverse forms of these items. Factually, it is demonstrated that beneficial and fruitful organizations have numerous items with a long benefit stage and shorter period of venture and decay. A few viably oversaw factors at each phase of the life cycle can accomplish an effective item.

Amid the slipped by a couple of decades, the number of autonomous automakers decreased by over half, this brought about the development of different gathering organizations and business gatherings. The aftereffect of such focus is a more prominent decent variety of model, which brings an exceptional automaker. Such adjustment of automakers can bring a considerable measure of chances, yet additionally extraordinary dangers, for instance on support costs. One reason for the expansion of models offered in the market is more perplexing client conduct and the higher vehicle requests. These days the client needs a vehicle that should mirror his way of life, an ever-increasing number of carmakers go from mass to singular creation. It is conceivable to see with respect to clients and their expanded interest for purported. "specialty" vehicles that are centered around a smaller gathering of clients (Mohr, Muller, Krieg, Gao, Kaas, Krieger, and Hensley, 2013). Today, the carmaker cannot be constructed just in light of the accomplishment of the outline, and present-day innovation, however probably offered models that are more extraordinary. Additionally, the buying division is harder to deal with sorting out and organizing the generation of numerous brands and models and still be aggressive. Shorter advancement cycles. A lifetime of vehicle models in the previous decade in the further developed nations diminished largely from 8 to right around 4 years. In addition, the advancement time of another model was abbreviated from 48 to around 25 months and in 2018 is required to additionally lessen the level of 20 months (Orsato and Wells, 2007).

The rate of development in the car showcase has expanded fundamentally, and the VM should confront the test of reacting to client request and contenders' activity in an always responsive manner later on, while being obliged in the meantime by significantly shorter deals windows and lower generally speaking volumes per model to take care of their expenses. Create and dispatch vehicles within a shorter time span, as present item advancement times of 3+ years would not allow contending in a market, which develops every 2-3 years (Orsato and Wells, 2007). Deliver vehicles gainfully at bringing down economies of scale. As the existence cycle, reductions and deals spread out finished numerous models, the normal volume per vehicle diminishes pointedly. Henceforth, the breakeven guide needs to be accomplished considerably before on that already. The normal method for accomplishing this is to send a staged methodology, and the anticipated normal volume per stage demonstrates this pattern plainly. Adjust the circulation technique to the item assortment offered, as a misalignment definitely prompts high rebates expected to offer the vehicles. As a

result, a VM offering high assortment would need to grasp a work-to-arrange methodology, while a low-multifaceted nature producer may have the capacity to use focal vehicle stocks effectively.

3.1.2 Commoditization

Commoditization is another essential component of the car business. As per Berger (2016), commoditization can be depicted as the procedure under which the products inside a given industry introduce a type of uniqueness that makes them recognizable. What's more, commoditization verifies that the properties make the items speaking to the eyes of the customers. Rising interest in car parts and administrations is prodding new development and income openings in the worldwide reseller's exchange. With the general market esteem anticipated that would hit \$722.8 billion by 2020 (Geissbauer, Schrauf, Koch, & Kuge, 2014), an extensive variety of organizations working in the business remain to profit. Be that as it may, the business condition is – as it has dependably been – extreme, and rivalry for new clients is savage. Bigger parts and specialist organizations they are overwhelming the business, undermining their littler opponents on cost. These greater organizations can likewise stand to deliver a close thorough scope of items, and additionally put essentially in go-to-showcase advances.

Subsequently, commoditization is expanding and a value war has begun. At the point when purchasers can't recognize two providers' parts and administrations, their choice to a great extent comes down to cost. This makes it progressively troublesome for littler players to contend. Smugness isn't the arrangement, be that as it may; deals and showcasing groups need to put their experience, aptitudes, and information to great utilize and give their organizations a focused push (Holmes, 2016). To beat commoditization, brands need to end up as non-non specific as could reasonably be expected. A critical beginning stage is returning to and reexamining the deals and promoting technique. An intensive audit of the four Ps – item, value, place, and advancement – is key to enhancing deals (Berger, 2016).

3.1.2.1 Globalization

The car business is an industry that is very influenced by globalization from different angles. The degree and degree of globalization are distinctive among various nations, in any case, when considered, all in all, the car is a globalized industry. Globalization has influenced the car business in different business regions from plan to assembling and from enrollment to speculations. Business experts need to comprehend the elements of globalization in the business and need to

create fitting systems to make due in the aggressive market. For a considerable length of time, a hearty car fabricating part spoke to a complex generation and monetary essentialness. Indeed, even in nations where that is not true anymore, pioneers have for some time been hesitant to give that picture a chance to blur. The most notable case originates from the U.S., where the car segment has been the most loved theme of President Donald Trump since before his decision. Trump has guaranteed to revitalize residential car producing and fundamentally deregulate the car business (Berger, 2016). It is too soon in his organization to decide if President Trump will prevail on either errand, yet car producing is probably going to keep up a noticeable place in the political field.

3.2 Digitization

Advanced Transformation has affected the automotive Industry and there is no turning back. Just a couple of years old vehicles appear to be relics contrasted with the most up to date ones, and this fast change to computerized is just going to quicken. Digitalization, expanding computerization and the presentation of new plans of action have changed the business as of late, and organizations must adjust to the new condition. By 2020, developing digitalization and progressions in innovation will have expanded the car business ventures to \$82 billion (Kessler and Buck, 2017). The car business has realized rapidly that they should meet customer requests for a carefully upgraded encounter when they are inquiring about, buying and working as a vehicle. These are the patterns as of now changing the car business.

The future guide of digitalization in the car business is relied upon to move quickly from "computerized administrations" to "vehicle as-a-benefit" to "versatility as-a-benefit", changing the vehicle into a component of an associated living arrangement by 2030. In the year 2016, digitalization supports the change of business exercises, process upgrades, and the advancement of new abilities and plans of action over the five key mainstays of the car business (Kagermann, 2015).

Scarcely any components have changed the vehicle business as much as globalization has. Vehicle brands are among the most notorious pictures of their particular nations. Lamborghini is basically Italian, for instance, while Volvo is naturally Swedish and Jaguar traditionally British (Planning and Pfoertsch, 2016). Brand symbolism might be the main thing about the car business that globalization hasn't changed, however. For example, Lamborghini is claimed by Germany's Volkswagen Group; Volvo Cars is possessed by China's Geely Holding Group; Jaguar's parent

organization is India-based Tata engines. Today, vehicle fabricating is a legislative issue mixed, fringe spreading over the process in which dangers are as evident as prizes. In surveying the globalization effect on the car business, the production network, the governmental issues, and the universal exchange are vital to take a gander at (Planning and Pfoertsch, 2016).

There are still buyers for whom phrases like "Made in America" or "German designing" hold noteworthy interest. Actually, the matter of making vehicles is complex to the point that in almost all cases, saying a vehicle was made in this nation or that nation is an oversimplification. As supply chains have turned out to be more mind-boggling, they have additionally turned out to be more delicate. For instance, Japan's Takata Corporation was one of the vehicle business' biggest providers of airbags. At that point, its air sack inflators were rebuked for the passing of 18 individuals around the globe (Kaggermann, 2015). What took after was the biggest review in car history, a \$1 billion settlement with the U.S. Equity Department and a liquidation documenting. Presently, Takata might want to pitch its business to match Key Safety Systems. Because of Takata's battles, car producers have needed to scramble to discover new air pack providers, manage the lawful aftermath of their own and review influenced vehicles. The Takata disaster is extraordinary, yet it illustrates the complexities of the vehicle business' cutting edge, globe-revolving around supply chains.

Therefore, when it comes to the Car-Sharing, there will be a great impact on the service as far as digitization is concerned. People are moving or aligning towards digitally enhanced devices and as such, people will have to adopt. This can also be seen in how the digitization has been used in other fields such as in the introduction of e-commerce, and its impact on clients.

3.2.1 Digitization meets customers

As far as digitization-meeting customers are concerned, the important aspect to realize here is the customer experience and how it influences the consumer. Changing the client encounter requires a level of speed and exactness that customary methodologies can't meet and the best specialists do it progressively. Quick track item improvement, propelled programming strategies, and the prepared accessibility of advanced channels have made items drastically less demanding to commoditize. Such changes are one reason the fight for aggressive separation has progressively moved to the nature of the client encounter. As far as concerns them, clients familiar with the quickness, personalization, and comfort that portray advanced showcasing pioneers, for example,

Amazon and Google currently expect a similar administration from all players, upping the ante. Digitalization has likewise made up for lost time in different regions of the car industry, for example, security innovations, vehicle purchasing process, vehicle upkeep, and upgraded producing process (Planning and Pfoertsch, 2016).

3.2.2 E-Commerce

Online business inside Europe and the world when all is said in done has widely flourished. It involves the offering and buying of products through the web. Web-based business additionally incorporates the transmission of cash and information by means of the web, making it a standout amongst the most honed perspectives of the 21st century. They can be either business-to-business, customer to-buyer, shopper to-business, or likewise business-to-purchaser (Chiu, Wang, Fang, and Huang, 2014). Internet business started at around 1960 where the business utilized electronic information and shared records. Be that as it may, the principal internet business organizations were eBay and Amazon that came to be in the 1990s and from that point forward, the industry has developed altogether. It has been coordinated inside various fields with the consideration of vehicle sharing and different ventures (Kim and Peterson, 2017).

3.3 Environmental Challenges

In a study by Vezzoli and Tischner (2009), a great number of individuals who used car-sharing services were argued that the lesser the cars that are on the road, the lesser the emission. In this case, aligning with the notion that those who use car sharing more often are more environmentally conscious. In addition, insurance of the earth and change of air quality is an imperative target of the European Commission. In the car business, EU enactment and measures intend to diminish the outflow of CO₂, NO₂, and particulate issue. The Commission additionally takes a shot at clamor decrease and the end of fluorinated ozone-depleting substances utilized in portable cooling frameworks. Street transport is a noteworthy wellspring of ozone-harming substance discharges, delivering around 15% of the EU's CO₂ emanations (Vezzoli and Tischner, 2009). The Commission centers on the decrease of outflows from the accompanying vehicle classifications specifically:

- Light-obligation vehicles (vehicles and vans);
- Heavy obligation vehicles (mentors, transports, trucks);
- Non-street portable hardware (excavators, bulldozers, front loaders).

Restricting emanation limits were at that point presented for light and rock solid vehicles. Ecological prerequisites for agrarian and ranger service tractors and a few wheeled vehicles will be incorporated into future controls. More on discharges. Diminishing the commotion of vehicles is another need for the Commission. The new Regulation embraced in 2014 will altogether add to decreasing vehicle clamor. More on clamor. To decrease outflows of fluorinated ozone-depleting substances utilized in versatile cooling frameworks, the European Directive on Macs presented a steady restriction on these gases. This law will enable the Commission to meet its atmosphere activity destinations (Shehab and Roy, 2012).

3.4 Disruptive Business Model

While much has been composed about corporate vision, mission, process, administration, methodology, marking and an assortment of different business hones, it is the designing of these practices to be troublesome that boosts openings. Without a troublesome center, you are only building your plan of action on a "me as well" stage of unremarkableness. Scarcely any things are more basic to your endeavors in expanding your income development and corporate manageability than understanding the estimation of troublesome advancement.

Problematic plans of action center around making, refining, re-engineering or improving an item/benefit, part/work/rehearse, classification, market, area, or industry. The best organizations join troublesome reasoning into the greater part of their business and administration practices to increase particular aggressive incentives. "Me Too" organizations battle to search out a piece of the overall industry trying to survive, while problematic organizations progress toward becoming classification predominant brands guaranteeing supportability (Laruccia, 2012). The built up organizations wind up concentrated on making incremental increases through process enhancements and were happy with their plans of action and didn't see the pioneers coming until the point when it was past the point of no return. Their center moved from overseeing chances to overseeing hazard, which thusly enabled them to oversee themselves into mark decay.

3.5 Sharing Economy

Not exclusively is the sharing economy in the news day by day, it likewise has impelled a developing – and now and again awesome – rundown of related terms. As the sharing economy has developed, it has turned into its very own casualty achievement. A few people have charged that quite a bit of the present sharing economy is not generally "sharing", an affirmation that is

somewhat right (Biswas, Pahwa, and Sheth, 2015). While from one viewpoint, there are numerous stages that uphold the genuine soul of sharing – underutilized resources and building network – then again, progressively there is "share washing" going on: organizations hooking onto the term since it influences them to some portion of a hot pattern. Who would not like to invoke thoughts of network and participation?

A case to look at is Uber. Is it carsharing when a driver rents out a vehicle that they did not claim previously, with a specific end goal to give rides that they would not have taken something else? Barely. However, to a great part of people in general and media, Uber is a standout amongst the most touted cases of the sharing economy. All things considered, fresher contributions, for example, Lyft Line and Uber Pool are great cases of ridesharing: they empower more proficient utilization of vehicles, full stop. In any case, they speak to just a small amount of current rides gave. All the more extensively, when a business visionary professes to be the "Uber of X," that is a quick warning of faulty sharing-economy status (Cohen and Kietzmann, 2014).

Today, what we term the computerized economy in the West – including, for instance, Amazon and Netflix – China characterizes as the sharing economy (Karabell, 2018). The outcome is a one of a kind arrangement of subtleties and difficulties, not minimum for policymakers and market analysts endeavoring to quantify its size and effect, and media attempting to report precisely on the issue. The sharing economy isn't highly contrasting: it is a range, and it is progressively vital to comprehend its diverse shades. At last it will turn out to be essentially part of the economy, without extraordinary phrasing, however, we are not there yet (Rude, 2015). Business visionaries, writers, governments, and (maybe above all) clients of and members in these new-economy stages have an obligation to be clear about whether and what we are, and are not, sharing.

3.5.1 History – What is the Sharing Economy

Sharing economy, otherwise called community-oriented utilization or distributed based sharing, is an idea that features the capacity - and maybe the inclination - of people to lease or get merchandise instead of purchase and possess them. A vital measure of the sharing economy is that it empowers people to adapt resources that are not being completely used. Underutilized resources go from substantial merchandise, for example, vehicles and houses, to items, for example, apparatuses, toys, and apparel. Before, individuals may have found and shared such resources through arranged promotions in a nearby daily paper or by listening in on others' conversations. With the approach

of the web, inescapable processing and the simplicity of versatile installments, in any case, the stages for finding and sharing resources have changed. The developing number of versatile and online stages that viably associate individuals who have underutilized resources with individuals who need to make utilization of these advantages have made it workable for people - peers - to generally promote and offer products and ventures that used to be given by full-time organizations (Erenken and Schor, 2017). In the sharing economy, the purchaser part is recast as two-sided, with customers going about as obtainers and suppliers of assets. Online stages likewise enable purchasers to underwrite suppliers of assets.

3.5.1.1 Peer to Peer (P2P)

A distributed (P2P) economy is a decentralized model whereby two people communicate to purchase or offer products and ventures specifically with each other, without a middle person outsider, or without the utilization of an organization of business. P2P is in this manner a method of relating that permits people, sorted out in systems, to work together, create and trade esteem. The joint effort is frequently permissionless, implying that one may not require the consent of another keeping in mind the end goal to contribute. The P2P framework is in this manner for the most part open to all patrons and commitments. The quality and incorporation of the work are generally decided "post-hoc" by a layer of maintainers and editors, as on account of Wikipedia (Barkai, 2001).

P2P can likewise be a mode to allot assets that do not include a particular correspondence between people, but rather just between the people and the aggregate asset. For instance, you are permitted to build up your own product in light of a current bit of programming disseminated under the broadly utilized GNU General Public License, just if your last item is accessible under a similar sort of permit (Scholl et al., 2015). In the domain of data that can be shared and duplicated at low minimal costs, the P2P systems of interconnected PCs utilized by working together individuals can give essential shared functionalities to the house. Nonetheless, P2P does not just allude to the computerized circle and isn't exclusively identified with high innovation. P2P can by and large be synonymous with "commoning," as in it portrays the ability to add to the creation and support of any mutual asset (Fraiberger & Sundararajan, 2017).

3.5.1.2 Business to Consumer Model (B2C)

Business-to-buyer models are those that offer items or administrations specifically to individual utilize clients. Frequently called B2C, business-to-shopper organizations interface, convey and direct business exchanges with purchasers regularly by means of the Internet. B2C is bigger than simply web-based retailing; it incorporates internet managing an account, travel administrations, online sales, and wellbeing and land destinations. The B2C display centers around coordinate offering and advertising between a business and a buyer through an online business site. A lower buy volume of higher estimated items ordinarily describes B2C organizations. Since the model relies upon singular exchanges and disposes of the discount buyer, the organization can make a higher benefit while the customer spends a similar measure of cash or in some cases less. B2C is successful for littler organizations since singular purchasers are not as worried about organization acknowledgment as they are with getting the item at the best cost.

B2C organizations isolate into five noteworthy classes: coordinate dealers, online middle people, publicizing based models, network-based models and charge based models. Each composes is so unique in relation to the others that they are not specifically practically identical. Truth be told, some B2C organizations use in excess of one sort to achieve diverse gatherings of people. Coordinate merchants, for example, online retailers, offer an item or administration straightforwardly to the client by means of a site. You can additionally partition coordinate dealers into e-posterior and makers. E-rears are electronic retailers that either dispatch items from their own distribution centers or trigger conveyances from other organizations' stocks. Item producers utilize the Internet as a list and deals channel to take out middle people.

Online go-between play out indistinguishable capacity from some other representative. The business permits non-B2C organizations to receive a portion of the rewards. Merchants offer purchasers an administration and help vendors by modifying the value setting forms, as indicated by financial aspects teachers Thierry Pénard of the University of Delaware and Michael A. Arnold of the University of Rennes in Rennes, France (Legace, 2003). Well, known sites depend on publicizing based models. These sites offer a free administration to buyers and utilize promoting income to take care of expenses. They draw countless, making them perfect publicizing streams for different organizations. Sponsors will pay a premium to destinations that convey high movement numbers.

Network-based models join the promoting technique that depends on activity at locales that emphasize on specific gatherings to make networks. Network deals and publicizing exploit social and system advertising by concentrating on particular gatherings that need particular items. For instance, destinations utilized by PC developers are splendidly set to publicize PC equipment and programming items. No less than one internet based life site utilizes part data to target notices to interests and areas. Pay-as-you-purchase or paid membership administrations fall under charge based models. The most well-known of these are online memberships to diaries or motion picture destinations, for example, NetFlix. These organizations depend on the nature of their substance to persuade shoppers to pay a typically ostensible expense.

3.5.1.3 Consumer to Business Model (C2B)

Client to Business (C2B), here and there known as Consumer to Business, is the latest E-Commerce plan of action. In this model, singular clients offer to pitch items and administrations to organizations who are set up to buy them. This plan of action is the inverse of the conventional B2C show (Wilson, 1995). C2B has come to fruition because of two noteworthy changes. Dissimilar to conventional media, which are unidirectional, the Internet is bidirectional, making this sort of relationship conceivable. Likewise, the decrease in the cost of innovation implies that people presently approach advancements, for example, ground-breaking PC frameworks, sound, and video catch frameworks and other computerized advances that were previously the selective area of vast organizations.

3.5.1.4 Free Floating Model

For some city inhabitants, owning a vehicle can be a noteworthy issue. You may utilize your vehicle just once in a while, yet still, need to battle through everyday roads turned parking lots and spend a fortune for stopping over your month to month petroleum and protection installments. Gratefully, new portability arrangements are developing in numerous cities. One is vehicle sharing. It enables urban inhabitants to join, pay a yearly or month to month participation expense, book and get a vehicle in their neighborhoods and be charged every hour as well as kilometer voyaged. Clients essentially wave a card over the windscreen to pop the locks, move in, and after that hit the street.

The primary rush of "return" vehicle sharing showed up in Europe in the oil-emergency hit the 1970s yet the pattern truly grew up in the principal half of the 1990s. The manner in which it works

is that vehicles are made accessible in a changeless station based on an earlier reservation by web or by means of a client relations focus with a characterized flight and entry time. Toward the finish of its utilization, the vehicle must be returned to its unique spot, generally situated in a secured vehicle stop or on a committed road parking spot. The mid-noughties and onwards then saw the second flood of "free-drifting" carsharing create in the meantime as the rise of the sharing economy, community-oriented utilization and cell phone innovation. This framework has demonstrated especially effective among the purported Millennials age, who, through a mix of money related and ecological concerns coordinated with the broad appropriation of cell phones and their applications, are sharing access to items and portability administrations, instead of settling on singular vehicle proprietorship.

The pioneers of this framework, Montreal-based Communvehicle in association with France's VULOG, have built up the innovation and going with administrations. Their "free-coasting" framework makes vehicles accessible inside a delimited territory, regularly the thick urban focus of a city, where customers can immediately find and book a traditional, mixture or electric 'takeaway' vehicle by distinguishing it from Communvehicle's web or cell phone application. The best points of interest of the "one-way" benefit are that it furnishes its clients with a much looked for after adaptability as they can drive wherever they have to go and after that end the rental of the vehicle by basically returning it inside the same delimited territory, utilizing one of the approved spaces. It is thus that it has earned its moniker "free-coasting" and demonstrated so fruitful that significant vehicle makers have likewise bounced on the fleeting trend and made their own particular other options to contend, including Car2Go (Daimler's auxiliary) and DriveNow (BMW's backup). Moreover, over the most recent two years, another sort of free-gliding vehicle sharing worked by a current station-based vehicle sharing administrator has risen (Efthymiou, Antoniou, & Waddell, 2013).

3.5.2 Generation Y as a driver of the sharing economy/an effect on modern society

In the most recent years, the sharing economy has risen as a contrasting option to conventional trades, presenting the possibility that clients can give different clients transitory access to their products and enterprises for monetary remuneration. This move was made to a great extent conceivable by innovative developments: Sharing stages, which coordinate clients who share (suppliers) with clients willing to pay for getting to (buyers), is based on the web and numerous

administrations are accessible solely through a cell phone. The idea of the sharing economy went for minimum at first at co-consumption, and its innovative reliance has driven the two media and scholarly outlets to connect it unequivocally to the purported 'Millennial age' (Vaughan, and Daverio, 2016). Conceived somewhere in the range of 1982 and 1996 and having survived a financial emergency as either youngsters or youthful grown-ups, Millennials have so far indicated fairly dissimilar utilization designs when contrasted with more seasoned ages. Past research has demonstrated that Millennials in the US, for example, are more averse to be property holders and will probably pick open or shared transportation over owning their own vehicle (Carson, 2014).

Contingent upon their own particular individual states of mind and inspirations, and in addition to outer factors, for example, social, political, and administrative settings, clients allot diverse implications to the sharing economy. Understanding the immediate encounters of clients, thusly, is basic for fathoming perspectives, for example, inspirations for cooperation, and demeanors towards sharing information and physical spaces, an impression of intensity awkward nature amid cooperation.

3.5.3 Benefits

As indicated by the worldwide statistics, recent college graduates are viewed as the biggest populace (Moycotte, 2015). The information applies in regions, for example, Europe, and the USA, among others. In this manner, their activities and effect on the sharing economy can be seen to widely impact different territories, for example, the economy and at last, having various advantages on the economy as well as in the collaboration forms inside the network also. In this manner, the advantages of the sharing economy can be seen to incorporate the decrease in natural impacts, availability of independent work openings, and high funds with a similar way of life among others.

3.5.3.1 Creation of new services

Community utilization offers financial advantages for everybody included. With the multiplication of online occupations and ride-hailing suppliers, for example, Ola, Rapido, Quick ride, and others, individuals would now be able to work from the solace of their home and utilize their possessed vehicle to produce an additional wellspring of pay. Individuals can likewise offer undesirable pre-possessed things on entries, for example, OLX and eBay. This guarantees the merchant profits on items that were generally worthless (Ranzini et al., 2017). On the opposite side of these courses of

action, you may take out the cost of vehicle possession, lessen your movement costs, and secure significant monetary help for another business thought that might not have been fundable something else.

3.5.3.2 Workplace flexibility

The sharing economy is changing the idea of the workforce, offering simple open doors for more cash by changing the thought of the customary work week. It is overturning the customary work environment encounter for a substantial number of people over the globe. As indicated by Carson (2014), it depends on alone hours and as observed in view of insights, it has turned into a gigantic development and suggestion for individuals over the world. Because of customary and gig economies progressively drawing from a similar pool of specialists, non-sharing economy organizations must get ready for an interruption of the regular plan of action. By understanding the developing class of specialists split between customary employment and sharing economy parts, organizations can plan for an advancing working environment.

3.5.3.3 Strengthened community

Sharing economy's commitment to societal concerns isn't simply limited to the earth. One vital part of the sharing economy is imparting trust among network individuals. Prior to the worries of having new faces as visitors before long were overwhelmed by solid driving rules that prompted the formation of the Airbnb people group. Many sharing economy stages, for example, ridesharing applications and Airbnb, have worked in appraisals and surveys that assistance keeps suppliers and buyers legit. Furthermore, a few stages utilize their impact – and the mutual assets of their members – to help those in require. These trust-building endeavors help to share economy members see each other as equivalents, building useful connections where none existed already.

3.5.3.4 The low costs of starting a new business

Not very far in the past owning was viewed as a grown-up toy. More resources you possessed better off one appeared. All that appeared to change post the monetary melancholy of 2008. Resources turned into a risk and owning ended up scarier. Today, in the event that you can get a greater amount of what you require through the sharing economy, you might have the capacity to carry on a more slender presence that requires less profitable belonging – and fewer stresses over them. For example, in the event that you live in a city and just need to drive a couple of times each month, a vehicle might be superfluous. Not dealing with vehicle advances, protection, support

issues, and potential cheats could be a major advantage. Similarly, on the off chance that you can lease or offer costly apparatuses or hardware that you use for extraordinary ventures, your instrument shed or carport would not be as appealing an objective for cheats.

3.5.3.5 The mindset promoted by sharing economy perfectly fits into modern society

Sharing economies have existed for a huge number of years, however, the web has advanced the sharing economy as of late by making it simpler to interface purchasers and leaseholders, and lessening exchange costs (Sundararajan, 2016). For instance, sites, for example, Airbnb, Uber, and SnapGoods coordinate buyers and leaseholders while online installment frameworks encourage charging. Furthermore, the web can advance trust in sharing economy clients through personal investigations, surveys, and evaluations. Clients can likewise utilize online networking to recognize leaseholders that are companions or who have common companions.

What's more, Businesses have likewise started to exploit the enthusiasm for the sharing economy. Striking organizations incorporate Airbnb, Uber, and Lyft. Huge numbers of these sharing economy organizations ascended somewhere in the range of 2008 and 2010 after the worldwide budgetary emergency. This shows enthusiasm by purchasers of gaining additional wage through sharing their benefits. The diminished expenses related with a portion of these administrations may likewise have energized the development. For instance, rooms leased through Airbnb can be less expensive than lodgings in real urban communities (Sundararajan, 2016). Airbnb procures income by taking 9-15% of the rental expenses from the around 4 million individuals they have served since 2008.

3.5.3.6 Savings – It is cheaper

The Sharing Economy has given intends to have a coveted way of life without consuming an opening in your pocket. The saving aspect of car sharing assesses H5, which has been proven quite true. Millennials prefer car sharing as it is cheaper and allows them to save money. Along these lines, on the off chance that you are hoping to make your flat a home, new companies like GrabOnRent is your Santa Claus giving a wide determination of home furniture and machines on lease, or wanting to wear planner attire, Flyrobe can be your own architect or the adrenaline surge of cruising in a Ducati around the city. Sharing economy has seen a climb in an ever increasing number of stages giving rental alternatives to clients without yielding on quality.

3.6 Car-sharing

Private vehicle possession with regards to the continuous urbanization is making challenges concerning ecological contamination, high vitality expenses, and restricted and costly stopping. As a response to these negative effects, organizations are growing new portability contrasting options to private vehicle possession. One option is carsharing that furnishes people with vehicles from an armada on an as a required premise (Scherf, Steiner, & Wolter, 2013). Carsharing is considered a transient vehicle rental enabling individuals to pick up the advantages of private vehicle use without the expenses and obligations of possession. As indicated by Navigant Research, the overall number of carsharing individuals will develop in excess of 12 million by 2020. Carsharing administrations income is evaluated to develop from roughly \$1 billion out of 2013 to \$6.2 billion by 2020. Alluding to Tils, Rahaag, and Glatz (2015), the development of carsharing is significantly influenced by the usage of keen transportation framework innovations. To enhance generally speaking proficiency, ease of use and operational sensibility of carsharing administrations, these advancements are utilized for different data frameworks (IS) driven spaces, for example, web and cell phone based reservations, savvy card access to vehicles, installed route, and worldwide situating framework (GPS) innovations

3.6.1 History of Car-Sharing

Vehicle sharing purportedly started in 1948 when a lodging agreeable in Zurich Switzerland started a little vehicle share course of action. In the 1970's and 1980's, more eager vehicle sharing tasks were propelled in France and Amsterdam yet these early ventures kept going just a couple of years. Re-developing in the 1990's, little vehicle share frameworks in Switzerland and Germany encountered a moderate development. StattVehicle in Germany is attributed with driving the path to the main projects in the United States by indicating early achievement and development inside an all around an organized plan of action (Shaheen, Sperling, & Wagner, 1999).

Within the USA, carsharing has additionally observed a noteworthy improvement. Carshare Portland is perceived as the primary authority vehicle sharing activity in the United States. Portland inhabitant and vehicle sharing master, Dave Brook propelled Carshare Portland in 1998 with one vehicle and a couple of neighbors and the task in the long run developed to around 20 vehicles. In 2000, a Boston couple began Zipcar. Seattle's Flexcar was additionally shaped in 2000 and in the long run purchased Carshare Portland and in late 2007 Flexcar and Zipcar consented to consolidate

(Shaheen, Sperling, & Wagner, 1999). It's evaluated that 600 urban areas around the globe bolster fruitful vehicle sharing tasks. In Germany alone, vehicle sharing works in more than 150 urban areas and some European activities, similar to Mobility CarSharing in Switzerland, have in excess of 30,000 individuals. Around 30 autonomous vehicle share organizations work in the United States

3.6.2 Basics Business Model Ecosystem

Numerous developments include a few and different performing artists, who should adjust on a typical perception of what the future business should be. Shockingly, regardless of the developing significance of the plan of action idea, the current writing is very quiet about such biological community approach. The plan of action idea has been significantly creating in the ongoing years, plan of action unites a few issues and consolidates diverse capacities, it comprises of a lucid arrangement of business factors incentive, accomplices, assets, income structures, clients, and so on. encompassing a given innovation. The writing demonstrates that the idea of the plan of action, for the most part, centers around outlining plans of the action taking a "central firm" viewpoint, so it can't unequivocal the plan of action of the multi-on-screen character exercises (Peuckert, Bätzing, Fünning, Gossen, & Scholl, 2017)

3.6.3 The effect of policy on vehicle sharing

Carsharing associations are shared-versatility administrations which enable clients to share vehicles of an armada. These administrations are isolated into one-way and two-way frameworks. Two-way frameworks expect clients to restore the vehicles to their unique get stations while one-ways frameworks don't. We display a crossbreed framework that has highlights of both. Two whole number programming streamlining models are figured. The primary model called the armada measure issue is for strategic arranging and ascertains the required armada estimate with a specific end goal to answer all the request in different market sections where each market fragment is made out of some immediate excursion and some round-trip clients (Nijland, Van Meerkerk, & Hoen, 2015). This model additionally represents vehicle movement between stations. In all actuality, be that as it may, the armada measure is settled for everyday tasks. With a predetermined armada measure, not all clients are fundamentally served except if the armada estimate is very extensive contrasted with the request. Along these lines, a second operational

model, called benefit augmentation issue, chooses from a rundown of client asks for the individuals who benefit the specialist co-op the most (Jung and Koo, 2018).

3.6.4 Key Drivers for Car-sharing

Overall development of carsharing is picking up energy. The mutual utilization of traveler vehicles grows over the globe. A few creators even claim to see the improvement of a standard transportation mode (Efthymiou, Antoniou, & Waddell, 2013), with in excess of one million clients worldwide since 2010. This upward pattern will proceed in the following years. The worldwide number of carsharing clients is relied upon to achieve 26.6 million by 2020. Today, carsharing has spread more than 27 nations and 5 landmasses. Particularly Europe represents an extraordinary extent of market development. In Germany, the quantity of carsharing clients added up to 453,000 toward the start of 2013, around 75 percent more than in the prior year (Prieto, Baltas, & Stan, 2017). Like other European nations, an expanding take-up of carsharing can be seen since the start of the thousand years.

The market entrance of a development whether a decent or an administration is an essential condition for dissemination (Prieto, Baltas, & Stan, 2017). At the individual firm level, it is a troublesome assignment, as appeared by high disappointment statements of new item improvements. This might be seen as one of the drivers of vehicle sharing. Carsharing varies from related versatility ideas like carpooling additionally called ridesharing in the way and reason the vehicles are utilized. While carsharing individuals can get to vehicles of their suppliers' vehicle pool solely for their own utilization, carpooling implies that no less than two people – the traveler in addition to the driver/proprietor of a private vehicle – share a ride, predominantly to drive to work.

Also, the exploration that has been led on vehicle sharing has cleared the route for the headway and advancement of the field tremendously. It has expanded the rates of development and thusly, made the path for the selection of vehicle sharing. The development is talked about as far as its aggregate biological and social advantages: diminishing vehicle proprietorship, diminishing voyaged vehicle mileage or permitting effective individual versatility. As portrayed in the hypothetical exchange, dissemination suggests a specific level of development of the advancement, attractiveness, and intersection of territorial or social limits. Today, carsharing has conquered the underlying model stage. Drivers of dissemination would thus be able to be found at

the supply side suppliers and administrations, request side, and in the non-advertise domain. As per. Efthymiou, Antoniou, & Waddell (2013) the procedure of carsharing dissemination is examined from three distinct points. Market performing artists and exchanges are engaged by taking a gander at the free market activity side.

3.6.5 Big Players

The most recent carsharing industry examination given by UC Berkley's TSRC demonstrate that in October 2016 carsharing was operational on all mainlands aside from Antarctica. TSRC assessed that there were carsharing associations in 2,095 urban communities around the world. Armada measure was comprehensively more than 157,000 vehicles and around 15 million individuals are enlisted. Asia is by a wide margin the biggest carsharing area with more than 40% of all carsharing vehicles working there. Europe is the second biggest carsharing market with 37% of the worldwide armada conveyed in that area (Le Vine, Zolfaghari, & Polak, 2014).

Station-based/Round-trip carsharing like Zipcar, Communvehicle or Maven still record for the lion's share everything being equal while free-coasting, for example, car2go, Gig or DriveNow is a developing section. Gauges on the split between station-based and free-drifting shift somewhat relying upon which inquire about we have taken a gander at, however, for the most part, station-based drifts between 74 – 83% and free-gliding between 17 – 26%. In Oceania, nonetheless, the connection is turned around: just about 80% of vehicles there was a piece of a free-skimming armada (Loose, 2010).

An essential point to note is that free-skimming has seen huge development on the enrollment and armada side in the course of recent years. By and large participation for nothing gliding has expanded by 76% (Münzel, Boon, Frenken, & Vaskelainen, 2018) which we at movmi credit to the low hindrance of the section. Free-drifting suppliers when all is said in done don't charge repeating enrollment expenses yet are set up as pay-as-you-go models. Shared armadas and enrollment has additionally experienced huge development in previous years. Current gauges by different diverse counseling all anticipate advertise development for 2025: armada size will increment right around 4x and be at around 427,000. Participation, in general, will increment 5x and around 36 million individuals will be bought into one or numerous carsharing administrations.

3.6.6 Millennials Profile

Millennials have had a large role to play when it comes to car sharing. Generally, the ease of use when it comes to car-sharing has been one of the major contributors towards the adaptation of millennials and also the extensive use of the service. In a particular study conducted by Jung & Koo (2018), it indicated that having to open an app and call for a car is preferred by around 68% of the millennials population. The reasons behind the preference included the short waiting time, reduced costs, and the efficiency of the experience. Therefore, millennials can be seen to be at the top of steering carsharing across the world. Income is also a determinant factor in this case whereby the millennials who have higher incomes tend to use the services more often as compared to those with minimal incomes (Koo, 2018)

3.6.7 City “tech” level

The city-tech level, in this case, can be aligned with the expansive use or alignment of technology to certain operations within cities. For instance, the use of smartphone applications to call for cars can be considered as one of the city-tech levels. In a study conducted by Carson (2014), Uber's 97% had the most elevated name acknowledgment, trailed by Lyft with 75%, and Zipcar at 42%. Twenty to thirty-year-olds had the most grounded generational brand acknowledgment, knowing Uber 98 percent of the time, Lyft 84 percent, and Zipcar at 49 percent. Within large cities, or what may be considered as Metropole cities, millennials tend to use carsharing more often and as such, the presented number in the research conducted by Carson. In most of the cases, young people prefer the use of carsharing services, as they are more convenient and effective. On the other hand, in a different study conducted by Sundararajan (2016), 91% of people who are above 50 years own cars while 78% of millennials prefer Ubers and other carsharing services. Therefore, there is still a number of millennials that still persist in using their own cars and this can be mainly found in German where carsharing is independent of the advancement of technology. Carsharing within Germany has been present for quite some time and as such, proving H2 partially wrong as Germans do not mainly focus on tech-oriented trends. However, within Portugal, millennials tend to focus on the tech-oriented characteristic to use the service as car sharing is a new aspect within the region.

3.7 Alternative services

As far as alternative services are concerned, there are wide ranges of services that can be used in place of carsharing services. The first alternative is owning a car, and based on statistics, around 60% of individuals within developed countries own cars. However, this population is largely the older generation that is 40 years and above (Zhuikova, 2017). In addition, rental car services can also be used in place of the carsharing service. People rent off the cars for a given period but in comparison to car sharing, renting cars is seen as being second. The other alternative is the use of public transport, which represents a larger majority of people who are within the middle-class setting. Generally, carsharing is rising quickly and being steered mainly by millennials.

3.8 Typical Car-Sharing user

The typical car-sharing user ought to be assessed based on a number of aspects that include the time, cost, and efficiency of the service. Among the various European nations, car sharing is considered a growing field and as such, presenting a form of perception among the typical car user that it is the most effective service there can be. Therefore, looking at the typical Portuguese and German customer, this perception will be presented.

3.8.1 Typical Portuguese Customer

As of current statistics, there is one Car-Sharing supplier in Portugal; it began up in September 2008 in Lisbon amid European Mobility Week. As of the start of 2009, twelve vehicles were accessible for the utilization of roughly 100 private and business Car-Sharing customers. Portugal's first Car-Sharing administration was sorted out via Carristur, an auxiliary of the general population transport administrator of Lisbon, which is in charge of (Fleury, Tom, Jamet, & Colas-Maheux, 2017). In addition to other things, the association of additional administrations for travelers in parallel to standard open transport administrations.

3.8.2 Typical German Customer

Towards the start of 2009, together, German Car-Sharing suppliers represented 137,000 Car-Sharing members. Accordingly, 20 years after Car-Sharing was first presented, German Car-Sharing asserted the best spot in Europe (in light of total quantities of members). 3,900 Car-Sharing vehicles were accessible to them. 2008 was the second back to back year with a net increment of in excess of 20,000 clients that is. in the wake of representing the loss of different members through the span of the year (Kim, Ko, & Park, 2015). Vehicle Sharing is offered in 270 German urban

areas and networks. In all urban communities more than 200,000 and in all urban communities with in excess of 100,000 occupants, there is no less than one Car-Sharing supplier (Kim, Ko, & Park, 2015). The minute the populace, the less the Car-Sharing tasks.

3.8.3 Cross Country Comparison Portugal/Germany

When it comes to the assessment of both regions, the important aspect to note is that for one, Germany, car sharing has been present for more than 20 years and as such, influencing the behavior pattern of the consumer. Germany and Portugal have developed nations and as such, the differences in this services can be viewed to have very few differences which are mainly the timeline of the industry.

3.8.4 Rational Behavior

The rational behavior of consumers is based on the notions of the purpose that one may need to use the service for. One may need to use the carsharing service to get to work, or to an important appointment and as such, feeling the need to use the service instead of using public transport. These behaviors, which are based on time, cost, and efficiency among other services influence the decision made by consumers.

3.8.5 Psychological Behavior

The mind of individual works in a mysterious way. In a study conducted by Efthymiou, Antoniou, & Waddell (2014), people are influenced by the behaviors of their peers. In this case, in the event that an individual interacts with friends that use carsharing services, they are also bound to begin using the service. Therefore, with the increased marketing endeavors by carsharing services, and the increased rate at which millennials spread the word in regards to the use of the service, this perspective directs the psychological minds of the consumer towards wanting to use the service as well. In addition, using car-sharing services can also be viewed to reduce levels of stress in that the clients will not have to worry about traffic nor parking spaces and fuel the cars. All they need to do is pay and deliver the car to the drop-off location (Efthymiou, Antoniou and Waddell, 2014).

3.8.6 Interaction Relationship Approach IMP

The interaction relationship approach, in this case, can be used to assess the state of the current markets within this industry. According to Lindloff, Pieper, Bandelow, & Woisetschläger (2014), in order to provide an effective analysis of the interaction relationship approach, one ought to consider the internal and external factors within the industry. Within the carsharing industry, the

external factors include the advancement in technology, the development of cars and also the fluctuating demand and supply based on the rise of alternatives within the industry. Nonetheless, these aspects are important as they determine whether the industry is here for the short term or the long run. On the other hand, the internal factors are more connected to the consumers and as such, they ought to be evaluated based on individual needs and desires.

3.8.9 Buyer-Seller Relationship

The buyer-seller relationship, in this case, is more aligned with the consumers and the companies that offer car-sharing services across Europe. Seeing that the focus of the study is across the region, carsharing ought to be focused on these companies and as it has been seen within recent years, car sharing within Europe is being influenced greatly by technology and market expansion. Companies want to keep loyal clients and as such, making this happen through effective marketing strategies and promotions and rewards. Therefore, the buyer-seller relationship is more aligned with the presentation of the companies and their effectiveness.

3.9 Theoretical/Conceptual Model

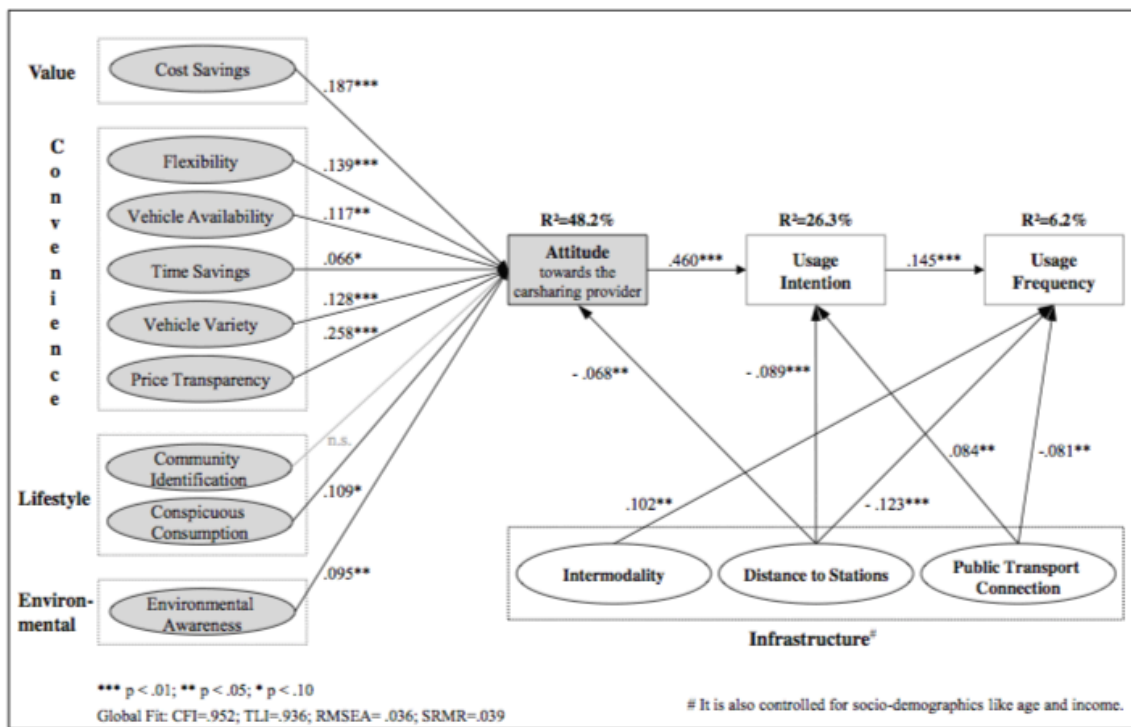
The car-sharing industry and its advancement within millennials can be viewed to be an integration of the business model concept. It is dynamic while at the same time competitive as it focuses on certain strategies and positions to reach its consumers who in this case are the millennials. Therefore, as Porter applied the Five Forces of understanding a market, the same case can be applied here where the threat of substitute products, competition, entry barrier, bargaining power of suppliers and buyers play an important role in shaping the industry (Porter, 2015). The impact that it has had on the millennials is significant, changing their patterns as far as driving and transport are concerned.

A study conducted by Lindloff, Pieper, Bandelow, and Woisetschalger (2014), on the evaluation of the car-sharing industry within Germany, indicated that it is more of an actor-centered approach. Meaning that among millennials, car sharing is gaining ground as a major transportation mode within Europe. This model of approach to the industry is mainly looked at or referred to as the Lindloff model. The service has become an integral part within the metropolitan areas, growing at an alarming rate and mainly impacting or being used by millennials that are in colleges and universities (Prieto, Baltas, and Stan, 2017). In this case, there are also other factors that are in play, contributing to the increasing adoption of car sharing within Germany and Portugal. These

factors have affected the millennials to a point that they prefer car-sharing and this entails the fuel prices, maintenance costs, and other aspects such as insurance costs (Efthymiou, Antoniou, and Waddell, 2013). These aspects are a major aspect for millennials, as they tend to focus on how they can effectively move from one place to another.

The Lindelof and Schafer model is also another important model to look at in this case. It evaluates the sociodemographic variables that are essential in the choice regarding car sharing and they include aspects such as proximity to the town, age, environmental awareness and conspicuous spending among others. Additionally, it also looks at the costs of savings which add up to the attitude and the usage intention (Lindloff, Pieper, Bandelow, and Woisetschalger, 2014). The Figure 1 below is an indication of the model and its various components.

Figure 1: Results of the structural model



Source: own depiction

Figure 1: Structural Model

3.10 Hypothesis

The car-sharing industry has been present for quite some time. Therefore, in helping to understand this particular industry, this section will focus on the hypothesis that will guide the research. The hypothesis in this case include:

H1: Millennials with higher income are more likely to use car sharing in the future instead of Millennials with lower incomes. The income of any given individual determines the lifestyle that they live and in this case, it may be a determining factor in the car sharing industry. According to statistics, high-income homes and individuals are more likely to use car-sharing services while low-income individual tends to use car-sharing services less often (Baptista, Melo, and Rolim, 2014). This result allows us to define the hypothesis.

H2: Millennials believe that carsharing saves money.

As described by Schor (2016), car sharing entails the sharing of cars, meaning that one will not incur the cost of the initial investment in a car, fuel or other maintenance costs. All that is needed is payment of a small fee.

H3: Millennials who are more tech-oriented tend to use car-sharing more often than Millennials who are less tech-oriented.

This hypothesis focuses on the impact that technology has had on millennials and car sharing. Millennials have adopted the use of phones and smart devices extensively. This hypothesis can be aligned to the tech-savvy notion where those millennials who have access to the internet and smart devices will tend to use the technology more.

H4: Millennials who use car sharing support the environmental protection.

The lesser the cars that are on the road, the safer or the more our environment is protected. In this case, the car and automotive industry tend to pollute the environment as the number of cars increase. Therefore, in this case, the smaller the amount of cars, which will be reduced by an increase in car sharing companies, the lesser the pollution of the environment. As such, it is safe to say that those that use car-sharing services are more focused on the preservation of the environment as indicated by Hildebrandt et al. (2015).

H5: German Millennials use the car sharing services more frequently than Portuguese Millennials.

This will be mainly based on the number of millennials within the given city and other factors such as the prices of fuel among others. In addition, the variation between these two countries, Germany and Portugal based on the size, population, technological advancements among other factors is also a contributive factor in this case in assessing the variation between the two countries and millennials.

H6: Millennials who are male use car-sharing services more often than female Millennials.

There is no proven study that indicated that male millennials use car-sharing more often as compared to the female millennials. This is because car-sharing is based on other needs and aspects and they impact both genders similarly, as such, dismissing the aspect of genders affecting the use of car sharing.

H7: Millennials who are male and living as single-person or childless-couple household use car sharing more often than female living as single-person or childless-couple households.

Similar to the previous hypothesis, there was no study that proved this as well. Male and female millennials who use car sharing and are single-person or childless couples use car sharing nearly equally. Additionally, the study focused more on the distinction between the two countries rather than the difference in the genders among millennials.

H8: Male Millennials with a higher education use car sharing more often than female Millennials with a higher education.

Studies indicate that there is no any form of difference in this case, as the two groups have the same group of capabilities, skills, and knowledge.

H9: Millennials would use car sharing much more often if there is a short distance for the potential car of car-sharing services.

The basis behind this is not verified nor is it in any literature as there is no difference to be exact. Millennials use car sharing for both short and long distance, but still, short distance within the cities, Lisbon and Berlin tend to have increased numbers of car-sharing services.

H10: Millennials would use more often the car sharing in the future if the potential car sharing vehicle would be electric.

One may argue that the car-sharing service can go both ways. In a study by Vaughan and Daverio (2016), it is indicated that the adoption of car sharing will change the automotive industry and in this case, it will also change the car sharing industry but in terms of growing its potential, especially with the usage of electric vehicles. However, there will be a variation in both countries based on the adaptation of the technology.

H11: German Millennials consider “attributes for vehicles” more important than Portuguese Millennials regarding the usage of car sharing services.

One may simply state that there is no difference as these attributes are also available in cars within both countries. Even though Buehler et al. (2017), may argue that driving in a Porsche car may elevate ones inner ego, there is still no difference in this case.

H12: German Millennials consider “attributes for services” more important than Portuguese Millennials regarding the usage of car sharing services.

Attributes for services are factors that are becoming more important for millennials and car sharing services. Millennials have also different preferences when it comes to services.

H13: German Millennials consider “functional consequences” more important than Portuguese Millennials regarding the usage of car sharing services.

Functional consequences are more of personal attributes and preferences. Therefore, they cannot be used to assess the usage of car sharing since everybody is unique in their own way. Therefore, with that, the aspect that can be gotten out of the way is the impact that certain clusters of functional consequences present the difference between German and Portugal.

H14: German Millennials consider “psychological consequences” more important than Portuguese Millennials regarding the usage of carsharing services.

When looking at the psychological consequences, aspects such as focusing on important parts of life, environmental awareness, and saving time are of great concern. In this case, based on studies of individuals like Schor (2016), there is no difference as the same group of psychological needs present in millennials from Germany are present in millennials from Portugal.

H15: German Millennials consider car-sharing services in the future more important than Portuguese Millennials.

Every person is unique based on their combination of needs and preferences. In this case, arguing that the millennials from Germany consider car sharing more important would be basing the notion on false hopes. As such, in order to come up with the right approach, in this case, the savvy comments from the survey will have to be analyzed separately.

H16: German Millennials would use carsharing services much more often if the cars would be electric than the Portuguese Millennials.

The hypothesis evaluated the impact of technological orientation and how it differentiates the usage of car-sharing in the two regions. In this case, Germany already has a higher number of millennials using car sharing services since the industry began earlier as compared to in Portugal and also, the fact that Berlin is larger. Therefore, in the event that the cars were electric, the millennials would use the car-sharing service more often in both countries.

H17: German Millennials consider themselves more as tech-savvy than Portuguese Millennials

In this case, the tech savviness of a group of millennials is based on their understanding of the various components of technology. Therefore, one can say that the increased adoption of technology has seen an increase in the adoption of tech-related aspects and as such, making it quite important. In this case, the tech savviness may be considered as a not clear line to draw but still, there will need to be assessed based on the millennials’ perspective.

CHAPTER 4: RESEARCH DESIGN

4.1 Introduction

This chapter looks at the research design and the methodology adopted in the thesis. It looks at a number of factors that include the research instruments used, the population and the sampling methodology.

4.2 Research instrument

The primary research instrument of the study was a survey that was meant to assess the concentration or the use of the car-sharing service within Germany and Portugal. The survey targeted both regions, focusing on the main cities where car-sharing was most likely to be prominent in Berlin and Lisbon. Therefore, the research instrument was posted online, on www.surveio.com, a website that has a wide exposure. According to the site, the website has more than 100,000 visitors on a daily basis and as such, it was convenient to use in this case. In addition, the use of an online platform to reach the respondents was a strategic move as it reduced the costs of traveling and production.

A survey, which as described by Iñesta (2018), is a type of questionnaire that is used to gather data on a broader level. The advantages of using a survey include;

- a) It is cheap as it is convenient and easy to prepare
- b) It saves on time as the website provides a comprehensive analysis of the data that is collected
- c) It is convenient and easy to prepare as compared to other forms of data collection
- d) Additionally, surveys are easier to prepare and offer the respondents the freedom to answer what they believe, which is important in ensuring the validity and reliability of the study.

On the other hand, the disadvantages of using a survey include;

- a) The probability of a large number of respondents not returning the questionnaires or not answering the questions is large as compared to when using interviews as some surveys are online.
- b) The data collected using questionnaires require to be analyzed effectively to ensure that the data that was collected is effective, therefore, requiring some form of expertise.

4.3 Population

The target population, in this case, was the millennials who live in Portugal and Germany. As seen within the literature review, the consumers and users of the car-sharing service have been increasing significantly and as such, increasing the car-sharing market. In this case, the target population was broad and covered a wide area to ensure that sufficient data was collected. Therefore, the target sample size, in this case, was around 300 respondents this would ensure that a wide range of responses would be gotten to ensure that the sufficient data is collected and analyzed to provide reliable results.

4.4 Sampling

The sampling technique was a convenience sample. It assessed the manner in which the millennials provided the data that they were required to present with the aim of making certain that the collected data would help in the presentation and answering of the set questions. As indicated by Naqvi, Zehra, Ahmad, and Ahmad (2016), the sampling technique that is applied heavily relies on the type of data that is being collected and the data collection technique as well. Therefore, in this case, the data was mainly focused on millennials and as such, finding ways in which they would be reached was an important aspect and this was realized through the provision of surveys. They were reached through the use of the internet and social media, where the link to the survey was sent and shared.

4.6 Statistical Analysis

The statistical analyses included descriptive statistics, and mean comparisons with t-tests (independent sample t-tests) and independent chi-square tests to compare the German and Portuguese millennials. All analyses were conducted using IBM SPSS v.22.

4.7 Conclusion

In conclusion, this chapter took a focus on the data collection aspects that were used. It was more like the methodology section, stating the instruments that were used, and the population, the sampling.

CHAPTER 5: DATA FINDINGS

This chapter looks at the results of the survey and presents an analysis of the results. The data that has been used in the analysis was gotten from the survey that was posted on www.surveio.com and as such, it may be considered as actual data.

5.1 Sample characterization

Table 5.1: Distribution of respondents by country

		198	62,5%	119	37,5%	
		Germany		Portugal		Pearson
Age		N	%	N	%	x ² (df)
	18-24	63	31.8	38	31.9	0.288 (2) ns
	25-34	124	62.6	76	63.9	
	35-45	11	5.6	5	4.2	
	Total	198		119		
Gender						1.316 (1) ns
	Male	90	45.5	62	52.1	
	Female	108	54.5	57	47.9	
	Total	198		119		
Size of household						
	1	59	29.8	16	13.4	19.611 (4) p=0.001
	2	75	37.9	38	31.9	
	3	34	17.2	28	23.5	
	4	21	10.6	26	21.8	
	5 or more	9	4.5	11	9.2	
Income						
Lower income	<10k	70	35.4	32	26.9	22.570 (6) p=0.001
	10-15k	25	12.6	17	14.3	
	15-25k	18	9.1	23	19.3	
Higher income	25-50k	35	17.7	35	29.4	
	50-75k	22	11.1	8	6.7	
Household size						19.611 (4) p=0.001
	1	59	29.8	16	13.4	

	2	75	37.9	38	31.9	
	3	34	17.2	28	23.5	
	4	10.6	6.6	26	21.8	
	5 or more	9	4.5	11	9.2	
Household type						4.114 ns p=0.242
	Single	164	82.8	91	76.5	
	Married	23	11.6	14	11.8	
	An Adult plus one or several children	2	1	3	2.5	
	A couple with one or several children	9	4.5	11	9.2	
Job status						50.200 p=0.000
	Employee	65	32.8	75	63	
	Unemployed	0	0	4	3.4	
	Student	124	62.6	28	23.5	
	Freelancer	9	4.5	12	10.1	
Education						16.206 p=0.002
	Completed some high school	5	2.5	3	2.5	
	High school graduate	38	19.2	5	4.2	
	Trade/technical/vocational training	5	2.5	3	2.5	
	College or university degree	131	66.2	93	78.2	
	Post-graduate degree	19	9.6	15	12.6	

The sample is composed mainly by German youth; Out of 314 respondents, 198 (62.5%) are German. Although there are more female respondents among the Germans and more masculine among the Portuguese, there are no significant differences between the respondents of the two countries regarding the gender. The age structure is also similar between respondents from both countries.

However, there are differences in terms of household size, job status, and education and income. The majority of German respondents have households of 1 or 2 people whereas Portuguese respondents have households of 2, 3 or 4 people. Of these, only 13% live alone. The large percentage of Germans with households of 1 person is confirmed with the large percentage of single people (82.8%).

5.2 Characterization of carsharing market Germany – Portugal

The study focuses on two groups of millennials that can be mainly be differentiated from where they are formed. In the first case, there are those millennials that come from Berlin, Germany and those that come from Lisbon, Portugal. The survey focused on gathering as much information in regards to the car sharing market within this market. Thus, the aspect will look at the distribution of carsharing use between the millennials of the countries. This distribution presented in table 5.2 and 5.3.

Table 5.2: Percentage Distribution in the two countries

			Country Where are you from?		
			1 Germany	2 Portugal	Total
q9 How often do you use the carsharing service?	1 Never	Count	109	51	160
		% within Country Where are you from?	55,1%	42,9%	50,5%
	2 Rarely	Count	48	35	83
		% within Country Where are you from?	24,2%	29,4%	26,2%
	3 Sometimes	Count	32	24	56
		% within Country Where are you from?	16,2%	20,2%	17,7%
	4 Very often	Count	8	5	13
		% within Country Where are you from?	4,0%	4,2%	4,1%
	5 Always	Count	1	4	5
		% within Country Where are you from?	0,5%	3,4%	1,6%
	Total	Count	198	119	317
		% within Country Where are you from?	100,0%	100,0%	100,0%

Table 5.3: Chi-square tests for distribution in the two countries

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5,199 ^a	2	,074
Likelihood Ratio	5,538	2	,063
Linear-by-Linear Association	1,942	1	,163
N of Valid Cases	317		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.39.

There are no differences of carsharing use between German and Portuguese millennials (sig>0.05). The majority of them never or rarely using this service. However, more than 15% of respondents use it sometimes.

Regarding the probably of carsharing use in the future Table 5.2 shows its distribution between the German and Portuguese millennials.

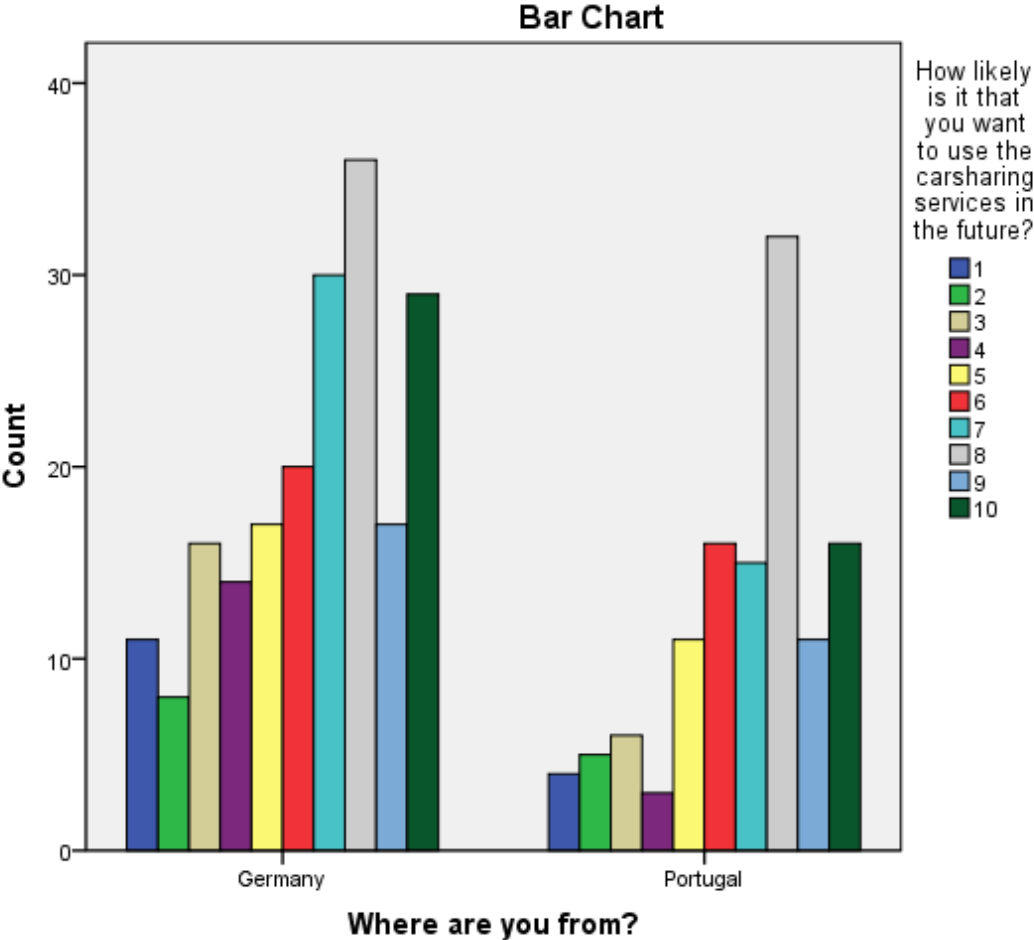


Figure 2: Distribution of likelihood of carsharing use in the future

Table 5.4: Group Statistics for Distribution of likelihood of carsharing use in the future

Group Statistics					
	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q9 How often do you use the carsharing service?	1 Germany	198	1,71	,915	,065
	2 Portugal	119	1,96	1,053	,097
q10 How likely is it that you want to use the carsharing services in the future?	1 Germany	198	6,45	2,638	,187
	2 Portugal	119	6,85	2,382	,218

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q9 How often do you use the carsharing service?	Equal variances assumed	,445	,505	-2,232	315	,026	-,251	,112	-,472	-,030
	Equal variances not assumed			-2,156	222,088	,032	-,251	,116	-,480	-,022
q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	3,411	,066	-1,352	315	,177	-,399	,295	-,980	,182
	Equal variances not assumed			-1,387	268,685	,166	-,399	,288	-,966	,167

Although they are likely to use the carsharing in the future. (The mean for German millennials is 6.45 while the mean for Portuguese is 6.85). There are no differences between the two groups of millennials.

The majority of millennials never driven an electric car and more than 70% never used an electric car of a carsharing service

Table 5.4: Crosstab and chi-square tests on the implication of electric cards based on individuals

Crosstab

		Country Where are you from?		Total	
		1 Germany	2 Portugal		
q17 Have you ever driven an electric car?	1 Yes, a hybrid electric/petrol car (PHEV)	Count	32	9	41
		% within Country Where are you from?	16,2%	7,6%	12,9%
	2 Yes, a fully electric car	Count	52	38	90
		% within Country Where are you from?	26,3%	31,9%	28,4%
	3 No, I've never driven an electric car	Count	114	72	186
		% within Country Where are you from?	57,6%	60,5%	58,7%
Total	Count	198	119	317	
	% within Country Where are you from?	100,0%	100,0%	100,0%	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5,199 ^a	2	,074
Likelihood Ratio	5,538	2	,063
Linear-by-Linear Association	1,942	1	,163
N of Valid Cases	317		

a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 15,39.

Table 5.5: Crosstab and chi-square tests on the implication of electric cards based on the country

Crosstab

		Country Where are you from?			
		1 Germany	2 Portugal	Total	
q18 Have you ever used an electric car of a carsharing service?	1 Yes	Count	43	35	78
		% within Country Where are you from?	21,7%	29,4%	24,6%
	2 No	Count	155	84	239
		% within Country Where are you from?	78,3%	70,6%	75,4%
Total	Count	198	119	317	
	% within Country Where are you from?	100,0%	100,0%	100,0%	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2,372 ^a	1	,124		
Continuity Correction ^b	1,976	1	,160		
Likelihood Ratio	2,339	1	,126		
Fisher's Exact Test				,139	,081

However, they are likely to use an electric car of carsharing service in the future. Although Portugal millennials are more likely than German millennials to use it.

Table 5.6: Distribution analysis on the implication of electric cards based on the two countries

T-Test

Group Statistics

		Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	1	Germany	198	7,25	2,510	,178
	2	Portugal	119	8,19	1,762	,162

Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	Equal variances assumed	27,041	,000	-3,590	315	,000	-,941	,262
	Equal variances not assumed			-3,909	307,417	,000	-,941	,241

5.3 Carsharing usage

This section aims to test and the defined hypothesis about carsharing usage. Thus, for each hypothesis, we will analyze the results of statistical tests.

H1: Millennials with higher income are more likely to use carsharing in the future instead of Millennials with lower incomes

Table 5.7: Distribution on impact of income on car usage

T-Test

Group Statistics						
Country Where are you from?		Income What is your household income?	N	Mean	Std. Deviation	Std. Error Mean
1 Germany	q10 How likely is it that you want to use the carsharing services in the future?	>= 4	85	6,47	2,763	,300
		< 4	113	6,43	2,553	,240
2 Portugal	q10 How likely is it that you want to use the carsharing services in the future?	>= 4	47	7,36	2,131	,311
		< 4	72	6,51	2,489	,293

Independent Samples Test											
			Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
1 Germany	q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	,403	,526	,097	196	,923	,037	,380	-,712	,786
		Equal variances not assumed			,096	173,008	,923	,037	,384	-,721	,795
2 Portugal	q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	3,984	,048	1,920	117	,057	,848	,442	-,027	1,722
		Equal variances not assumed			1,984	108,621	,050	,848	,427	,001	1,695

The use of carsharing in the future is independent of the income for the Germans and the Portuguese. Therefore, H1 is not verified. Note that higher income was considered above or equal to 25-50k (In the tables above labeled as 5.7)

H2: Millennials believe that carsharing saves money

Millennials believe that carsharing saves money, but Figure 3 shows that Portuguese tend to agree more strongly than Germans about this statement of saving money. Moreover, the mean for Germans is 4.04 and the mean for Portuguese is 4,37. Therefore, H2 is verified. (See Annex D)

Graph

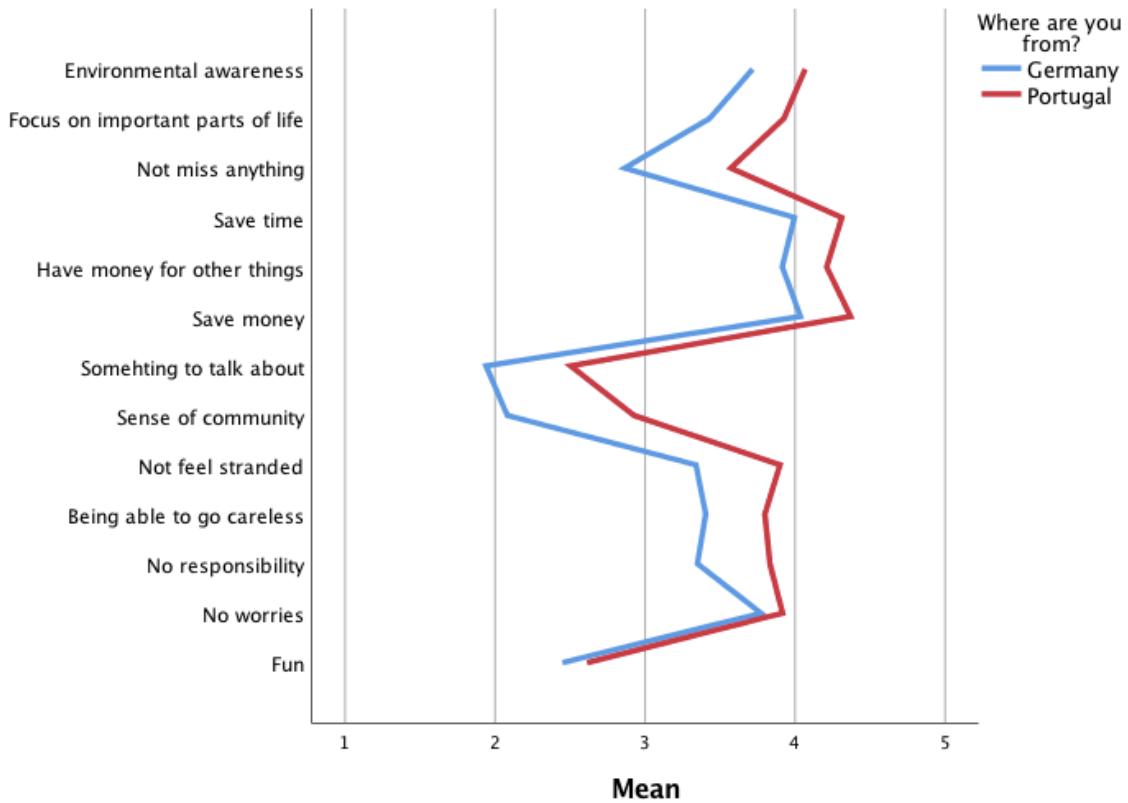


Figure 3: Distribution of Psychological Consequences

H3: Millennials who are more tech-oriented tend to use carsharing more often than Millennials who are less tech-oriented

Table 5.8: Distributions on tech-orientation and car usage

Group Statistics						
Country Where are you from?		q16a I enjoy using technology	N	Mean	Std. Deviation	Std. Error Mean
1 Germany	q10 How likely is it that you want to use the carsharing services in the future?	>= 4	155	6,48	2,681	,215
		< 4	43	6,35	2,506	,382
2 Portugal	q10 How likely is it that you want to use the carsharing services in the future?	>= 4	107	7,08	2,232	,216
		< 4	12	4,75	2,734	,789

Independent Samples Test											
Country Where are you from?			Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
1 Germany	q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	,468	,495	,282	196	,778	,129	,456	-,770	1,027
		Equal variances not assumed			,293	70,947	,770	,129	,439	-,746	1,003
2 Portugal	q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	,799	,373	3,356	117	,001	2,334	,695	,957	3,711
		Equal variances not assumed			2,852	12,698	,014	2,334	,818	,562	4,106

The usage of carsharing service in the future is independent of technology for Germans, but for Portuguese that one who is tech-oriented tend to use more carsharing service in the future (Mean: 7.08) than those that are less tech oriented. (Mean: 4,75). Note that those who are more tech-oriented are those who score above or equal to 4 in the “I enjoy using technology” variable.

This hypothesis verified by Portuguese Millennials.

H4: Millennials who use carsharing support the environmental protection.

Table 5.9: Distributions on carsharing and environmental support

Group Statistics						
Country Where are you from?		q15c Using carsharing supports a useful idea of environmental protection	N	Mean	Std. Deviation	Std. Error Mean
1 Germany	q9 How often do you use the carsharing service?	>= 4	161	1,66	,902	,071
		< 4	37	1,92	,954	,157
2 Portugal	q9 How often do you use the carsharing service?	>= 4	107	1,96	,990	,096
		< 4	12	1,92	1,564	,452

Independent Samples Test											
Country Where are you from?			Levene's Test for Equality of Variances		t-test for Equality of Means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper	
1 Germany	q9 How often do you use the carsharing service?	Equal variances assumed	,148	,701	-1,567	196	,119	-,261	,166	-,588	,067
		Equal variances not assumed			-1,513	51,827	,136	-,261	,172	-,606	,085
2 Portugal	q9 How often do you use the carsharing service?	Equal variances assumed	5,205	,024	,143	117	,887	,046	,322	-,591	,683
		Equal variances not assumed			,100	12,008	,922	,046	,462	-,960	1,052

Using carsharing supports the environmental protection and is independent of the country of millennials this means that are equal for both nations in terms of environmental protection. So, they don't think about the environment protection when they use carsharing services. The means are quite low for both Millennials. Means for both groups are below 2 that means on average they disagree with the statement. Therefore, H4 is not verified. There are no correlations about environment protection and carsharing services. This result can be confirmed by the correlation analysis.

Table 5.10: Correlation between car-sharing and the environment

Country Where are you from?			q15c Using carsharing supports a useful idea of environmental protection	q9 How often do you use the carsharing service?
1 Germany	q15c Using carsharing supports a useful idea of environmental protection	Pearson Correlation	1	,019
		Sig. (2-tailed)		,789
		N	198	198
	q9 How often do you use the carsharing service?	Pearson Correlation	,019	1
		Sig. (2-tailed)	,789	
		N	198	198
2 Portugal	q15c Using carsharing supports a useful idea of environmental protection	Pearson Correlation	1	,013
		Sig. (2-tailed)		,889
		N	119	119
	q9 How often do you use the carsharing service?	Pearson Correlation	,013	1
		Sig. (2-tailed)	,889	
		N	119	119

H5: German Millennials use the carsharing services more frequently than Portuguese Millennials.

Table 5.11: Analysis of the frequency of carsharing between the two countries

Group Statistics					
	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q9 How often do you use the carsharing service?	1 Germany	198	1,71	,915	,065
	2 Portugal	119	1,96	1,053	,097

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q9 How often do you use the carsharing service?	Equal variances assumed	,445	,505	-2,232	315	,026	-,251	,112	-,472	-,030
	Equal variances not assumed			-2,156	222,088	,032	-,251	,116	-,480	-,022

Portuguese Millennials use more frequently the carsharing service than the Germans Millennials. The hypothesis is not verified. This result is contradictory of that obtained in section 5.2, maybe because we are using a significant level of 5%. If we use 1%, we can conclude that there are no differences between the two groups of millennials.

H6: Millennials who are male use carsharing services more often than female Millennials

Table 5.12: Presentation of male and female millennials using car-sharing

Country Where are you from?	Gender What is your gender?	N	Mean	Std. Deviation	Std. Error Mean	
1 Germany	q9 How often do you use the carsharing service?	1 Male	90	1,70	,988	,104
	2 Female	108	1,71	,854	,082	
2 Portugal	q9 How often do you use the carsharing service?	1 Male	62	1,94	,956	,121
	2 Female	57	1,98	1,157	,153	

Country Where are you from?	q9 How often do you use the carsharing service?	Levene's Test for Equality of Variances	t-test for Equality of Means								
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
1 Germany	q9 How often do you use the carsharing service?	Equal variances assumed	1,555	,214	-,099	196	,921	-,013	,131	-,271	,245
		Equal variances not assumed			-,098	177,221	,922	-,013	,133	-,275	,249
2 Portugal	q9 How often do you use the carsharing service?	Equal variances assumed	1,408	,238	-,242	117	,809	-,047	,194	-,431	,337
		Equal variances not assumed			-,240	108,945	,811	-,047	,196	-,434	,341

There is no difference between gender in what concerns the use of carsharing service. So H6 it is not verified.

H7: Millennials who are male and living as single-person or childless-couple households use carsharing more often than female living as single-person or childless-couple households.

Table 5.13: Presentation of car-sharing millennials and family orientation

Group Statistics						
		Gender What is your gender?	N	Mean	Std. Deviation	Std. Error Mean
q9 How often do you use the carsharing service?	1	Male	127	1,78	,959	,085
	2	Female	128	1,77	,907	,080

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q9 How often do you use the carsharing service?	Equal variances assumed	,362	,548	,052	253	,958	,006	,117	-,224	,236
	Equal variances not assumed			,052	251,982	,958	,006	,117	-,224	,236

There is no difference between these two groups in what concerns the case of carsharing service. So H7 not verified.

H8: Male Millennials with a higher education use carsharing more often than female Millennials with a higher education.

Table 5.14: Presentation of car-sharing millennials and higher education

Group Statistics						
Country Where are you from?		Gender What is your gender?	N	Mean	Std. Deviation	Std. Error Mean
1 Germany	q9 How often do you use the carsharing service?	1 Male	68	1,75	1,013	,123
		2 Female	82	1,72	,836	,092
2 Portugal	q9 How often do you use the carsharing service?	1 Male	56	1,95	,942	,126
		2 Female	52	1,85	1,017	,141

Independent Samples Test

Country Where are you from?			Levene's Test for Equality of Variances		t-test for Equality of Means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper	
1 Germany	q9 How often do you use the carsharing service?	Equal variances assumed	1,708	,193	,202	148	,840	,030	,151	-,268	,329
		Equal variances not assumed			,198	129,763	,843	,030	,154	-,273	,334
2 Portugal	q9 How often do you use the carsharing service?	Equal variances assumed	,387	,535	,532	106	,596	,100	,189	-,274	,474
		Equal variances not assumed			,530	103,641	,597	,100	,189	-,275	,475

There is no difference between gender among those who have higher education. Therefore, H8 is not verified.

H9: Millennials would use carsharing much often if there is a short distance for the potential car of carsharing services.

Table 5.15: Presentation of car-sharing and distance

Group Statistics

Country Where are you from?		q13m Short distance to next carsharing vehicle	N	Mean	Std. Deviation	Std. Error Mean
1 Germany	q9 How often do you use the carsharing service?	>= 4	144	1,68	,850	,071
		< 4	54	1,78	1,076	,146
2 Portugal	q9 How often do you use the carsharing service?	>= 4	90	2,00	1,006	,106
		< 4	29	1,83	1,197	,222

Independent Samples Test

Country Where are you from?			Levene's Test for Equality of Variances		t-test for Equality of Means						
			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper	
1 Germany	q9 How often do you use the carsharing service?	Equal variances assumed	2,413	,122	-,665	196	,507	-,097	,146	-,386	,191
		Equal variances not assumed			-,598	79,112	,552	-,097	,163	-,421	,226
2 Portugal	q9 How often do you use the carsharing service?	Equal variances assumed	,914	,341	,766	117	,445	,172	,225	-,274	,618
		Equal variances not assumed			,700	41,501	,488	,172	,246	-,325	,670

There is no difference between the two groups of millennials. Therefore, H9 it is not verified. Although the means of Portuguese and Germans are not significant in the population. Consider short distance for the potential car of carsharing service is important.

H10: Millennials would use more often the carsharing in the future if the potential carsharing vehicle would be electric.

Table 5.16: Correlations in car-sharing in the future in relation to electric vehicles

Correlations

Country Where are you from?			q10 How likely is it that you want to use the carsharing services in the future?	q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?
1 Germany	q10 How likely is it that you want to use the carsharing services in the future?	Pearson Correlation	1	,736**
		Sig. (2-tailed)		,000
		N	198	198
	q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	Pearson Correlation	,736**	1
		Sig. (2-tailed)	,000	
		N	198	198
2 Portugal	q10 How likely is it that you want to use the carsharing services in the future?	Pearson Correlation	1	,593**
		Sig. (2-tailed)		,000
		N	119	119
	q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	Pearson Correlation	,593**	1
		Sig. (2-tailed)	,000	
		N	119	119

** . Correlation is significant at the 0.01 level (2-tailed).

Both are more likely to use carsharing service more often if the potential car would be electric, but Portuguese tend to use it more often if the car would be electric than Germans.

H15: German Millennials consider car sharing services in the future more important than Portuguese Millennials:

Table 5.17: Group Statistics for Distribution of likelihood of carsharing use in the future

Group Statistics					
	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
	q9 How often do you use the carsharing service?	1 Germany	198	1,71	,915
2 Portugal		119	1,96	1,053	,097
q10 How likely is it that you want to use the carsharing services in the future?	1 Germany	198	6,45	2,638	,187
	2 Portugal	119	6,85	2,382	,218

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
q9 How often do you use the carsharing service?	Equal variances assumed	,445	,505	-2,232	315	,026	-,251	,112	-,472	-,030	
	Equal variances not assumed			-2,156	222,088	,032	-,251	,116	-,480	-,022	
q10 How likely is it that you want to use the carsharing services in the future?	Equal variances assumed	3,411	,066	-1,352	315	,177	-,399	,295	-,980	,182	
	Equal variances not assumed			-1,387	268,685	,166	-,399	,288	-,966	,167	

There is no difference between the two groups of millennials. As such, H15 is no verified.

H16: German Millennials would use carsharing services much more often if the cars would be electric than the Portuguese Millennials.

Table 5.18: Preference in the use of electric cars

Group Statistics					
	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	1 Germany	198	7,25	2,510	,178
	2 Portugal	119	8,19	1,762	,162

Independent Samples Test										
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	Equal variances assumed	27,041	,000	-3,590	315	,000	-,941	,262	-1,456	-,425
	Equal variances not assumed			-3,909	307,417	,000	-,941	,241	-1,414	-,467

Table 5.19: Pearson's correlation on the use of electric cars and car-sharing in future

Country Where are you from?		q10 How likely is it that you want to use the carsharing services in the future?	q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?
1 German y	q10 How likely is it that you want to use the carsharing services in the future?	Pearson Correlation	,736**
		Sig. (2-tailed)	,000
		N	198
	q19 How likely is it that you want to use an electric	Pearson Correlation	,736**
			1

	vehicle of a carsharing service in the future?	Sig. (2-tailed)	,000	
		N	198	198
2	q10 How likely is it that you want to use the carsharing services in the future?	Pearson Correlation	1	,593**
Portugal		Sig. (2-tailed)		,000
		N	119	119
	q19 How likely is it that you want to use an electric vehicle of a carsharing service in the future?	Pearson Correlation	,593**	1
		Sig. (2-tailed)	,000	
		N	119	119

Portuguese Millennials would use carsharing services much more often if the cars would be electric. (Means Germans = 7.25 vs. Means Portuguese = 8,19). So, H16 is not verified.

5.4 Attributes

5.4.1 Attributes for Vehicles

Figure 4 presents the Distribution of Attributes for Vehicles by the Germans and Portuguese millennials.

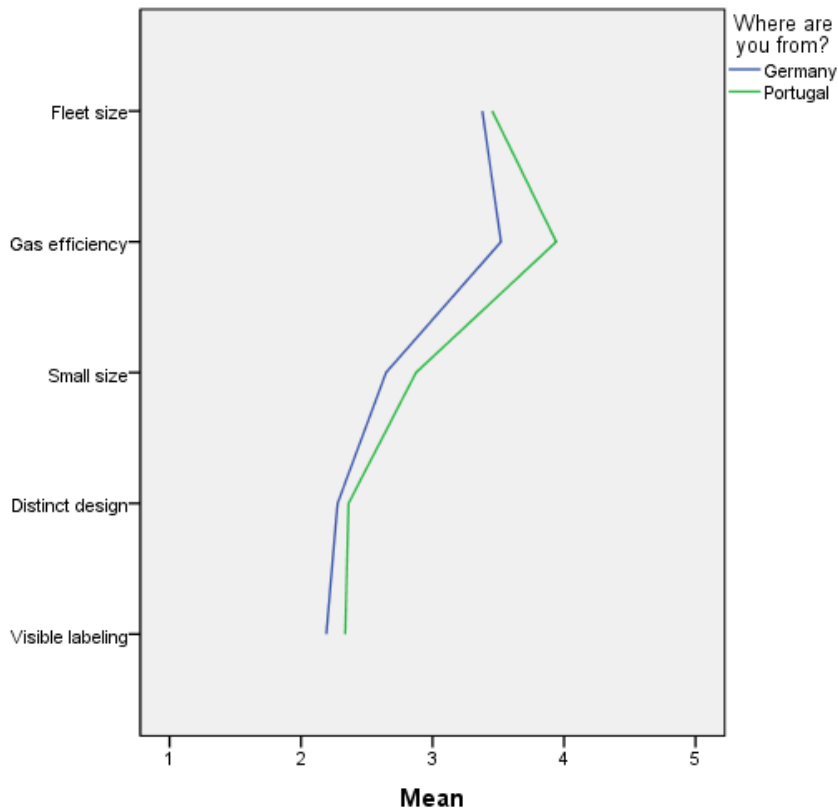


Figure 4: Distribution of Attributes for Vehicles

In the graph is shows that Fleet size & Gas efficiency are the more important attributes for both Millennials. Although in the sample test, Portuguese consider all attributes more important (mean = 3.94, sd=1.036) than the Germans (mean = 3.52, sd=1.0161), the difference are significant in the Gas efficiency. Reject, Portuguese consider “attributes for vehicles” more important than German Millennials regarding the usage of carsharing services. (See Annex A). So, the hypothesis *H11: German Millennials consider “attributes for vehicles” more important than Portuguese Millennials regarding the usage of carsharing services*, is not verified.

5.4.2 Attributes for Service

Figure 5 presents the Distribution of Attributes for Service by the Germans and Portuguese millennials.

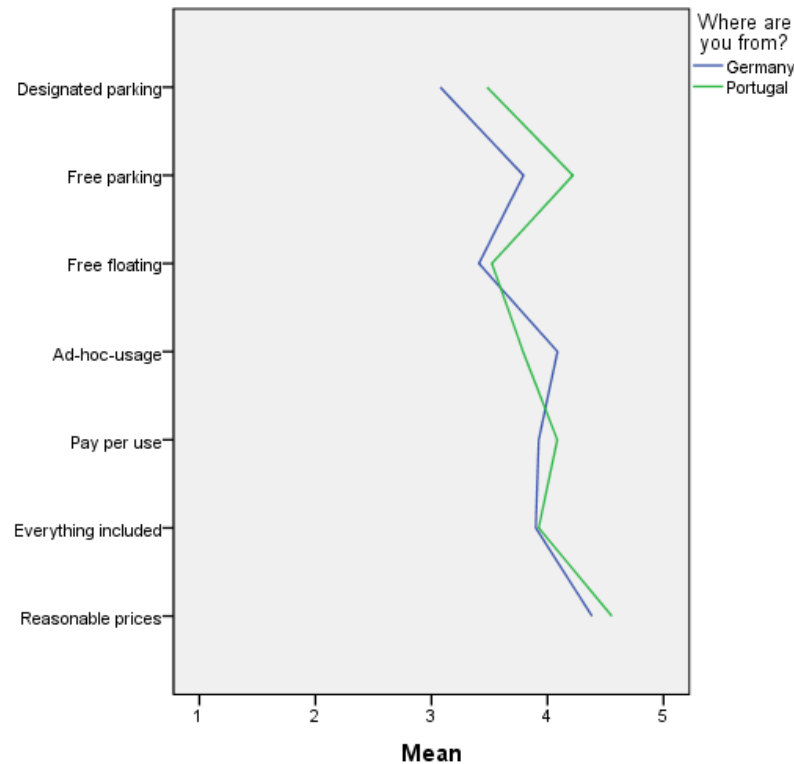


Figure 5: Distribution of Attributes for Service

The attributes considered the most important for service are reasonable prices, pay per use and free parking (Figure 5). German and Portuguese also evaluate them differently in ad hoc usage ($t=2.310$, $p<0.01$) and designated free parking ($t=2.998$, $p<0.01$). German millennials consider the first attributes more important than the Portuguese (mean is 4.09 vs 3.79), but the last two attributes are better evaluated by the Portuguese (mean value for Portuguese is 4.22 and 3.48, respectively, vs 3.79 and 3.08). Regarding these results, it can be concluded that the hypothesis *H12: German Millennials consider “attributes for services” more important than Portuguese Millennials regarding the usage of carsharing services* is only verified in what concerns ad-hoc usage. (See Annex B)

5.4.3 Functional Consequences

In this case, the study aimed at identifying the various approaches and how they made the car sharing services within Portugal and Germany unique. It measured aspects such as the reliability, availability, Co2 emissions, and the identification of drivers among other factors. Figure 6 presents the distribution of these aspects.

Graph

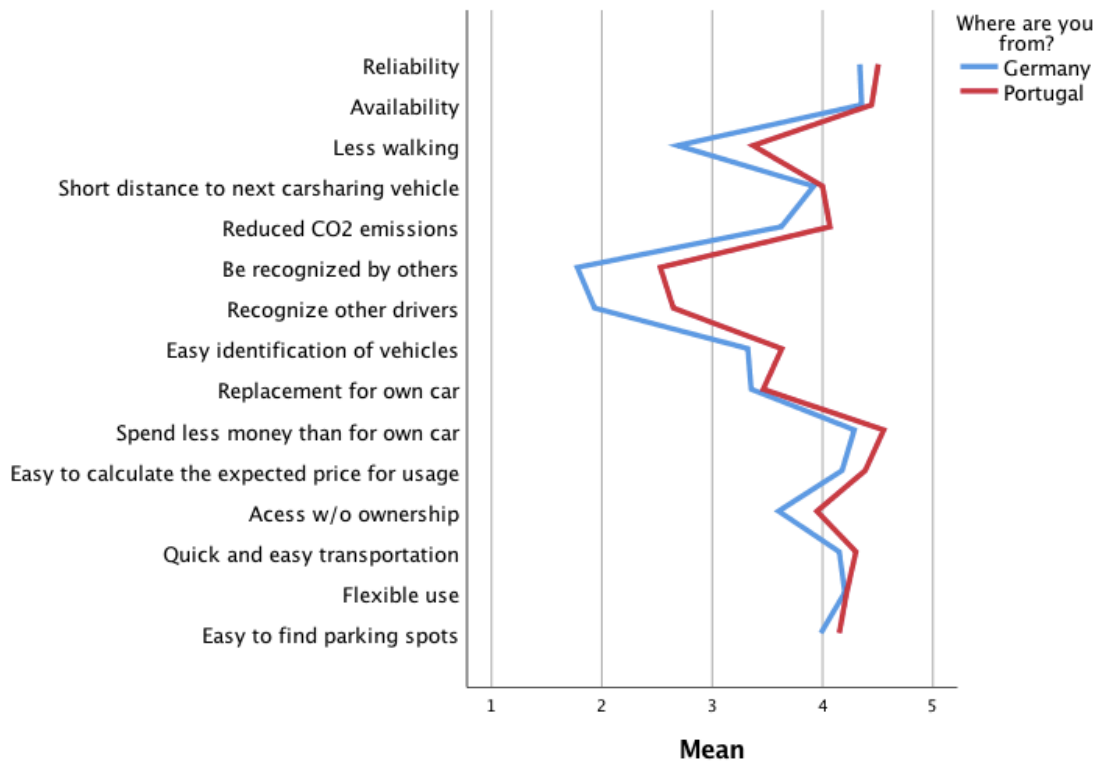


Figure 6: Distribution of Functional Consequences

The majority of aspects are very important for both millennials. There are no differences in Access w/o ownership Sig = 0.004, Easy to calculate the expected price for usage Sig = 0.038, Spend less money than for own car Sig = 0.006, Easy identification of vehicles Sig = 0.017, Recognize by other drives Sig = 0.000, Be recognized by others Sig = 0.001, Reduced CO2 emission Sig = 0.001, Less walking Sig 0.000, between Germans in Portuguese. (See Annex C) So, the hypothesis H13: German millennials consider functional consequences more important than Portuguese millennials is not verified.

5.4.4 Psychological Consequences.

The study also focused on the hypothesis that was linked to the psychological consequences of the individuals. It looked at the environmental awareness; focus on important parts of life, and saving time among others. Figure 7 shows the results of the psychological consequences between both groups of millennials

Graph

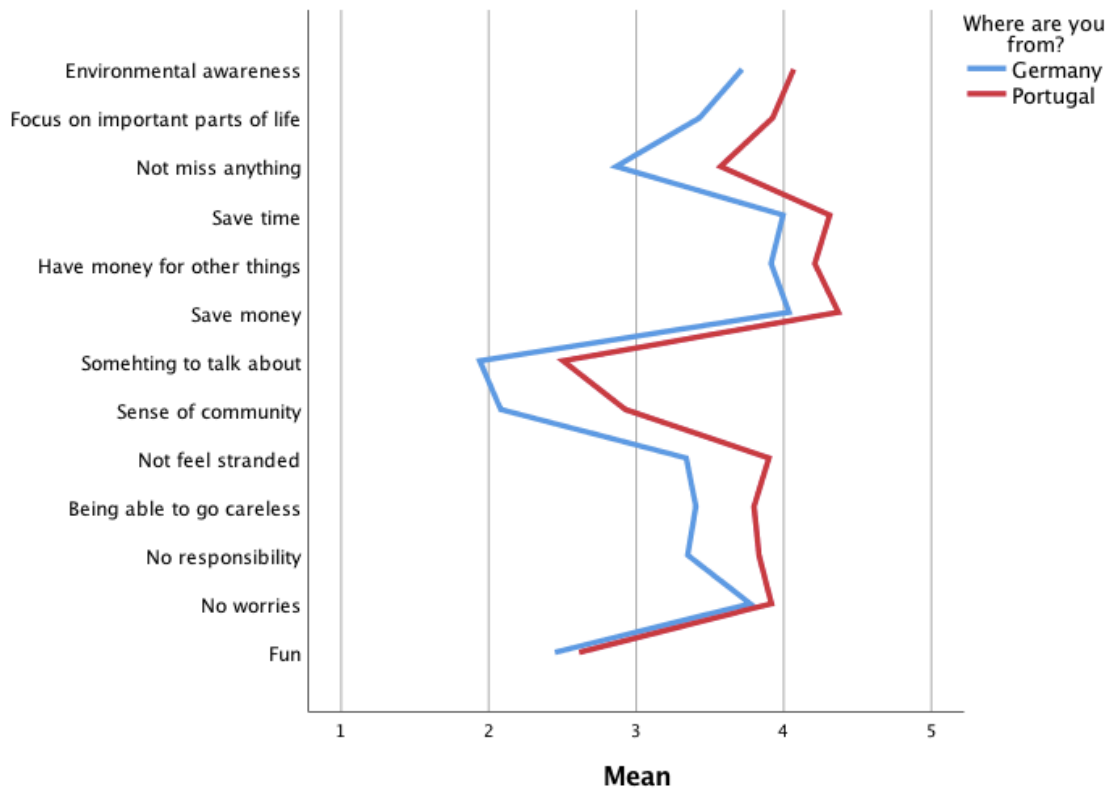


Figure 7: Comparison between Germany and Portugal in terms of Psychological Consequences

The least important aspects for both groups is Fun, Something to talk about, and Sense of community are the least important psychological consequences. In the range of consequences, Portuguese consider the following consequences more important than Germans: No responsibility (Sig = 0.000), Being able to go careless (Sig = 0.03), Not feel stranded (Sig = 0.000), Sense of community (Sig = 0.000), Something to talk about (Sig = 0.000), Save money (Sig = 0.01). (See Annex D)

Therefore, it can be concluded that *H14: German Millennials consider psychological consequences more important than Portuguese millennials* is not verified.

5.4.5 Comparison between Germany and Portugal in terms of technology adoption

The main aim of the research was to assess the significance and depth of car sharing within German millennials in comparison to Portuguese millennials. In this case, it focused on the confidence of the customers and the adoption of technology within the millennials of the two cities. As such, the results that were found are indicated in Figure 8 below.

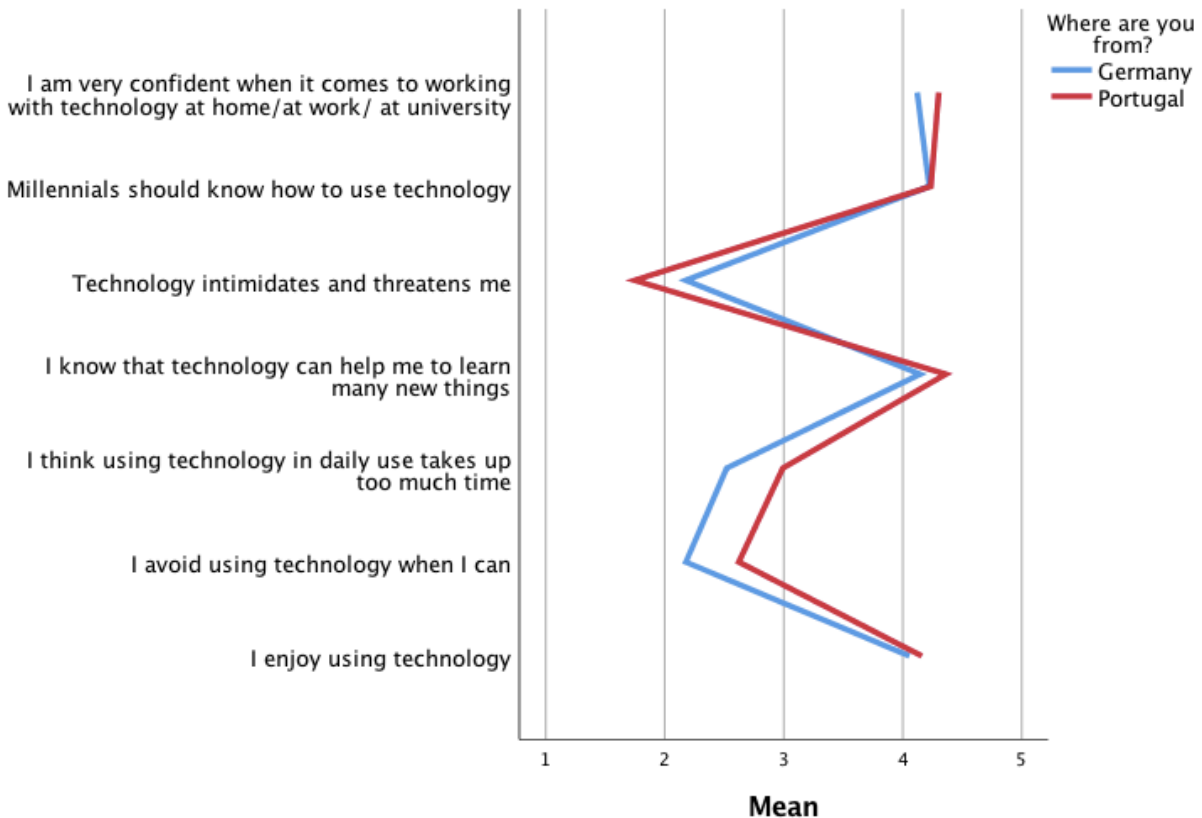


Figure 8: Comparison between Germany and Portugal in terms of technological adoption

Technology within both cities, Portugal and Germany, can be viewed as being adopted quite greatly. Millennials have adopted the use of technology greatly and as such, there seem to be very slight differences in the results that are indicated in this case. All statements about tech-savvy are different between both Millennials with the exception “I enjoy using technology” & “I am very confident when it comes to working...” and “Millennials should know how to use technology” Technology intimidates Portuguese more than Germans as can be seen by the evaluation of the

two groups. The statements “I think using technology in daily use takes up too much time” and “I avoid using technology are worse evaluated by the Germans than the Portuguese. (See Annex E)

The Hypothesis *H17: German millennials consider themselves more tech-savvy than Portuguese millennials* are verified.

5.3 Conclusion

In conclusion, these two cities have an increased use of car-sharing services, which are determined by a variety of factors. There are car-sharing organizations that are set up within various locations in these cities where millennials can access them adequately. Therefore, based on these factors, car sharing within Germany and Portugal is greatly increasing as a result of the millennials and their perceptions of car sharing.

CHAPTER 6: CONCLUSIONS: PRACTICAL CONTRIBUTIONS

6.1 Conclusion

As opposed to the great car-ownership and its commanding impact, Car-Sharing is a maintainable versatility benefit. At the end of the day, with Car-Sharing, the regular assets and advancement chances of future ages will remain – in created nations, as well as a model for different locales of the world. The better the market potential is understood, the more remote the manageability impacts of Car-Sharing administrations can be spread. Consequently, the German Bundesverband CarSharing e. V., the umbrella association of German Car-Sharing suppliers marked the UITP sanction for feasible advancement. Additionally, car sharing within Portugal has also seen an increase in the operation and presence within the country more so the larger cities. In doing as such, it proclaims to the worldwide open transport association that it puts its association and its exposure endeavors at the administration of maintainable transport and prompts its part associations in this same soul.

CarSharing is not just a fascinating and financially perceptive path for private clients to meet periodic auto needs; business clients can likewise benefit from it. Car Sharing can fulfill the vehicle needs of organizations and based on the collected data.

6.2 Research Limitations

Because of the nature within the carsharing industry, it is essential to note that there was a number of limitations that presented themselves during the research. First, there was the aspect of location, seeing that the research mainly focused on two countries namely Portugal and Germany and the two countries are wide apart. One has to go through France and Spain to get to Portugal and as such, this proved to be a limitation despite the survey mainly being conducted online. In this case, the demographics and their variation in regards to culture and other aspects such as currency when it came to measuring the inflation and difference in income per household in relation to the use of car-sharing services.

Additionally, time and funds were also an issue in this case and just as indicated earlier on, this was highly fueled by the fact that the two countries are different in a number of aspects. There were a number of resources that were required in this case and as such, the need to come up with effective and efficient services was of great importance and as such, limiting conducting the research to its fullest potential. Nonetheless, the research was conducted effectively and to the best of my knowledge and the data presented is used to analyze the carsharing niche in the present and in the end.

The last aspect or limitation was the complexity of the topic and the limited research that has been conducted within the field. Very few studies have been conducted in relation to the two countries. Addition, very few have been conducted to compare the two countries and as such, that proved to be a limitation to the study greatly. Most of the information that was being developed in this case was more of fresh information that had been collected from the field. However, with the available resources, I made the research possible and deliver the best that I could.

6.3 Ideas for future research

The paper covered a wide range of aspects that were of great use in this case. They have helped in understanding the car-sharing industry within Germany and Portugal as well, making it quite important and effective in general. However, there is always room for further studies and how it impacts the society in general. Room for future studies also creates room to further understanding the industry and how it would be impacted in the long run. In this case, there are two main ideas for further research within the field.

- 1) In this research, the point of view of the consumer is exclusively in view of literature on vehicles or car-sharing. There is in this way a need to test the possibility of unbundling the auto into a day-by-day utilized vehicle and a portability protection from a customer point of view. Is it at all appealing for customers? This could be looked into by developing decision tests and expressed inclinations. This may likewise be valuable to more readily comprehend what sort of administrations and vehicles the purchaser would need and what mixes are generally alluring.
- 2) When it comes to Portugal, unmistakably there is an absence of investigations of individuals from carsharing. Most investigations of the carsharing industry on the present individuals and seldom on potential individuals or those that have left the administrations. These gatherings would intrigue research on carsharing can be made more gainful for them and the consequences for future auto buys even in this gathering.

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Annex

Annex A: Attributes for Vehicles – Comparison between German and Portuguese millennials

Group Statistics

	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q11a Visible labeling	Germany	198	2.19	1.172	.083
	Portugal	119	2.34	1.297	.119
q11b Distinct design	Germany	198	2.28	1.046	.074
	Portugal	119	2.36	1.133	.104
q11c Small size	Germany	198	2.65	1.134	.081
	Portugal	119	2.87	1.232	.113
q11d Gas efficiency	Germany	198	3.52	1.161	.082
	Portugal	119	3.94	1.036	.095
q11e Fleet size	Germany	198	3.38	1.202	.085
	Portugal	119	3.45	1.199	.110

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q11a Visible labeling	Equal variances assumed	2.103	.148	-1.019	315	.309	-.144	.142	-.423	.134
	Equal variances not assumed			-.993	229.188	.322	-.144	.145	-.430	.142
q11b Distinct design	Equal variances assumed	.120	.729	-.667	315	.505	-.084	.125	-.330	.163
	Equal variances not assumed			-.654	233.290	.514	-.084	.128	-.335	.168
q11c Small size	Equal variances assumed	.842	.359	-1.674	315	.095	-.227	.136	-.495	.040
	Equal variances not assumed			-1.640	232.603	.102	-.227	.139	-.501	.046
q11d Gas efficiency	Equal variances assumed	7.660	.006	-3.253	315	.001	-.421	.129	-.676	-.166
	Equal variances not assumed			-3.347	270.911	.001	-.421	.126	-.669	-.173
q11e Fleet size	Equal variances assumed	.001	.980	-.539	315	.591	-.075	.139	-.349	.199
	Equal variances not assumed			-.539	249.222	.590	-.075	.139	-.349	.199

Annex B: Attributes for Service – Comparison between German and Portuguese millennials

Group Statistics

	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q12a Reasonable prices	Germany	198	4.38	.783	.056
	Portugal	119	4.55	.733	.067
q12b Everything included	Germany	198	3.90	.923	.066
	Portugal	119	3.92	1.051	.096
q12c Pay per use	Germany	198	3.92	.982	.070
	Portugal	119	4.08	.869	.080
q12d Ad-hoc-usage	Germany	198	4.09	.970	.069
	Portugal	119	3.79	1.178	.108
q12e Free floating	Germany	198	3.41	.939	.067
	Portugal	119	3.52	1.126	.103
q12f Free parking	Germany	198	3.79	1.123	.080
	Portugal	119	4.22	1.001	.092
q12g Designated parking	Germany	198	3.08	1.094	.078
	Portugal	119	3.48	1.261	.116

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q12a Reasonable prices	Equal variances assumed	1.895	.170	-1.925	315	.055	-.171	.089	-.345	.004
	Equal variances not assumed			-1.957	261.687	.051	-.171	.087	-.343	.001
q12b Everything included	Equal variances assumed	2.147	.144	-.225	315	.822	-.025	.113	-.247	.197
	Equal variances not assumed			-.218	224.025	.828	-.025	.117	-.255	.204
q12c Pay per use	Equal variances assumed	.300	.584	-1.464	315	.144	-.160	.109	-.375	.055
	Equal variances not assumed			-1.509	272.383	.133	-.160	.106	-.368	.049
q12d Ad-hoc-usage	Equal variances assumed	15.980	.000	2.423	315	.016	.296	.122	.056	.536
	Equal variances not assumed			2.310	212.701	.022	.296	.128	.043	.549
q12e Free floating	Equal variances assumed	9.822	.002	-.952	315	.342	-.112	.118	-.343	.119
	Equal variances not assumed			-.910	214.809	.364	-.112	.123	-.354	.130
q12f Free parking	Equal variances assumed	1.025	.312	-3.400	315	.001	-.426	.125	-.672	-.179
	Equal variances not assumed			-3.498	271.076	.001	-.426	.122	-.665	-.186
q12g Designated parking	Equal variances assumed	8.098	.005	-2.998	315	.003	-.403	.135	-.668	-.139
	Equal variances not assumed			-2.894	221.730	.004	-.403	.139	-.678	-.129

Annex C: Functional Consequences – Comparison between German and Portuguese millennials

Group Statistics					
	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q13a Easy to find parking spots	1 Germany	198	3,98	,953	,068
	2 Portugal	119	4,15	,840	,077
q13b Flexible use	1 Germany	198	4,20	,774	,055
	2 Portugal	119	4,22	,794	,073
q13c Quick and easy transportation	1 Germany	198	4,15	,759	,054
	2 Portugal	119	4,30	,829	,076
q13d Access w/o ownership	1 Germany	198	3,60	1,041	,074
	2 Portugal	119	3,95	1,007	,092
q13e Easy to calculate the expected price for usage	1 Germany	198	4,18	,845	,060
	2 Portugal	119	4,39	,903	,083
q13f Spend less money than for own car	1 Germany	198	4,29	,903	,064
	2 Portugal	119	4,55	,789	,072
q13g Replacement for own car	1 Germany	198	3,35	1,228	,087
	2 Portugal	119	3,46	1,254	,115
q13h Easy identification of vehicles	1 Germany	198	3,32	1,060	,075
	2 Portugal	119	3,63	1,171	,107
q13i Recognize other drivers	1 Germany	198	1,93	1,023	,073
	2 Portugal	119	2,65	1,510	,138
q13j Be recognized by others	1 Germany	198	1,78	,946	,067
	2 Portugal	119	2,53	1,550	,142
q13l Reduced CO2 emissions	1 Germany	198	3,63	1,123	,080
	2 Portugal	119	4,07	1,047	,096
q13m Short distance to next carsharing vehicle	1 Germany	198	3,92	1,009	,072
	2 Portugal	119	4,00	1,042	,095
q13n Less walking	1 Germany	198	2,69	1,243	,088
	2 Portugal	119	3,37	1,340	,123
q13o Availability	1 Germany	198	4,35	,765	,054
	2 Portugal	119	4,45	,767	,070
q13p Reliability	1 Germany	198	4,34	,794	,056
	2 Portugal	119	4,50	,780	,071

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q13a Easy to find parking spots	Equal variances assumed	,502	,479	-1,572	315	,117	-,166	,106	-,375	,042
	Equal variances not assumed			-1,623	273,239	,106	-,166	,103	-,368	,035
q13b Flexible use	Equal variances assumed	,051	,821	-,182	315	,856	-,016	,091	-,195	,162
	Equal variances not assumed			-,181	243,679	,857	-,016	,091	-,196	,163
q13c Quick and easy transportation	Equal variances assumed	2,825	,094	-1,657	315	,099	-,151	,091	-,330	,028
	Equal variances not assumed			-1,620	231,586	,107	-,151	,093	-,335	,033
q13d Access w/o ownership	Equal variances assumed	3,087	,080	-2,922	315	,004	-,349	,119	-,583	-,114
	Equal variances not assumed			-2,946	255,163	,004	-,349	,118	-,582	-,116
q13e Easy to calculate the expected price for usage	Equal variances assumed	,677	,411	-2,085	315	,038	-,210	,101	-,408	-,012
	Equal variances not assumed			-2,051	235,872	,041	-,210	,102	-,411	-,008
q13f Spend less money than for own car	Equal variances assumed	5,200	,023	-2,668	315	,008	-,267	,100	-,463	-,070
	Equal variances not assumed			-2,759	274,931	,006	-,267	,097	-,457	-,076
q13g Replacement for own car	Equal variances assumed	,020	,888	-,757	315	,450	-,109	,144	-,391	,174
	Equal variances not assumed			-,753	244,603	,452	-,109	,144	-,393	,176
q13h Easy identification of vehicles	Equal variances assumed	1,339	,248	-2,400	315	,017	-,307	,128	-,559	-,055
	Equal variances not assumed			-2,342	229,530	,020	-,307	,131	-,565	-,049
q13i Recognize other drivers	Equal variances assumed	62,737	,000	-5,002	315	,000	-,713	,142	-,993	-,432
	Equal variances not assumed			-4,558	183,672	,000	-,713	,156	-1,021	-,404
q13j Be recognized by others	Equal variances assumed	78,525	,000	-5,363	315	,000	-,752	,140	-1,027	-,476
	Equal variances not assumed			-4,781	171,545	,000	-,752	,157	-1,062	-,441
q13l Reduced CO2 emissions	Equal variances assumed	3,715	,055	-3,471	315	,001	-,441	,127	-,691	-,191
	Equal variances not assumed			-3,532	262,317	,000	-,441	,125	-,687	-,195
q13m Short distance to next carsharing vehicle	Equal variances assumed	,003	,958	-,682	315	,496	-,081	,118	-,314	,152
	Equal variances not assumed			-,677	242,528	,499	-,081	,119	-,316	,154
q13n Less walking	Equal variances assumed	1,469	,226	-4,599	315	,000	-,683	,149	-,975	-,391
	Equal variances not assumed			-4,514	234,236	,000	-,683	,151	-,981	-,385
q13o Availability	Equal variances assumed	,002	,963	-1,034	315	,302	-,092	,089	-,267	,083
	Equal variances not assumed			-1,034	248,150	,302	-,092	,089	-,267	,083
q13p Reliability	Equal variances assumed	,739	,391	-1,812	315	,071	-,166	,092	-,346	,014
	Equal variances not assumed			-1,820	252,325	,070	-,166	,091	-,345	,014

Annex D: Psychological Consequences – Comparison between German and Portuguese millennials

Group Statistics

	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q14a Fun	1 Germany	198	2,45	1,092	,078
	2 Portugal	119	2,61	1,180	,108
q14b No worries	1 Germany	198	3,77	1,025	,073
	2 Portugal	119	3,92	,962	,088
q14c No responsibility	1 Germany	198	3,35	1,064	,076
	2 Portugal	119	3,83	1,068	,098
q14d Being able to go careless	1 Germany	198	3,40	1,161	,083
	2 Portugal	119	3,80	1,124	,103
q14e Not feel stranded	1 Germany	198	3,34	1,158	,082
	2 Portugal	119	3,90	,933	,086
q14f Sense of community	1 Germany	198	2,08	1,137	,081
	2 Portugal	119	2,92	1,536	,141
q14g Somehting to talk about	1 Germany	198	1,94	1,093	,078
	2 Portugal	119	2,50	1,518	,139
q14h Save money	1 Germany	198	4,04	,968	,069
	2 Portugal	119	4,37	,746	,068
q14i Have money for other things	1 Germany	198	3,91	1,056	,075
	2 Portugal	119	4,21	,852	,078
q14j Save time	1 Germany	198	3,99	,959	,068
	2 Portugal	119	4,31	,841	,077
q14l Not miss anything	1 Germany	198	2,86	1,203	,086
	2 Portugal	119	3,57	1,101	,101
q14m Focus on important parts of life	1 Germany	198	3,43	1,210	,086
	2 Portugal	119	3,92	1,114	,102
q14n Environmental awareness	1 Germany	198	3,72	1,067	,076
	2 Portugal	119	4,07	,945	,087

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q14a Fun	Equal variances assumed	,762	,383	-1,256	315	,210	-,164	,131	-,421	,093
	Equal variances not assumed			-1,232	233,736	,219	-,164	,133	-,426	,098
q14b No worries	Equal variances assumed	4,736	,030	-1,233	315	,218	-,143	,116	-,372	,085
	Equal variances not assumed			-1,253	261,082	,211	-,143	,114	-,368	,082
q14c No responsibility	Equal variances assumed	1,981	,160	-3,912	315	,000	-,483	,124	-,727	-,240
	Equal variances not assumed			-3,908	247,861	,000	-,483	,124	-,727	-,240
q14d Being able to go careless	Equal variances assumed	2,179	,141	-2,962	315	,003	-,394	,133	-,656	-,132
	Equal variances not assumed			-2,986	255,033	,003	-,394	,132	-,654	-,134
q14e Not feel stranded	Equal variances assumed	14,876	,000	-4,478	315	,000	-,561	,125	-,807	-,314
	Equal variances not assumed			-4,723	289,165	,000	-,561	,119	-,794	-,327
q14f Sense of community	Equal variances assumed	28,105	,000	-5,591	315	,000	-,844	,151	-,1140	-,547
	Equal variances not assumed			-5,197	195,827	,000	-,844	,162	-,1164	-,523
q14g Something to talk about	Equal variances assumed	34,174	,000	-3,838	315	,000	-,565	,147	-,854	-,275
	Equal variances not assumed			-3,545	191,855	,000	-,565	,159	-,879	-,251
q14h Save money	Equal variances assumed	,958	,328	-3,233	315	,001	-,334	,103	-,538	-,131
	Equal variances not assumed			-3,446	296,052	,001	-,334	,097	-,525	-,143
q14i Have money for other things	Equal variances assumed	1,740	,188	-2,592	315	,010	-,296	,114	-,521	-,071
	Equal variances not assumed			-2,732	288,805	,007	-,296	,108	-,509	-,083
q14j Save time	Equal variances assumed	,235	,628	-2,973	315	,003	-,316	,106	-,525	-,107
	Equal variances not assumed			-3,071	274,058	,002	-,316	,103	-,519	-,113
q14l Not miss anything	Equal variances assumed	,572	,450	-5,232	315	,000	-,708	,135	-,974	-,442
	Equal variances not assumed			-5,349	266,048	,000	-,708	,132	-,968	-,447
q14m Focus on important parts of life	Equal variances assumed	5,758	,017	-3,633	315	,000	-,495	,136	-,763	-,227
	Equal variances not assumed			-3,709	264,998	,000	-,495	,133	-,758	-,232
q14n Environmental awareness	Equal variances assumed	3,755	,054	-2,950	315	,003	-,350	,119	-,584	-,117
	Equal variances not assumed			-3,040	272,207	,003	-,350	,115	-,577	-,123

Annex E: Technological Adaptation – Comparison between German and Portuguese millennials

T-Test

Group Statistics

	Country Where are you from?	N	Mean	Std. Deviation	Std. Error Mean
q16a I enjoy using technology	1 Germany	198	4,06	,755	,054
	2 Portugal	119	4,16	,676	,062
q16b I avoid using technology when I can	1 Germany	198	2,18	1,087	,077
	2 Portugal	119	2,62	1,228	,113
q16c I think using technology in daily use takes up too much time	1 Germany	198	2,52	1,112	,079
	2 Portugal	119	2,99	1,218	,112
q16d I know that technology can help me to learn many new things	1 Germany	198	4,15	,632	,045
	2 Portugal	119	4,36	,673	,062
q16e Technology intimidates and threatens me	1 Germany	198	2,18	1,151	,082
	2 Portugal	119	1,75	1,067	,098
q16f Millennials should know how to use technology	1 Germany	198	4,22	,755	,054
	2 Portugal	119	4,24	,890	,082
q16g I am very confident when it comes to working with technology at home/at work/ at university	1 Germany	198	4,12	,744	,053
	2 Portugal	119	4,30	,819	,075

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
q16a I enjoy using technology	Equal variances assumed	1,599	,207	-1,235	315	,218	-,104	,084	-,270	,062
	Equal variances not assumed			-1,270	270,266	,205	-,104	,082	-,266	,057
q16b I avoid using technology when I can	Equal variances assumed	10,922	,001	-3,360	315	,001	-,445	,132	-,706	-,184
	Equal variances not assumed			-3,260	225,364	,001	-,445	,137	-,714	-,176
q16c I think using technology in daily use takes up too much time	Equal variances assumed	1,587	,209	-3,526	315	,000	-,471	,134	-,734	-,208
	Equal variances not assumed			-3,447	231,064	,001	-,471	,137	-,741	-,202
q16d I know that technology can help me to learn many new things	Equal variances assumed	1,712	,192	-2,859	315	,005	-,215	,075	-,363	-,067
	Equal variances not assumed			-2,815	236,496	,005	-,215	,076	-,365	-,065
q16e Technology intimidates and threatens me	Equal variances assumed	1,828	,177	3,301	315	,001	,429	,130	,173	,685
	Equal variances not assumed			3,363	263,419	,001	,429	,128	,178	,680
q16f Millennials should know how to use technology	Equal variances assumed	1,451	,229	-,139	315	,889	-,013	,094	-,197	,171
	Equal variances not assumed			-,134	217,743	,894	-,013	,098	-,205	,179
q16g I am very confident when it comes to working with technology at home/at work/ at university	Equal variances assumed	1,621	,204	-2,022	315	,044	-,181	,090	-,358	-,005
	Equal variances not assumed			-1,975	230,250	,050	-,181	,092	-,362	,000

Appendix

Appendix A: Survey Questions

1. How old are you?

Answer Choices
<input type="radio"/> 18-24
<input type="radio"/> 25-34
<input type="radio"/> 35-45

2. What is your gender?

Answer Choices
<input type="radio"/> Male
<input type="radio"/> Female

3. Where are you from?

Answer Choices
<input type="radio"/> Germany
<input type="radio"/> Portugal

4. What is your household type?

Answer Choices
<input type="radio"/> Single
<input type="radio"/> Married
<input type="radio"/> An adult plus one or several children
<input type="radio"/> A couple with one or several children

--

5. What is your job status?

Answer Choices		
<input type="radio"/> Employee		
<input type="radio"/> Unemployed		
<input type="radio"/> Student		
<input type="radio"/> Freelancer		

6. What is the highest degree or level of school you have completed?

Answer Choices		
<input type="radio"/> Completed some high school		
<input type="radio"/> High school graduate		
<input type="radio"/> Trade/technical/vocational training		
<input type="radio"/> College or University degree		
<input type="radio"/> Post-graduate degree		

7. What is the size of your household?

Answer Choices		
<input type="radio"/> 1		
<input type="radio"/> 2		
<input type="radio"/> 3		
<input type="radio"/> 4		

<input type="radio"/> 5 or more		

8. What is your household income?

Answer Choices		
<input type="radio"/> < 10K		
<input type="radio"/> 10K - 15K		
<input type="radio"/> 15K - 25K		
<input type="radio"/> 25K - 50K		
<input type="radio"/> 50K - 75K		
<input type="radio"/> 75K - 100K		
<input type="radio"/> > 100K		

9. Please rate the following question: How often do you use the carsharing service?

<input type="radio"/> Never	<input type="radio"/> Rarely	<input type="radio"/> Sometimes	<input type="radio"/> Very often	<input type="radio"/> Always

10. How likely is it that you want to use the carsharing services in the future?

Answer Choices		
<input type="radio"/> 10/10 ★★★★★★★★★★		
<input type="radio"/> 9/10 ★★★★★★★★★☆		
<input type="radio"/> 8/10 ★★★★★★★★☆☆		
<input type="radio"/> 7/10 ★★★★★★★☆☆☆		
<input type="radio"/> 6/10 ★★★★★★☆☆☆☆		

● 5/10	★ ★ ★ ★ ★ ☆ ☆ ☆ ☆ ☆		
● 4/10	★ ★ ★ ★ ☆ ☆ ☆ ☆ ☆ ☆		
● 3/10	★ ★ ★ ☆ ☆ ☆ ☆ ☆ ☆ ☆		
● 2/10	★ ★ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆		
● 1/10	★ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆		

11. Please rate the following "attributes for vehicles" in terms of their importance for your decision to engage in carsharing:





	● Unimportant	● Somewhat important	● Quite important	● Very important	● Extremely important
Visible labeling					
Distinct design					
Small size					
Gas efficiency					
Fleet size					

12. Please rate the following "attributes for services" in terms of their importance for your decision to engage in carsharing:

	● Unimportant	● Somewhat important	● Quite important	● Very important	● Extremely important
Reasonable prices					
Everything included					
Pay per use					
Ad-hoc-usage					

Free floating					
Free parking					
Designated parking					

13. Please rate the following "functional consequences" in terms of their importance for your decision to engage in carsharing:

	 Unimportant	 Somewhat important	 Quite important	 Very important	 Extremely important
Easy to find parking spots					
Flexible use					
Quick and easy transportation					
Access w/o ownership					
Easy to calculate the expected price for usage					
Spend less money than for own car					
Replacement for own car					
Easy identification of vehicles					
Recognize other drivers					
Be recognized by others					
Reduced CO2 emissions					
Short distance to next carsharing vehicle					
Less walking					
Availability					
Reliability					

14. Please rate the following "Psychosocial consequences" in terms of their importance for your decision to engage in carsharing:






	● Unimportant	● Somewhat important	● Quite important	● Very important	● Extremely important
Fun					
No worries					
No responsibility					
Being able to go carelessly					
Not feel stranded					
Sense of community					
Something to talk about					
Save money					
Have money for other things					
Save time					
Not miss anything					
Focus on important parts of life					
Environmental awareness					

15. Please rate the following statements about carsharing services in terms of environmental awareness:



	● Strongly disagree	● Disagree	● Nor agree neither disagree	● Agree	● Strongly agree
Carsharing is an environment-friendly service.					

Environmental protection is an important factor when using Carsharing					
Using carsharing supports a useful idea of environmental protection.					

16. Are you tech-savvy?

	Strongly disagree 	 Disagree	Nor agree neither disagree 	 Agree	Strongly agree 
I enjoy using technology					
I avoid using technology when I can					
I think using technology in daily use takes up too much time					
I know that technology can help me to learn many new things					
Technology intimidates and threatens me					
Millennials should know how to use technology					
I am very confident when it comes to working with technology at home/at work/ at university					

17. Have you ever driven an electric car?




Answer Choices		
 Yes, a hybrid electric/ petrol car (PHEV)		
 Yes, a fully electric car		
 No, I've never driven an electric car		

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18. Have you ever used an electric car of a carsharing service?

Answer Choices		
<input checked="" type="radio"/> Yes		
<input type="radio"/> No		

19. Please rate the following question: How likely is it that you want to use an electric vehicle of a carsharing service in the future?

Answer Choices		
<input checked="" type="radio"/> 10/10 		
<input type="radio"/> 9/10 		
<input type="radio"/> 8/10 		
<input type="radio"/> 7/10 		
<input type="radio"/> 6/10 		
<input type="radio"/> 5/10 		
<input type="radio"/> 4/10 		
<input type="radio"/> 3/10 		
<input type="radio"/> 2/10 		
<input type="radio"/> 1/10 		

20. Below are some statements people have made about the benefits of electric vehicles. For each statement, please indicate whether you personally agree or disagree with that statement.

	Strongly disagree ●	Disagree ●	Nor agree neither disagree ●	Agree ●	Strongly agree ●
Electric vehicles are much quieter than other vehicles					
Electric vehicles have excellent acceleration					
Electric vehicles are environmentally friendly because they have zero emissions					
The cost to charge an electric vehicle is much less than the fuel costs for a petrol or diesel vehicle					
Electric vehicles cost about the same to buy as petrol or diesel vehicles					
Electric vehicle technology has improved and they now have a much better range					
Electric vehicle do not attract me due to low range					
Electric cars are safe					
Electric cars increase the pleasure of driving					
Electric vehicle attract me due to tax benefits					
Electric vehicle attract me due to extra charging parking slots					