Digital Service through Sharing Economy to Sustainability

A car sharing case in Suzhou, China

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Abstract

The rapid increase in car ownership has caused rigorous issues for people living in the major cities in China, which is observed from traffic pressure, the inconvenience of city travelling, and air pollution. While the fast development of digital service platforms based on the Internet provides an alternative approach to touch the problems, leading a researchable phenomenon, online car-sharing service in China.

This paper strives to explore the impact of car sharing on millennial sustainability attitudes by using the daily service on apps to ‘drive less, share more’. The paper is conducted using mixed research methods in Suzhou, China. Principally, the researchers interviewed ten car-sharing consumers during shared ride. To ensure the creditability and reliability, the paper collected 326 online survey responses from local car-sharing platforms as comparable data.

The results show that most millennials agree car-sharing service makes their traffic modes more convenient, and taking shared ride more compared to self-driving has a significant influence on social and environmental issues in cities. Also, some respondents present willingness or already take actions on giving up car ownerships. However, the result also emphasises the fundamental reasons for millennials to participate in car-sharing service, which is personalised service and reasonable price. The paper closes with three outcomes, sharing economy as ‘Development’, digital service as ‘Innovation’, and sustainability as ‘The future’. They not only enrich the current literature research between Millennials and sharing economy, but also promote further strategies for car-sharing companies with empirical data.

KEY WORDS:

Sharing Economy; Sustainability; Digital Service platform; Suzhou-China; Transport Mode; Car-sharing service; Consumer Culture Theory ‘CCT’; Consumer Attitude.
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<th>Full Form</th>
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<tbody>
<tr>
<td>CCT</td>
<td>Consumer Culture Theory</td>
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<tr>
<td>CCTV</td>
<td>China Central Television</td>
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<tr>
<td>CIDR</td>
<td>China Industry Development Research</td>
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<tr>
<td>CO2e</td>
<td>'Carbon dioxide equivalent' (measure of greenhouse emissions)</td>
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<tr>
<td>FBIC</td>
<td>Fung Business Intelligence Centre</td>
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<tr>
<td>GHGs</td>
<td>Greenhouse Gases</td>
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<tr>
<td>ICTs</td>
<td>Information and Communication Technologies</td>
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<td>PwC</td>
<td>PricewaterhouseCoopers</td>
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<td>SE</td>
<td>Sharing Economy</td>
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<td>SD</td>
<td>Sustainable Development</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>WEF</td>
<td>World Economic Forum</td>
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Chapter 1: Introduction

1.1 Background

China, as the second largest economy with the most population in the world (World Bank [WB] 2016), is experiencing the booming stage of vehicle ownership. According to China Industry Development Research (CIDR) (2016), from 2007 to 2015, the total amount of vehicle ownership increased more than three times (57 million to 172 million), which can be seen in Figure 1. Based on the data, it is predicated that in 2020, the total number of vehicle ownership will be over 200 million (CIDR 2016).

![Figure 1: The Vehicle Ownership and Growth in China from 2009 to 2015](image)

Until 2016, there are 49 cities in China owning millions of vehicles, among which 6 cities have over 3 million vehicles (Figure 2) (The Department of Public Security 2017). Simultaneously, the related air pollution from car emission accounts for more than 50% of the total pollutant (Brown 2017).
Correspondingly, this huge increasing phenomenon causes serious social and environmental concerns that mainly disturb people’s lives in cities, particularly in those with a population of over millions (Chan & Yao 2008; Becken et al. 2015). To be specific, these issues directly reflect to traffic system pressure, difficulties of city traveling, and air pollution (e.g. smog) (CCTV 2015; Tsinghua University 2015).

With the goal of developing long-term Sustainable Development (SD), China is putting more efforts into solving these tagged problems in order to create sustainable cities (China’s 13th Five-Year Plan 2015). In 2015, Premier Li Keqiang proposed a new notion called “Internet Plus”, which promotes Internet-based platforms for businesses to explore more creative and innovative products and services with respect to social issues and demands (The State Council 2015). It has accelerated development of the sharing economy as a new consumption concept in China (National Information Centre 2016). Thus, based on the social and environmental issues from big number of vehicle ownership in cities and combined with the business digitalization model on sharing platforms, a rising business field “online car-sharing service” has emerged onto the Chinese business environment.
In terms of the current development of car sharing market in China (Fung Business Intelligence Centre [FBIC] 2016) showed in Figure 3, until February 2016, there are 10 million cars that are registered on car-sharing platforms, and at the same time, the registered users are around 250 million. The overall service coverage reaches 60% of cities in China, and the primary focuses are those having millions of population, which indicate that the vehicle ownership is also ranked high relatively.

According to the research from Roland Berger (2016), the idle time of cars in China accounts for 95% of emissions. However, the use of one shared car can on average reduce between nine and thirteen regular cars on the road (Li 2017). On the basis of various research data support (Figure 3), one ride of car sharing helps to reduce about 3.7 kg CO2, and the influence of eight rides of car sharing equals to plant a tree as a compensation in city (Fellows & Pitfield 2000; Jacobson & King 2009; Caulfield 2009).
In other word, the model of car sharing can enhance the usage ratio of vehicles to improve the resources operation to be more efficient, which in return is beneficial to release the pressure of traffic system, advance the convenience and flexibility of travel modes, and decrease the overall emission that originally caused by the idle time. Namely, “drive less, share more” is an effective and efficient approach to tag the solid social and environmental issues caused by the vast increase of vehicle ownership that perplexes people who are living in cities.

More importantly, during the relationship between sharing and driving, the vital decision maker is consumer. Therefore, the paper puts the focus on the role of consumers to explore their perceptions of car-sharing business concept and operation model, by questioning how the car-sharing service stimulates consumers’ sustainability attitudes during their interactions and interconnections in daily life.

1.2 Research Description

To specifically structure the study, the research target location is set in Suzhou, which is one of the first batches of cities covered by car-sharing services in China, with the ownership of private car over 3.13 million ranked No.6 in China (Figure 1) (CNR 2017). Considering the research from the Department of Public Security (2017), for every hundred homes in Suzhou, the total vehicles are averagely over 70. So this locality has typical social and environmental concerns in terms of vehicle ownership. The paper chooses the research target group on millennials as they are recognized as “digital natives” that actively participate in Internet-based services and activities (Russell 2016; Bess & Bartolini 2011; Yuan 2013).

In addition, they present stronger perceptions with concerns on social and environmental related issues and are more confident to influence and make a change. The third reason of the study to put attention on millennials is due to the lack of literature with empirical data related to millennial sustainability attitude in sharing economy currently. It is thus, based on the environment of sharing economy in China to analyse car sharing performance and effects, when targeting Suzhou as the research focus and bringing the car sharing business concept into the pattern of local consumption behaviour, to obtain insights into the connections to millennial attitudes towards sustainability. Besides, the study aims to be helpful and beneficial for both literature-based studies and other business operations in sharing economy.
Accordingly, the main research question is,

“Is there an impact on millennial sustainability attitude by using car-sharing service in Suzhou, China?”

To be specific, three research objectives are listed below.

- To understand how the car sharing business model tags millennial daily concerns and issues during the daily life in cities.
- To analyse how the car-sharing service influences millennial attitudes towards sustainable behaviour in Suzhou, China.
- To discuss how the car-sharing practice reflects in creating a better ecosystem of city life.

1.3 Structure of the Paper

This chapter presents the introduction of the problem background, which also includes the research motivation and expectation for the study. Chapter 2 is essentially devoted to the theoretical framework by reviewing the available literature in the Sharing Economy concept areas, and Consumer Culture Theory (CCT), from which extract the study focus of digital sharing service, millennials, and sustainability attitude. Chapter 3 provides the research design construct centred on ‘The Research Onion’ model of Saunders et al. (2012) and identifies the methodological approach by way of peeling the onion layers from the outside towards the core. The paper is designed to conduct a mixed research method, consisting of interviews and online survey collected from car-sharing platforms as comparable and supplementary data. Chapter 4 introduces a car-sharing case “Didi Chuxing” as an illustration platform. This chapter presents background information of this car sharing company, with detail content of its business operation model, market performance and already achieved results from economic, social and environmental aspects. Chapter 5 discusses the research results that conducted on the app platform of Didi Chuxing with the target group of millennials in Suzhou, using a narrative form of analysing information understood from the data gathered from both interviews and survey questionnaires, to support and compare insights from sampled data and descriptive data analysis. In Chapter 6, the study presents the discussion of the results presented in the previous chapter, by reflecting on the

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1 Didi Chuxing also referred to as Didi.
research question and objectives of this paper with current research. Chapter 7 is the concluding chapter. Finally, Chapter 8 presents among others, implications with further recommendations and paper limitations associated with this study, and potential research avenues for future field research.
Chapter 2: Theoretical Framework

This chapter focuses on the theoretical framework that deals with two crucial aspects, mainly at the macro level of inquiry, including the concept of the sharing economy and consumer culture theory (CCT).

2.1 Sharing Economy

A new arrangement of creating value starts to have a major impact on many economies about the way of production and consumption. As a substitute for buying and owning products, customers are increasingly interested in leasing and sharing them. Companies benefit from the bearing or trend toward “collaborative consumption” through creative new approaches to define and distribute their offerings (Matzler et al. 2014). The system is often referred to as the sharing economy, involving a spectrum of activities meant to maximize the potential of minimally utilized human and physical resources.

Besides, useful quality of sharing is evident, which is often forgotten even by its advocates: sharing is not the same thing as access (Aigrain 2012). Sharing is an act of making something available to others, and it is of particular importance because it can be practised by all, at a very limited entry cost and consumer usage with real payoff for all involved. Thus, sharing with others is a move towards cultural empowerment. In this idea, there is a symbolic beauty in the concept of balancing rewards – it is experiential since ownership is no longer the ultimate expression of consumer desire (Yu 2009; Marx 2011).

The sharing economy has attracted a significant amount of attention in recent years, as the development of ‘big data’. Information and Communication Technologies (ICTs) have enabled diverse business models to emerge under the system. Growth in sharing systems has particularly been fuelled by the Internet and smartphones, with the rise of social media systems (Lamberton & Rose 2012), which facilitate connections between peers eager to share their possessions. For consumers, it seems to hold the possibility to combine cost reduction, benefit augmentation, comfort and environmental awareness in one mode of consumption. Whether in the temporary using of assets, renting or serving up micro-skills in exchange for admittance or money, consumers are showing a strong appetite for the sharing-based economy (PricewaterhouseCoopers [PwC] 2015).
In China, many companies are providing digital service built on sharing systems. On the platform of car-sharing service by business digitalization support, the company not only makes abundant economic sense for consumers and communities, but also improves the business modelling to be more flexible, innovative, and forward thinking. These organisations are utilising the sharing platform to follow the mission to “help regulators meet transportation, environmental and employment challenges, decrease congestion and pollution, and build more mobile, vibrant cities for the Chinese people” (The State Council 2015).

Concerning the phenomenon of car sharing from previous studies and their business concepts (Böckmann 2013; Kim et al. 2015; Hamari et al. 2016; Roland Berger 2016), three necessary drivers for consumers to participate in the sharing economy are in Figure 5 summarized.

![Figure 5: Drivers for Consumers to Participate in Sharing Economy](image)

2.1.1 Economic drivers

The prominent features motivating people to join in the sharing business wave is to reutilize and monetize the resources that stay in good shape (Botsman & Rogers 2012) when idle resources or assets for direct economic benefits are underused. Whereas, from the financial flexibility perspective (Chui et al. 2012), collaborative consumption provides both owners and non-owners to be more flexible to gain financial income as well as the independence of working with empowerment compared to standard earnings. First, for providers, they earn income from low utilized resources with flexible working hours. Second, for consumers, it leads to cost savings, convenience and allows them to gain access to formerly unattainable products and services.
According to Levine (2009), “Sharing is to ownership what the iPod is to the eight-track, what the solar panel to the coal mine. Sharing is clean, crisp, urbane, and postmodern; Owning is dull, selfish, timid, and backward.” In fact, car sharing is way of formulating “sustainable” development. Due to any change of ownership, the limitations of resource utilization decrease and more opportunities that match the specific or personalized needs present in the operating environment for consumption, which reflects on the access over ownership (Belk 2014).

2.1.2 Technological drivers

As with the vast support for digital apps integrated innovative support of social networking, the transactions among peers, depending on demand and supply become easier and more efficient (Constantinides & Fountain 2008). In the same way, a majority of people become part of the sharing network to access, manage, share and spread and to teach (Black & Lynch 2004). The interactions with such networking provide users with appropriate choices that appeal to individualistic personalities and experience to drive further specific interest with demand.

Certain factors reveal that mobile apps designed are for various reasons. They include “engagement/ disengagement, pass-time, knowledge, education, and social” (Gerlich et al. 2015, p. 69). While the essential features of apps with digitalization consist of easy accessibility and usage, simple functions focusing on individual demands, free and frequent information updates (Hsu & Lin 2016). The aim of the app is to build a relationship experience with users to become useful as well as necessary ‘tools’ to make users’ lives more convenient and smarter, which reflect the principles of car-sharing apps. In other words, digital technology apps enable consumers to meet expectations of personalised services and products catering for individual contexts (World Economic Forum [WEF] 2016).

Furthermore, payment systems are an important category of mobile apps that are indispensable tools in the process of completing consumers’ transactions (Black & Lynch 2004; Nakamoto 2008). Considering the mobile trend for payment system in China is in the adaptation age of ‘Mobile Wallet’, it provides consumers with an expedient approach simply to participate in the car sharing business platforms (PwC 2014).
2.1.3 Social drivers

The social benefits and value embedded in the sharing economy are substantial for individuals. Simultaneously, the created welfare benefits are shared relatively with people as private gains or economic benefits. Due to the development of digital networking as mentioned previously, consumers have more capabilities to communicate, present, share, and create value in the local communities and society. These characteristics enable consumers to modify their understanding of sustainable ideology, reflecting their attitude towards sustainable development and of rational sharing and utilising as well, such as caring more about resource and energy saving and the enhancement of environmental protection (Porter & Kramer 2011; National Information Centre 2016).

A recent Nielsen global online research found that Chinese people, especially so-called millennials, continue to be the most willing to pay more for sustainable offerings compared to other age groups (Nielsen 2015). The elements such as information and communication transparency on the platforms, social presence, self-fulfilment, consumption experiences, and so on affirm to this notion. They form the social recognition and ideologies of trust. Trust belongs to the intrinsic motivation of consumers, as people define and judge by different reasons and parties. Therefore, the position of confidence or trust in the sharing economy context has uncertainty.

However, works of Botsman and Rogers (2010), Lamberton and Rose (2012), and Schor and Fitzmaurice (2014) determine peer trust as the central driver on the platforms of collaborative consumption. Similarly, cultural orientation on sharing (Arnould & Thompson 2007), stipulates another natural effect for consumers to make the consumption behaviour. Considering the research on the car-sharing service within the regional study in Suzhou, China, the Chinese culture, as well as Suzhou local culture play a vital role that influences the consumer behaviour aside from the already evident direction of sustainable policy by government regulators.

In brief, these three drivers point to several aspects, manifesting not only the present relevant conditions, but also consumers who have proper opportunities and approaches to access the sharing economy with the expectations to gain benefits during the involvement. Also, the potential reflection that the environment of digital service embedded on sharing platforms impacts consumer attitudes towards sustainable consumption, penetrating among economic,
technological, and social perspectives. As one of the significant business models to promote and implement the concept of sharing economy in China (National Information Centre 2016), car-sharing companies engages consumer attitudes to join in its car-sharing service by presenting a more comfortable and intelligent lifestyle. In the same way, compared to the traditional transportation, this travel mode brings ripple effects in the development of sustainability.

Next, by the explanation of the three necessary drivers, the academic framework endeavours to explore more deeply and in a more concrete way by combing the theory of Consumer Culture Theory (CCT), to obtain comprehensive inspiration from scholarly literature for the study of the car-sharing service.

2.2 Consumer Culture Theory (CCT)

In recent years, researchers exploring experiential elements of consumption have gained wider acceptance (Mehmetoglu 2012; Yuksel et al. 2016; Andrews et al. 2012; Trudeau and Shobeiri 2016; Jantzen et al. 2012; Jr. Kwortnik & Jr. Ross 2007; Lanier and Rader 2015). These studies have been characterised as “interpretive,” “humanistic,” “naturalistic,” “subjective,” “hermeneutic,” or “postmodern” (Arnould & Thompson 2005b; Levy 2006). Although these scholars often have different approaches, they share a theoretical orientation that focuses on the relationships between consumption and cultural meanings (Arnould & Thompson, 2005a).

To unify culturally oriented consumer research, Arnould and Thompson (2005b, 2007) created an academic brand, “Consumer Culture Theory (CCT)”, as a label for research that explored the experiential, sociocultural, and symbolic aspect of consumption. In contrast with traditional consumer research, which draws heavily from economics and psychology regarding theory and method, this burgeoning sub-field of research reflects anthropological and sociological orientations toward the study of consumption.

Arnould and Thompson (2005) identified and focused on four ‘CCT’ types of research streams in settings whose conceptual meaning was explained according to Dahl (2012) that can likewise be likened or reflected in terms of car-sharing service in China.
Consumer Identity Projects

This involves the study of how consumers use promotion materials or purposes to construct a consistent, though often diverse and fragmented “self”. A key tenet of the CCT tradition is the consumption-oriented kind of identity projects and expression of self (Arnould & Thompson 2005; Belk 1988, 2013). It is concerned with the behaviours in which consumers shape their identity and projects by gender performativity, symbolic distinctions, cultural contradictions, and marketplace conditions. Thus, consumers are given the means to creatively construct and express the abundance of identities that are open to them (Shankar & Fitchett, 2002, p. 512). To put it differently, consumers use the car-sharing indulgence to create their identities, consuming goods to express their desires and feelings. In this sense, for users actively in the car-sharing segment environment, consumption becomes a way to express a craving for quality, internationalization or recognized elegance or modernity.

Marketplace Culture Perspectives

This involves an anthropological position on consumer culture and social behaviour. In that conviction, the marketplace acts as a mediator of social relationships and connections. It highlights the important function of consumers as active creators, meaning that the ‘culture’
is what the consumers and businesses in individual business create. For instance, they co-create their culture by consuming essential and functional (utilitarian) bearing goods. The idea of neorealism, where customers create ‘brand tribes’, is also an example of seeing from the millennial angle. The important notice has been perceived through news-caps such as ‘China’s ride-hailing apps fuelled by hundreds of millions of Chinese mobile-savvy Millennials’ (Huang 2017).

- **Socio-historical Patterning of Consumption**

This aspect addresses the issue of consumer society and how it is developed and maintained (Arnould & Thompson, 2005, p. 874). Besides, it links structural influences of class, gender, and habits with consumption behaviour. This perspective offers compelling insights into how, for example, ethnic origins have become something ‘consumable’ and act as the anchor in an uncertain consumption environment (Askegaard et al. 2005).

- **Mass-Mediated Marketplace Ideologies and Consumers’ Interpretive Strategies**

This attempts to answer how consumers make a judgment of mass-media messages linked to consumption and formulate (critical) responses in the way they embrace or reject received messages. In Suzhou, people understand that global companies exercise extraordinary influence, both positive and negative, on society’s wellbeing. However, they require companies to address social problems connected to what they sell and how they conduct business (Holt et al. 2005). It links critical theory with consumers’ interpretive and co-creative activities. It is a sustainable approach that car-sharing service in Suzhou has tapped into in the form of reducing pollution with its operations by using an app-based platform to lead in combating environmental issues. However, according to Mitra and Gupta (2008), a transformation is complex, difficult, and uncertain because it has unpremeditated side effects, which is another aspect for the paper to pay attention during the research process.
Figure 7 illustrates two key points (2.2.1 and 2.2.2) extracted from the understanding of CCT for the paper that tagging the research question and objectives listed in Chapter 1.

2.2.1 Sustainability Attitude

Promoters of sustainable development acknowledge the need for changes in human values, attitudes, and behaviours to reach a sustainable transition that will meet human needs while protecting the ecosystem (Kates 1999). Darwin (1872) introduced attitude into the literature of Science in his book, ‘Expression of the Emotions in Man and Animals’. Thomas (1907), who elaborated on Darwin in ‘Sex and Society’ linked ‘affect’ and ‘cognition’ in the ‘attitude’ concept and conveyed the notion that attitudes have implications for behaviour. Therefore, this paper defines: according to Osgood, Suci and Tannenbaum (1957), who empirically-formulated the most current description of attitude. There are three components, ‘affect, cognition and behaviour’, dimensions from which regularly discovered through studies. As stated by the above authors, “Attitude is what we infer from our behaviour” (Kahle 1984, p. 3-4). While values determine or direct our individual goals, it also frames our attitudes and provides the rooted standards of the behaviour of people and societies which could be relatively abstract and trans-situational. To review the research question stated in Chapter 1 “Is there an impact on millennial sustainability attitude by using car-sharing service in Suzhou, China?” Attitudes, according to Leiserowitz, Kates and Parris (2004, p. 1), however, refer to the evaluation of a specific object, quality, or behaviour as positive or negative, which are often derived from and reflect abstract values. Thus, behaviour refers to concrete decisions and actions taken by individuals or groups. In this sense, millennials, which are often rooted in underlying values and attitudes, are well suited for this purpose.

2.2.2 Digital Techniques and Millennials

The implementation of CCT on the study of car sharing and sustainability likewise, denotes Perceived Consumer Effectiveness (PCE) and consumer innovativeness. According to literature, PCE has remained associated with socially conscious attitudes. The idea appears to have fused with other related constructs in the empirical studies measuring effects on behaviour (Ellen et al. 1991). On another hand, Betje (as cited in Awan & Zuriat-ul-Zahra 2014, p. 94) asserts, “innovations are new ideas applied in a business of producing, distributing and consuming products or services.” Consequently, innovation embraces both technological and creative elements.
In China, 58% of Internet users are Millennials (Russell 2016). They embrace new technology regarded as “digital natives” (Bess & Bartolini 2011; Yuan 2013). According to previous research, millennials tend to be more confident about the positive and desirable influence due to their human consumption behaviours, which is one of the significant attractiveness for them to participate in the collaborative consumption services (Hwang & Griffiths 2017, p. 133). Likewise, the rapid development of digitalization also provides millennials with advanced knowledge and understanding on the concept of environmental-friendly and sustainable lifestyle compared to other generations in China, and they turn to be more willing to take actions and make achievements (National Information Centre 2016). According to Kahle (1984, p.6), attitude is simply preferential, as it does not represent the only kind of social cognition or adaptation construct. Thus, their degree of adaptability and acceptability of the digital service of car sharing is an important aspect of identifying the impact towards their sustainability attitude in this case.

In the next chapter, the elements mentioned above will be used to frame the research design and methodology.
Chapter 3: Research design and methodology

The research design is centred on ‘The Research Onion’ model of Saunders et al. (2012, p. 128). Concerning the study subject of car sharing service and its stimulation to the sustainability attitude of millennials in Suzhou, China, the research focuses on a mixed method which combines interview with online survey to explore consumers’ stories and experiences from car-sharing service, to describe specific effects on millennial attitude related to sustainability. The research timetable, covering the entire study process, is presented in Appendix 2.

3.1 Research Philosophy

The research philosophy is drawn to explore the conceptual research approach chosen to examine the social phenomena in gaining an understanding (Saunders et al. 2009, p. 118). It guides the explanation and justification of the path taken. The study of car sharing service in Suzhou China emphasises and shapes the interpretation understood from the pattern of millennial attitudes within the local cultural environment (Arnould & Thompson 2007). As such, the path taken is hermeneutics. The study aims to gather data originating from millennial contexts and experiences (attitude) through story telling about the participation activities to access consumers’ perceptions and understanding of car-sharing service in the sharing economy in Suzhou. The knowledge gathered ranges from the narrative, textual to descriptive aspects (Gabriel et al. 2013). This research philosophy directs the study towards the relationship between car sharing and millennial attitudes, with an emphasis on the stimulation of sustainability from the business-sharing phenomena.

3.2 Research Nature and Approach

As Saunders et al. (2012, p. 26-50) argued, the determination of the research nature and approach is due to the content of investigation question and objectives planned to answer. Since the paper explores the stimulation of millennial attitude in sustainability due to their engagement with car-sharing service in Suzhou, the understanding of millennial feelings and knowledge with the degree of recognition is significant. Therefore, the inductive approach is suitable to benefit the study in this position. It is important to collect and dig into the empirical knowledge from millennial individual experiences, which will assist the analysis of connections to the sustainability concept. Thus, it requires researchers to take part in the data
collection process and have a relatively high level of interactions and communication with respondents (Saunders et al. 2009). As new thinking may occur during the data collection, the inductive approach has advantages to keep the research flexible and adaptable and enable the researchers to concentrate on the subject simultaneously. Meanwhile, the process of empirical information gathering may help to enrich the existing theoretical framework in Chapter 2 as well with more appropriate applications for the selected concepts and theories.

3.3 Mixed Research Method

The study places significant attention on the combination of multiple resources to structure the research, including the implementation of interview and online survey. Since the research question is expected to have an experience-based reflection on millennial attitude towards sustainability during the participation with car-sharing service, from the interview and online question based method, the data collected describe routines and challengeable moments and meanings in individuals’ lives (Denzin & Lincoln 2005, p. 3), deploying whatever strategies, methods, and empirical materials are at hand (Becker 1998, p. 2). It applies to the study of relevant car sharing phenomenon, which immerses a culture within a group of people under the study to generate rich, detailed, and valid data that are whole experiences from participants’ attitudes (Steckler et al. 1992; Taylor et al. 2015). Considering the key point from the research question – “millennial sustainability attitude”, it involves a variety of empirical materials based on different individual’s emotional experiences and perceptions, which are difficult to be quantified only by numbers. In this view, the mixed research choice with multiple sources for the car sharing study is necessary in order to create a comprehensive understanding of millennial choice reflected to their attitudes.

3.4 Data Collection

Since the research design focus on a mixed method attributes, the study utilises the semi-structured interview as the main data collection method. On the other hand, the researchers designed correlated question list and posted on car sharing online platforms (for instance, apps and forums) to collect data as further comparable and supplementary information.

With the narrative probe as the primary research strategy, it connects the research contexts directly to the feelings and comments of consumers based on the experiences of car-sharing service in Suzhou, which will reflect millennial attitudes of behavioural change or influence
(Coffey & Atkinson 1996; Chase 2005; Musson 2004). Gabriel and Griffiths (2004, p. 114) believe that narrative inquiry combined with interviews will provide possible opportunities for researchers to access the realities more closely and broadly. Likewise, it represents a study process that perceives the research topic and questions to be more insightful, which is a significant aspect of exploratory research.

Due to the limited time horizon, the paper takes cross-sectional studies (Saunders et al. 2012, p. 190), meaning that the data gathering handling is at a given period. In this car sharing case in Suzhou, the prevalence of semi-structured interviews is in line with the particular phenomenon (car sharing service) and within a particular environment (Suzhou). To be specific, the researchers will use purposive ‘homogenous’ sampling, because this technique helps pinpoint the right research target group of millennials (Saunders et al. 2012). In the meantime, it saves time, cost and effort significantly (Cochran 1977), which offsets the limitations of cross-sectional studies. The detail information about how to conduct the study is discussed in section 3.4.1 and 3.4.2.

3.4.1 Main Method - Semi-structured Interview

The researchers have used car-sharing apps located in Suzhou area to order private car sharing, hitching and taxi services, to find the target group directly and accurately (example can be seen in Figure 12 and 13 in Chapter 4). During the shared ride, the researchers asked other passengers if they belong to the target group (millennials) and are willing to take an interview. A sharing ride with other passengers has enabled the researchers to gain a first-hand understanding of how they feel about the service of car sharing, and how they use and comment the experience (both good and bad sides). These observational data, as well as immersion in the literature on sharing economy and consumer culture theory (CCT), have guided the construction of the interview (Bernard et al. 2016). Additionally, the researchers utilized the social media “WeChat”. It is recognised as a favourite commonplace and prominent spot for millennials to play a role. The researchers contacted the official account “WeChat ID: didi-taxi” and “WeChat ID: didi-suzhou” (Figure 12) with the goal of interviewing who have extensive experience using the car sharing apps with professional knowledge.

Thereby, based on the different characteristics of participants, the interview is classified into two groups (Figure 8), including individual and group interviews. Each interview is planned to take 15 to 30 minutes. Since the researchers find interviewees by calling car-sharing
services (sharing, hitching and taxi services), the interviewees come from passengers who are sharing the same car at the same time. Furthermore, each passenger has different willingness and requirements about how to proceed with the interview, therefore, the process of conducting interviews remains high uncertainty and flexibility to organize. The researchers made notes and used an audio recorder for the interview content recording. The entire data collection period for the interview took two to three weeks in Suzhou, China. The specific interview question list is exhibited in Appendix 1.

<table>
<thead>
<tr>
<th></th>
<th>Participants</th>
<th>Recording Tools</th>
<th>Time Duration</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual Interviews</strong></td>
<td>Car sharing passengers (Millennials) and/or Drivers</td>
<td>Text and/or Recorder</td>
<td>15-30 minutes</td>
<td>Suzhou (China)</td>
</tr>
<tr>
<td><strong>Group interviews</strong></td>
<td>Car sharing passengers (Millennials) and/or Drivers</td>
<td>Text and/or Recorder</td>
<td>15-30 minutes</td>
<td>Suzhou (China)</td>
</tr>
</tbody>
</table>

Figure 8: Structure for Semi-structured Interview (by Authors)

In Appendix 3, the table provides a summary of the interview respondents. Twelve interviewees scheduled in advance, but ten interviewees adequately participated with notes and recordings transcribed at the end. The samples consist of almost an equal distribution of men and women, five of whom are between 20 and 25 years old and four are between 26 and 30. One interviewee with a professional background as a shared car driver is 50 years old – an exception not only because of his experience but also because of the fact that he is an employee in the car sharing company from previous part time to full time right now. Thus, his contribution is crucial to understanding the car-sharing phenomenon to millennial sustainability attitude from a driver’s perspective.

The majority of our informants represent urban professionals, while the rest consist of university students. Beyond the demographic variables, there is heterogeneity in the samples. Wherein, three respondents have private car ownership and use car-sharing service occasionally, and eight in total have driving licenses. However, one respondent shows strong hesitation on the matter of trust using which types of car-sharing services, due to ideological reasons, in particular concerning safety issues.

On the other hand, several limitations occurred during the interview process, such as,

- Language expression and translation between Chinese and English.
- A co-researcher’s relatedness and objectiveness of the research.
- The particular cultural concern from another researcher.
- Uncontrollable conditions during interviews.

3.4.2 Data Triangulation – Online Survey

Additionally, to strengthen the research with credibility, reliability and validity, the technique of data triangulation is implemented. The researchers use data triangulation to ensure the study to achieve more comprehensive and well-developed results, as it captures different dimensions of the same phenomenon (Patton 1999; Angen 2000; Bogdan & Biklen 2006). In other words, the purpose of data triangulation is to facilitate the deeper understanding of the topic by cross verifying the same information with multiple sources and methods (Rothbauer 2008). According to the research of Bill Gillham (2000), to conduct the semi-structured interview comprehensively, a survey is a useful complement for enriching the holistic research.

To conduct the online survey on car sharing platforms, the researchers designed the survey question list with the relative connection to interview question description. The full survey question list is attached in Appendix 6. Accordingly, the survey is distributed through the social media “WeChat ID: didi-taxi” and “WeChat ID: didi-suzhou” as the app platform is considered as a favourite commonplace for millennials to engage in the car sharing service in Suzhou, China.

Since survey questions are designed from the interview question description, during interviews, there may be new ideas mentioned by interviewees. Thus, the researchers opted to conduct the study after the semi-structured interview started, as this procedure will improve the quality of the survey questions. The implementation process is a premium survey service tool – “SurveyMonkey”. The published time for filling in the questionnaire is open for a minimum of two to three weeks with the anticipation of reaching the target participant numbers that can allow an accurate analysis of results.

The researchers also contacted the administrator covering WeChat (didi-suzhou) and expected to get a general number of the total millennial users of the App on “WeChat ID: didi-suzhou”. However, for the user’s privacy protection, the administrator did not provide the information relating to the number of millennial users of this platform for car sharing in Suzhou. Hence, due to various people’s participation online, the means to target millennials, and for the survey to gain reliability and validated data are significant challenges. Therefore,
the researchers have made contact with a third-party agency “Yicheng You Market Research Studio”. Its database is assisted in selecting the target group for the survey. For the measurement of sample size proportion to the population, see the exhibit in Appendix 5. The survey had a pre-testing carried out before the actual publishing on the platform by using the SurveyMonkey. In the end, the researchers used the purposive sampling technique to select 326 recipients from the social media platform ‘WeChat’.

3.5 Data Analysis

After data collection, according to Löfgren (2012) and Slone (2009), there are several necessary steps for this study to follow to analyse the gathered data (See: Figure 9).

![Data Analysis Process Diagram]

In the first stage of data interpretation, each researcher read the individual interview transcripts to identify consumer motivations and relationships to the car sharing service and platforms. In the second phase, emphasis was placed on comparison among sources (interview and survey data) in which the researchers followed the sharing economy concept and consumer culture theory (CCT) standpoints to identify emerging codes and categories relevant to the idea under development (Fischer & Otnes 2006).

3.6 Ethical Aspects

During the research, there is a need to be aware of certain basic ethical research aspects (Dornyei 2003; Hammersley & Traianou 2012a; 2012b). According to Rose Wiles (2013, p.
difficulties encompass the general extensive ethical matters that researchers would encounter, for instance, the problems of consent, anonymity, confidentiality, and risk and role conflict. The study of car sharing phenomenon to the impact of millennial sustainability attitude concentrates on people from 18 to 35 years old, who can be directly interviewed during a shared ride or access a survey request online. It is decent and professional, and in some contexts, the legal obligation of the researchers to keep the level of confidentiality and anonymity guaranteed to the respondents from the onset. As part of the present research, emphasis is given to the validity and reliability of the data besides the accompanying ethical and accessible issues to create appropriateness and suitability of the analytical techniques (Gill & Johnson 2002).

Consideration is also given to the measures, observations and transparency that apply to data collection procedures. Reliability according to Saunders et al. (2009, p. 156) refers to the extent to which data collection techniques or analysis methods will yield reliable findings, while “validity is concerned with whether the findings are really about what they appear to be about” (ibid, p. 157) that will result in a validly drawn conclusion. As the research is based on multiple resources, a clear explanation of the enquiry questions, sampling techniques, response rates and a copy of the interview and survey instrument results would give indications to the paper’s validation. Thus, the research is burdened on the manuscript’s data collection and interpretation of findings, to whether the revealing conclusions stand up to the closest scrutiny.
Chapter 4: A Car Sharing Case – Didi Chuxing

This chapter illustrates the background information of a car sharing company as a research-based example case, Didi Chuxing. The structure includes the operation content of Didi Chuxing, the current performance, and more significantly, its distinguished achievements with contributions based on economic, social and environmental aspects compared to other car sharing online platforms.

Didi is a pioneer Chinese car-sharing business which started as a start-up in 2012, using an Internet-based environment in the sharing economy while considering the extraordinary influence of the concept of sustainability. The business concept of Didi is to increase the utilisation rate of its vehicles and simultaneously influence the decrease in the use of private vehicles with the goal of relieving city traffic congestion, reducing CO2 emission, and alleviating air pollution, in order to create a more mobile, intelligent and sustainable urban ecosystem for citizens and communities (Didi Chuxing [Didi] 2016).

The way in which Didi Chuxing fits within the scope of the general car-sharing market in China is illustrated in Figure 10. Didi Chuxing is regarded as a significant initiator in this area (Tencent Research Institute 2016). It accounts for 85.3% of the total market share, making it the largest one-stop, on-demand online transportation service platform in the country (Fung Business Intelligence Centre [FBIC] 2016, p. 2). In particular, Didi has covered over 400 cities in China, with more than 11 million rides completed every day.

Figure 10: Market Share of Major Private Car-Sharing Players in China, by Order Volume, Q1 2016, and Didi Chuxing Market Share by Numbers Q1 2016 (Source: Tencent Research Institute 2016; Fung Business Intelligence Centre [FBIC] 2016)
With respect to the 2016 Sharing Economy Report published by the National Information Centre (2016), one important feature of Didi is that it maintains millions of consumers participating actively in a car-sharing service. The company's achievements together with the contributions to sustainability are mainly determined by consumer attitude with repeated behaviour of engagement in the online car-sharing platform accessed by mobile phones (e.g. Didi apps, WeChat and Alipay).

Figure 11 shows the consumer operation process of car sharing service, on the basis of the frequently used platforms including Didi official app, WeChat, and Alipay displayed in Figure 12.

Figure 11: Didi Business Model Focusing on Online Car-sharing Service (Source: Didi Chuxing)

Figure 12: Didi Car-sharing Service Online Platforms
Figure 13 gives an example of Didi car sharing system about how to utilize vehicle resources from the express pool.

Figure 13: Didi's Express Pool (Source: Didi Chuxing)

Below displays the significant contributions from economic, social and environmental aspects of Didi with an effect on the sustainability attitudes of consumers in China in 2016 (National Information Centre 2016).

- **Economic aspects:** Didi has created approximately 17.51 million flexible job opportunities. More so, 2.072 million Didi drivers’ daily incomes constitute more than 160 RMB (21 Euro), fostering sustainable career development structures with a better quality of life, particularly for those in lower educated socio-economic groups of society (CBNData 2016). With Didi implementing regulations with the collaboration of local government to stimulate sustainability, attitudes have improved towards sustainable development of the participants in the industry, particularly those who work as drivers for Didi. These drivers gain access to a new industry and job market. Their attitudes to continue participating individually with their vehicles, once able to afford them, are sustainable.
- **Social aspects:** Due to the flexible working schedule for Didi drivers, it becomes easier for people to balance work and life. In addition, 90.1% of Didi drivers (including part-time and full-time) show a high sense of achievement and satisfaction during their engagement with Didi. Furthermore, due to the specific regulations on the Didi platform, 72.2% of users (including drivers and consumers) show an intention to purchase gas-electric hybrid or low-emission cars or even give up car ownership in the future. On the other hand, among them, 25.7% of users have already taken actions. In other words, they have changed their consumption attitudes regarding private cars (Tencent Research Institute 2016) towards sustainability, as a result of Didi’s reforms.

- **Environmental aspects:** In Figure 4, it illustrates that each Didi car-sharing trip leads to a reduction of 3.7 kg of CO2 emission in comparison to a non-shared trip. CO2 emission reductions after eight trips are equivalent to planting one tree, as compensation for air pollution in a city’s ecosystem (Fellows & Pitfield 2000; Jacobson & King 2009; and, Caulfield 2009). In 2016, Didi’s private car-sharing and hitching service led to 1.443 million tonnes of CO2 emissions in China both directly and indirectly, which are equivalent to the removal of approximately 910,000 private cars for an entire year. Didi’s business concept involves improving the utilization ratio of cars to distribute social resources more reasonably, which is beneficial for optimizing the traffic system and reducing average costs caused by traffic congestion in cities.

Thus, compared to other car sharing companies in China, considering the operation model of Didi Chuxing and its current sustainability impact to consumers and cities, the researchers choose Didi Chuxing as a car sharing case to implement the research process. The next chapter will present the practical research results based on the city of Suzhou and target group of millennials.
Chapter 5: Research Results

In this chapter, the research results of car sharing phenomenon is presented based on the data analysis from the interviews during the two-week field trip in Suzhou China. Besides, the survey response that collected from online car-sharing platforms was compared simultaneously on the process of analysing. On the one hand, the research results consisted of these two sources give researchers a more comprehensive dimension to understand the diversity and depth of millennial perception and attitude to car-sharing service with the particular influence to their daily life. Relatively, the researchers have more concrete information to solve the main research question emphasized in Chapter 1. The multiple sources provide a wide cover, which is beneficial to keep the study quality in a good level.

Ultimately, there are three prospective outcomes achieved, including sharing economy as ‘Development’, digital service as ‘Innovation’, and sustainability as ‘The future’, reflecting the research objectives stated in Chapter 1.

![Figure 13: Interview Data Codes and Categories (by Authors)](image-url)
Drawing from notable excerpts of the interview in comparison with the survey question response, the researchers coded relative key points under these three outcomes. Namely, ten aspects link to ‘sharing economy’ resulting in ‘development’ concerning the development environment in China. In addition, 12 aspects are extracted to support ‘digital service’ as ‘innovation’ based on the millennial consumption experience of car sharing service. Lastly, 11 aspects for ‘sustainability’ draw ‘The Future’. In this category, it is divided into economic, social and environmental side. The researchers explore specific influence with possible further actions from millennials after they experience car-sharing service. It reflects a more realistic millennial attitude towards sustainability concept and understanding in the phenomenon of car sharing. All the detail is listed in Figure 13.

5.1 ‘Sharing economy’ as Development

- To understand how the car sharing business model tags millennial daily concerns and issues during the daily life in cities.

By connecting the first research objective, interviewees’ viewpoints were classified from both inside and outside core issues, for instance, the social problems, policy support and technology accessibility, and the intrinsic inside 'self' (e.g. self-needs and wants), to reflect that how car-sharing platforms tag the common daily concerns in cities.

According to most interviewees, the primary motivations for them to use car-sharing service are to deal with traffic congestion, crowded public transportation, parking problems, or as an alternative travel mode, to save time and money. Several short extracted entries from the experience of an interviewee listed below would suggest, for example: “I use Didi Chuxing private car sharing or hitching service between two and four times per week returning from the company in Wujiang and my home in Suzhou.” […] “I also like to order a shared car for short trips, such as dining out and shopping, because it is annoying to spend a lot of time on finding a parking spot.” – Ms Liao, 04.01.2017.

As the name would imply, person-oriented phenomena deal with the personal experience of the individual. It maintains that attitudinal change occurs when the particular experience of the person changes. So the feelings of the individual are of primary concern to any understanding of the objectives of attitudes. Whether a person accurately perceives the environment or not, the perceptions the individual holds and the relationships among them
dictate what attitudes will manifest. Accordingly, the consumer narrates; “I often get off work very late. Before, I have to call the taxi company and wait on the line. Now, car sharing makes the process easier and efficient.” – Ms Cai, 04.03.2017. It is recognised from another happy consumer who apparently sees the synergy between car-sharing service and the public transportation system. In her words, “I like Didi Chuxinig’s new cooperation service with public bus lines. Now I can check the latest schedule when transferring. This shortens my waiting time.” – Ms Sun, 04.01.2017.

Thus, the advantages of car sharing business model are that it pinpoints the travel problems precisely that most people living in the city commonly have. Car sharing platforms position their car-sharing service as an alternative travel option accurately where consumers can easily shift among other transportation modes whether public or private transportation, while with dominance such as fast, convenient, efficient, flexible order schedule, and acceptable price. Accordingly, among 326 respondents from the survey also illustrate similar results. In Q1, consumers show similar preference to Didi Chuxing (34%) compared to bus and metro (33% and 20%, respectively), and in Q5, most current social pressures resulting from transportation were named in preferred considerations.

Both results reflect how frequently (Q2) millennials turn to use the car sharing service platform in Suzhou and the degree of ‘frequency’ has an impact on the usage relationship or 'stickiness' of car sharing platforms with millennials in the market. As one interviewee narrated: “When I go out, calling Didi Chuxing to order a car is like a conditional response for me...” – Ms Sun, 04.01.2017. Besides, the other vital reason that is frequently mentioned by interviewees is the accessibility through mobile apps. Two interviewees shared their thoughts based on this phenomenon: “I don’t download particular car sharing apps, but use the sharing service through WeChat and Alipay.” [...] “It is a smart cooperation because I believe almost all of us use WeChat and Alipay for work, entertainment, payment and so on every day.” – Mr Zhou and Mr Zhuang, 04.08.2017.

Any adequate idea of attitudinal change would necessarily examine the relationship between situations and persons. The cognitions about both, as well as factors not perceived, undoubtedly interact to produce the most significant social behaviour. As perceived from the interpretation, millennials go along with the continuous changes of development car-sharing service bringing to the market as they grow their business. An observation worth noting is: “Previously, consumers need to prepare cash or even change, so do drivers. Now all the
transactions are finished online, cashless, transparent and safe.” [...] “The development of car sharing platforms and services is due to the rapid development of Internet in China.” [...] “It updates knowledge and lifestyle much faster for consumers in China than other places.” – Mr Zhao, 04.14.2017.

Relevant supporting results are also exhibited in Q6 and Q7 of the survey. Over two-thirds of the respondents were satisfied with the accessibility to Didi services on mobile equipment. The environment of app digitalization from the influence of Internet development represents an important condition in the sharing economy. By combining with the significance that the car sharing business model targets the right social problems and concerns of consumers, the complete results give a better understanding on why car-sharing service has increasingly matched itself to become a preferred means of public transportation in big cities in China.

5.2 ‘Digital service’ as Innovation

- To analyse how the car-sharing service influences millennial attitudes towards sustainable behaviour in Suzhou, China.

For the second research objective, interviewees emphasize the concentration on the features and functionality of car-sharing service, from which to explore the changes perceived by them in daily life (attitude), to analyse any new intentions with behaviour with respect to sustainability. From the observation of interviews, most informants present two-sided opinions on car-sharing service. On the one hand, millennials treat price and personalized service as main decisive factors for long-term engagement with the service, but also show excellent and straightforward comments on the emotional bonding with drivers in the shared car during the ride.

However, on the other hand, millennials cannot ignore the fact that there is a space existing for car-sharing service to improve concerning bad experiences they had or heard about, for instance, trust and safety issues, personal credit systems, and regulations for drivers’ qualification and training. A few excerpts attest to this finding. For example, one customer in this type of scenario would rather call a taxi for a long distance travel than a shared car. “For short ride, I turn to use car-sharing service, but if I go somewhere far away or late, I will call a taxi, because traditional taxi is more professional and safer.” [...] “Compared to taxi, the selection system of car-sharing drivers and cars still has a long way to go.” – Ms Tang, 04.09.2017. While some millennials may weigh their options between punctuality, others
look at the safety or security issues more closely. For instance, “Currently the cost for wrong behaviour is not high, which leads a gap for car-sharing drivers as well as consumers to not follow necessary regulations.” – Ms Chen, 04.12.2017. Similarly, one interviewee emphasised that; “I have private cars. The biggest concern for me to order shared cars is safety and trust issues. I need to make sure I am safe when sharing a ride with other stranger(s). Otherwise, I prefer to drive by myself.” – Mr Yi, 04.08.2017.

However, another interviewee gave a brief narration of her experiences which have impacted not just her finances but also developed her awareness towards sustainability: “Because of my special working schedule,” […] “a feature of car hitching for me is that I usually share the ride with someone who is also off work later. Naturally, we often share similar work experience during the ride.” […] “Hitching is cheap. The driver and I go to the similar direction, so it is energy efficient and good for the environment, and the driver earns money as well. All these I think are unique service experiences of car sharing compared to taxi...” – Ms Cai, 04.03.2017.

Correspondently, in Q17 (open question) of the survey, more than half of respondents offer suggestions to Didi Chuxing to provide millennials with the sense of wellbeing and protection when using car-sharing service. However, when asking interviewees if car-sharing service makes effective efforts on solving daily, social and environmental concerns, most informants show positive attitudes, and this relatively influence their intention to start to use or keep using more of car-sharing service. Considering this situation, as a car-sharing driver, Mr Zhao presents his understanding to the related foreseen problems: “Under the influence of Internet nowadays, the rapid development of car-sharing service causes relevant problems at the same time. I think it is understandable and a necessary phenomenon. These problems push big cities in China, such as Suzhou, to promote more strict regulations and policies for the operation of car-sharing platforms.” – Mr Zhao, 04.14.2017.

During the exploration with car sharing phenomenon, millennials prefer more personalized interactions based on their expectations. It motivates car-sharing platforms to offer more consumer-oriented service based on consumers’ needs. Several interviewees mention the same special feature of car-sharing service, which is the win-win business model: “After 1st of May, the local government of Suzhou will strictly check how many Didi Chuxing registered drivers and cars owning new type of licenses.” […] “The new requirement in Suzhou includes that the price of the car without tax should be at least 120,000 RMB (15,427Euro),
and drivers should have driving experiences for at least three years with no criminal records.”

[...] “For every ride, consumers can check drivers’ information on apps, so do drivers. All GPS info will be synchronously tracked among consumers’ phones, driver’s phone and Didi system” [...] “I think these changes will make consumers have better quality of ride.” (Appendix 4 shows Mr. Zhao’s registered car for sharing.) – Mr Zhao, 04.14.2017.

After millennial requirements are satisfied, such as the improvement of car-sharing drivers’ qualification and social credit system, it is millennial turn to obey regulations as well. With the new progress of concern, understanding, and knowledge, the researchers observe that millennials care more about their behaviour and performance. From Q14 and Q15 in the survey, it can be seen that around 80% of respondents are encouraged by the real changes with a contribution to the society from car sharing phenomenon, which will motivate them to engage more with sharing service and activities. Therefore, moving to the third research objective, which refers to millennial attitudes resulting in sustainability understanding.

5.3 ‘Sustainability’ as the Future

- *To discuss how the car-sharing practice reflects in creating a better ecosystem of city life.*

As car-sharing service deals with a significant number of consumers, the researchers then examined from a broader perspective to discuss the impact of car sharing phenomenon with interviewees. From the interviews, issues of the environment are present, heard from discussion monologues. There are good reasons for concerns regarding the city’s ecosystem. However, to overcome these problems cannot readily be done. Customers understand that a better way to this end is awareness creation and innovation. Many respondents in the interviews state they are willing to use more car-sharing service to reduce personal CO2 emissions, due to the reality of pollution seen as smog, coming out of the exhaust of most vehicles, irrespective of mode, covering the city at most times. In this sense, Ms Sun gave her suggestions for a better solution in regards to sustainable possibilities for a better city life:

“We have millions of people living in Suzhou, so if everybody takes a small step, the progress on CO2 emission reduction will be huge.” – Ms Sun, 04.01.2017. It is similar to Mr Zhou’s intentions for a reasonable use of private automobiles as it also cuts CO2 emissions. “For those who have private cars, when taking Didi car sharing service they drive less simultaneously.” – Mr Zhou, 04.08.2017.
This can also be understood from the Q11 and Q12 in the survey. One group of passengers feel that car-sharing service is helpful for minimizing car pollution in Suzhou. Two-fifths of its users are satisfied with the sustainable contributions from car sharing. Approximately half of respondents agree that it is influential in promoting a greener city by the car-sharing transportation model. However, some responses from both interviews and surveys also show doubts about the car-sharing effects for the sustainable development in a city. As many interviewees mentioned, the precondition to support and participate more in shared cars is due to the utilitarianism, namely, the improved personalized service quality with price. On the other hand, two interviewees actively share their opinions about car ownership, with strong intentions to give up their cars: “Considering the current development of technology, I believe the understanding of ownership will be changed soon. Since the beginning of this year, bicycle sharing becomes a super-hot activity to participate in. Besides, there are electric cars parking near my apartment for sharing. I can drive a shared car anytime I want, then what is the point to spend lots of money buying one?” [...] “Regardless of Didi Chuxing, other cars-sharing platforms, bicycle sharing or the new electric car platform, they all prove the concept of sharing is very powerful.” – Ms Tang, 04.09.2017.

When asking Mr Zhao about his attitude to sustainability, he states two points: “I was a consumer for car-sharing service before, and since the end of last year, I think working with Internet-based service will be a future trend. Then I become a car-sharing driver.” [...] “Because of the new regulations set in Suzhou, my previous car is not up to standard to register as a shared car. Therefore, I sold it and bought this low emission car, because I need to drive more than before, saving gas is important.” – Mr Zhou, 04.14.2017. It reinstates the fact that car sharing phenomenon is impacting the attitude of its consumers with the awareness of sustainability (economically, socially, and environmentally).

Although consumers show concerns about car-sharing service, both interview and survey responses indicate that millennials are generally positive about the company, and it more or less reflects their attitudes regarding the understanding of sustainability. Thus, it is not surprisingly to see that, referring to Q16 in the survey ‘who do ‘you’ think is beneficial by using Didi’, most respondents answered “our city”.

In brief, from the discussion excerpts presented above, it is clear that ‘Digital Service’ (Innovation) through ‘Sharing Economy’ (Development) is the ‘Sustainability’ of the
(Future). The researchers clearly see a relationship in the business practice of car sharing that have an impact on millennial attitude. Millennials in Suzhou have been able to be benefited from digital innovation in the environment of sharing economy. Therefore, development through Innovation is the key to a sustainable future economically, socially and environmentally.
Chapter 6: Discussion

As an explorative and interdisciplinary paper, this research draws on vital links to what have previously been carried out. The results from the study suggest three perspectives to answer the main research question. First, the work explores how the business operation model of car sharing matches millennial needs and wants in the local market of Suzhou based on the environment of an Internet-driven sharing economy in China. In other words, it reveals the approach of how car-sharing service builds the relationship with millennials to impact their attitudes towards sustainability, by accurately targeting their direct demand under the particular cultural background to make the car-sharing service a fundamental alternative travel mode within the city’s daily life. Second, the researchers concentrated on millennial attitudes to the business concept and model of car sharing in order to analyse the stickiness in the long term. Accordingly, millennials presented positive results concerning their attitudes to car-sharing service. This finding is conducive to discuss the third viewpoint, which represents the ultimate core of the research question reflecting the sustainability impact on millennial attitudes to car-sharing activities. Therefore, to answer the research question, it is important to think through the process gradually from the external circumstances inner essence of the car-sharing phenomenon. The sharing economy is not only a development through digital services but also an innovation that stimulates positive attitudes of consumer behaviour through a soft approach to address demands of millennials to penetrate the meaning of sustainability in the future.

Regarding the sharing economy literature, the theory and concepts have been extracted from Böckmann (2013), Puschmann and Alt (2016), Hamari et al. (2016), and Kim et al. (2015). Just as important is the Consumer Culture Theory ‘CCT’ by Arnould & Thompson (2005; 2007), and Coskuner-Balli (2013). They all are reflected adequately in the research results. It suggests arguable aspects that the researchers previously pointed out as determinants for consumers to participate in the sharing economy (see Figure 5 and 7). Notably, these are applied well in the study of car-sharing service with the target group millennials, who are often not given adequate attention in the current literature (Hwang & Griffiths 2017, p. 142).

The importance of millennials is due to generational characteristics. For example, from the relationships built with new technologies and the ‘World Wide Web’ (Internet), their attitudes towards recent social issues and sustainability are more explicit and straightforward
than the previous generation. In the near future, they will represent the main social productivity and power of consumption in China. Hence, one contribution of the study of car sharing phenomenon is the connection the research made concerning millennials sustainable attitude by participating in sharing economy.

The researchers recognize that the study shows that sustainable attitude is highly influenced by regulations set by the car-sharing platforms. With the collaboration to the Chinese government, car-sharing companies instil low-emission car usage on their platforms, and it directly affects the attitude and behaviour of who want to register as drivers of shared cars. Additionally, millennials demand safety, reliability and speed of service through car sharing app technology. These expectations have created a credit system for drivers who adhere to the code of safety, reliability and speed of their service, which ultimately impacts their income. The direct causal relationship between drivers’ adherence to the regulations and credit system of car-sharing service has influenced and encouraged the adoption of sustainable attitude.

According to many interviewees, the improvement of the credit system will ensure the transaction fairness for both car sharing drivers and consumers. While currently, the cost of credibility is low, it shows the particular social problem in the sharing economy in China. The reality indicates that public expectation is from functional demands during car-sharing activities to more engaged and personalized experience. Acknowledging Gilbert et al. (2003), Gillis et al. (2015), and Haghshenas and Vaziri (2012), more than 30 indicators have been identified relating to sustainable transportation in cities. However, the credit system does not cover direct sustainable behaviour without incentives to do so, although it does promote a positive attitude towards sustainable practices. As Lamberton and Rose (2012, p. 122) states, “academic research has thus far provided no empirically grounded framework for studying marketer-meditated or controlled sharing systems.”

In referring to the fundamental reasons, it is important to highlight that millennials who are willing to be served by car-sharing service essentially act due to utilitarianism. In particular, because of the personalised service and reasonable price, consumers experience the convenience of car-sharing service with benefits to solve their transportation concerns, which indirectly impacts their positive attitude towards sustainable behaviour. Meanwhile, consumers widely endeavour to pressure car-sharing companies and the local government of Suzhou to improve regulations for appropriate controls instead of depending on trust and the
community entirely. These findings are similar to the statement of Bardhi and Eckhardt (2012, p. 895) that motivations, which drive engagement in car sharing, are primarily utilitarian as contrasted to identity enhancing. There is also a preference for surveillance and command controls rather than responding to trust and community. Despite the identity enhancement, the behaviour for social contribution, confidence and community bonding are important features representing millennials (Hwang & Griffiths 2017). As previously mentioned, millennials clearly express the priority of the demand for the degree of improved service quality with price, or it will negatively influence their continuous engagement in the car-sharing platforms.

Consequently, to answer the research question “Is there an impact on millennial sustainability attitude by using car-sharing service in Suzhou, China?” A meaningful direction is to pay attention to the millennial fundamental needs, as they directly affect millennial participation (Devinney et al. 2010). When car-sharing platform keeps its consumers’ high level of satisfaction with the car-sharing service experience, it will effectively represent the stimulation on the attitude of millennials towards sustainability. Likewise, the engagement of car sharing means sustainability. Referring to Figure 4 from Chapter 1, one car-sharing ride leads to a relative reduction of 3.7 kg of CO2, with eight rides corresponding to the planting of one tree to compensate for the city’s ecosystem (Fellows & Pitfield 2000; Jacobson & King 2009; and, Caulfield 2009). This simple reasoning demonstrates the concept of effective sharing that connects sustainability. Presently, research has been published supporting this correlation (Matzler et al. 2015; Bardhi & Eckhardt 2012; Akbar et al. 2016; Li et al. 2016).

Furthermore, Bardhi and Eckhardt (2012, p. 885) indicate that the car-sharing service is the market mediation and their level has the capability to develop real consumer relationships as well as the exchange criteria that guide them. It strongly reveals the attitude towards sustainable millennial behaviour associated with the study data themes in the coding process, such as sharing more and driving less and giving up car ownership or participating in other sharing platforms and activities. In this vein, the cognitive value perceptions and affective attitudes of millennial consumers correlate to the behavioural meaning in the context of collaborative consumption and how such relationships could be established. That is, during the car-sharing interactions, the process enhances its regulations will simultaneously shape and guide millennial attitude, and present a different stimulation for sustainability.
Chapter 7: Conclusion

In summing up, drawing back to the main research question mentioned in Chapter 1, which is “Is there an impact on millennial sustainability attitude by using car-sharing service in Suzhou, China?” several key points highlighted from the question are car-sharing service, millennial, and the impact to their sustainability attitude.

Concerning the multiple sources gathered during the investigation of car-sharing service and empirical contact with millennials in Suzhou, most of them (from interview and survey) show positive attitude on car-sharing service with a good level of satisfaction due to the frequently mentioned reasons such as the quality of service, personalized design, flexible schedule, adjustable price, efficient travel mode, app settings, fast and convenience, and communication. The service of shared car not only offers an alternative mode for city traveling with relatively high decision-making power and service experience for consumers, but also remits the traffic pressure in cities by increasing the social vehicle utilization ratio effectively while decreasing the individual time cost during traffic congestion especially in the morning and evening. Therefore, on the one side, the car-sharing service provides a better solution for millennial daily concerns in everyday city travelling. On the other side, the participation of “drive less, share more” simultaneously optimizes the social vehicle resources to alleviate car emission linked to air pollution. Furthermore, millennials feel that the concept of car sharing penetrating their daily life actually gives them an opportunity to understand what sharing economy means, and how it influences and changes their daily life during various services. When millennials get the clear benefit and value on car-sharing service, as several millennials discussed during interview, they turn to have more dependency on car-sharing service, show more willingness to promote the travel mode of sharing, and acknowledge between sharing-ship and ownership from vehicles to even other things. In a word, the impact of millennials sustainability attitude from car-sharing service is a process from personally to socially and environmentally. It depends on the developing extent of interactions and interconnections between millennials and car-sharing service.

Nevertheless, according to the empirical analysis, some millennials still show ambiguous attitude about car-sharing service. They agree that the business concept of car-sharing service aims to concentrate on consumers’ fundamental needs and wants. While due to the lack of normative policies and regulations currently in the development of sharing economy in China, the existing problems of trust and safety makes them hesitate to use car-sharing service
frequently, because they may negatively affect the personal demand and experience. What’s more, they also pinpoint the primary reasons to use car-sharing service, which are service and price. Hence, the continuous high service quality with personalised features and reasonable price are vital elements determining how strong the dependency from millennials to car-sharing service is, which in return, reflect the impact to millennial sustainability attitudes in the long term.

In other words, the essential reasons to keep millennial sustainable stickiness to car-sharing service are based on the satisfaction of their fundamental demands. Considering the present existing problems, related measures are set in process. For example, in the car-sharing platform level, the bidirectional (i.e. between passengers and drivers) comment and rating service are used to improve the personal credit system. Other system-based feedback from millennials is adjusted accordingly. In governmental level, related policies and regulations are designed and updated locally, including the identification of both passengers and drivers, training sessions for drivers, personal criminal checking, quality of vehicles, requirements of driving license, third part supervision, and so on. Last but not least, in the personal level, the open mind and understanding from consumers for the car-sharing phenomenon during the rapid development of Internet in China is also significant.

In brief, to answer the research question, on the basis of the empirical research results, it is important to conclude that, “the impact on millennial sustainability attitude by using car-sharing service” reflects to a process during the interactions and interconnections between millennials and car-sharing service (see Figure 14).

Figure 14: The Concluded Process of the Impact on Millennial Sustainability Attitudes by Using Car-sharing Service
Chapter 8: Implications, Recommendations and Limitations

This explorative study of car-sharing service, particularly in the sharing economy and sustainable development areas, has opened a broader insight into a true innovative revolution using a digital apps platform to create a new development in the Chinese business environment and beyond. However, there are still basic issues with respect to the capabilities and uniformity of its app’s functionalities. While, appropriate digital service ‘apps’ development through sharing economy will open a new frontier in sustainability. As previously argued, “New technologies, like new ideas, take time to become established” (Mitra & Gupta 2008). As such, an open business environment as Suzhou is a source for creating value and competitive advantage that can sustain prosperity.

8.1 Implications

It is shown and remains that Didi Chuxing, who entered the Chinese business environment in 2012, has come a long way with its app platform. With its continuous innovative development, this study illustrates that car-sharing ‘development’ through ‘innovation’ is the key to influencing attitudes of consumers and users towards a ‘sustainable future’. However, to elaborate on these fundamental themes and impacts, a comprehensive description will be necessary to construct the relationship thread back to the thesis research question: “Is there an impact on millennial sustainability attitude by using car-sharing service in Suzhou, China?” To do that, the researchers have chosen to use the revealed themes, which are the apparatus for connecting the significant association required to understand the paper. As discussed previously, three necessary drivers (economic, technology and social) are required for consumers to participate in the sharing economy. Böckmann (2013), Kim et al. (2015), Hamari et al. (2016) and Roland Berger (2016), opened the arena for the paper’s argumentation that complements all aspects of the findings explained below. Notably, these are the same drivers utilized for categorizing the coding of the data gathered in the later analysis. Meanwhile, to answer the research question, the paper draws on its discoveries and thus, contributes to the literature in influencing attitudes towards Sustainability, as well as the interdisciplinary fields of the Sharing Economy and Digital Services.
– **Development:** Given the irregular tracks of development in innovation and uneven learning systems in Asia, the emerging phenomenon of platforms in businesses will affect industrial dynamics, creating new practices of competition and revealing new means of collaborative innovation across businesses that will also pose numerous new fundamental challenges. As a platform, car-sharing is subject to network effects, which will tend to reinforce in an accumulative position of first entry advantages among a connected base of consumers, or the existence of complementary services. Connecting to Lamberton and Rose’s (2012) inference above, development is thus, rightly powered by the evolution of the Web 2.0 and Web 3.0, together with the visible and continuous social media development systems and smartphones. Similarly, the car sharing companies are serving to not just stimulate the consumers, but also change the industry and societal culture, while simultaneously creating and aiding awareness of the business development concept of the sharing economy phenomenon to spread within the Chinese environment.

– **Innovation:** The assertion of the Chinese government’s interest in car-sharing service is due to the sustainable role in the sharing economy business and, in addition to the few exceptional stakeholders, ranging from the innovative powerhouse, Apple Inc., to the Internet giants, Alibaba and Tencent. However, why? The important logical reason is that of its innovative research and development (R&D) prowess of using outcome-driven innovation to create a breakthrough service by pioneering a digital app platform for a car-sharing service that has taken China and the Asian region by storm.

– **The Future:** In meeting the goals of Agenda 21 (UNEP 1992), the Chinese government adopted the ‘Ninth Five-Year Plan’ in 2010 to combat critical environmental issues such as air pollution problems, and consequently out-dated and congested transport systems. Looking from this standpoint recalled from Arnould & Thompson (2005b, 2007) “Consumer Culture Theory (CCT)”, is engrained in the experiential, sociocultural, and symbolic aspect of consumption. Car sharing, through collaboration with the government has instilled regulations for its drivers at which only low CO2 emitting cars can service passengers through the app. Secondly, with an inspired credit system, drivers are highly encouraged to provide safe, reliable and
speedy service. Therefore, car-sharing phenomenon is an example making clear initiatives and impact in this direction towards influencing positive attitudes concerning a sustainable development future, by helping to protect the ecosystem on which humans depend for life sustenance on Earth.

8.2 Recommendations

By adhering to the methodology mentioned above, managers can stimulate research through the philosophy of science taking advantages of the steps conducted in this study. Although this research has its shortcomings, it still contributes to the academic discourse in sustainability and provides a ground for future research. It sets the stage for many paths of further inquiry in the realms of the concept of sharing economy and consumer culture theory capacities towards positively influencing attitudes of consumer behaviour towards sustainable business development.

Nonetheless, information sharing is vital in developing a business, and car-sharing managers should thus use considerable ingenuity to gain strategic information from their platform, as it will direct a focus on where the next value creation opportunities exist.

Finally, the sharing economy is a relatively new phenomenon in China, particularly the business operation of car-sharing service. Various possibilities exist that influences the attitude of consumers which results in sustainable consumer behaviour stimulated in the long term, especially based on the group attributes of millennials. Hence, to deliver extensive findings, it is worth consolidating different data that extend generalized insights and this requires further field studies.

8.3 Paper Limitations

The ethical implications have not only exposed the difficulties faced by scholars but are a barrier that obstructs appropriate research processes. For example, adhering to all standards of ethics causes delays and setbacks to the scheduling process. During data collection, steps must be taken to avoid research bias. Constraints often limit the selection of appropriate literature, and these limitations also influence the eventual decisions. Also, time pressure associated with making these choices can interfere with the literature selection process. For example, changing theories and concepts in the middle of on-going research affect the
research directions and the types of literature required. This reduces the already limited time required for manuscript completion.

Lastly, this paper solely focuses on the Didi ride-sharing app. As an example of car-sharing service, it is only one aspect of the sharing economy. As a result, the findings of this study can have direct implications towards similar ride-sharing applications and might not be fully applicable towards the management and sustainability practices of other services provided through the sharing economy.
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Appendices

Appendix 1: Interview Question List of Didi Chuxing in Suzhou related to Theory/Concept and Question Description

<table>
<thead>
<tr>
<th>Theory/Concept</th>
<th>Question Description</th>
<th>Semi-structured Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Economic benefits</td>
<td>- The degree of stickiness of car-sharing service usage</td>
<td>e.g. How often do you use Didi? 请问您使用滴滴的频率？</td>
</tr>
<tr>
<td>- Financial flexibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pattern of consumption (CCT)</td>
<td>- Connections of car-sharing service to millennial specific demands  - Reasons for millennials to build dependence on car sharing service in daily life</td>
<td>e.g. Why do you use Didi? 您为什么会选择用滴滴？</td>
</tr>
<tr>
<td>- App theory and digitization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Payment systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Digital techniques</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Social networking</td>
<td>- What millennials learn from the concept of car sharing  - The impact of millennial experiences on the perception of car sharing business model, attitude for the service, continuous usage, and behaviour change</td>
<td>e.g. Could you share some good/bad experiences during the usage of Didi digital service? 您能跟我们分享几个使用滴滴打车服务过程中有趣的经历么？或者哪些不太好的经历？</td>
</tr>
<tr>
<td>- Trust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Sustainability attitude</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| - Trust  
  - Consumers’ interpretive activities (CCT) | - Millennials-oriented business model  
  - The way of communication from millennials to car sharing platforms  
  - How beneficial millennial confirm from car sharing service | e.g. How do you rate and comment for Didi service?  
  您如何给滴滴服务评价打分？ |
|---|---|---|
| - Access over ownership  
  - Sustainability ideology  
  - Cultural orientation on sharing | - Satisfaction for car sharing travel mode  
  - Changes of millennial lifestyle  
  (connections to social issues such as traffic congestion, air pollution, and city ecosystem)  
  - Chain reactions on millennial behaviour  
  - The extent of millennials to become sustainable from transportation to other possibilities in daily life | e.g. Do you have any reflection about the changes and impacts that Didi brings to the society?  
  对于滴滴给现在社会带来的影响和改变（如大众出行方式），您对此有何感想？ |
| - Economic benefits  
  - Social benefits  
  - Sustainability ideology  
  - Sustainability attitude | - The extent of engagement for car sharing  
  - The degree of support for digital service by sharing types  
  - The degree of connection for sustainability reflection and thinking | e.g. Do you have any suggestions and expectations for the improvements of Didi digital service platform?  
  对于滴滴平台的质量与服务提升，您有何建议及期待？ |
- Sharing economy
- CCT

| | - The degree of recognition and acceptability for sharing concept  
| | - Changes that millennial feel the sharing economy brings  
| | - The extent of sustainable achievements for people and society  
| | - The degree of millennial willingness to participate in different forms in the sharing economy by their behaviour  
| | e.g. How do you feel for the concept of sharing in the society currently (from public transportation to other business and social areas)?  
| | 您对于现在社会中“共享”这种概念有何理解？  

Appendix 2: Research Timetable
Appendix 3: Table of Interview Participants

<table>
<thead>
<tr>
<th>Interview Type</th>
<th>Name</th>
<th>Age</th>
<th>Occupation</th>
<th>Car Ownership</th>
<th>Driving License</th>
<th>Date</th>
<th>Time</th>
<th>Duration</th>
<th>Location</th>
<th>Media</th>
<th>Voice Recording</th>
<th>Text Recording</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Interview</td>
<td>Ms. Liao</td>
<td>27</td>
<td>Office employee</td>
<td>No</td>
<td>No</td>
<td>2017.04.01</td>
<td>1:00 PM</td>
<td>15 mins</td>
<td>Suzhou</td>
<td>WeChat Video</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Ms. Sun Chen</td>
<td>20</td>
<td>Student</td>
<td>No</td>
<td>No</td>
<td>2017.04.01</td>
<td>4:00 PM</td>
<td>30 mins</td>
<td>Suzhou</td>
<td>WeChat Video</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Ms. Cai</td>
<td>23</td>
<td>Office employee</td>
<td>No</td>
<td>Yes</td>
<td>2017.04.03</td>
<td>1:00 PM</td>
<td>15 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Group Interview</td>
<td>Mr. Yali Zhou</td>
<td>27</td>
<td>Teacher</td>
<td>No</td>
<td>Yes</td>
<td>2017.04.08</td>
<td>PM 7:00</td>
<td>27 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Group Interview</td>
<td>Mr. Yachen Zhuang</td>
<td>28</td>
<td>Government employee in district</td>
<td>Yes</td>
<td>Yes</td>
<td>2017.04.08</td>
<td>PM 7:00</td>
<td>27 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Group Interview</td>
<td>Mr. Lei Yi</td>
<td>28</td>
<td>Company employee</td>
<td>Yes</td>
<td>Yes</td>
<td>2017.04.09</td>
<td>PM 1:00</td>
<td>25 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Ms. Mengjia Tang</td>
<td>25</td>
<td>Manager</td>
<td>No</td>
<td>Yes</td>
<td>2017.04.12</td>
<td>PM 6:00</td>
<td>30 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Ms. Hu</td>
<td>24</td>
<td>Designer</td>
<td>No</td>
<td>Yes</td>
<td>2017.04.14</td>
<td>PM 2:00</td>
<td>35 mins</td>
<td>Suzhou</td>
<td>Face-to-Face</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Mr. Jin Yi Chen</td>
<td>24</td>
<td>Accountant</td>
<td>No</td>
<td>Yes</td>
<td>2017.04.05</td>
<td>PM 1:00</td>
<td>Cancelled</td>
<td>(reason: schedule)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Mr. Xiao Cai</td>
<td>26</td>
<td>Master Student</td>
<td>Yes</td>
<td>No</td>
<td>2017.04.06</td>
<td>PM 1:00</td>
<td>Cancelled</td>
<td>(reason: schedule)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Interview</td>
<td>Ms. Jing Fang</td>
<td>32</td>
<td>High school teacher</td>
<td>Yes</td>
<td>No</td>
<td>2017.04.06</td>
<td>PM 1:00</td>
<td>Cancelled</td>
<td>(reason: schedule)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Total Interview Participants: 10
Canceled Participants: 2

Interview Success Rate: 10 out of 12 (83.33%)
Appendix 4: Sample Car from Didi Driver Mr. Zhao

04/14/2017 @ Suzhou
Appendix 5: Measurement of Sample Size for Survey Clarification

In December 2016, Suzhou’s population was 13,750,000 (sztjj.gov, 2017). With a 95% confidence level and 5% margin of error, a target level of 385 respondents is required. However, the received respondents are 326. Therefore, the degree of trust or margin of error is adjusted to 5.43% to match the target level of 326 respondents.

According to Gerald Keller (2005), the standard measurement ‘Sample Size’ to estimate the proportion formula is:

\[
    n = \left( \frac{Za/2 \sqrt{\hat{p}(1-\hat{p})}}{W} \right)^2
\]

Where:
- \( n \) is the sample size.
- \( Za^2 \) is the desired Z-value for the confidence level.
- \( \hat{p} \) or p-hat is the estimated proportion of an attribute present in the population.
- \( W \) is the confidence interval or width expressed in decimals.

However, for Suzhou:
- \( Z \) = Z-Score or confidence level
- \( e \) = Confidence level or margin of error
- \( p \) = width or standard deviation
- \( N \) = Population size

Equal:

\[
    N = \frac{z^2 \cdot p(1-p)}{1 + \left( \frac{z^2 \cdot p(1-p)}{e^2} \right)^2}
\]

Step 1:

\[
    N = \frac{1.96^2 \cdot 0.5(1-0.5)}{1 + \left( \frac{1.96^2 \cdot 0.5(1-0.5)}{0.0543^2} \right) \frac{13,750,000}{0.0543^2}}
\]

Step 4: Sample Size=325.7260496
Rounded Recipients = 326
## Appendix 6: The Purpose of Survey Question List Developed from Interview Question Description

<table>
<thead>
<tr>
<th>Data Triangulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interview Questions</strong></td>
</tr>
<tr>
<td>How often do you use Didi?</td>
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<td></td>
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<tr>
<td>Why do you use Didi?</td>
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<tr>
<td>Could you share some good/bad experiences during the usage Didi digital service?</td>
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<tr>
<td></td>
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<tr>
<td>How do you rate and comment for Didi service?</td>
</tr>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td><strong>Q11.</strong> How helpful do you feel that Didi service can decrease city car pollution?</td>
</tr>
<tr>
<td><strong>Q12.</strong> How influential do you feel about Didi service to promote city green/sharing transportation construction?</td>
</tr>
<tr>
<td><strong>Q17.</strong> Could you share cool ideas to improve Didi service?</td>
</tr>
<tr>
<td><strong>Q18.</strong> How will influence you not to continue to use Didi car sharing?</td>
</tr>
<tr>
<td><strong>Q13.</strong> How do you feel when you donate your Didi passenger kilometres to social charities?</td>
</tr>
<tr>
<td><strong>Q14.</strong> How likely the sense of achievement from individual donation will motivate you to keep using Didi?</td>
</tr>
<tr>
<td><strong>Q15.</strong> How do you feel if Didi provides more functions linking to personal credits with individualistic social contribution?</td>
</tr>
</tbody>
</table>
Appendix 7: Survey Questions and Data Results

<table>
<thead>
<tr>
<th>Q1</th>
<th>调查问卷</th>
<th>问题</th>
<th>公交车</th>
<th>Bus</th>
<th>33.1%</th>
<th>108</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>车</td>
<td>地铁</td>
<td>Metro</td>
<td>20.2%</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td></td>
<td>来</td>
<td>出租车</td>
<td>Taxi</td>
<td>7.4%</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>巴</td>
<td>Didi</td>
<td>34.4%</td>
<td>112</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>巴</td>
<td>其他</td>
<td>Others</td>
<td>4.9%</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2</th>
<th>调查问卷</th>
<th>问题</th>
<th>是的</th>
<th>Yes</th>
<th>33.4%</th>
<th>108</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>有</td>
<td>不是</td>
<td>No</td>
<td>66.6%</td>
<td>215</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3</th>
<th>调查问卷</th>
<th>问题</th>
<th>一次</th>
<th>Once per day</th>
<th>21.2%</th>
<th>69</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>几次</td>
<td>几次</td>
<td>Several times per day</td>
<td>18.1%</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td></td>
<td>周</td>
<td>每月</td>
<td>Several times per week</td>
<td>22.7%</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>每月</td>
<td>几次</td>
<td>Few times per month</td>
<td>38.0%</td>
<td>124</td>
<td></td>
</tr>
</tbody>
</table>
### Q4 请问您用滴滴的原因是什么？（可多选）Why do you like to use Didi? (Multiple choice)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>叫车很快 Fast to get a car</td>
<td>43.9%</td>
<td>143</td>
</tr>
<tr>
<td>价格优惠 Favourable price</td>
<td>37.1%</td>
<td>121</td>
</tr>
<tr>
<td>方便 Convenience</td>
<td>43.3%</td>
<td>141</td>
</tr>
<tr>
<td>绿色出行，有益环保 Green transportation, good for environment</td>
<td>39.9%</td>
<td>130</td>
</tr>
<tr>
<td>服务好 Good service</td>
<td>15.3%</td>
<td>50</td>
</tr>
<tr>
<td>支付简单 Easy to pay online</td>
<td>29.4%</td>
<td>96</td>
</tr>
<tr>
<td>身边很多朋友用 Everybody uses it</td>
<td>12.9%</td>
<td>42</td>
</tr>
<tr>
<td>其他原因，比如….. (please specify)</td>
<td>3.1%</td>
<td>10</td>
</tr>
</tbody>
</table>

Answered Question 326  
Skipped Question 0

### Q5 以下哪种情况您会倾向于用滴滴？（可多选）Why do you turn to use Didi? (Multiple choice)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>短距离出行 Short distance for going out</td>
<td>28.8%</td>
<td>94</td>
</tr>
<tr>
<td>不想自己开车 Avoid self driving</td>
<td>32.5%</td>
<td>106</td>
</tr>
<tr>
<td>外出娱乐（例如就餐聚会等） Entertainment (e.g. party)</td>
<td>31.9%</td>
<td>104</td>
</tr>
<tr>
<td>远离高峰堵车 Avoid traffic congestion</td>
<td>23.0%</td>
<td>75</td>
</tr>
<tr>
<td>公共交通太拥挤 Crowded public transportation</td>
<td>34.4%</td>
<td>112</td>
</tr>
<tr>
<td>停车难 Parking difficulty</td>
<td>22.4%</td>
<td>73</td>
</tr>
<tr>
<td>拒绝酒驾 Avoid drunk driving</td>
<td>26.7%</td>
<td>87</td>
</tr>
<tr>
<td>其他原因，比如… (please specify)</td>
<td>4.6%</td>
<td>15</td>
</tr>
</tbody>
</table>

Answered Question 326  
Skipped Question 0

### Q6 您觉得下载滴滴的app容易么？How accessible for you to get Didi apps?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>极难下载 Very difficult</th>
<th>有难度 Difficult</th>
<th>中立 Neutral</th>
<th>容易 Easy</th>
<th>轻而易举 Very easy</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>18</td>
<td>77</td>
<td>157</td>
<td>65</td>
<td>3.79</td>
<td>324</td>
<td></td>
</tr>
</tbody>
</table>

Answered Question 324  
Skipped Question 2

### Q7 您对滴滴app现有的功能感觉如何？How do you feel about the functions of Didi apps?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>非常不方便，操作又复杂 Very inconvenient and complex</th>
<th>存在不方便 Inconvenient</th>
<th>还行 Neutral</th>
<th>简洁 Simple</th>
<th>使用非常简单易懂 Very easy to understand and use</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>25</td>
<td>169</td>
<td>51</td>
<td>59</td>
<td>3.32</td>
<td>324</td>
<td></td>
</tr>
</tbody>
</table>

Answered Question 324  
Skipped Question 2

### Q8 您对滴滴的服务质量有多满意？How satisfied are you about Didi service?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>非常不满意 Very unsatisfied</th>
<th>不满意 Unsatisfied</th>
<th>一般 Neutral</th>
<th>满意 Satisfied</th>
<th>非常满意 Very satisfied</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>14</td>
<td>90</td>
<td>165</td>
<td>42</td>
<td>3.65</td>
<td>323</td>
<td></td>
</tr>
</tbody>
</table>

Answered Question 323  
Skipped Question 3
Q9 在分享出行上，您同意“信任感”是很重要的因素吗？Do you agree that trust is a vital aspect for sharing transportation service?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全不同意</th>
<th>不同意</th>
<th>还行</th>
<th>同意</th>
<th>非常同意</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly agree</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>17</td>
<td>83</td>
<td>155</td>
<td>60</td>
<td>3.74</td>
<td>324</td>
</tr>
</tbody>
</table>

Answered Question 324
Skipped Question 2

Q10 您认为“安全问题”是影响您长期使用滴滴的一个重要因素吗？Is security an important factor to influence you to keep using Didi car sharing?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全不重要</th>
<th>不重要</th>
<th>一般</th>
<th>重要</th>
<th>极其重要</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Totally not important</td>
<td>Not important</td>
<td>Neutral</td>
<td>Important</td>
<td>Extremely important</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>27</td>
<td>85</td>
<td>130</td>
<td>71</td>
<td>3.70</td>
<td>323</td>
</tr>
</tbody>
</table>

Answered Question 323
Skipped Question 3

Q11 您认为滴滴出行的服务形式对降低城市汽车污染有帮助吗？How helpful do you feel that Didi service can decrease city car pollution?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全没有帮助</th>
<th>帮助不大</th>
<th>一般</th>
<th>有很大帮助</th>
<th>非常有帮助</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very unhelpful</td>
<td>Unhelpful</td>
<td>Neutral</td>
<td>Helpful</td>
<td>Very helpful</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>35</td>
<td>95</td>
<td>149</td>
<td>35</td>
<td>3.51</td>
<td>324</td>
</tr>
</tbody>
</table>

Answered Question 324
Skipped Question 2

Q12 您认为滴滴对推动城市绿色出行/共享出行的建设有多大影响力？How influential do you feel about Didi service to promote city green/sharing transportation construction?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全没有影响</th>
<th>影响不大</th>
<th>中立</th>
<th>有些影响</th>
<th>影响很明显</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly un-influential</td>
<td>Un-influential</td>
<td>Neutral</td>
<td>Influential</td>
<td>Strongly influential</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>38</td>
<td>113</td>
<td>127</td>
<td>36</td>
<td>3.43</td>
<td>325</td>
</tr>
</tbody>
</table>

Answered Question 325
Skipped Question 1

Q13 当您选择捐献您的滴滴里程数，为社会献上一份力时，您感觉如何？How do you feel when you donate your Didi passenger kilometres to social charities?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全无感</th>
<th>毫无感觉</th>
<th>感到一般</th>
<th>感到良好</th>
<th>骄傲，为自己点个赞</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Something normal</td>
<td>No special feeling</td>
<td>Neutral</td>
<td>Feeling good</td>
<td>Very proud</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>32</td>
<td>87</td>
<td>147</td>
<td>45</td>
<td>3.56</td>
<td>323</td>
</tr>
</tbody>
</table>

Answered Question 323
Skipped Question 3

Q14 您的个人贡献带来的成就感，会激励您继续使用滴滴的服务么？How likely the sense of achievement from individual donation will motivate you to keep using Didi?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>完全没有激励</th>
<th>不会很激励</th>
<th>中立</th>
<th>会有一些激励</th>
<th>会非常激励</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very unlikely</td>
<td>Unlikely</td>
<td>Neutral</td>
<td>Likely</td>
<td>Very likely</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>26</td>
<td>100</td>
<td>144</td>
<td>43</td>
<td>3.55</td>
<td>326</td>
</tr>
</tbody>
</table>

Answered Question 326
Skipped Question 0
Q15 If Didi promotes more social benefits, and personal credits are linked to individual social contributions, how do you feel if Didi provides more functions linking to personal credits with individual social contributions?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Rating Average</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaningless and nonsupport</td>
<td>3.40</td>
<td>325</td>
</tr>
<tr>
<td>Difficult to implement</td>
<td>325</td>
<td></td>
</tr>
<tr>
<td>Neutral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meaningful to implement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social progress, very support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Answered Question | 325 |
| Skipped Question | 1 |

Q16 Who do you think is benefited by using Didi? (Multiple choice)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Didi passengers</td>
<td>38.3%</td>
<td>124</td>
</tr>
<tr>
<td>Didi drivers</td>
<td>30.9%</td>
<td>100</td>
</tr>
<tr>
<td>Didi company</td>
<td>37.3%</td>
<td>121</td>
</tr>
<tr>
<td>Our city</td>
<td>50.0%</td>
<td>162</td>
</tr>
<tr>
<td>Others</td>
<td>6.2%</td>
<td>20</td>
</tr>
</tbody>
</table>

| Answered Question | 324 |
| Skipped Question | 2 |

Q17 Could you share cool ideas to improve Didi service? (Open question)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>326</td>
</tr>
</tbody>
</table>

| Answered Question | 326 |
| Skipped Question | 0 |

Q18 How will you be influenced not to continue to use Didi car sharing? (Multiple choice)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not have favorable functions</td>
<td>16.6%</td>
<td>54</td>
</tr>
<tr>
<td>Had bad experiences</td>
<td>32.9%</td>
<td>107</td>
</tr>
<tr>
<td>Inaccurate location</td>
<td>40.6%</td>
<td>132</td>
</tr>
<tr>
<td>Imperfect policy</td>
<td>39.1%</td>
<td>127</td>
</tr>
<tr>
<td>Monopoly with rapid rise in price</td>
<td>37.8%</td>
<td>123</td>
</tr>
<tr>
<td>(please specify)</td>
<td>3.1%</td>
<td>10</td>
</tr>
</tbody>
</table>

| Answered Question | 325 |
| Skipped Question | 1 |

Q19 Is your Age between 18-35 years old?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>83.1%</td>
<td>270</td>
</tr>
<tr>
<td>No</td>
<td>16.9%</td>
<td>55</td>
</tr>
</tbody>
</table>

| Answered Question | 325 |
| Skipped Question | 1 |
### Q20 请问您的性别是： Your gender is:

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>男  Male</td>
<td>43.5%</td>
<td>141</td>
</tr>
<tr>
<td>女  Female</td>
<td>47.8%</td>
<td>155</td>
</tr>
<tr>
<td>不想告诉你 ^_^  Do not want to choose</td>
<td>8.6%</td>
<td>28</td>
</tr>
</tbody>
</table>

| Answered Question | 324 |
| Skipped Question  | 2   |