An empirical study of customer's usage intention for chauffeured car service provided by mobile apps*

Ajing Zhan**

Fudan University

Siyu Chen***

Fudan University

Xiao Chen****

Fudan University

Jingyi Ma*****

Shanghai University of International Business and Economics

Yonghui Dai*****

Shanghai University of International Business and Economics

Abstract

With the development of mobile internet and increasing consumer's demands in cars, the emerging patterns in car service appeared successively, such as taxi calling software, chauffeured car service and so on. The above car-calling patterns based on internet and mobile apps can be regarded as the attempts of exploring O2O patterns in the area of car rental. Comparatively, the users' awareness and cognitions of the chauffeured car service are still in low level at its initial stage, and this may lead to an insufficient usage rate. In order to investigate on how to carry out effective promotion and increase users' viscosity in the Chauffeured car service, the TPB(Theory of Planned Behavior), TRA (Theory of Reasoned Action), TAM (Technology Acceptance Model) and perceptional risk theory were used as the theoretical basis in our study. Six variables were selected as the model of users' intention of using chauffeured car service, which consists of perceived usefulness, perceived ease of use, perceived risk, perceived cost, marketing effort and community influence. Through the empirical study based on 255 questionnaires, the results show the main characteristics and factors affecting customer's usage intention for chauffeured car service in China.

Keywords: chauffeured car, usage intention, mobile apps, empirical study, perceived risk

1. Introduction

In recent years, with the development of mobile internet and intelligent device, more and more industries expand the market to e-commerce model of O2O (Online to Offline), such as Jingdong mall of O2O, Pingan automobile insurance of O2O and so on. Similarly, the service of Internet special car began to appear and has gradually been accepted by people, which is becoming a new way to use a car. According to the statistical data of 2015 there are more than 130 million cars in China, which is a good foundation for the development of the

** 13220690066@fudan.edu.cn
*** 16307100073@fudan.edu.cn
**** 16307100066@fudan.edu.cn
***** cissymjy@aliyun.com
****** Corresponding author: daiyonghui@suibe.edu.cn

Internet special car mode. Although the number of cars in China is large, the demand for automobiles is strong and hard-to-get because of the large population. Especially in a big city, people's demand for going out by car is great, and the obvious fact is that it is difficult to call a taxi when it rains or on and off duty. Therefore, the emergence of Internet special car service is great significance to both the city and the society.

As we know, car rental can meet the needs of consumers to some extent. However the traditional car rental mode requires consumers to have driving qualification and a series of tedious registration procedures, which makes it difficult to meet the temporary demand of consumers. The continuous development of mobile internet derives business model innovation, and it also constantly changes the habits of consumers (Amey et al., 2011). In such a context, chauffeured car service integrates the business of car rental and taxi and becomes a new choice for consumers to use a car. From the exterior, chauffeured car service provides the booking and rental services of "Car + Driver" and it is based on the Internet and mobile apps. In addition, it adopts the operation mode of the O2O, which is facilitated in two ways. On the one hand, it meets the travel demand of the citizens. On the other hand it opens a new segment market. So it has a vast space for growth because it meets the needs of many users of using a car. Overall, the chauffeured car service is still in the early stage (Vanoutrive et al, 2012; Zhan, 2015). Compared with the traditional taxi or car rental, the management policy for chauffeured car service needs to be improved and standardized, and users' awareness of this service and the cognitive level are lower than taxi. Furthermore, user's recognition of Internet car also needs to be further strengthened.

Based on the above background, this paper selects the use intention of the chauffeured car service as the research subject, and uses the empirical method to analyze the following problems.

(1) The main factors of affecting the use of chauffeured car services.
(2) The impact of expected revenue, expected cost, and expected risk factors on the use of chauffeured car services.
(3) The impact of community and promotion factors on the use of chauffeured car services.

This paper is organized as follows. In section 2, the related research of Internet special car and customer's usage intention is introduced. In section 3, business model of chauffeured car service and theory of TAM, TRA, and TPB are shown. In section 4, questionnaire and empirical survey are presented. In section 5, analysis of results is illustrated. Section 6 is the summary and discussion of this article.

The implication of this research is mainly three points. Firstly, some factors that affect user perception and the use of Internet special car services have been given out, such as perceived usefulness, perceived ease of use, perceived cost, perceived risk, community impact, and inadequate working strength. Secondly, our research can help Internet special car service providers understand the needs of customers more objectively, and then help them optimize their business strategies and carry out effective marketing activities. Thirdly, this research analyzes the operation mode of the Internet special car, and puts forward some management suggestions for the usability, safety and marketing of the Internet special car platform, which can help the service providers improve the management level.

2. Related works

As chauffeured car service belongs to the emerging industry, the related researches mainly focus on the development of Internet special car or the influence factors of customer's usage intention.

2.1 The development of Internet special car

With the rapid development of Internet special car service, more and more scholars begin to study this new economic model, and a series of research articles were presented. For example, the safety and legal supervision of the Internet special car were pointed out, and the problems and countermeasures of the development of Shanghai Internet special car were provided (Zhao et al, 2016). The characteristics of consumer groups of using taxi software and the problems in the process of using also have been analyzed by scholars, and they believed that the establishment of corresponding laws, regulations and information security systems is extremely important (Lan et al., 2014; Cui, 2014). Some scholars thought that the Internet special car was a kind of innovation for using car based on internet technology, and it could be seen as a market innovation of regulatory measures on taxi, and they mentioned the emergence of the Internet special car can lead to the reform of the traditional taxi (Shen, 2015).Since the Internet special car is regarded as a form of sharing economy, some scholars have studied the normative development of sharing economy from the perspective of regulation economy, and some suggestions are put forward, such as creating dynamic regulatory environment, responsive regulation and so on (Posen, 2015; Bai, 2017).

In addition, there are a lot of reports about the Internet special car platform such as Uber, Didi, Yidao, and Shenzhou. Especially to Uber, it was the first company to put forward the Internet special car in 2010, since then its business has expanded to 36 countries and regions, and the localization of Uber is not only a taxi application, but also is "provide a high-end and more private travel scheme for passengers." Compared with the traditional taxi and car rental companies, Uber has a lot of humanized and differentiated activities, such as it launched rose delivery service in Valentine's Day in the United States. From the perspective of target customer and business process, chauffeured car service is an O2O service based on location information. In the use of the process, chauffeured car service realizes the matching between the consumers' demand for car and the service supply of the chauffeur, which reduces the information asymmetry between consumers and drivers (Lin, 2014; Yu et al, 2014). Chauffeured car service mainly consists of three parts: order, service and payment. Firstly, the order was launched online, and consumers can get accurate location information of car through the chauffeured car service platform or mobile client. And once consumers input demand of using a car like time, location, destination and the type of the car, the platform will send the information to an appropriate car. Secondly, the car order is set up after the driver accepts the task or the system assigns a car. Once the service order is confirmed, the driver

Figure 1. O2O service process of chauffeured car service
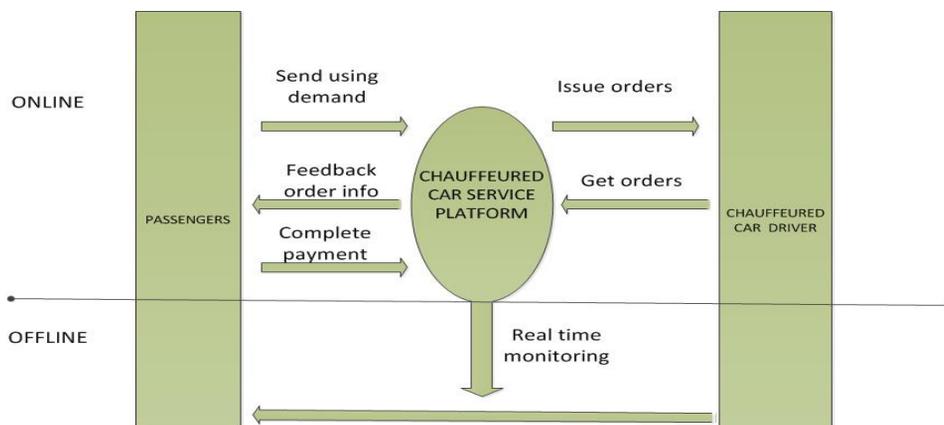
will contact the customer and provide the service on time according to the order, which can be seen as a typical offline service. Finally, the service is completed and customer will pay for the service of this time, which usually pays by mobile payment. Overall, the process of chauffeured car service includes online service and offline service, which are shown in Figure 1.

The pricing of the chauffeured car service includes two types, one is payment fee by whole package, and the other is pay fee by unit price. The whole package charging, that is to say, fee is according to the time of use and model, which provides a certain range of the package fee of transport time, such as the fee of half day rental service of Yidao is RMB 600, and the fee of whole day rental service of Yidao is RMB 1000. The unit price charging is similar to taxi charging, it includes starting price, mileage fee, length fee and other expenses, for example, long-distance service fee, night service fee, and high speed fee and so on. At the same time, according to the class and type of the car, different models and prices will be set, such as the model of comfort, business and luxury. Generally speaking, the service prices are higher than that of the taxi, and different companies may have different pricing. For example, the pricing of Internet special car service in China is shown in Table 1.

Table 1. The pricing of Internet special car service

Type	Chauffeured car	Flag-fall price	Fee per min (RMB:Yuan)	Fee per kilometer (RMB:Yuan)
Comfort	Yidao	20	0.6	4.5
	Didi	15	0.5	2.9
	Yihao	20	0.67	3.9
	Shenzhou	15	0.5	2.8
Business	Yidao	25	0.6	5.5
	Didi	23	1.2	5.5
	Yihao	25	0.8	4.9
	Shenzhou	20	0.7	4.5
Luxury	Yidao	30	0.8	5.5
	Didi	27	1.5	5.6
	Yihao	29	0.9	4.9
	Shenzhou	23	0.8	4.6

Remarks: The above data was selected on March 20, 2015

2.2 Factors influencing user's usage intention

The previous research on user's usage intention mainly focuses on TPB (Theory of Planned Behavior), TRA (Theory of Reasoned Action) and TAM (Technology Acceptance Model). Khalifa et al. (2012) used the TPB model to verify the user accepts the influence of the mobile business behavior, and the results of the analysis show that mobile commerce technology can influence user's acceptance through perceived behavior control and behavior attitude. Thereafter, Yu et al. (2008) have studied the development of rational behavior theory, and they systematically summarized the development of rational behavior theory to three categories. The first category is the deepening research of rational behavior theory itself, the second category is the study of the applicability of rational behavior theory, and the third category is the study of theoretical model of rational

behavior.

Zhou (2009) built a network learning behavior model based on the TRA and TAM, and the model includes nine potential variables, his research results show that college students' online learning is influenced by subjective norms and attitude control. Zhang et al. (2011) compared the theory of planned behavior with rational behavior, and analyzed consumer online shopping intention. Relatively speaking, planned behavior theory can explain consumer network shopping intention better. Their results show that behavioral attitudes and perceived behavioral control have a significant impact on online shopping intentions, and subjective norm was not a significant influencing factor. In addition, their research also shows that consumers' past behavior of shopping was an important factor influencing consumers' online shopping intention. Zhou (2012) adopted the combination of logical analysis and empirical research method to adjust the TAM, and used the above model to study the differences of consumers' willingness when they are using mobile e-commerce. In addition, some scholars have studied the user perceived risk. For example, Cunningham (1967) divided perceived risk into uncertainty and consequence. The uncertainty is the subjective probability of a user's probability of occurrence of something. The consequence refers to things that can be dangerous to the outcome. Since two factors of uncertainty and consequence were put forward, they have become the main analysis objects of the study of perception risk. Ding (2014) analyzed the key factors of affecting consumers to accept mobile payment, and his studies showed that the influence factors mainly include five aspects: perceived risk, perceived cost, perceived revenue, marketing promotion and community marketing.

3. Theory and model

Chauffeured car service is a new type of business operation mode. Essentially, it is a combination of information technology and traditional business relations, and the related theory of TRA, TPB and TAM would be introduced in this part.

3.1 Theory of reasoned action

The theory of reasoned action (TRA) was first put forward by Martin Fishbein and Icek Ajzen in 1975, and it was used to analyze the influence of attitude on individual behavior. The theory tries to explain the relationship between attitudes and behaviors within human action. TRA is shown in Figure 2.

Figure 2. Theory of reasoned action
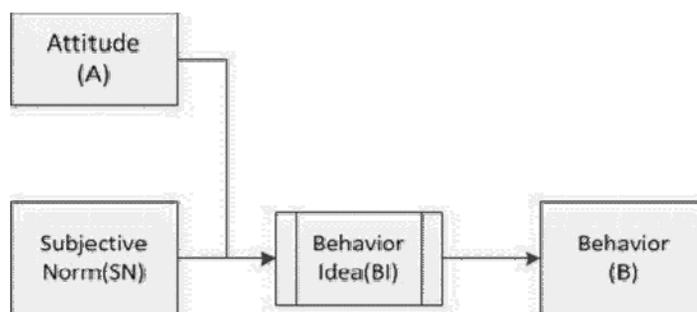
In Figure 2, attitude is produced on the basis of experience or feeling of something and it is a positive or negative feeling when someone is doing something. Subjective norms usually refer to the social pressure that individuals do when they do something. Behavior is influenced by willingness, according to the TRA, the higher the subjective norm is, the higher the willingness is. Correspondingly, the lower the subjective norm is, the lower the willingness is. In this paper, this theory can be used to the basic point of the hypothesis. For example, this service should be legal and it could bring them convenience so that their attitudes could be positive, and it can impact their use intention.

3.2 Theory of planned behavior

The theory of planned behavior (TPB) is a theory that links beliefs and behavior, and it was proposed by Ajzenin 1985. Human behavior is guided by three kinds of consideration, behavioral beliefs, normative beliefs and control beliefs. In their respective aggregates, behavioral beliefs produced a favorable or unfavorable of "behavior attitude" and normative beliefs can lead to 'subjective norm.' Control beliefs give rise of "perceived behavioral control." TPB is shown in Figure 3.

Figure 3. Theory of planned behavior
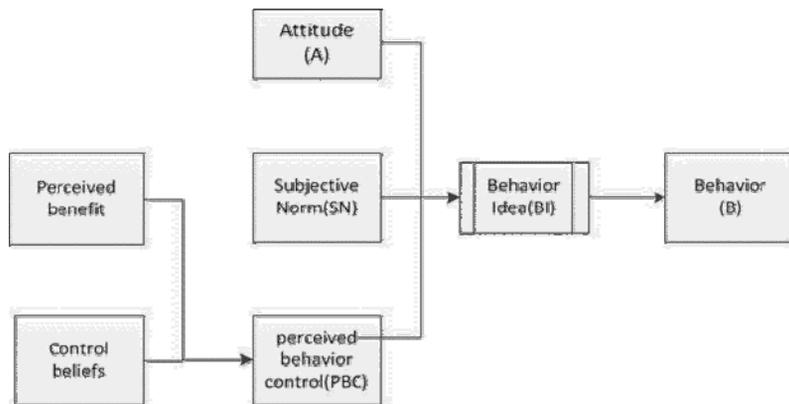
In Figure 3, attitude, subjective norm and perceived behavioral control determine the behavioral intention. In particular, perceived behavioral control is presumed to not only affect actual behavior directly, but also affect behavioral intention. This theory could help our hypothesis to move forward some steps and help us determine the variables. For example, we could set up the model with more variables just like perceived benefit, attitudes and so on.

3.3 Technology acceptance model

The technology acceptance model (TAM) is an information systems theory that how users accept and use a technology, and it was put forward by Davis on the basis of rational behavior theory in 1989.The model suggests when users are presented with a new technology, a number of factors influence their decision, especially to perceived usefulness and perceived ease of use. TAM is shown in Figure 4.

Figure 4. Technology acceptance model
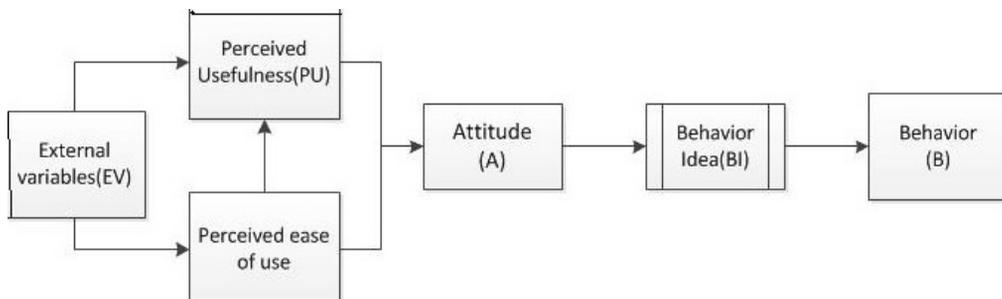
Perceived usefulness refers to the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease of use refers to the degree to which a person believes that using a particular system would be free from effort.

There is an external variable influencing perceived usefulness and perceived ease of use in the TAM model, which has an indirect effect on attitudes, willingness and behavior, but for perceived usefulness, perceived ease of use it has direct impact. In the case of taxi software, external variables that affect user's behavior include personal characteristics, system design, environment, price, security variables, etc. These external variables affect the user's willingness to use by perceiving usefulness and perceived ease of use.

3.4 Perceived risk theory

Li et al. (2007) believed that any purchase behavior of consumers is hard to know whether the expected result is correct or not, and some results may be unpleasant to consumers. Therefore, consumers purchase decision implied on the uncertainty and this kind of uncertainty can be seen as the risk. As some of these results may be less optimistic, so the customer's behavior is a kind of assumption of risk (Cui, 2007). The formation of perceived risk mainly includes the following reasons.

(1) Consumers face new products that have never been experienced or consumed. When new production has just been put into the market, it is difficult for consumers to fully trust and accept the new products because of the lack of necessary understanding. Therefore, consumers will have doubts about their consumption behavior and form perceived risks.

(2) Consumers have experienced an unhappy experience in the past consumption. If consumers have unpleasant experience when buying a product, consumers will have more doubts about this product when they consume again, and consumers will have risk perception in the process of shopping.

(3) Consumers have opportunity cost when they are consuming.

(4) Consumers don't know enough about products. If it is a strong technical and professional product, it is difficult for consumers to grasp and understand it, which is easy to form cognitive risk and lead to consumer doubts about the product.

(5) Privacy risks. Consumers worry about their privacy being leaked (Sun et al., 2009; Yang et al., 2012).

In this paper, the theory could help us understand the customer's behavior mode. Some consumers are unfamiliar with the process of the chauffeured car service, or they have doubts when using this service. As consumers are not aware of the results of using chauffeured car service, the uncertainty risk will have an impact on their decisions. Taking the service as an example, many factor such as driver, safety of the car, personal privacy information, and the properties of binding of payment will make users feel risky, and these risks is one

of the important factors that affect the user deciding whether to use the chauffeured car service.

3.5 Chauffeured car service of using intention model

Referring to previous studies, the variables of the model are further defined as follows.

(1) Perceived usefulness. It refers to how much usefulness Chauffeured car service could bring to the users.

(2) Perceived ease of use. It refers to the degree of ease of operation of the Internet taxi software.

(3) Perceived risk. It refers to the degree of risk generated by the users using the chauffeured car service.

(4) Perceived cost. In the process of experiencing the Internet special car, users not only perceive the direct cost of the special car, but also feel the cost of time, energy, psychology of them, which will affect the users' willingness to use the special car.

(5) Marketing effort. It refers to the issuance of coupons, media promotion, increasing the number of discounts and other promotional forms to attract customers to use special car service.

(6) Community impact. It refers to the impact of the surrounding population on the use of chauffeured car service.

(7) Use intention. It refers to the strength of intention to use the chauffeured car service.

TAM and the theory of perceived risk provide us with a good research framework in explaining consumer acceptance for chauffeured car service (Zhang et al., 2009). Considering the particularity of special car service and based on the previous research, we selected perceived usefulness, perceived ease of use, perceived risk, perceived cost, marketing effort and community impact as variable factors to study the chauffeured car service of using intention model, which is shown in Figure 5.

Figure 5. Chauffeured car service of using intention model
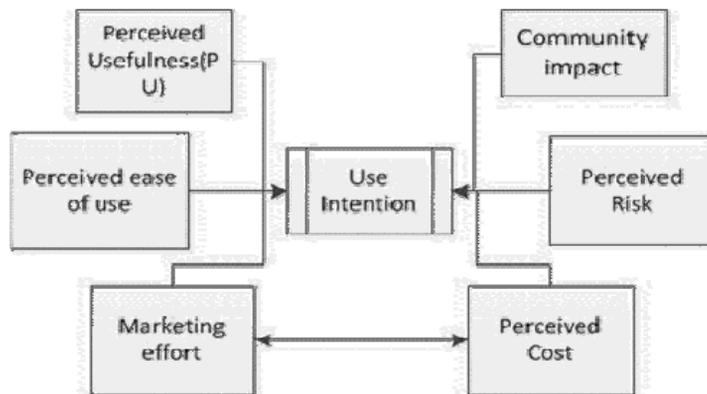
In order to analyze the customer's usage intention for chauffeured car service, the above variables were used to construct the model. The perceived usefulness usually reflect the users' satisfaction, once the users have a high degree of perceived usefulness and they are usually willing to use the service again. The perceived ease of use, we have known that when the user feels the software is easier to operate, the use probability of the chauffeured car service will be higher. As for the variable of perceived cost, it is obviously that nobody wants to use the service if it costs too much. The variable of marketing effort is the same as to it because consumers tend to accept the product they've already used or they have known. Marketing efforts often bring consumers the benefits of product price reduction, which can attract some consumers to participate in the use of chauffeured

car service. As the community impact, it is obvious that feedback on the products and services of the surrounding population will greatly affect the user's willingness to use. According to the above analysis, some hypotheses are put forward, which is as follows.

Hypothesis:

H1: Perceived usefulness has positive impact on the intention to use the chauffeured car service. According to the TAM theory, perceived usefulness would have direct impact on the willingness of using the specific product for it reflects the customers' satisfaction towards quality, price, service, variety and responding speed. Obviously this impact should be positive (here is the hypothesis).

H2: Perceived ease of use has positive impact on the intention to use the chauffeured car service. According to the TAM theory, this means how easy to use the specific system. And it's also easy for us to come up with this hypothesis that it should be positive impact.

H3: Perceived risk has negative impact on the intention to use the chauffeured car service.

H4: Perceived cost has negative impact on the intention to use the chauffeured car service.

H5: Marketing efforts has positive impact on the intention to use the chauffeured car service.

H6: Community impact has positive impact on the intention to use the chauffeured car service. (H3-H6 is obviously summarized in their concepts according to the theory above)

H7: Marketing efforts and perceived cost have a mutual impact. According to the Theory of Planned Behavior and the TAM model, the perceived cost is mainly related to whether people know the specific product and how much convenience the product could provide. If they had heard of it before, it's likely for them to use the product. From this aspect, we could speculate that increasing the brand name and improving their services could influence the costs in a negative way but increase the use intention. Meanwhile, the higher cost would also increase the marketing efforts to lower the perceived costs and grasp the big new market.

4. Questionnaire design and survey

4.1 Questionnaire design

Questionnaire survey is a widely used method to study user behavior. In this paper, the questionnaire is divided into two parts, one is the basic information of the respondents, and the other part is the scale of the question. The first part is the basic information of the respondents, which mainly includes gender, age, educational background, occupation, whether he or she knows the chauffeured car service and the frequency of using Internet special car, etc. The basic information is in the first part of the questionnaire, and we hope that the collected data will be used to analyze the acceptance of the Internet special car to users who has different backgrounds. The second part of the questionnaire is the scale design, and it used five dimensions of Likert Scale to answer the question, which are strongly disagree, not agree, not sure, agree and strongly agree. The question of this questionnaire involves perceived usefulness, perceived ease of use, perceived risk, perceived cost, marketing efforts, community impact and intention to use.

The structure of this questionnaire is shown as follows.

(1) Measuring questions for perceived usefulness:

A1. I think the special car is useful to me.

A2. When I need the car, I will select the car service as one of the main choices.

A3. It is very efficient to use a special car.

A4. Compared with taxis, special cars can satisfy my higher demand for cars (e.g., business cars, luxury cars, etc.).

A5. I feel satisfied with the service attitude of the driver and the tidy inside of the car.

(2) Measuring questions for perceived ease of use:

B1. I can easily contact the chauffeur.

B2. I can easily locate where I want to go.

B3. I can easily complete the whole process of calling the special car.

B4. I am satisfied with the after-sales service and customer service system of the special car service (If you've never used it, please choose I don't know).

B5. In general, taxi hailing apps are easy to use and easy to operate.

(3) Measuring questions for perceived risk:

C1. The identity of the chauffeur made me feel unsafe.

C2. The use of a special car may have the risk of being deceived.

C3. There is a risk of disclosure of privacy information such as personal location, name, mobile phone number, etc.

C4. It's risk for me to make payments through mobile payments, credit card bindings, etc.

(4) Measuring questions for perceived cost:

D1. It is more expensive to use a special car than traditional taxi.

D2. Using a special car will consume a lot of mobile traffic.

D3. Additional costs will be generated using a special vehicle, such as parking fees.

D4. Generally speaking, the cost of using special car service is higher.

(5) Measuring questions for marketing efforts:

E1. If there are no coupons, discounts and other promotions, I would prefer to choose a taxi.

E2. Marketing subsidies will attract me and consider using a special car.

E3. The advertising media will make me willing to use a special car service.

(6) Measuring questions for community impact:

F1. If a lot of people around me are using a car service, I'll try to use a special car service.

F2. If I trust someone who recommends me to use the chauffeured car service, I'll try to use it.

F3. I think the use of special car services will improve my image.

(7) Measuring questions for use intention:

G1. On the whole, I'd like to try to use the chauffeured car service.

G2. If I need to call a car, I'll consider using the chauffeured car service.

Considering that the chauffeured car service is a emerging patterns for using car service, we selected the employees and students in colleges and universities as subjects because they have a relatively good background in education and have a high willingness to try new things.

4.2 Questionnaire survey and statistical test

The questionnaire data were collected by field survey and network collection, and the total collection time

was about one week. A total of 282 questionnaires were collected at the beginning of the study, and 27 of them were removed for its unavailability. Finally, 255 questionnaires were used to analysis, and the available rate reaches 90.4%. The basic conditions of this questionnaire are shown in Table 2.

Table 2. The basic conditions of this questionnaire

Description	Category	Respondents	Proportion (%)
Gender	male	98	38.43%
	female	157	61.57%
Age	<20	22	8.63%
	21-30	113	44.31%
	31-40	106	41.57%
	41-50	10	3.92%
	>50	4	1.57%
Education background	high school or below	5	1.96%
	college degree	30	11.76%
	bachelor degree	140	54.90%
	master degree or above	80	31.37%
Occupation	government or institutions	16	6.27%
	state - owned enterprises	33	12.94%
	foreign companies	73	28.63%
	private enterprises	95	37.25%
	students	28	10.98%
	no fixed occupation	10	3.92%

According to the collected data, there are 113 people between the ages of 21 and 30, and the percentage is 44.31%. The number is 106 between the ages of 31 to 40, which is 41.57%. In terms of educational background, the bachelor's degree is 140 and the graduate or above degree is 80, which means the proportion of respondents with bachelor degree or above is 86.27%. But one thing is not so ideal for the difference of sample numbers of man and woman. This maybe causes some unexpected problem in our first thought. However we found that the gender difference has no impact on the answers after the empirical study, which means we can approximately take the males and females as the same for there's no remarkable influence. Overall, our subjects are relatively young, with higher education background and more receptive to new things, and it is easy for them to use and accept chauffeured car services. In addition, before investigating the variables, the respondents were assessed about the Internet special car, and the evaluation information is shown in Table 3

Table 3. The evaluation information of whether to know chauffeured car service or not

Description	Category	Respondents	Proportion (%)
Whether to know chauffeured car service or not	know very well	44	17.25%
	know	161	63.14%
	not familiar with	48	18.82%
	don't know	2	0.78%
Frequency of using this service	very often (>4 per week)	10	3.92%
	often (2-4 per week)	20	7.84%
	sometimes (1-4 per month)	65	25.49%
	Little (1-5 per 0.5year)	45	17.65%
	never	115	45.10%

From Table 3, there are 44 respondents who knew chauffeured car service very well, and 161 respondents know it commonly, which can confirm that this questionnaire is reliable. This means that all the samples could be well used in the marketing efforts and community impact part. For the samples who never use this service, the answer of the latter two parts is the same. And the number covers 45.10% of entire samples, which means their answers for some specific question is invalid. Meanwhile, the reliability test shows us that all the samples provide us with a convincing result.

4.2.1 Reliability test

Reliability is mainly used to measure the reliability, stability and consistency of data. The method of reliability evaluation mainly includes retest reliability, consistency reliability, and split-half reliability and so on. Since consistency reliability has been widely used by scholars, and then this paper also used it.

Consistency reliability mainly verifies the internal consistency effect of each measurement item in the questionnaire, and examines whether each question has measured the same content. Cronbach's Alpha is currently used to measure the consistency reliability. In general, the higher the Cronbach's Alpha is, the higher the reliability is. The reliability test of this research is shown in Table 4.

Table 4. The reliability test

Variables	Value of Cronbach's Alpha	Items	Value of Cronbach's Alpha after object removed
Entirety	0.827	all 26	--
Perceived usefulness	0.814	A1	0.764
		A2	0.768
		A3	0.767
		A4	0.782
		A5	0.807
Perceived ease of use	0.876	B1	0.865

Variables	Value of Cronbach's Alpha	Items	Value of Cronbach's Alpha after object removed
Perceived ease of use	0.876	B2	0.859
		B3	0.846
		B4	0.844
		B5	0.832
Perceived risk	0.826	C1	0.785
		C2	0.735
		C3	0.769
		C4	0.828
Perceived cost	0.782	D1	0.684
		D2	0.779
		D3	0.723
		D4	0.703
Marketing effort	0.858	E1	0.831
		E2	0.757
		E3	0.804
Community impact	0.806	F1	0.692
		F2	0.701
		F3	0.786
Use intention	0.824	G1	-
		G2	-

It can be seen from Table 4 that the Cronbachs Alpha value of the entirety is 0.827, and the Cronbach's Alpha value of other variables is about 0.8 or more. The results show that the reliability of the scale is good.

4.2.2 Validity test

Validity refers to the accuracy of the measured problem and the content of the measurement. The higher the validity is, the more persuasive the result is. The validity is divided into three types, including content validity, criterion-related validity and construct validity. Content validity refers to the extent to which a measure represents all facets of a given construct. Criterion-related validity is a measure of the validity of the test which could directly and independently measure the behavior of the respondents. Construct validity is the degree to which a test can measure the desired conception.

This paper takes the validity analysis in the way of factor analysis from the aspect of construct validity. Generally speaking, when the value of factor loading is greater than 0.5 and the value of cumulative explanatory variance is above 50%, this means the validity is good. The validity test of this research is shown in Table 5.

Table 5. The validity test

Variables	Parameter	Factor loading	Cumulative explanatory variance
Perceived usefulness	A1	0.808	58.010%
	A2	0.794	
	A3	0.786	
	A4	0.749	
	A5	0.663	
Perceived ease of use	B1	0.768	67.420%
	B2	0.782	
	B3	0.831	
	B4	0.842	
	B5	0.878	
Perceived risk	C1	0.804	66.386%
	C2	0.879	
	C3	0.838	
	C4	0.731	
Perceived cost	D1	9.824	59.505%
	D2	0.653	
	D3	0.769	
	D4	0.814	
Marketing effort	E1	0.864	78.185%
	E2	0.91	
	E3	0.878	
Community impact	F1	0.877	71.605%
	F2	0.865	
	F3	0.806	
Use intention	G1	0.922	85.075%
	G2	0.922	

It can be seen from Table 5 that all of values of the factor loadings are greater than 0.6. Meanwhile, cumulative explanatory variances are above 50%, which means the questionnaire of the model has convictive validity. After reliability and validity verification, we could get the new structural equation model, which is shown in Figure 6.

Figure 6. The structural equation model of chauffeured car service
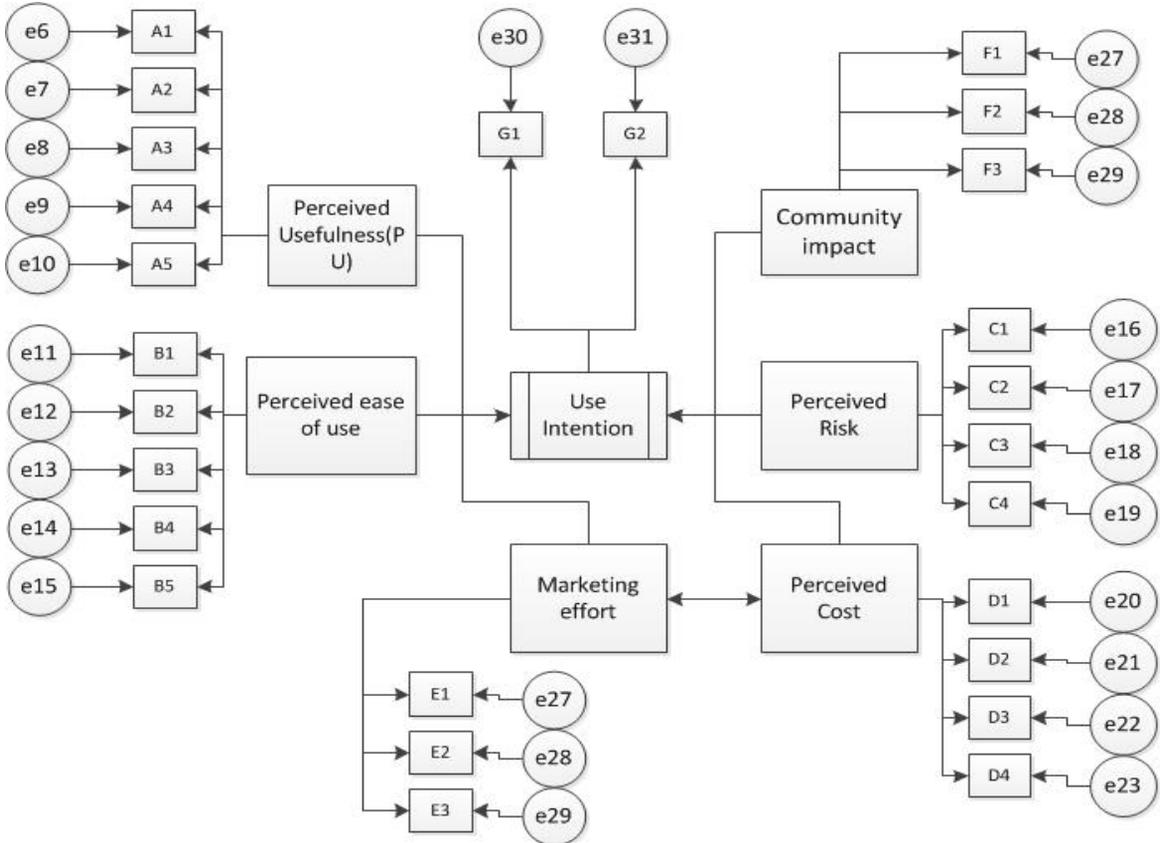
5. Result analysis

According to the questionnaire data and the structural equation model established by the selected indexes, we used AMOS software to analyze the fitting degree of the model, and the fitting index is shown in Table 6.

Table 6. Simulation of the fitting index

Index of fitting	Criteria		Model actual value	Fitting effect
	Acceptable	Favorable		
CMIN/DF	2-3	<2	2.17	Acceptable
RMSEA	0.7-0.9	>0.9	0.83	Acceptable
CFI	0.7-0.9	>0.9	0.807	Acceptable
FI	0.7-0.9	>0.9	0.811	Acceptable

It can be seen from Table 6 that each fitting index of the model is in the reasonable range, and the structural equation established in this study has a relatively good fitting degree.

After the model validation of the hypotheses, the results indicate that the main affecting consumer's usage intention are perceived usefulness, perceived ease of use, perceived risk, perceived cost, marketing, and social influence. The specific results are analyzed as follows.

Hypothesis H1: Perceived usefulness has positive impact on the intention to use the chauffeured car service, and it is validated in the model. According to the TAM theory, perceived usefulness would have directly impact on the willingness of using the specific product for it reflects the customers' satisfaction towards quality, price, service, variety and responding speed. Obviously this impact should be positive. This indicates that the car services provided by Internet special car can meet the needs of consumers, and the business model is recognized by consumers. Such as chauffeured car service provides consumers with seven-person commercial vehicles, luxury cars and other models equipped with a full-time driver, which traditional taxi can't be compared with. Moreover, chauffeured car service has also incomparable advantages in terms of response speed, optional space.

Hypothesis H2: Perceived ease of use has positive impact on the intention to use the chauffeured car service. According to the TAM theory, this means that how easy it is to use the specific system. And it's also easy for us to come up with this hypothesis that it should be positive impact. Chauffeured car service belongs to relatively new market field, the most important condition for users to use the Internet special car is to know the flow of Internet special car and familiar with the operation mode of the software. The results of the model analysis also show that if there is a complex and unfamiliar-based influence on the usability factors, consumers will be affected by the use of Internet special vehicles. For the new platform of Internet car, it is an important work to give the better experience of software operation and call success rate in the early stage. In the case of Shenzhou special car in the early launch, they collected some problems reflected by users, including lack of sense of experience, duplicate registered personal information, inaccurate map location, and recharge operation is too tedious and so on, and all of these need to improve.

Hypothesis H3: Perceived risk has negative impact on the intention to use the chauffeured car service. This analysis shows that the more users perceive the risk, the more likely they will not use the Internet special car. At present, there are some problems in the special car operation of the Internet, such as the uncertainty of driver identity, unlicensed cab, disclosure of personal information and payment security and so on, which have become the important factors to restrict user access to the chauffeured car service. The above problems are worth the attention of the Internet special car operators so as to enhance the security of the Internet special car users.

Hypothesis H4: Perceived cost has negative impact on the intention to use the chauffeured car service. Generally speaking, consumers are rational and are willing to meet the same demand for cars with less cost or less money. As a short distance car demand, different types of car are more reflected in the cost. The Internet special car users have higher sensitivity to the cost. The analysis of the questionnaire also further verified that the higher the cost, the lower the willingness of users to use the service.

Hypothesis H5: Marketing efforts has positive impact on the intention to use the chauffeured car service. The analysis results show that the marketing campaigns carried out by the Internet car have had a positive effect. This is also important in the marketing strategy theory. As mentioned in the questionnaire, among the 255 respondents, 162 respondents think that marketing subsidies will remind themselves of using the

car service. For the development stage of chauffeured car service, marketing subsidy is undoubtedly a kind of promotion way that can obtain user's stickiness quickly, and play the effect of user's use habit.

Hypothesis H6: Community impact has positive impact on the intention to use the chauffeured car service. This suggests that the use of the chauffeured car service can produce certain network externalities, and through the use of the surrounding crowd influencing people to recommend, Internet users are more likely to accept the service. In particular, when other people around the user have a good evaluation of the Internet special car, the user will be more willing to use it.

Hypothesis H7: Marketing efforts and perceived costs have a mutual impact. From the analysis, there is a positive relationship between marketing force and perception cost. The higher the perception cost is, the more the operators of chauffeured car service are inclined to increase their marketing efforts, including the wide distribution of coupons or subsidies. Conversely, too much marketing can have a negative effect. If marketing is carried out in the form of subsidies or coupons, the actual cost of the user will be reduced. But at the same time, it will increase the user's sensitivity to the cost and other costs, and make user form a promotion dependency, which lead to user's perceived costs rise accordingly.

Based on the above analysis and verification results, we put forward some suggestions for the operation and development of chauffeured car service as follows. First, it is necessary to further clarify the business positioning of the Internet special car. Chauffeured car service cannot just be satisfied with the substitute of taxi. It should satisfy consumers' basic needs of car while giving them higher values and goals, and realize the separation or partial separation between themselves and traditional taxis. Second, some refined services can be provided such as the optimization and improvement of the whole service process, further improve the traffic condition, service state, additional equipment and traffic route guidance and so on, so as to make the consumers feel the value, even excellent quality and reasonable price. Especially is the improvement of service quality of the chauffeur car.

6. Summary and discussion

6.1 Summary

With the continuous development of mobile internet, the continuous change of users' consumption habits has created a favorable environment for the emergence of Internet special cars. In order to understand consumers' views on the Internet special car, this paper studies the customer's usage intention for chauffeured car service. The relevant questionnaire was designed and the structural equation model was established, on the whole, the main contents of this research are as follows.

(1) This paper firstly introduces the business model of chauffeured car service, and analyzes the market positioning and the value of chauffeured car service in O2O mode. Based on the present situation of chauffeur car service, the customer's usage intention was selected as the research content.

(2) On the basis of the previous research, we combined with the TRA, TPB, TAM, TAM2 and perceived risk theory, and six variables were selected to build the chauffeured car service users' intention model, that is perceived usefulness, perceived ease of use, perceived risks, perceived cost, marketing effect and community impact.

(3) The combination of questionnaire and empirical research is used in this paper, and the analysis of reliability and validity of the 255 questionnaires were implemented. In addition, the structural equation

model is established, and the goodness of fit analysis and hypothesis verification were carried out, and the results show that the hypothesis is valid.

6.2 Discussion

From the perspective of user perception, this paper studied the influence factors of chauffeured car usage intention. Although this survey only covers a number of highly educated people and selects a number of variables to build model, the results of the study are very convincing. In the future research, the issue should be paid attention to as follows.

Firstly, the scope of the study sample can be expanded. Other person can also be selected as subjects, except for employees and college students, which can extend this study to various all age groups, regions and occupations. Secondly, more perspectives and variables can be used to study the customer's usage intention for chauffeured service, such as UTAUT (Unified Theory of Acceptance and Use of Technology), Innovation Diffusion and so on.

References

Amey, A., Attanucci, J. and Mishalani, R. (2011). Real-time ridesharing: opportunities and challenges in using mobile phone technology to improve rideshare services. *Transportation Research Record Journal of the Transportation Research Board*, *2217*, 103-110.

Bai, X. N. (2017). Discussion on the normative development of sharing economy: based on the perspective of regulatory economy. *Shanxi Agricultural Economy*, *17*, 6-7.

Cui, Y. H. (2007). The application of the theory of perceived risk in online shopping. *E-commerce*, *3*, 75-79.

Cui, X. (2014). Legal problems and countermeasures in the supervision of taxi software. *Transportation Enterprise Management*, 29(6), 15-16.

Ding, H. (2014). Research on affecting factors of consumers' using willingness to third-party mobile payment. Unpublished master's thesis, Anhui University, Anhui Province, China.

Khalifa, M., Cheng, S. K. N. and Shen, K. N. (2012). Adoption of mobile commerce: a confidence model. *Data Processor for Better Business Education*, *53*(1), 14-22.

Lan, H. Y., Hu, G. and Yuan, H, P. (2014). Investigation and thinking of mobile taxi software. *Journal of New Western Theory*, *7*, 39-40.

Li, B. L. and Hu, H. L. (2007). Consumers' perceived risk and risk reduction strategies. *China's Circulation Economy, 21*(2), 52-54.

Lin, Y. C. (2014). Mobile car-hailing software user behavior research. Unpublished master's thesis. Xiamen University, Fujian Province, China.

Posen, H. A. (2015). Ridesharing in the sharing economy: should regulators impose Uber regulations on Uber?. *Iowa Law Review*, *101*(1), 405-433.

Shen, Z. S. (2015). Internet innovation and regulation of special car. *Wen Hui Newspaper*, *2*(1), 8.

Sun, Q. and Hu, Q. L. (2009). The factors affecting consumer intentions to use mobile services based on integrated technology acceptance model. *Commercial research, 6*, 55-59.

Vanoutrive, T., Van De Vijver, E., Van Malderen, L., Jourquin, B., Thomas, I., Verhetsel, A. and Witloxb, F. (2012). What determines carpooling to workplaces in Belgium: location, organisation, or promotion?. *Journal of Transport Geography*, *22*(2), 77-86.

Yang, S. Q., Lu, Y. B. and Cao, Y. Z. (2012). An empirical study on mobile payment initial adoption. *Chinese Journal of Management*, *9*(9), 1365-1372.

Yu, D., Dong, D. H., Liu, R. and Yuan, Y. D. (2008). Theory of reasoned action and its extending researches. *Advances*

in Psychological Science, *16*(5), 796-802.

Yu, J. H., Liang, X. Q. and Xie, S. H. (2014). The research of taxi mobile phone application profit pattern. *Technology & Economy in Areas of Communication*, *16*(2), 63-65.

Zhan, A. J. (2015). Research on intention in using Internet special car on the basis of users' perception. Unpublished master's thesis, Fudan University, Shanghai, China.

Zhang, H., Bai, C. H. and Li, C. F. (2011). Study on consumers' online purchasing intention—comparison between TRA and TPB. *Soft Science*, *25*(9), 130-135.

Zhang, Z. and Lu. X. Y. (2009). Based on the TAM model and the analysis of network group purchase perceived risk of consumer participation willingness. *Marketing Herald*, *1*, 13-19.

Zhao, G. S., Yang, Y. P. and Yang, J. Z. (2016). Problems and countermeasures of the development of Internet special cars in Shanghai. *Electronic Commerce*, *6*, 1-2.

Zhou, X. Y. (2012). An empirical study on usage intention of mobile e-commerce based on technology acceptance model. Unpublished master's thesis, South China University of Technology, South China polytechnic school Guangdong Province, China.

Zhou, Y. (2009). Construction of college students' network learning behavior model based on TRA and TAM. *China Educational Technology*, *11*, 58-61.