

PERCEIVED VALUE OF CAR SHARING SERVICE AND CHINESE CONSUMER'S CONTINUOUS USAGE INTENTION

YUANHAO HUANG¹ AND TAESOO MOON²

¹Cooperative Department of International Business

²School of Business Administration

Dongguk University

Dongdaero 123, Gyeongju, Gyeongbuk 38066, Korea

261001876@qq.com; tsmoon@dongguk.ac.kr

Received March 2020; accepted June 2020

ABSTRACT. *Sharing economy has attracted a great deal of attention in China. Car sharing service in China is increasingly growing. China's increasing wealth makes it achieve sustainable urban mobility. This study examines to empirically identify the relationship between the characteristics of car sharing service and Chinese consumers' continuous usage intention. The purpose of this study is to examine what factors in car sharing service may affect consumers' continuous usage intention through consumer satisfaction. The results proved that reliability, cost saving, and social influence significantly influence perceived value of car sharing service. And perceived value of car sharing service significantly influences Chinese consumers' continuous usage intention through consumer satisfaction.*

Keywords: Sharing economy, Car sharing service, Reliability, Cost saving, Social influence, Perceived value, Consumer satisfaction, Continuous usage intention

1. Introduction. Although China holds one of the world's largest vehicle populations, the nationwide motorization level is still low compared to developed countries. In 2016 the car density in Germany was 552 passenger cars per 1,000 inhabitants. In comparison, the car density in China was only 118 cars per 1,000 inhabitants, which equals a fifth of Germany's car density. If China would reach the car density of Germany, it means a total of 920 million cars on China's roads at least, almost 17 times the existing car stock of Germany. Nevertheless, increasing private car ownership concentrates in densely populated Chinese megacities and metropolitan regions where they have already reached a saturation point, resulting in a variety of negative influences, such as severe air pollution, high congestion levels, parking pressure, and traffic accidents. This is one of the reasons that car sharing services are suited to develop in China. And, the growth of car sharing in China is mainly driven by governmental support measures and citizen's needs.

For the first time in China, car sharing could be publicly experienced on a broader scale during the World Expo 2010 in Shanghai. And only a few months after the World Expo 2010, the car sharing operator China Car Clubs (CC Clubs, formerly known as the EVnet) introduces its service in Hangzhou. In the following years, the growth of the car sharing market in China was slow with only a total fleet size of less than 1,000 by 2013, but from 2015, the car sharing services in China started to develop, the total fleet size reached 30,000 cars, located mainly in Tier 1 and 2 cities. By 2018, there were more than 40 car sharing operators with more than 40,000 cars in China, mainly in Tier 1 and 2 cities.

This study suggested a research model based on expectation-confirmation theory and value-based theory. Reliability, cost saving, and social influence, as driving forces of car

sharing service in China, could positively influence perceived value and continuous usage intention through customer satisfaction. We consider that when car sharing companies provide its benefit of car sharing such as convenience and cost saving, they would be able to improve continuous usage intention through consumer satisfaction.

2. Literature Review and Hypothesis Development. Car sharing service is considered as a sustainable mobility. Car sharing service is environmentally friendly, flexible, and dynamic mobility services to complement the public transportation infrastructure. Car sharing studies have shown a nearly 30% reduction of car-bound mobility for its customers due to a tendency to reevaluate the need for car use, favoring an increase in preference for alternate modes of transportation [1,2]. Bardhi and Eckhardt [3] explained that car sharing service is similar to market exchange because it is determined by self-interest and utilitarianism. Fleury et al. [4] explained effort expectancy and performance expectancy positively influence behavioral intention. And Paundra et al. [5] explained the price, parking convenience, and car type will affect the intention to use a car sharing service. According to those previous studies, the convenience of car sharing services is important to determine consumer usage intention. Zhu et al. [6] studied on car sharing application and found that perceived value indirect influences consumer adoption intention via attitude.

This study is based on the expectation-confirmation theory [7]. The key constructs of ECT include expectation, perceived performance, confirmation, satisfaction, and repurchase intention. Bhattacharjee [8] is one of the earliest to test a theoretical model of IS continuance. In his study, combined with Davis et al. [9] and Taylor and Todd [10], it suggests that satisfaction and perceived usefulness are important predictors of actual continuance behaviors. So, Bhattacharjee [8] considered four constructs (IS continuance intention, satisfaction, perceived value, and confirmation) drawn from prevaricated measures in IS use or ECT research.

However, this study considers that perceived usefulness is a lack of explaining consumer behavior in car sharing services. With the development of mobile technology, there is little or no difference in consumer perception of usefulness between different services. Huang and Moon [11] explained that a product/service must be useful, or the consumer will not use it for the first time.

Technology adoption model suggests perceived usefulness and perceived ease of use to explain the adoption of technology by individuals, but it has limitation to explain the adoption of information and communication technology [12], and developed the Value-based Adoption Model (VAM). The perceived value is defined as the overall assessment of the utility of a product/service based on the perception of what is received and what is given [13]. In the marketing size, before consumer choice of a product/service, there would estimate the value by considering relevant benefits and sacrifice, so Kim et al. [12] suggested the perceived value as compared with other services/products. This study considers the perceived usefulness has limitations to measure the car sharing service, and the perceived value is better to explain consumer's continuance behavior by comparing the difference of services.

There are many variables that have been theoretically and empirically related to car sharing service; in this study, we focus specifically on perceived value and ECM theory, as post-adoption model in choosing of car sharing service. This study expects that contextual variables such as reliability, cost saving, and social influence, will be positively related to perceived value, consumer satisfaction and continuous usage intention. Our research model is shown in Figure 1.

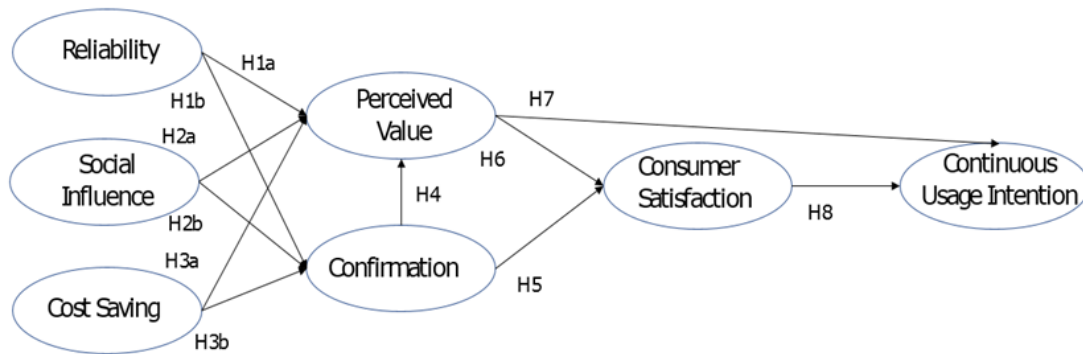


FIGURE 1. Research model

H1a: Reliability in car sharing service will be positively related to perceived value.

H1b: Reliability in car sharing service will be positively related to confirmation.

H2a: Social influence in car sharing service will be positively related to perceived value.

H2b: Social influence in car sharing service will be positively related to confirmation.

H3a: Cost saving in car sharing service will be positively related to perceived value.

H3b: Cost saving in car sharing service will be positively related to confirmation.

H4: Confirmation in car sharing service will be positively related to perceived value.

H5: Confirmation in car sharing service will be positively related to consumer satisfaction.

H6: Perceived value in car sharing service will be positively related to consumer satisfaction.

H7: Perceived value in car sharing service will be positively related to continuous usage intention.

H8: Consumer satisfaction in car sharing service will be positively related to continuous usage intention.

3. Research Methodology.

3.1. Sampling and data collection. The sample was selected from individuals who have usage experience of car sharing services in China. This study uses the online survey spread of questionnaire via an online questionnaire platform for five weeks, and shares the hyperlink through the social media platform. The respondents of this study were who have car sharing service experience in China. In total, 314 data were collected, and connected to the data analysis process.

3.2. Measurement model. In this research, Structural Equation Modelling (SEM) was used to evaluate the proposed model. For the analysis of the data, we used SPSS 23.0 and Amos 21.0 software. Before testing the structural model, the reliability and validity of the measurement model were assessed through item reliability, internal consistency, and discriminant validity.

The cross loadings presented in Table 2 suggest that all the items load significantly on their posited constructs, ranging from 0.672 to 0.823. Reliability was examined by using the indicator loadings and the Composite Reliability (CR). Indicator loadings and CR values for most items are greater than 0.80. Three measures of reliability for internal consistency were used: Cronbach's, composite reliability and average variance extracted. For Cronbach's, a minimum value of 0.7 is considered as the acceptable for existing scales. Also, the Average Variance Extracted (AVE) overall values were all above the 0.5 suggested for each construct.

TABLE 1. Demographic characteristics

Item	Classification	Frequency	Percentage
Gender	Male	148	47.10%
	Female	166	52.90%
Age	20-29	133	42.40%
	30-39	160	51.00%
	40-49	19	6.10%
	over 50	2	0.20%
Job	Student	3	0.90%
	Official	11	3.50%
	Employees	294	93.60%
	Freelance work	4	1.30%
	Others	2	0.60%
Educational level	High school	5	1.60%
	Undergraduate	20	6.40%
	Bachelor degree	247	78.70%
	Master degree	42	13.40%
Total		314	

TABLE 2. Measurement item and convergent validity

Factors	Items	Std. Est.	Cronbach's Alpha	AVE
Social Influence (SI)	SI2	0.793	0.818	0.58
	SI1	0.766		
	SI3	0.745		
	SI4	0.733		
Continuous Usage Intention (CUI)	CUI5	0.785	0.808	0.55
	CUI1	0.757		
	CUI2	0.742		
	CUI3	0.672		
Satisfaction (SAT)	SAT3	0.793	0.805	0.54
	SAT2	0.726		
	SAT5	0.714		
	SAT4	0.696		
Perceived Value (PV)	PV1	0.809	0.785	0.52
	PV4	0.694		
	PV3	0.682		
	PV2	0.682		
Cost Saving (CS)	CS4	0.762	0.762	0.55
	CS1	0.758		
	CS5	0.729		
	CS3	0.710		
Reliability (REL)	REL1	0.823	0.784	0.63
	REL5	0.817		
	REL2	0.731		
Confirmation (C)	C3	0.795	0.749	0.61
	C1	0.788		
	C2	0.761		

$\chi^2/DF = 1.182$, $GFI = 0.926$, $AGFI = 0.907$, $CFI = 0.982$, $NFI = 0.895$, $RMR = 0.032$, $RMSEA = 0.024$

3.3. Structural model. Results of the analysis for the structural model are presented in Table 3. From the result, all the hypotheses are accepted, except H3b, in which the p -value is more than 0.05. Among those independent variables, social influence shows the largest influence on perceived value (H2a, 0.336***), the reliability determines confirmation (H1b, 0.306***). And perceived value ($R^2 = 0.427$) significantly affects consumer satisfaction (H6, 0.503***) and continuous usage intention (H7, 0.351***). Confirmation ($R^2 = 0.214$) has a positive influence on perceived value (H4, 0.203**) and satisfaction (H5, 0.15*). Satisfaction ($R^2 = 0.342$) has a positive influence on continuous usage intention 47.5% ($R^2 = 0.475$). Also, the model fit indices of this research are acceptable. Social influence and reliability, rather than cost saving in using car sharing service, are the determinants to positively influence confirmation and perceived value. This means Chinese consumers have some expectation to hear the consumers' voice for reliable car sharing companies.

TABLE 3. Results of hypothesis

Hypotheses	Path			Estimate	S.E.	C.R.	P	Result
		→						
H1a	Reliability	→	Perceived value	0.182	0.078	2.465	*	Accepted
H1b	Reliability	→	Confirmation	0.306	0.087	3.717	***	Accepted
H2a	Social influence	→	Perceived value	0.336	0.064	4.313	***	Accepted
H2b	Social influence	→	Confirmation	0.208	0.068	2.512	*	Accepted
H3a	Cost saving	→	Perceived value	0.180	0.063	2.575	*	Accepted
H3b	Cost saving	→	Confirmation	0.067	0.070	0.855	0.393	Rejected
H4	Confirmation	→	Perceived value	0.203	0.075	2.706	**	Accepted
H5	Confirmation	→	Satisfaction	0.150	0.077	1.976	*	Accepted
H6	Perceived value	→	Satisfaction	0.503	0.089	5.737	***	Accepted
H7	Perceived value	→	Continuous usage intention	0.351	0.089	4.279	***	Accepted
H8	Satisfaction	→	Continuous usage intention	0.426	0.092	5.014	***	Accepted

$\chi^2/DF = 1.242$, GFI = 0.922, AGFI = 0.904, RMR = 0.042, NFI = 0.887, CFI = 0.975, RMSEA = 0.028, ***: $P < 0.001$, **: $P < 0.01$, *: $P < 0.05$

4. Implications and Conclusions.

4.1. Academic implication. This study has the following academic implication. First, this study also testifies that satisfaction is the key factor predictor of consumer continuous usage intention [14]. In comparison with H6 and H7, perceived value has higher impact to satisfaction than continuous usage intention. Second, compared with Bhattacharjee [8], consumer satisfaction is determinant by confirmation, and the relationship between perceived usefulness with satisfaction is weak. However, this study found that perceived value is the strongest predictor of consumer satisfaction. In this study, the perceived value is defined as the consumer's overall assessment of the utility of a product or service based on the perception of what is received and what is given [13]. Satisfaction is the result of consumer perception of value received. The consumer perception of value via comparing with different car sharing services usage experience, thus, influences consumer satisfaction. Kim et al. [12] also suggested the importance of perceived value in M-Internet. Third, this study found reliability is the strongest predictor of consumer confirmation, Abkowitz and Tozzi [15] explained public transport service reliability influences the decisions of travelers and transportation providers. Fourth, social influence is the key factor of consumer perceived value. Information passed by social networks influences consumer's perception of the target technology. In this study, it is explained that social influence would change consumer's perception of the car sharing service.

4.2. Practical implication. After path analysis, this study found that consumer's continuous usage intention is predictor by satisfaction, and consumer satisfaction is an important factor in marketing studies. In car sharing service, consumer satisfaction directly affects continuous usage intention; in other words, if a consumer is satisfied with the car sharing service, he/she would use it again. Next, this study found that perceived value significantly influences satisfaction, and it means that consumers are satisfied with a car sharing service which can receive more via comparing with others. And this study found that social influence will affect consumer perceived value, and the information on car sharing services through social networks influences consumer perception. Especially, with the development of social media, the spread of information is fast, so, if a car sharing service has positive information, it will enhance consumer perception value.

4.3. Conclusion. This study focuses on Chinese consumer's continuous usage intention in the car sharing service. Based on expectation-confirmation theory, this study also explained that satisfaction is a key predictor of consumer's continuous usage intention. The most of car sharing related studies always neglected reliability, and this study found the reliability significantly influences confirmation. Also, this study found that social influence is positively related to perceived value, and consumer perceived value will positively affect satisfaction.

However, this study also has some limitations: the confirmation is just explained by reliability, social influence, and cost saving, and the R square of confirmation is low. Compared with the population of China, this study has low explanatory power because of small size in sampling. According to the result of this study, the future study can consider the impact of the perceived value in car sharing service in China.

REFERENCES

- [1] E. W. Martin and S. A. Shaheen, Greenhouse gas emission impacts of carsharing in North America, *IEEE Trans. Intelligent Transportation Systems*, vol.12, no.4, pp.1074-1086, 2011.
- [2] H. Nijland, J. Van Meerkerk and A. Hoen, Impact of car sharing on mobility and CO₂ emissions, *PBL Note*, vol.1842, pp.1-12, 2015.
- [3] F. Bardhi and G. M. Eckhardt, Access-based consumption: The case of car sharing, *Journal of Consumer Research*, vol.39, no.4, pp.881-898, 2012.
- [4] S. Fleury et al., What drives corporate carsharing acceptance? A French case study, *Transportation Research Part F: Traffic Psychology and Behavior*, vol.45, pp.218-227, 2017.
- [5] J. Paundra et al., Preferences for car sharing services: Effects of instrumental attributes and psychological ownership, *Journal of Environmental Psychology*, vol.53, pp.121-130, 2017.
- [6] G. Zhu, K. K. F. So and S. Hudson, Inside the sharing economy: Understanding consumer motivations behind the adoption of mobile applications, *International Journal of Contemporary Hospitality Management*, vol.29, no.9, pp.2216-2239, 2017.
- [7] R. L. Oliver, Measurement and evaluation of satisfaction processes in retail settings, *Journal of Retailing*, vol.57, no.3, pp.25-48, 1981.
- [8] A. Bhattacherjee, Understanding information systems continuance: An expectation-confirmation model, *MIS Quarterly*, vol.25, no.3, pp.351-370, 2001.
- [9] F. D. Davis, R. R. Bagozzi and R. R. Warshaw, User acceptance of computer technology: A comparison of two theoretical models, *Management Science*, vol.35, no.8, pp.982-1003, 1989.
- [10] S. Taylor and P. A. Todd, Understanding information technology usage: A test of competing models, *Information Systems Research*, vol.6, no.2, pp.144-176, 1995.
- [11] Y. H. Huang and T. S. Moon, Influence of car sharing service on consumers' continuous usage intention in China, *Journal of Internet Electronic Commerce Research*, vol.18, no.5, pp.201-215, 2018.
- [12] H. W. Kim, H. C. Chan and S. Gupta, Value-based adoption of mobile Internet: An empirical investigation, *Decision Support Systems*, vol.43, no.1, pp.111-126, 2005.
- [13] V. A. Zeithaml, Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence, *Journal of Marketing*, vol.52, no.3, pp.2-22, 1988.

- [14] A. T. Oghuma, C. F. Libaque-Saenz and S. F. Wong, An expectation-confirmation model of continuance intention to use mobile instant messaging, *Telematics and Informatics*, vol.33, no.1, pp.34-47, 2016.
- [15] M. Abkowitz and J. Tozzi, Research contributions to managing transit service reliability, *Journal of Advanced Transportation*, vol.21, no.1, pp.47-65, 1987.