Journal of Southeast University (English Edition) Vol. 37, No. 2, pp. 216 - 221 June 2021 ISSN 1003—7985

Modeling and gender difference analysis of acceptance of autonomous driving technology

Chen Yuexia[1] Zha Qifen[2] Jing Peng[1] Cheng Hengquan[1] Shao Danning[1]

([1]School of Automobile and Traffic Engineering, Jiangsu University, Zhenjiang 212013, China)
([2]School of Finance and Economics, Jiangsu University, Zhenjiang 212013, China)

Abstract: In order to deeply analyze the differences in the acceptance of autonomous driving technology among different gender groups, a multiple indicators and multiple causes model was constructed by integrating a technology acceptance model and theory of planned behavior to comprehensively reveal the gender differences in the influence mechanisms of subjective and objective factors. The analysis is based on data collected from Chinese urban residents. Among objective factors, age has a significant negative impact on women's perceived behavior control and a significant positive impact on perceived ease of use. Education has a significant positive impact on men's perceived behavior control, and has a strong positive impact on women's perceived usefulness (PU). For men, income and education are found to have strong positive impacts on perceived behavior control. Among subjective factors, perceived ease of use (PEU) has the greatest influence on women's behavior intention, and it is the only influential factor for women's intention to use autonomous driving technology, with an influence coefficient of 0.72. The influencing path of men's intention to use autonomous driving technology is more complex. It is not only directly affected by the significant and positive joint effects of attitude and PU, but also indirectly affected by perceived behavior controls, subjective norms, and PEU.

Key words: autonomous vehicle; acceptance of autonomous driving technology; technology acceptance model; theory of planned behavior; multiple indicators and multiple causes model

DOI: 10.3969/j.issn.1003-7985.2021.02.012

Autonomous vehicles are expected to reduce traffic accidents caused by human errors[1], relieve traffic congestion, and reduce exhaust emissions[2], but the current high-level autonomous driving technology is still in the stages of research and testing and far from the market application. Furthermore, while being limited by the development level of technology, its application also depends on wide public acceptance and use[3]. Existing studies show that the acceptance of autonomous driving technology is affected by many factors, such as age, gender, cost, legal, and policy risks[4-5]. Most of those have shown significant gender effects, but few have focused on gender influence. According to the sixth census of the National Bureau of Statistics, the ratio of male-to-female citizens in China is 1.052. In general, the attitude of women toward new technology is less positive than that of men[6]. Although the gender difference in new technology cognition is weak, it could still have a systematic impact. It is necessary to analyze the differences in the acceptance of autonomous driving technology from the perspective of gender, so as to form the relevant decision-making basis for promoting the development of autonomous driving technology.

A German survey[7] showed that men had a more positive attitude toward autonomous cars. Kyriakidis et al.[8] further confirmed that women were more concerned about the problems associated with autonomous cars based on 5000 questionnaires from 109 countries. Liu et al.[9] found that female participants showed lower perceived benefits and higher risk perception of autonomous driving technology in Xi'an and Tianjin. Payre et al.[10] surveyed 421 samples from France and concluded that men were more willing to use autonomous cars than women. In the above-mentioned literature, the subjects showed a consistent gender difference in the attitude and intention to use autonomous driving technology; moreover, the consistency has also been confirmed in different regions and cultural backgrounds. However, the differences in the deeper impact mechanism of the intention need to be further explored, especially based on the empirical analysis of China's national conditions. Although Kyriakidis et al.[8] tried to explain the gender differences in terms of the intention to use autonomous cars, it was not enough to fully explain the inherent differences. It is necessary to establish an appropriate theoretical framework to analyze the differences in the influence mechanism for the acceptance of autonomous driving technology among the gender groups.

Received 2020-12-29, **Revised** 2021-05-12.

Biography: Chen Yuexia(1982—), male, doctor, lecturer, chenyxia@ujs.edu.cn.

Foundation items: The National Key Research and Development Program of China (No. 2018YFB1601304), the National Natural Science Foundation of China (No. 71871107), Philosophy and Social Science Foundation Project of Universities in Jiangsu Province (No. 2020SJA2059).

Citation: Chen Yuexia, Zha Qifen, Jing Peng, et al. Modeling and gender difference analysis of acceptance of autonomous driving technology[J]. Journal of Southeast University (English Edition), 2021, 37(2): 216 - 221. DOI: 10.3969/j.issn.1003-7985.2021.02.012.

Theory of planned behavior (TPB) and technology acceptance model (TAM) are the main behavioral psychology theories applied in the research field of autonomous driving technology acceptance. However, explaining behavioral intention by a single theory is rather insufficient. The integration of the two provides a new approach for the effective improvement of the explanation of behavioral intention[11-12]. Furthermore, research on gender differences in the acceptance of autonomous driving technology by fusing the theories has yet to be seen with its influence path and and its effect is yet to be verified.

Therefore, based on TPB-TAM, multiple indicators and multiple causes (MIMIC) models are established for male and female groups, respectively. Empirical data was used to analyze the gender differences in influencing mechanisms. In particular, although the legal and policy risks may be of most concern to the public, with the improvement of relevant laws and regulations, it will not be the main problem in the future. Therefore, this paper only focuses on the acceptance of the technology itself, regardless of the laws and regulations.

1 Theoretical Model

Both TPB and TAM originate from rational behavior theory[11], and their common variables, attitudes, and intentions provide an opportunity for theoretical integration. In TPB, attitude, subjective norms (SN) and perceived behavioral control (PBC) jointly affect behavioral intentions in which attitude may be affected by subjective norms and perceived behavioral control. In TAM, behavioral attitude and perceived usefulness (PU) jointly affect behavioral intention. Among them, attitude may be affected by PU and perceived ease of use (PEU). Therefore, TPB and TAM are integrated, and the theoretical framework of the influencing factor model of acceptance of autonomous driving technology is constructed by combining the objective variables of individual socioeconomic attribute characteristics, as shown in Fig. 1, and the path hypothesis referred to in Refs. [12-14].

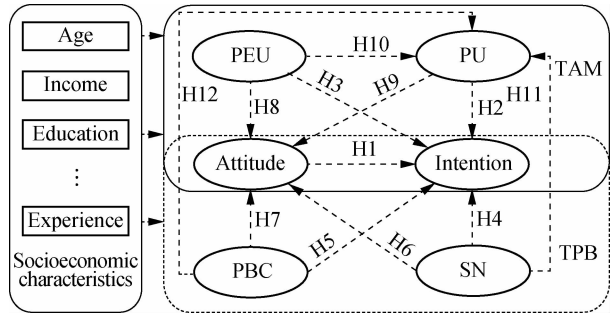


Fig. 1 TPB-TAM theoretical framework of acceptance of autonomous driving technology

According to the theoretical framework in Fig. 1, the latent variables of acceptance of autonomous driving technology are shown in Tab. 1, in which the latent variables are measured by several question items, and each question item is constructed by a Likert five-scale (strongly disagree 1→strongly agree 5).

Tab. 1 Latent variables

Latent variable	Definition	ID	Measurement item
Attitude	Public evaluation of autonomous driving technology	Attitude1	You are very supportive of the use of autonomous cars
		Attitude2	You are very interested in autonomous driving cars instead of traditional cars in the future
		Attitude3	The use of autonomous cars can improve road safety and reduce traffic accidents
		Attitude4	Autonomous cars can make traffic smoother and result in less delay
SN	The social pressure and public opinion perceived by the public	SN1	Your friends and family will support you for using autonomous cars
		SN2	The attitudes of the crowd around you toward autonomous cars will affect you
		SN3	Your friends and family's attitude toward autonomous cars will affect you
PBC	Public perception of driving capacity and opportunity for autonomous cars	PBC1	When autonomous cars are put on the market, you can afford to buy an autonomous car and use it
		PBC2	When autonomous cars are put on the market, you will be capable of buying or hiring an autonomous car
		PBC3	You have the ability to drive an autonomous car
PEU	Public perception of matching their own capabilities with skills needed to use new technologies	PEU1	Driving an autonomous car is easy
		PEU2	The autonomous car is easier to drive than a traditional car
		PEU3	You can drive an autonomous car without training
		PEU4	You can drive an autonomous car to go where you want to go without training
PU	Public perception of the usefulness of autonomous driving technology	PU1	You will have more time to do other things when driving an autonomous car
		PU2	Traveling by an autonomous car is more convenient than other modes
		PU3	When you cannot drive, you can use the autonomous car independently to go where you want to go
		PU4	Autonomous cars can reduce physical consumption during driving
		PU5	Autonomous cars can relieve mental fatigue during driving
Intention	Public intention to use autonomous driving technology	Intention1	When autonomous cars are put on the market, you are planning to use an autonomous car
		Intention2	When autonomous cars are put on the market, you will use them regularly
		Intention3	When autonomous cars are put on the market, you are willing to use them to travel

2 Sample Statistics and Test

The questionnaire content is composed of two parts: the information survey of individual socioeconomic attributes and the subjective psychological survey of acceptance of autonomous driving technology. A total of 250 questionnaires were collected through face-to-face surveys at main gathering points, such as railway stations, high-speed railway stations, passenger stations, shopping malls, and schools. Of those, 231 valid surveys were obtained by eliminating invalid data. The response rate was 100% and the effective rate was 92.4%. The specific sample distribution is shown in Tab. 2.

Tab. 2 Respondents' profile

Characteristics	Items	Frequency		Percentage/%	
		Male	Female	Male	Female
Age	18-22	47	51	41.59	43.22
	23-44	43	37	38.05	31.36
	45-60	23	30	20.35	25.42
Education(education level of the re-spondents)	High school graduate or less	19	22	16.81	18.64
	Bachelor's degree	64	81	56.64	68.64
	Postgraduate degree	30	15	26.55	12.71
Income/yuan (monthly income)	≤3 000	45	50	39.82	42.37
	3 001-6 000	35	57	30.97	48.31
	>6 000	33	11	29.20	9.32
License (had a driver's license or not)	Yes	88	70	77.88	59.32
	No	25	48	22.12	40.68
Experience (driving experience)	Yes	68	44	60.18	37.29
	No	45	74	39.82	62.71

Tab. 2 shows the proportions of each socioeconomic characteristic category in the sample of men and women. According to Tab. 2, men account for 48.92% and women 51.08% of the total sample. Of those, men accounting for 56.64% have bachelor's degrees, 29.20% earn more than 6 000 yuan per month, 77.88% of men have driving licenses, and 60.18% of them have actual driving experience. Compared with men, 68.64% of women have college or bachelor's degrees, only 9.32% earn more than 6 000 yuan per month, 59.32% of women have driving licenses, only 37.29% of them have actual driving experience, and there are significant differences in socioeconomic characteristics between the two genders. Therefore, it is necessary to analyze the acceptance of autonomous driving technology by gender.

The reliability of latent variables is tested by factor analysis, Cronbach's α coefficient, composite reliability (CR), and average variance extracted (AVE). The results are shown in Tab. 3. It can be seen from Tab. 3 that the principal component factors are unique, the eigenvalues are greater than 2.33, and the explained variance is greater than 70%. The coefficient α is greater than 0.85, which is higher than 0.7[15]. The AVE values are larger than 0.61, higher than 0.5[16] of the acceptable values. The CR values are all greater than 0.86, which exceed the acceptable value by 0.7[17]. In all, the designed scale has good reliability and validity.

Tab. 3 Reliability and validity test results

Latent variable	Gender	α	AVE	CR	Factor analysis	
					Eigenvalue	Proportion/%
Attitude	Male	0.913	0.725	0.914	3.175	79.37
	Female	0.903	0.700	0.903	3.100	77.48
SN	Male	0.913	0.784	0.916	2.554	85.14
	Female	0.856	0.689	0.866	2.336	77.87
PBC	Male	0.927	0.819	0.931	2.621	87.36
	Female	0.894	0.769	0.907	2.486	82.85
PEU	Male	0.860	0.614	0.863	2.832	70.80
	Female	0.909	0.721	0.912	3.154	78.84
PU	Male	0.911	0.678	0.913	3.700	74.02
	Female	0.921	0.707	0.923	3.817	76.34
Intention	Male	0.923	0.805	0.925	2.608	86.93
	Female	0.896	0.745	0.897	2.481	82.71

3 Influencing Factor Model

According to the theoretical framework of Fig. 1, a MIMIC model of the influence factors of male and female behavior is established to analyze the gender differences in the acceptance of autonomous driving technology.

The MIMIC model includes the structural equation reflecting the relationship between latent variables and the measurement equation expressing latent variables.

$$\boldsymbol{\eta} = \boldsymbol{\Lambda x} + \boldsymbol{\zeta} \tag{1}$$

where $\boldsymbol{\eta}$ is $n \times 1$ dimensional vector of psychological latent variables of acceptance of autonomous driving technology, including attitude, SN, PBC, PEU, PU, and intention, and n is set to 6; $\boldsymbol{x}$ is $k \times 1$ dimensional vector of exogenous observable variables, including age, education, income, license, and experience, and k is set to 5; $\boldsymbol{\Lambda}$ is $n \times k$ dimensional parameter matrix; $\boldsymbol{\zeta}$ is measurement error.

$$\boldsymbol{y} = \boldsymbol{\Gamma\eta} + \boldsymbol{v} \tag{2}$$

where $\boldsymbol{y}$ is $q \times 1$ dimensional observable index vector; $\boldsymbol{\Gamma}$ is $q \times n$ dimensional parameter matrix; $\boldsymbol{v}$ is measurement error.

The error terms $\boldsymbol{\zeta}$ and $\boldsymbol{v}$ meet the following conditions:

$$E(\boldsymbol{\zeta\zeta}^{\mathrm{T}}) = \Psi, \quad E(\boldsymbol{vv}^{\mathrm{T}}) = \Theta, \quad E(\boldsymbol{v\zeta}^{\mathrm{T}}) = 0 \tag{3}$$

4 Gender Differences in Acceptance of Autonomous Driving Technology

4.1 Model establishment and result analysis

The male and female MIMIC models were established by using Stata to analyze the influence of objective varia-

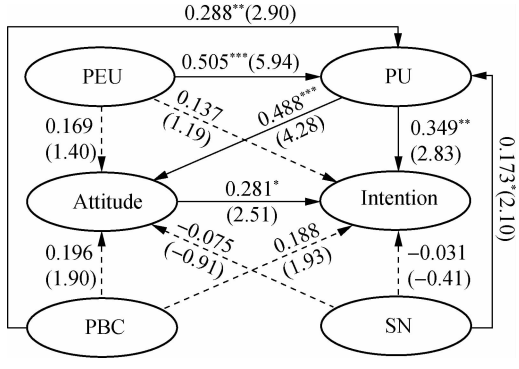
bles of individual socioeconomic characteristics on the psychological variables and the correlation between psychological variables. On the premise of ensuring the integrity of the theoretical framework, the model is modified. The goodness of fit of the final model is shown in Tab. 4.

Tab. 4 Fitting index of the MIMIC model

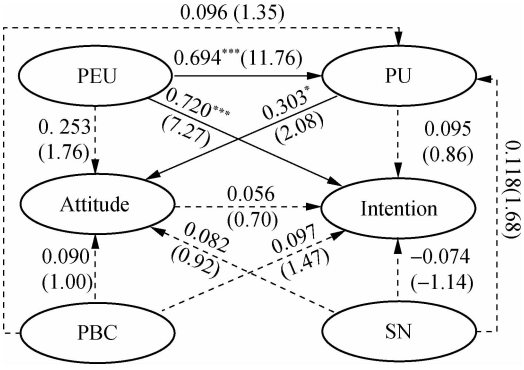
Goodness of fit	χ^2/df	CFI	TLI	RMSEA	SRMR
Male	1.290	0.962	0.952	0.051	0.063
Female	1.278	0.964	0.955	0.049	0.071
Test standard	[1,3]	>0.9	>0.9	<0.06	<0.08

According to Tab. 4, the fitting indexes of MIMIC models are all above the test standard values, indicating that the established models are acceptable.

The results in the MIMIC model are divided into two parts. One is the relationship between the psychological latent variables, as shown in Fig. 2. The value on the path is the standardized path coefficient. The * in the upper right of the value represents $P < 0.05$, ** is $P < 0.01$, *** is $P < 0.001$, and the value in brackets is the corresponding Z value.



(a)



(b)

—— Hypothetical path is significant; ---- Hypothetical path is not significant

Fig. 2 MIMIC models of autonomous driving technology acceptance. (a) Male; (b) Female

From Fig. 2(a), it can be seen that men's attitudes toward autonomous driving technology and PU have a positive and significant impact on their behavior intentions. SN, PBC, and PEU have indirect effects on behavior intention through significant impact on PU; however, they have no direct significant impact on behavior intention. In addition, PU also has a significant effect on attitude and an indirect effect on behavioral intention.

According to Fig. 2(b), women's behavioral intention regarding autonomous driving technology is only positively and significantly affected by PEU, while other variables bear no significant direct impact on it. In addition, PEU has a significant impact on PU, while PU has a significant impact on attitude, with other paths not significant.

The other part of the results is the influence of objective variables on latent variables. The path with a significant influence relationship is shown in Tab. 5. The first row of the table is the standard influence coefficient.

Tab. 5 Effect of significant variables

Latent variable	Age		Income		Education	
	Male	Female	Male	Female	Male	Female
PBC	0.072	−0.262*	0.241*	0.145	0.238*	0.026
	(0.67)	(−2.34)	(2.28)	(1.36)	(2.47)	(0.28)
PEU	−0.056	0.257*	0.217	−0.077	−0.033	0.002
	(−0.48)	(2.25)	(1.90)	(−0.70)	(−0.31)	(0.02)
PU	0.142	0.123	−0.109	0.005	−0.010	0.153*
	(1.67)	(1.41)	(−1.24)	(0.07)	(−0.13)	(2.24)

Notes: * $P < 0.05$; the value in brackets is the Z value of the corresponding influence coefficient.

It can be seen from Tab. 5 that age has a significant negative impact on women's PBC, and a significant positive impact on PEU. Monthly income has a significant positive impact on men's PBC. Finally, education level has a significant positive impact on men's PBC, and a significant positive impact on women's PU.

4.2 Analysis of gender differences

Comparative analyses of the influence paths of gender, including autonomous driving technology acceptance and the influence of individual socioeconomic objective variables on psychological cognition, were conducted. According to the results of the mimic model, the hypothesis paths of the two groups are sorted out (see Fig. 3). The values on the histogram in the figure are the standard path coefficients of each path, * indicating that the corresponding path has a significant impact.

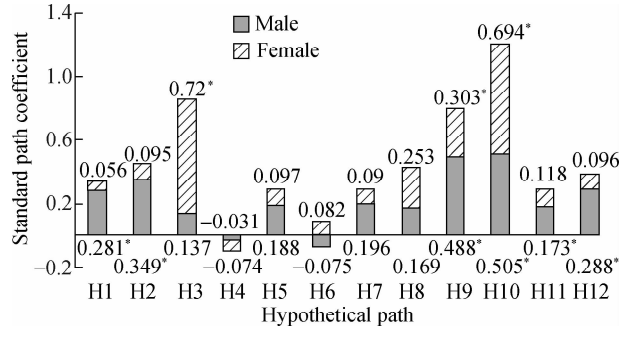


Fig. 3 Difference of influence path of autonomous driving technology acceptance

According to Fig. 3, there are differences in the paths of autonomous driving technology acceptance, and there are more significant influence paths for men, including H1, H2, H9, H10, H11, and H12, with six paths in total. There are only three important paths for women, which are H3, H9, and H10. The number of factors influencing the intention is greater for men than women, and the significant influence path for males is relatively complex. It is directly or indirectly influenced by all other psychological variables. There is just one significant influence path for women; the key factor is PEU.

Between the two genders, there is a significant difference in the degree of acceptance of autonomous driving technology. Men have more significant influence paths, their values range from 0.173 to 0.505, while women have a less significant influence on the route. The coefficient of influence path is between 0.303 and 0.72, which is larger than men. The most influential path for women is H3: PEU → Intention, with a value of 0.72, which is higher than it is for men, H10: PEU → PU, with a value of 0.505, while men only indirectly affect the intention of PU.

The influence of objective variables of individual socioeconomic attributes on the psychological cognition of autonomous driving technology is mainly reflected in the influence of age, income, and education on PBC, PEU, and PU.

It can be seen from Tab. 5 that there are differences in the influence degree and direction between males and females. Among the paths with significant effects, the most significant differences are age → PBC, age → PEU and education → PU, with different degrees and directions. There is only a difference in the degree of influence between the two groups for income→PBC and education→PBC.

In terms of the degree of influence, age has a significant impact on PBC and PEU among women, and education has a significant impact on PU, indicating that the older women are, the more concerns they have about the opportunities and abilities to use autonomous driving technology. The higher the education level, the more concerns they have about the usefulness of the technology. Income and education have a significant impact on PBC in male groups, indicating that men with higher incomes and higher educational qualifications are more likely to have the opportunity to use autonomous cars. As a highly educated group, women are more concerned about PU, while men are more concerned about the opportunity and ability to use technology.

In terms of influence direction, age has a significant positive effect on PEU, as education has a significant positive effect on PU. Age has a significant negative effect on PBC among females, while the corresponding influence direction of men is just the opposite and not significant. It shows that the older women are, the more confident they are in their ability to use new technology. The more educated the women are, the more convinced they are in the usefulness of new technology, but the more worried they are about the opportunities to use new technology. The older the men are, the less confident they are in their ability to use new technology. The more educated the women are, the less likely they are to use new technology, but the more confident they are on the opportunity and ability to use new technologies. In contrast, women are more confident as they age. The higher the education level the women have, the higher recognition of usefulness they have compared with men. However, the older the women are, they have fewer opportunities to use autonomous driving technology compared with men.

5 Conclusions

1) The MIMIC model, which contains the objective variables of individual socioeconomic attributes and the subjective potential psychological variables regarding the acceptance of autonomous driving technology, has a good fit degree, which can reveal the internal relationship among the variables of the acceptance degree of autonomous driving technology. Compared with the demographic characteristic variable, the psychological variables have a more significant effect on the intention to use autonomous driving technology.

2) There are gender differences regarding the influence of objective variables of social and economic attributes on the acceptance of autonomous driving technology, mainly reflected in the degree of influence and direction differences of age, income, and education. The older one's age, the more confident women are than men, but they are more worried about the chance of using autonomous driving technology. The higher the income, the more opportunities men will have to use autonomous driving technology than women. The higher the education level, the more attention women pay to PU, while the opportunity and ability to use the technology fall to men.

3) There are gender differences in the factors influencing the acceptance of the driving technology, mainly reflected in the differences of the paths and effects of the intention to use. The significant influence path of males is more complex than that of females, which is directly influenced by attitude and PU, and indirectly affects other psychological variables. The significant influence path of women is only the PEU. Compared with men, although the significant influence route of women is relatively small, the influence path coefficient is larger than that of males.

References

[1] Zhang T R, Tao D, Qu X D, et, al. The roles of initial trust and perceived risk in public's acceptance of automated vehicles[J]. *Transportation Research Part C: Emerging Technologies*, 2019, **98**: 207−220. DOI: 10.1016/j.trc.2018.11.018.

[2] Perrine K A, Kockelman K M, Huang Y T. Anticipating long-distance travel shifts due to self-driving vehicles[J]. *Journal of Transport Geography*, 2020, **82**: 102547. DOI: 10.1016/j.jtrangeo.2019.102547.
[3] Tang L, Qing S D, Xu Z G, et al. Research review on public acceptance of autonomous driving[J]. *Journal of Traffic and Transportation Engineering*, 2020, **20**(2): 131 - 146. (in Chinese)
[4] Jing P, Xu G, Chen Y X, et al. The determinants behind the acceptance of autonomous vehicles: A systematic review[J]. *Sustainability*, 2020, **12**(5): 1 - 26. DOI: 10.3390/su12051719.
[5] Yuen K F, Wong Y D, Ma F, et al. The determinants of public acceptance of autonomous vehicles: An innovation diffusion perspective[J]. *Journal of Cleaner Production*, 2020, **270**: 121904. DOI: 10.1016/j.jclepro.2020.121904.
[6] Etzioni S, Hamadneh J, Elvarsson A B, et al. Modeling cross-national differences in automated vehicle acceptance [J]. *Sustainability*, 2020, **12**(22): 1 - 22. DOI: 10.3390/su12229765.
[7] Hohenberger C, Spörrle M, Welpe I M. How and why do men and women differ in their willingness to use automated cars? The influence of emotions across different age groups[J]. *Transportation Research Part A*: *Policy and Practice*, 2016, **94**: 374 - 385. DOI: 10.1016/j.tra.2016.09.022.
[8] Kyriakidis M, Happee R, de Winter J C F. Public opinion on automated driving: Results of an international questionnaire among 5000 respondents[J]. *Transportation Research Part F*: *Traffic Psychology and Behaviour*, 2015, **32**: 127 - 140. DOI: 10.1016/j.trf.2015.04.014.
[9] Liu P, Zhang Y W, He Z. The effect of population age on the acceptable safety of self-driving vehicles[J]. *Reliability Engineering and System Safety*, 2019, **185**: 341 - 347. DOI: 10.1016/j.ress.2019.01.003.
[10] Payre W, Cestac J, Delhomme P. Intention to use a fully automated car: Attitudes and a priori acceptability[J]. *Transportation Research Part F*: *Traffic Psychology and Behaviour*, 2014, **27**: 252 - 263. DOI: 10.1016/j.trf.2014.04.009.
[11] Chen C F, Chao W H. Habitual or reasoned? Using the theory of planned behavior, technology acceptance model, and habit to examine switching intentions toward public transit[J]. *Transportation Research Part F*: *Traffic Psychology and Behaviour*, 2011, **14**(2): 128 - 137. DOI: 10.1016/j.trf.2010.11.006.
[12] Huang W. *Research on the acceptance of fully autonomous vehicle based on theory of planned behavior and technology acceptance model*[D]. Zhenjiang: Jiangsu University, 2019. (in Chinese)
[13] Wang S Y, Fan J, Zhao D T, et al. Predicting consumers' intention to adopt hybrid electric vehicles: Using an extended version of the theory of planned behavior model [J]. *Transportation*, 2016, **43**(1): 123 - 143. DOI: 10.1007/s11116-014-9567-9.
[14] Jing P, Huang H, Ran B, et al. Exploring the factors affecting mode choice intention of autonomous vehicle based on an extended theory of planned behavior—a case study in China[J]. *Sustainability*, 2019, **11**(4): 1 - 20. DOI: 10.3390/su11041155.
[15] Chen Y X, Chen L, Zha Q F, et al. A travel mode forecasting model based on low-carbon psychological latent variable logit model[J]. *Journal of Highway and Transportation Research and Development*, 2017, **34**(9): 100 - 108, 137. DOI: 10.3969/j.issn.1002-0268.2017.09.014. (in Chinese)
[16] Qu W N, Sun H L, Ge Y. The effects of trait anxiety and the big five personality traits on self-driving car acceptance[J]. *Transportation*, 2020: 1 - 17. DOI: 10.1007/s11116-020-10143-7.
[17] Chen Y X, Chen L, Zha Q F, et al. Forecasting model of travel mode based on latent variable SVM[J]. *Jonrnal of Southeast University* (*Natural Science Edition*), 2016, **46**(6): 1313 - 1317. DOI: 10.3969/j.issn.1001-0505.2016.06.034. (in Chinese)

自动驾驶技术接受度建模与性别差异性分析

陈月霞[1] 查奇芬[2] 景 鹏[1] 程恒权[1] 邵丹宁[1]

([1]江苏大学汽车与交通工程学院, 镇江 212013)
([2]江苏大学财经学院, 镇江 212013)

摘要:为深度解析性别异质群体对于自动驾驶技术的接受差异,融合技术接受模型和计划行为理论构建两性自动驾驶技术接受度多指标多因素模型,全面揭示主、客观因素作用下自动驾驶技术接受度影响机制的性别差异性.以中国城市居民为例,分析结果表明:不同性别群组中主、客观因素对自动驾驶技术接受度的影响机制存在差异.客观因素方面,年龄对女性的感知行为控制有显著负向影响,而对其感知易用性存在显著正向影响;月收入对男性的感知行为控制有显著性正向影响;受教育程度对男性的感知行为控制有显著正向影响,对女性的感知有用性有显著正向影响.主观因素方面,感知易用性对女性行为意向的影响作用最大,影响系数达到0.72,也是女性自动驾驶技术行为意向最显著且唯一的影响因素,而男性的行为意向影响路径较为复杂,不仅受到态度和感知有用性的显著正向联合作用,而且受到感知行为控制、主观规范和感知易用性的间接影响.

关键词:自动驾驶汽车;自动驾驶技术接受度;技术接受模型;计划行为理论;多指标多因素模型
中图分类号:U491.1