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Purchase Intention of New Energy Vehicles in Guangzhou: An Analysis of the Influence of Consumers' Psychological Needs

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ABSTRACT:
This study examines how consumers' psychological requirements influence their purchase intention for new energy vehicles (NEVs). It seeks to determine how exogenous latent variables influence consumers' purchase intentions for NEVs in Guangzhou, China. Understanding these elements is important because they can help drive NEV manufacturers' marketing strategies and product development. To investigate the key factors influencing NEVs purchase intention, the study adopts the Stimulus-Organism-Response (SOR) model, which is combined with the Technology Acceptance Model (TAM) and Customer Perceived Value (CPV) theory. A questionnaire study was administered to Guangzhou residents to gather information about their perceptions of NEVs, such as perceived ease of use, perceived usefulness, perceived product quality, perceived service quality, and considered value of test drives. Structural Equation Modeling (SEM) was used to test the hypotheses and investigate the variables' direct and indirect impacts on purchase intention. The results show that the perceived ease of use had the greatest overall influence on NEVs purchase intentions, followed by perceived product quality, perceived usefulness, and perceived value of test drives. Perceived service quality, while significant, has a relatively little impact. Notably, women are more influenced by perceived ease of use and product quality perception, whereas men's purchase intention is primarily influenced by perceived service quality. Educational levels also have an impact, with highly educated people having a larger association between purchase intention and perceived ease of use. The direct effect of perceived usefulness on purchase intention has also been validated, emphasizing the importance of customers perceiving NEVs as valuable and useful. This study verifies the SOR model's usefulness in assessing purchase intentions for NEVs and demonstrates the important influence of customer psychological needs on purchasing decisions. The study makes specific strategic recommendations to NEV makers and marketers by identifying perceived ease of use, perceived product quality, and perceived usefulness as important factors of purchase intention. These include optimizing product design for ease of use, improving service quality, and promoting the value and use of NEVs through marketing initiatives. Overall, this study contributes to a better understanding of customer perceptions about NEVs and provides recommendations for increasing their acceptance in the Guangzhou market and elsewhere.

Keywords: new energy vehicles; purchase intention; consumer psychological needs; SOR model; technology acceptance model.

INTRODUCTION

As a green travel option, new energy vehicle are steadily growing in importance within the automotive industry as environmental protection and sustainable development have become more and more of a global issue in recent years. China is the largest market for new energy cars worldwide, and it has developed quickly, particularly since consumer acceptance of these vehicles has grown dramatically due to technological advancements and governmental assistance. As of the end of June 2024, China's total number of motor vehicles had reached 440 million, with 345 million automobiles and 24.72 million new energy vehicles accounting for 7.18% of the total number of automobiles. [1] According to the Guangdong Automobile Circulation Association's most recent data, retail sales of new energy cars in Guangdong Province climbed dramatically year on year in 2023, hitting 21.2%. Guangzhou led the province in new energy vehicle retail sales with 235,000, a 36.7% increase year on year. [2] Guangzhou, being a key economic center in China, places a high priority on promoting and implementing new energy vehicles to alleviate urban traffic congestion, reduce air pollution, and promote sustainable development.

The purpose of this study is to investigate the fundamental elements influencing Guangzhou citizens' desire to buy new energy cars, with a special emphasis on the impact of psychological requirements on purchasing decisions. Although previous research has focused on theories such as the Technology Acceptance Model (TAM) and Customer Perceived Value (CPV), the significance of customer psychological demands in the purchase intention of new energy vehicles has yet to be completely investigated. Using the Stimulus-Organism-Response (SOR) model, this paper will investigate how exogenous latent variables such as perceived product quality, perceived service quality, and perceived value of test drive affect consumers' perceived usefulness and perceived ease of use, which in turn affects their purchase intention.

The research presented in this paper not only gives focused marketing strategy recommendations for new energy vehicle producers and marketers, but it also provides a theoretical foundation for policymakers seeking to promote the popularization of new energy vehicles. Simultaneously, knowing consumers' psychological demands is critical to fostering the long-term development of the new energy vehicle business and increasing market acceptance. As a result, an in-depth analysis of Guangzhou residents' purchasing intentions can aid in the development of more effective marketing tactics and policy measures in a quickly changing market environment, thereby encouraging the further promotion and use of new energy vehicles.

THEORETICAL MODEL AND RESEARCH HYPOTHESES

SOR Model

Mehrabian and Russell, two environmental psychologists, created the well-known stimulus-organism-response (SOR) model in 1974.[3] This is a theoretical model of consumer behavior based on behaviorist Watson's "S-R model (stimulus-response)".[4] Donovan and Rossiter adapted the model in 1982 and applied it to shopping situations, proposing that the store environment elicits the basic affective states of pleasure, arousal, and control in individuals, and that these affective states are the consumers' intrinsic response to the shopping environment, influencing their purchasing behavior.[5]

In the study application of the SOR model, stimulus (S) usually refers to the external environment that produces particular sensations for the participant. The organism (O) functions as a mediating variable, expressing changes in an individual's psychological state, such as emotional or cognitive responses. In contrast, reaction (R) indicates the outcome variable of an individual's attitude or behavior, which is typically manifested as the adoption or avoidance of a certain thing.

The SOR model has been used in a variety of domains, particularly the investigation of factors influencing consumer purchase intention. For example, in the field of advertising, the SOR model is used to investigate the impact of short video advertisement content features on consumers' purchase intention, and it is discovered that the entertainment, informativeness, and interactivity of advertisement content significantly and positively influence consumers' purchase intention by affecting consumers' perceived trust, perceived pleasure, and perceived usefulness.[6] Shi et al. used the SOR model to investigate the factors that influence consumers' purchase intentions for online group purchases. Environmental stimulation variables such as price discount rate, time pressure, restricted number of purchases, and number of group buyers have been found to influence consumers' perceptions of product risk and transaction process risk, which in turn influences their propensity to buy.[7] In the library field, the SOR model has been used to examine the impact of librarian conduct on patron engagement, and research has indicated that librarian behavior influences reader engagement by influencing reader emotions.[8] The SOR model has also been used to examine the factors that influence users' continued use of mobile libraries. Research has shown that system quality, service level, and cost of use are the most important factors influencing users' demand match for mobile libraries, and that demand match and perceived fun have a positive effect on system stickiness and continued use willingness.[9]

In the field of new energy vehicles, the SOR model has been used to investigate how new energy vehicle consumption promotion strategies influence potential consumers' purchase intentions via perceived value and perceived risk.[10] The SOR theory is also used to assess customer satisfaction with new energy vehicles and to develop an influence model for repurchase behavior.[11] Wang and Xiong used the SOR model to determine that the Jilin Provincial Government's new energy vehicle consumption promotion strategy had a beneficial influence on potential consumers' purchasing intentions.[12] Xue discovered, using the SOR model, that perceived novelty and perceived utility have large positive effects on perceived value and purchase intention for new energy vehicles, with consumer innovativeness acting as a moderator.[13]

Yu used partial least squares structural equation modeling (PLS-SEM) to create a hypothetical model based on the stimulus -organism-response (SOR) model, which incorporates consumer trust theory, TAM theory, and customer value theory. To investigate the effect of webcasting on consumers' willingness to buy sporting goods, Liu uses perceived product quality, perceived service quality, and consumer trust as stimulus sources (S), functional perceived value and emotional perceived value as organismic cognition (O), and willingness to buy as consumer response (R).[14]

Although the SOR model has been used in a variety of disciplines, its applicability in new energy vehicles is restricted, and it is primarily focused on the stimulating effects of governmental incentives and product innovation. As a result, this paper will develop the SOR model for new energy vehicles based on consumers' psychological needs, conduct a thorough analysis of the impact of perceived product quality, perceived service quality, and perceived value of test drive as stimulus factors on the organism's perception, and investigate differences in the purchase intention of new energy vehicles based on consumer personalized characteristics.

Research Hypothesis

Assumptions based on TAM

The Technology Acceptance Model (TAM), which was created by Fred Davis in 1989 and is based on rational behavior theory, has become a popular model for studying the factors that influence people's acceptance of new technology.[15] TAM posits that consumers are rational people who would think reasonably when confronted with new technologies. Its central premise is that users' acceptance of technology is primarily driven by two factors: perceived usefulness (PU) and perceived ease of use (PEU). Perceived Usefulness relates to the amount to which users believe that using a specific technology would improve their job performance, whereas Perceived Ease of Use refers to the degree to which users believe that using the technology requires little effort. Both factors also influence consumers' attitudes toward technology, predicting their intention to use and actual usage behavior.

The TAM model is mostly used in studies on new technology acceptance. Jun et al. applied the TAM model to assess the acceptability of mobile applications in the hotel industry [16]. Lim et al. applied the TAM model to investigate the acceptance of women in Singapore who use cell phones to obtain health information.[17] Wei and Zhong extended the TAM model by incorporating the aspects of privacy worry and privacy loss, and then developed a user acceptance model for autonomous cars.[18]Wang investigated the influencing factors of Beijing residents' willingness to purchase new energy vehicles using the TAM and TPB integration model, and proposed that perceived usefulness refers to the degree of usefulness of new energy vehicles for facilitating travel as perceived by consumers, while perceived ease of use refers to the degree of difficulty in using new energy vehicles as perceived by the surveyed population.[19] Yang and Cui develop an enhanced model of MOA and TAM based on SOR to investigate the impact of perceived value and stimulation elements on new energy vehicle buying intentions.[20] As a result, this paper develops a TAM model based on consumers' psychological needs using SOR to investigate the direct influence of perceived usefulness and perceived ease of use on the purchase intention of new energy vehicles, as well as the indirect influence of perceived ease of use on the purchase intention, using perceived usefulness as a mediating variable. The hypotheses are proposed, as seen in Table 1.

Table 1. Assumptions based on TAM

No.	Model Assumption
H1	Perceived ease of use (PEU) positively affects perceived usefulness (PU).
H2	Perceived usefulness (PU) positively influences purchase intention (PI).
H3	Perceived ease of use (PEU) positively influences purchase intention (PI).

Assumptions based on CPV

Table 2. Assumptions based on CPV

No.	Model Assumption
H4	Perceived Product Quality (PPQ) positively affects Perceived Usefulness (PU)
H5	Perceived Service Quality (PSQ) positively affects Perceived Usefulness (PU)
H6	Perceived Test Drive Value (PTDV) positively influences Perceived Usefulness (PU)
H7	Perceived Product Quality (PPQ) positively influences Perceived Ease of Use (PEU)
H8	Perceived Service Quality (PSQ) positively affects Perceived Ease of Use (PEU)
H9	Perceived Test Drive Value (PTDV)Positively Influences Perceived Ease of Use (PEU)
H10	Perceived Product Quality (PPQ) positively influences Purchase Intentions (PI)
H11	Perceived Service Quality (PSQ) positively influences Purchase Intentions (PI)
H12	Perceived Test Drive Value (PTDV)Positively Influences Purchase Intentions (PI)

Zeithaml proposed perceived value, also known as Customer Perceived Value (CPV), as a fundamental notion for understanding customer value. [21] According to research, consumer psychological needs have a significant impact on perceived value. Researchers such as Song have found that the higher the perceived value of a product, the stronger the buy intention, which is strongly related to their psychological demands. [22] In other words, when customers believe the value of a product matches or surpasses their expectations, they are more inclined to buy it. Scholars from other countries frequently

classify perceived worth as functional, emotional, or hedonic. [23] Zhong further classified perceived value as trust-based, satisfaction-based, and emotional perceived value. [24] Li a et al. have divided it into three categories: product perceived value, service perceived value, and social perceived value. [25] This study, based on the framework of consumer psychological needs and considering the uniqueness of new energy vehicles, defines the stimuli in the SOR model as product quality perception, service quality perception, and test drive value perception, resulting in the hypotheses shown in Table 2.

Model Building

By merging the TAM model and customer value theory, this study explores the factors that influence Guangzhou residents' willingness to purchase new energy vehicles in light of consumers' psychological demands. Figure 1 depicts the SOR theoretical model of this paper, with stimulus (S) representing Perceived Product Quality (PPQ), Perceived Service Quality (PSQ), and Perceived Test Drive Value (PTDV), organism (O) representing Perceived Usefulness (PU) and Perceived Ease of Use (PEU), and reaction (R) representing Purchase Intentions(PI).

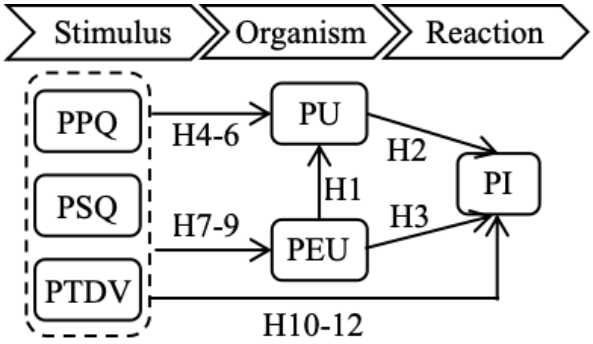

Figure 1. SOR model combining TAM and CPV

RESEARCH DESIGN AND DATA TESTING

Scale Development

Table 3. Description of model variables

Latent Variable	Serial Number	Observational Indicators
Perceived Product Quality (PPQ)	PPQ1	Less energy consumption
	PPQ2	Low noise level while driving
	PPQ3	More storage space
	PPQ4	Sleek and stylish
	PPQ5	easy operation
Perceived Service Quality (PSQ)	PSQ1	Good service before and during the sale
	PSQ2	High level of service convenience of charging facilities
	PSQ3	Very timely delivery.
	PSQ4	The sales and service process is simple and straightforward
	PSQ5	High efficiency in after-sales maintenance and troubleshooting
Perceived Test Drive Value (PTDV)	PTDV1	I'm excited about the test drive.
	PTDV 2	Test driving can acquire certain knowledge and skills
	PTDV 3	Test drives can master charging, maintenance and other details
	PTDV 4	Test drive makes me more interested in new energy vehicles
Perceived Usefulness (PU)	PU1	New energy vehicle innovations are all useful
	PU2	New energy vehicles are closely related to my needs
	PU3	New energy vehicles meet my expectations
	PU4	New energy vehicles are all about innovation
Perceived Ease of Use (PEU)	PEU1	Being smart takes the burden of driving off my shoulders.
	PEU2	New Energy Vehicles Make Me More Willing to Drive Out of Town
	PEU3	New Energy Vehicles Make My Travel More Convenient
	PEU4	Fewer breakdowns in new energy vehicles
Purchase Intention (PI)	PI1	I would recommend my friends and relatives to buy new energy vehicles
	PI2	I think we should advocate people to buy new energy vehicles
	PI3	Buying a new energy vehicle is valuable

	PI4	Buying a new energy vehicle is pleasurable
	PI5	I prefer new energy cars to fuel cars

This paper draws on the scale research results of the Stimulus-Organism-Response (SOR) model, the Technology Acceptance Model (TAM) and the Customer Value Theory (CVT), combines with the characteristics of the willingness to buy new energy vehicles, designs the measurement question items for each variable in the theoretical model, and finally forms the measurement indexes as shown in Table 3.

In this study, a pilot survey of 92 resident samples was done on the designed survey scale, and the data passed the reliability test, indicating that the survey's design items had good internal consistency and reliability and could be administered to a large sample size.

Distribution of the survey sample

This study used the random sampling method in 11 districts of Guangzhou City, shopping malls, subway stations, 4S stores, and street communities, etc. on Guangzhou residents of offline and online random sampling, a total of 462 questionnaires were issued, removing the completion of 37 questionnaires in unreasonable time and other circumstances, and eventually obtained 425 valid questionnaires, the number of effective samples more than 200, the effective rate is 92%. The descriptive statistics of the basic information of the sample show that the sample group has a more balanced gender ratio of men and women, with 48.7% of men and 51.3% of women; the age group of the respondents is mainly post-90s and post-00s, which account for 21.7% and 34.6% respectively, and the respondents are younger; the bachelor's degree accounted for 50.1%, and annual income of 50,000-200,000 accounted for a total of 56.5%; the number of people with driving a -The majority of citizens, 31.5%, have at least three years of driving experience.

Reliability and Validity of the Sample

In this study, SPSS26.0 software was used to examine the reliability and validity of the gathered data. The reliability test was based on the Cronbach's α coefficient technique, and the measured coefficient value was ≥0.7, indicating good dependability of the questionnaire data. The validity test evaluates the questionnaire's structural validity. A KMO of the sampling fitness measurement value of ≥ 0.5 indicates high validity.

Table 4 displays the test findings. All measures have Cronbach's α values more than 0.7, and the overall reliability is 0.952, indicating good internal consistency and reliable questionnaire data. The KMO values of all latent variables are greater than 0.5, and the overall validity is 0.957, indicating that the questionnaire's structure has high interpretative validity.

Table 4. Results of validated factor analysis and reliability test

Variable	Cronbach's α	KMO	CR	AVE
PPQ	0.831	0.831	0.833	0.5
PSQ	0.873	0.873	0.873	0.579
PTDV	0.848	0.848	0.849	0.584
PU	0.833	0.833	0.833	0.555
PEU	0.753	0.753	0.757	0.439
PI	0.869	0.869	0.873	0.579

Finally, confirmatory factor analysis was conducted and evaluated based on two indicators: Composite Reliability (CR) and Average Variance Extracted (AVE). The CR values for all latent variables exceeded 0.7, and the AVE values of all latent variables, except for perceived ease of use, were greater than 0.5. This indicates strong explanatory power among the factors, reasonable measurement error, and good convergent validity. The AVE value for perceived ease of use, exceeding 0.36, was also within an acceptable range, indicating that the valid sample data were suitable for further model fit analysis.

DATA ANALYSIS AND MODEL TESTING

Data analysis

In this research, we use AMOS26.0 software to create a new energy vehicle purchasing intention model and do an overall fitness test on it. The following indicators were utilized to evaluate fitness in this paper: cardinal freedom ratio (CMIN/DF), root of the square of the approximation error (RMSEA), comparative fit index (CFI), goodness-of-fit index (CFI), value-added fit index (IFI), and canonical fit index (NFI). The early test results are provided in Table 5, and all of the indexes fulfill the requirements, indicating that the fit of the SOR model is within the valid range.

Table 5. Initial model fitness test results

Evaluation indicators	standard of judgment	fitting result	Evaluating the effects
CMIN/DF	<3	1.759	Opt
RMSEA	<0.05	0.042	Opt
CFI	>0.9	0.961	Opt
GFI	>0.9	0.916	Opt
NFI	>0.9	0.915	Opt
IFI	>0.9	0.962	Opt

After ensuring that the model fits the data well, the significance of the path coefficients between the latent variables is determined as a means of determining whether or not the relationships between the latent variables (i.e., hypotheses H1 to H8 as described earlier) are valid. Path coefficients show the role of the relationship between latent variables, and their values can be positive or negative; positive values indicate that the latent variables are positively associated to one another, while negative values indicate that they are adversely related. The path coefficient's significance can be determined by two indicators: critical ratio (C.R.) and P value, where C.R. is the ratio of the estimated value of the path coefficient (Estimate) to the standard error term (S.E.), and the absolute value is greater than 1.96, indicating significance; and P stands for the possibility of the hypothesis theory being rejected, and the hypothesis is established if it is less than 0.05.

Table 6. Initial model test results

Hypothesis	pathway relationship	Estimate	S.E.	C.R.	P	Hypothesis validity
H1	Perceived ease of use → Perceived usefulness	0.127	0.382	0.332	0.74	No
H2	Perceived usefulness → Purchase intention	0.379	0.094	4.04	***	Yes
H3	Perceived ease of use → Purchase intention	0.924	0.512	1.805	0.071	No
H4	Perceived product quality →Perceived usefulness	0.152	0.239	0.636	0.525	No
H5	Perceived service quality →Perceived usefulness	0.125	0.08	1.563	0.118	No
H6	Perceived test drive value →Perceived usefulness	0.378	0.119	3.17	***	Yes
H7	Perceived product quality → Perceived ease of use	0.543	0.087	6.206	***	Yes
H8	Perceived quality of service → Perceived ease of use	0.122	0.056	2.177	**	Yes
H9	Perceived test drive value →Perceived ease of use	0.241	0.06	3.991	***	Yes
H10	Perceived product quality → Purchase intention	-0.132	0.315	-0.42	0.674	No
H11	Perceived service quality → Purchase intention	0.066	0.097	0.681	0.496	No
H12	Perceived test drive value →Purchase intention	-0.106	0.155	-0.683	0.494	No

Note: *** denotes p<0.001, ** denotes p<0.05

The results in Table 6 reveal that the C.R.<1.96 and P>0.05 corresponding to the 7 groups of path relations of H1, H3-5, and H10-12 are not significant, implying that the hypotheses of H1, H3-4, H6, and H10-11 are invalid. The C.R. and P corresponding to the remaining 5 groups of path relations satisfy the significance requirement, and the positivity and negativity of the path coefficients are consistent with the assumptions made in the previous section, so the remaining 5 groups of path relations are judged to have significant effects, establishing hypotheses H2, H5, and H7-H9.

Model Corrections

Table 7. Modified model fitness test results

Evaluation indicators	standard of judgment	fitting result	Evaluating the effects
CMIN/DF	<3	1.742	Optimal
RMSEA	<0.05	0.042	Optimal
CFI	>0.9	0.962	Optimal
GFI	>0.9	0.916	Optimal
NFI	>0.9	0.915	Optimal

IFI	>0.9	0.962	Optimal

Assumptions H1 and H10-12 are invalid and have an impact on the overall correctness of the model outputs; consequently, they must be modified. Hypothesis H3 is not valid, but it is close to the conditions for its validity, so it is not adjusted for the time being, and the correlation coefficients of product quality perception and service quality perception with the perceived usefulness of the product's consumer are high, so they are retained first. As a result, this study chose to eliminate the latent variable route related to hypotheses H1, H10, and H12 before re-fitting and testing the SOR model using data. Following rectification, the overall model fitness indicators match the criteria, as shown in Table 7.

The C.R. and P corresponding to the remaining 8 groups of path relations meet the requirement of significance, and the positivity and negativity of the path coefficients are consistent with the assumptions made in the previous section (as shown in Table 8), so it is determined that the impacts of all path relations are significant, i.e., hypotheses H2 to H9 are established.

Table 8. Modified model test results

Hypothesis	pathway relationship	Estimate	S.E.	C.R.	P	Hypothesis validity
H2	Perceived usefulness → Purchase intention	0.375	0.079	4.716	***	Yes
H3	Perceived ease of use → Purchase intention	0.742	0.096	7.754	***	Yes
H4	Perceived product quality →Perceived usefulness	0.534	0.083	6.405	***	Yes
H5	Perceived service quality →Perceived usefulness	0.143	0.053	2.697	0.007	Yes
H6	Perceived test drive value →Perceived usefulness	0.228	0.057	3.992	***	Yes
H7	Perceived product quality → Perceived ease of use	0.403	0.078	5.135	***	Yes
H8	Perceived quality of service → Perceived ease of use	0.224	0.092	2.422	0.015	Yes
H9	Perceived test drive value→Perceived ease of use	0.146	0.07	2.093	0.036	Yes

Note: *** indicates p<0.001

The corrected model is shown in Figure 2 shown.

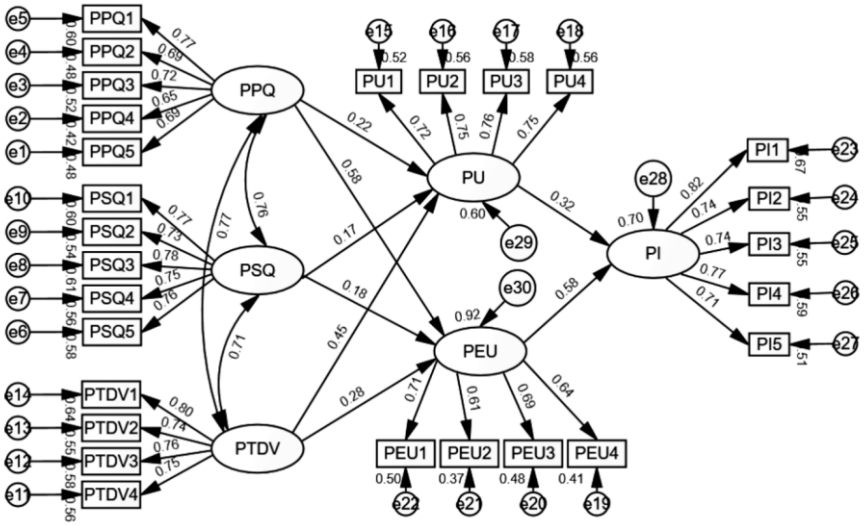

Figure 2. Modified structural variance model

Analysis of Results

Figure 2 depicts the calculation results for the SOR model of new energy vehicle purchasing intention. The model's standardized factor loading coefficients are all more than 0.6, indicating that the results are good and that the observed variables accurately reflect all five latent variables.

Among the four observed variables for perceived usefulness (PU), PU3 has the highest coefficient value (0.76), showing that customers believe that new energy cars meet their expectations. Of the four identified variables for perceived ease of use (PEU), consumers believe smart technology to minimize the burden of driving (0.706) and travel convenience policies to be more relevant than other factors. Among the five identified variables of perceived product quality (PPQ), consumers are particularly concerned with the energy consumption (0.772) and storage space (0.721) of new energy vehicles. The observed

variables of perceived service quality (PSQ) and perceived test drive value (PTDV) are not significantly different in terms of consumer concern, with coefficient values ranging from 0.735 to 0.798.

To determine the important elements impacting the purchasing intent of new energy vehicles, the impacts of five exogenous latent variables in structural equation modeling on purchase intention were calculated. The direct effect represents the direct effect of the two latent variables, perceived usefulness and perceived ease of use, on purchase intention, as shown by the path coefficient values. Indirect effect refers to how product quality perception, service quality perception, and test drive value perception influence purchase intention after acting on other variables, which is expressed by the product of the corresponding path coefficients, and if there are multiple indirect effect paths, the sum of each indirect effect.

The results show that perceived ease of use (0.58) has the largest total influence effect on the purchase intention of new energy vehicles, which is the main influence variable; followed by perceived product quality (0.407), perceived usefulness (0.32), and perceived value of test drive (0.306); and perceived service quality (0.159) has the smallest combined effect on the purchase intention.

Group Analysis

To further investigate whether the factors heterogeneous across groups, the sample data were divided into three clusters: gender, education level, and driving experience The data were then modeled and analyzed using Amos 26.0 software, following the analytical process outlined above, to obtain the total effect of each exogenous latent variable on behavioral intention across the clusters, as illustrated in Table 9.

Table 9. Comparative analysis by groups

Indicator		PPQ	PSQ	PTDV	PU	PEU
Gender	Male	0.36	0.19	0.30	0.28	0.56
	Female	0.48	0.10	0.30	0.3	0.63
Education	High school and below	0.44	0.13	0.31	0.36	0.58
	Associate Degree	0.43	0.14	0.25	0.28	0.61
	Bachelor's Degree	0.52	0.14	0.31	0.26	0.68
	Master's degree and above	0.57	0.10	0.25	0.29	0.65
Driving Experience	Less than 1 year	0.50	0.12	0.27	0.26	0.63
	1-3 years	0.46	0.10	0.27	0.26	0.57
	4-6 years	0.41	0.14	0.27	0.27	0.58
	7-10 years	0.43	0.07	0.17	0.31	0.45
	11-15 years	0.48	0.11	0.05	0.29	0.43
	More than 15 years	0.50	0.11	0.27	0.35	0.72

When it comes to purchasing electric vehicles, women are more impacted by perceived ease of use (0.63) and product quality perception (0.48), whereas they pay less attention to service quality (0.10). In contrast, men's purchase intention is predominantly influenced by service quality perception (0.19). Product quality perception has a considerable impact on purchase intention as educational levels grow, with coefficients of 0.52 for undergraduates and 0.57 for those with a master's degree or higher. The highest correlation between purchase intention and perceived ease of use is found among highly educated persons, particularly undergraduates (0.68) and master's students (0.65). Furthermore, perceived ease of use is highest among those with more than 15 years (0.72) and less than one year (0.63) of driving experience. Compared to those with 11-15 years of driving experience, the perceived test drive value (0.05) has the least impact on purchase intention.

The statistics show significant disparities in psychological impressions of electric vehicles across demographic groups: women and those with higher education levels place a larger value on product quality and simplicity of use. To attract these target demographics, marketing techniques should emphasize product quality and user-friendliness. Furthermore, the relevance of simplicity of use varies between younger drivers and those with substantial driving experience, indicating that marketing techniques should be customized to these two groups. For example, marketing to younger drivers should emphasize technology breakthroughs and new design, whereas messaging for veteran drivers should emphasize operational simplicity and safety. Such diversified methods can better meet the diverse needs of distinct consumers.

These variations suggest that when establishing marketing strategies for electric vehicles, promotional tactics must be tailored to consumer attributes such as gender, educational level, and driving experience. This personalization can improve purchase intent and better suit the psychological needs of distinct consumer groupings.

CONCLUSION

This study is based on consumer psychological needs, integrating the Stimulus-Organism- Response (SOR) model, the Technology Acceptance Model (TAM), and Customer Perceived Value (CPV) theory to delve into the key factors influencing the purchase intention of new energy vehicles among residents in Guangzhou. Through questionnaires and data analysis, we have reached a series of important conclusions.

Firstly, this study identifies several critical factors influencing the purchase intention of new energy vehicles among residents in Guangzhou. Notably, perceived ease of use emerges as the most significant determinant, underscoring the importance of usability in these vehicles. Consumers demonstrate a clear preference for models that offer simplicity in operation and advanced technological features. Furthermore, perceived product quality is also a vital factor, with considerable consumer attention directed toward key quality indicators such as energy efficiency and storage capacity. While perceived usefulness does exert a positive influence on purchase intention, its impact is somewhat less pronounced than that of perceived ease of use and perceived product quality. Additionally, the perceived value associated with test drives plays a role in shaping consumers' purchasing decisions, whereas the effect of perceived service quality is comparatively minimal.

In conclusion, this study identifies several critical factors influencing the purchase intention of new energy vehicles among residents in Guangzhou. Notably, perceived ease of use emerges as the most significant determinant, underscoring the importance of usability in these vehicles. Consumers demonstrate a clear preference for models that offer simplicity in operation and advanced technological features. Furthermore, perceived product quality is also a vital factor, with considerable consumer attention directed toward key quality indicators such as energy efficiency and storage capacity. While perceived usefulness does exert a positive influence on purchase intention, its impact is somewhat less pronounced than that of perceived ease of use and perceived product quality. Additionally, the perceived value associated with test drives plays a role in shaping consumers' purchasing decisions, whereas the effect of perceived service quality is comparatively minimal.

In conclusion, this study not only affirms the applicability of the SOR model in examining purchase intentions for new energy vehicles but also elucidates the significant influence of consumer psychological needs on purchasing decisions. Factors such as perceived ease of use, perceived product quality, perceived usefulness, and perceived value of test driving collectively shape consumers' purchase intentions, while distinct consumer segments exhibit notable heterogeneity in their purchasing behaviors. These findings provide targeted strategic recommendations for manufacturers and marketers of new energy vehicles, including the optimization of product design, enhancement of service quality, and improvement of test drive experiences to effectively address the diverse psychological needs of consumers. Additionally, this research offers a theoretical foundation for policymakers aiming to promote the adoption of new energy vehicles, thereby contributing to the sustainable development of the industry and enhancing overall market acceptance.

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