

Investigation on the Influencing Factors of Consumers' Purchase of Medium and High-end New Energy Vehicles in Chengdu

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Abstract. With the significant increase in people's income level, consumers' demand for private cars continues to rise, the subsequent challenges, including energy scarcity and environmental degradation, are increasingly evident. This study delves into the determinants influencing consumers' inclination towards purchasing new energy vehicles in Chengdu via empirical analysis. Drawing upon existing scholarly work, a comprehensive questionnaire was designed to gather pertinent data. The analysis of this collected information was carried out using both SPSS version 25.0 and AMOS version 26.0. This analytical approach allowed for the construction of a structural equation model that elucidates the various factors impacting consumers' inclination towards purchasing new energy vehicles in Chengdu. It has been established that both perceived value components, including functional value and economic value, and external situational factors, such as governmental policies, exert a substantial and positive influence on consumer intent to purchase new energy vehicles in Chengdu. The findings of this study offer valuable insights that can guide the government in the development of pertinent policies and assist automotive companies in enhancing their product offerings.

Keywords: New energy vehicles, Influencing factors, Customer perceived value, Situational factor.

1. Introduction

Currently, China leads the global landscape in terms of vehicle ownership, with a rapid growth trajectory that has exacerbated environmental pollution and intensified energy supply-demand imbalances. Studies indicate that major Chinese cities and other regions experience prolonged periods of hazy weather annually, underscoring a significant deterioration in air quality and the severity of environmental pollution. By 2020, it is anticipated that conventional vehicles in China will consume approximately 80% of the nation's oil resources, amounting to 256 million tons. This statistic underscores the severity of the energy crisis that China currently faces. The automotive sector in China, particularly its traditional segment, has long struggled with a deficiency in core technological capabilities and the absence of internationally acclaimed brands, making it susceptible to the dominance of foreign automobile corporations. Currently, the automotive sector is undergoing a transformative period marked by the integration of cutting-edge technologies and a reorganization of product portfolios. This evolution is steering the industry towards a future characterized by vehicles that prioritize reduced fuel consumption, minimized emissions, enhanced safety features, and robust reliability, particularly in the realm of new energy vehicles. This phase represents a significant juncture for the industry's alignment with global automotive standards, offering a strategic window to narrow the technological gap with international counterparts, positioning it at the forefront of the global automotive industry, while simultaneously mitigating escalating air pollution and alleviating potential future energy shortages in China.

In 2011, national ministries and commissions undertook strategic-level macroplanning to guide development, sequentially unveiling a suite of policy directives anchored by the "National Energy Efficiency and New Energy Vehicle Industry Development Plan (2012-2020)." At all administrative levels, local governments have promptly enacted a comprehensive suite of policies and guidelines. These encompass planning, allocation, marketing, utilization strategies, fiscal and tax inducements, as well as the development of supporting infrastructure. In 2015, the national "13th Five-Year Plan"

was introduced by the state, which explicitly advocated for the execution of the New Energy Vehicle Promotion Plan. This initiative was accompanied by the establishment of an award and subsidy policy, aiming to enhance the industrialization level of new energy vehicles. By 2020, the State Council released the "New Energy Vehicle Industry Development Plan (2021-2035)", further solidifying the commitment to the growth and advancement of this sector. It was emphasized that fostering the growth of the new energy automobile sector represents the sole pathway for China to transition from a vehicle powerhouse to a leader in the automotive industry. Moreover, the introduction of the "double carbon" objective has significantly propelled the advancement of new energy vehicles within the Chinese market.

Nonetheless, within the contemporary landscape of electric vehicles, several challenges persist, encompassing issues related to infrastructure development, such as the installation of charging stations, along with policy incentives. These factors collectively contribute to the vast untapped potential of the electric vehicle market, yet its stability remains uncertain. Consequently, both the governmental bodies and electric vehicle corporations are faced with the imperative task of addressing these multifaceted issues. To identify and analyze the determinants influencing consumers' inclination towards purchasing new energy vehicles, and to delve into the underlying motivations driving such consumer behavior, holds the key to invigorating the new energy vehicle consumer market and steering the industry towards more robust and accelerated growth. To enhance the provision of strategic development directions and recommendations for both new energy vehicle companies and governmental agencies, and to facilitate the establishment of a mutually advantageous and interdependent relationship among industry, governance, and consumers, this scholarly endeavor will undertake empirical investigations into the determinants influencing consumer intent to purchase new energy vehicles.

2. Theoretical Basis

2.1. Theoretical Basis

2.1.1. Customer perceived value theory

In 1954, Drucker initiated an investigation wherein he posited that the essence of customer acquisition and consumption extends beyond mere products or services [1]. This pioneering work laid a robust foundation for subsequent academics to delve deeper into the realm of customer valuation, paving the way for more comprehensive analyses in this field [1]. Zeithaml posited that customer-perceived value is the value that consumers can discern during their consumption behaviors [2]. Dodds categorizes consumers' perceived value into two dimensions: perception of gain and perception of gain and loss, drawing upon Zeithaml's research [2]. Specifically, the perception of gain encompasses consumers' cognitive assessment of the fundamental attributes, quality, and technical specifications of goods or services during consumption processes. The concept of gain and loss involves consumers' cognitive evaluation of the expenses incurred and potential future hazards associated with their consumption endeavors. According to Sheth's scholarly work, the customer-perceived value of a product or service can be systematically analyzed through five dimensions, the operational traits of the item or service, customers' perception of the item or service, customers' feelings about the item or service, and the sociological attributes and environmental circumstances that the item or service can impart to consumers [3].

2.1.2. Attitude-situation-behavior theory

The Attitude-Context-Behavior (ACB) theory, introduced by Guagnano and colleagues in 1995, posits that the attitudes individuals hold toward their surroundings and societal circumstances concurrently influence their propensity to exhibit certain behaviors [4]. In this theory, individual attitudes include beliefs, norms, values and behavioral intentions, while contextual elements encompass economic motivations, expenses, individual competencies and constraints, social ambiance, and legal frameworks and institutions, they play a pivotal role in shaping consumer

behavior. In this investigation, the specific contextual factors that consumers encounter are encapsulated within governmental policy advocacy and direction, aligned with pertinent price subsidy programs, among other elements. Under imperfect policies or when the performance of new energy vehicles is relatively weak, despite the consumer's high attitude and awareness towards acquiring new energy vehicles, making a purchasing decision becomes challenging for the consumer.

2.2. Analysis Framework

By examining the foundational theories, this study utilizes the customer value theory and the "attitude-situation-behavior" framework to investigate how both internal and external factors impact the purchasing intent for electric vehicles. The study posits four key dimensions of perceived value for new energy vehicle customers: functionality, economics, society, and emotion. These dimensions are utilized to dissect how consumer valuation impacts their inclination towards purchase. The research framework constructed around these insights as show in Figure 1.

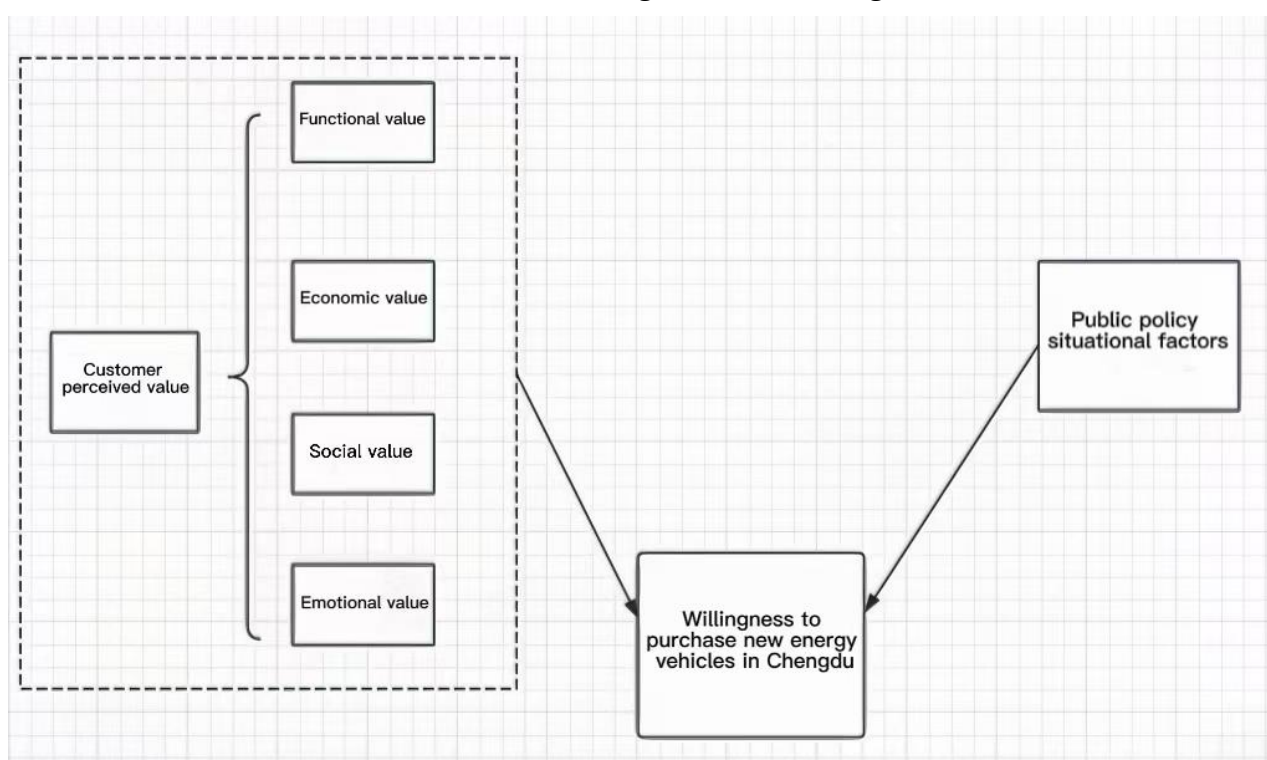


Fig. 1 Research model diagram

2.2.1. Customer perceived value variable index design

Combined with theoretical analysis and reference to Sheth's relevant research conclusions, the perceived value is evaluated from four aspects: function, economy, emotion and society [3]. Drawing on the scale of Wang Qian and Zu Ming et al. a total of 23 variable indicators are designed as shown in Table 1 [4,5].

Table 1. Customer perceived value variable scale

variable	Variable symbol	item	source
Functional valueFV	Functional valueFV1	The cutting-edge and stylish design of new energy vehicles captures contemporary aesthetics	Wang Qian(2021)
	Functional valueFV2	New energy vehicles have excellent acceleration performance	
	Functional valueFV3	New energy vehicles drive smoothly and make low noise	
	Functional valueFV4	New energy vehicles have a high degree of intelligence	
	Functional valueFV5	New energy vehicles have rich entertainment functions inside	
Economic valueEV	Economic valueEV1	The cost performance of new energy vehicles is high	Wang Qian(2021)
	Economic valueEV2	New energy vehicles are reasonably priced	
	Economic valueEV3	Buying a new energy vehicle is now worth the cost	
Social valueSV	Social valueSV1	Opting for new energy vehicles conveys to others my commitment to environmental stewardship, showcasing a proactive stance towards sustainability and responsibility in the community	Wang Qian(2021) Zumin et al(2019)
	Social valueSV2	Opting for new energy vehicles makes a commendable impression upon others	
	Social valueSV3	I can get a lot of praise for using new energy cars	
	Social valueSV4	Opting for new energy vehicles enables me to project a positive, healthy, and environmentally conscious public persona	
Sentimental valueEMV	Sentimental valueEMV1	Using new energy cars will bring me pleasure	Wang Qian(2021)
	Sentimental valueEMV2	Using new energy cars will give me a sense of pride	
	Sentimental valueEMV3	Using new energy cars will make me stand out from the crowd	

2.2.2. Design of policy perceived willingness index

As for the variable index of policy perception, it is mainly based on ABC theory to set up a survey of scenario factors. With reference to the relevant research of Liu Tengfei, this part mainly focuses on the scenario factors at the level of government policies, including policy subsidies, policy support and guidance, and designs a total of 4 items [6].

2.2.3. Purchase intention variable index design

Regarding the assessment of fluctuating factors influencing purchase intent, this study adopts the categorization proposed by Wang Qian [4]. This classification is comprised of four metrics: "Intent to explore electric vehicle options," "Disposition to purchase an electric vehicle," "Preference for electric vehicles over conventional models," and "Consideration of environmental impact in decision-making, "Given the opportunity, I am inclined to purchase new energy vehicles," and "I am enthusiastic about recommending these vehicles to my family and acquaintances".

2.3. Research Hypothesis

Drawing upon the aforementioned examination, the majority of academic experts posit that customers' estimated value exerts a substantial and favorable influence on their inclination to make a purchase. Consequently, this scholarly investigation posits the subsequent proposition concerning Chengdu residents' predisposition to acquire new energy vehicles: Consumers' purchase intention of

new energy vehicles will increase with the increase of perceived value. In addition, situational factors are the external environmental factors faced by consumers when they purchase behaviors. For new energy vehicles, external environmental factors mainly include policy subsidies, policy support and guidance. According to the situational factor theory proposed by Belk et al., consumers' consumption behaviors are directly related to situational factors [7]. Consequently, it is reasonable to infer that an environment where government policies facilitate the emergence of new energy vehicle usage patterns will likely amplify consumers' inclination to buy such vehicles, given the impact of various situational circumstances. Situational external factors are capable of exerting a positive influence on consumers' disposition to acquire new energy vehicles. The specific assumptions are shown in Table 2.

Table 2. Research hypotheses

Serial number	hypothesis	Reference basis
H1a	Functional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	Wang Qian(2021)
H1b	Economic value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	
H1c	Social value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	
H1d	Emotional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	
H2	External situations such as policies have a significant positive effect on consumers' purchase of new energy vehicles in Chengdu	

3. Empirical Analysis

3.1. Questionnaire Design

The survey is bifurcated into two sections. To gain a preliminary insight into the fundamental details of the survey participants, a single-choice questionnaire format was employed. This segment comprises two dimensions. Firstly, it delves into the foundational attributes of the clientele, encompassing parameters such as sex, chronological age, educational attainment, and monthly earnings. Conversely, the study primarily delves into consumers' comprehension and valuation of domestic electric vehicles, alongside their awareness of relevant governmental policies. The core segment of the survey utilizes an established Likert five-point scale, for rating the various components of the questionnaire's custom-designed framework. A five-point scale gauges responses as extremely inconsistent, somewhat inconsistent, unsure, somewhat consistent, or very consistent, with higher scores reflecting greater agreement. Respondents evaluate each survey question against their genuine sentiments, selecting the fit that best represents their feelings. Each question allows for only one selection, opting for multiple choices renders the response invalid.

3.2. Pre-survey and Data Collection

In this study, the primary platform for distributing questionnaires was "Juanxing," China's leading online survey portal. The geographical focus was Chengdu. The selection criteria for participants were non-specific, ensuring inclusivity. Each individual was limited to submitting only one response via a singular Internet IP address. A total of 210 Internet surveys were initially gathered. After eliminating those deemed invalid due to completion times under 100 seconds and those with anomalous responses, there was a total of 201 valid surveys.

3.3. Descriptive Statistical Analysis

3.3.1. Analysis of basic characteristics of sample population

A descriptive analysis was conducted on the fundamental demographic details of the consumer cohort, utilizing data from 201 valid survey responses. The statistical outcomes delineating the essential attributes of this sample group are encapsulated in Table 3.

Table 3. Statistical results of basic characteristics of the sample population

	variable	frequency	frequency
sex	male	110	55%
	female	91	45%
age	Under 25 years old	55	27.4%
	26-35 years old	57	28.3%
	36-45 years old	53	26.4%
	Over 46 years old	36	17.9%
	Below undergraduate level	48	23.9%
Educational background	Undergraduate course	126	62.7%
	Graduate student	27	13.4%
	Less than 10,000 yuan	32	15.9%
Monthly income level	10001-20000yuan	54	26.9%
	20001-30000yuan	50	24.9%
	30001-40000yuan	28	13.9%
	40001-50000yuan	17	8.5%
	More than 50,000 yuan	20	9.9%

Table 3, the largest segment of participants falls within the 26 to 45 age bracket, constituting 54.7% of the entire participant pool. In terms of educational attainment, a significant 62.7% hold bachelor's degrees it underscores that, in aggregate, the participants exhibit a greater educational attainment and demonstrate a heightened receptiveness to novel offerings, including electric vehicles. 84.1% of individuals earn over 10,000 yuan monthly. This highlights that there is a notable preference for new energy vehicles, which tend to be priced higher than conventional cars. Such a preference suggests that buyers must possess a degree of purchasing capability.

4. Research Result

4.1. Reliability Analysis

The reliability of the survey was assessed using Cronbach's alpha coefficient. As depicted in Table 4, this metric elucidates the connection between the Cronbach alpha and reliability. It is commonly acknowledged that if the alpha value falls below 0.6, the survey's reliability is deemed insufficient, necessitating a redesign of the questionnaire. If the α coefficient exceeds 0.7, it indicates robust questionnaire reliability, suggesting that the data collected is sufficiently consistent for subsequent analysis.

Table 4. Reliability relation of α coefficient

Cronbach's alphacoefficient	credibility
$\alpha < 0.6$	The reliability is poor
$0.6 \leq \alpha < 0.7$	acceptable
$0.7 \leq \alpha < 0.8$	General credibility
$0.8 \leq \alpha < 0.9$	More credible
$0.9 \leq \alpha$	Very credible

This research employs SPSS 25.0 for assessing the questionnaire's reliability. Specifically, it calculate the Cronbach's α coefficients for the functional value (FV), economic value (EV), social value (SV), emotional value (EV), policy perceived willingness (PPW), and purchase intent variable (PI). The findings, presented in Table 5, illustrate these coefficients.

Table 5. Results of α coefficients of each variable

variable	Cronbach's α coefficient	Global reliability
Functional value(FV)	0.818	0.965
Economic value(EV)	0.786	
Social value(SV)	0.791	
Sentimental value(EMV)	0.727	
Policy perceived willingness(PPW)	0.800	
Purchase intention variable(PI)	0.831	

In the process of calculating the reliability of each variable, it is found that the reliability value of one variable in economic value (EV) is less than 0.7. After removing EV1 problem "The government subsidy policy makes me think that the cost performance of medium and high-end new energy vehicles is high", the Cronbach's α coefficient of economic value (EV) reaches 0.786, and the reliability meets the requirements. For the other Cronbach's α coefficient is above 0.7. The questionnaire items and the resultant survey data exhibit high internal consistency, indicating robust reliability. Notably, there is no correlation among the questionnaire's indicators, underscoring its validity.

4.2. Validity Analysis

4.2.1. Structural validity

To assess the convergent validity of the questionnaire, the study employed confirmatory factor analysis. This statistical technique simplifies complex data by condensing multiple variables into a smaller set of factors that capture the essence of the underlying data. This method were able to examine and confirm the convergent validity of the primary latent variables within the measurement model.

This paper employs SPSS 25.0 for conducting an exploratory factor analysis on the dataset. The analysis typically established through Bartlett's Sphericity Test and the KMO (Kaiser-Meyer-Olkin) measure. The outcomes from these tests, detailed in Table 8, have been meticulously evaluated.

Table 6. Bartlett's test and KMO test

KMO Sample appropriateness measure.		.932
Bartlett sphericity test	Approximate chi-square	2533.322
	Degree of freedom	136
	significance	.000

Evidently, as illustrated in the table 6, the KMO statistic amounts to 0.932, surpassing the benchmark of 0.9. Moreover, the statistical significance of Bartlett's test is recorded at 0.000, conclusively affirming that the survey data adhere to the essential criteria for conducting factor analysis. This outcome signals the feasibility of proceeding with subsequent analytical stages.

4.2.2. Convergence validity

Although the above exploratory factor analysis preliminarily verified the convergence validity, It remains essential to conduct additional validations ensuring the alignment of the measurement elements with the proposed theoretical framework. When these elements harmoniously align with the hypothesized model, this signifies that the instrument demonstrates robust construct validity. Consequently, for the development of the measurement scale, this research employed AMOS version

26.0 to execute a confirmatory factor analysis. The outcomes of this evaluation are delineated in Tables 7 and 8.

Table 7. Overall fitting coefficient table

exponent	Absolute fit index				Value added fit index				Reduced fit index			
	X^2/df	GFI	AGFI	RMSEA	RMR	NFI	RFI	CFI	IFI	TLI	PNFI	PCFI
Standard model	<3	>0.9	>0.8	<0.1	<0.05	>0.9	>0.9	>0.9	>0.9	>0.9	>0.5	>0.5
	1.259	0.917	0.880	0.036	0.046	0.943	0.923	0.987	0.987	0.983	0.713	0.747

Table 8. Confirmatory factor analysis

	path	Factor load after standardization	S.E.	P	CR	AVE
FV <---	Functional valueFV	0.651				
FV <---	Functional valueFV	0.629	0.121 ***		0.7623	0.4464
FV <---	Functional valueFV	0.751	0.133 ***			
FV <---	Functional valueFV	0.634	0.104 ***			
EV <---	Functional valueEV	0.793			0.7877	0.6499
EV <---	Functional valueEV	0.819	0.088 ***			
SV <---	Functional valueSV	0.666				
SV <---	Functional valueSV	0.658	0.078 ***		0.7423	0.419
SV <---	Functional valueSV	0.663	0.085 ***			
SV <---	Functional valueSV	0.6	0.074 ***			
EMV3 <---	Sentimental valueEMV	0.612				
EMV2 <---	Sentimental valueEMV	0.636	0.097 ***		0.6674	0.401
EMV1 <---	Sentimental valueEMV	0.65	0.112 ***			
PPW1 <---	Policy perceptionPPW	0.704				
PPW2 <---	Policy perceptionPPW	0.666	0.084 ***		0.7907	0.4845
PPW3 <---	Policy perceptionPPW	0.72	0.079 ***			
PPW4 <---	Policy perceptionPPW	0.697	0.08 ***			

In confirmatory factor analysis, combined reliability (CR) is usually used to investigate the internal consistency and stability of the scale, and the convergence validity of the scale is measured by mean extraction variance (AVE), where CR greater than 0.6 is the acceptable threshold [8]. The CR values of each latent variable in this study ranged from 0.667 to 0.789, The AVE values for all latent variables in this study, ranging from 0.401 to 0.649, surpass the critical benchmark of 0.6, showcasing strong convergence validity. According to Kline, an AVE above 0.36 is considered acceptable, with an even higher score of 0.5 deemed ideal for model robustness. Thus, the findings affirm the model's satisfactory reliability and validity [9].

4.2.3. Distinguishing validity

Discriminative validity refers to the capacity for distinct variables, assessed through various methodologies, to yield separable outcomes. To ascertain if adequate discriminative validity exists among the variables within each dimension, one must evaluate whether these variables can be reliably distinguished from one another under different measurement techniques, The fully standardized correlation coefficient typically contrasts with the arithmetic square root of the average variance extracted (AVE) for each dimension. If, for any latent variable within the model, the AVE's arithmetic square root exceeds its correlation with other latent variables, it signifies adequate discriminant validity across all dimensions. This study's findings on discriminant validity are outlined in Table 9.

Table 9. Discriminative validity

	SV	PPW	EMV	EV	FV
SV	0.647				
PPW	0.92	0.696			
EMV	0.876	0.847	0.633		
EV	0.84	0.797	0.761	0.806	
FV	0.772	0.751	0.701	0.66	0.668

The diagonal elements of the matrix denote the AVE geometric mean for every variable, whereas the entries beneath the diagonal illustrate the bivariate correlation. Observing the dataset, it is evident that the correlation surpasses the AVE geometric mean. Consequently, a chi-square disparity examination was executed, as detailed in Table 10.

Table 10. Results of discriminative validity test

Serial number	model	X2	df	NFI	CFI	RMSEA	Model comparison	ΔX^2	Δdf
1	Master model	149	98	0.943	0.987	0.036			
2	Four-factor model 1	203	103	0.922	0.96	0.07	2 vs 1	54***	5
3	Four-factor model 2	202	103	0.923	0.96	0.069	3 vs 1	53***	5
4	Four-factor model 3	219	103	0.916	0.953	0.075	4 vs 1	70***	5
5	Four-factor model 4	177	103	0.932	0.97	0.06	5 vs 1	28***	5
6	Three-factor model 1	224	105	0.914	0.952	0.075	6 vs 1	75***	7
7	Three-factor model 2	232	105	0.911	0.949	0.078	7 vs 1	83***	7
8	Three-factor model 3	233	107	0.911	0.949	0.77	8 vs 1	84***	9
9	Two-factor model	252	110	0.904	0.943	0.081	9 vs 1	103***	12
10	Single factor model	271	112	0.896	0.938	0.084	10 vs 1	122***	14

Note: *** means p is less than 0.001

Four-factor model 1: FV+EV, SV, EMV, PPW

Four-factor model 2: FV, EV+SV, EMV, PPW

Four factor model three: FV, EV, SV+EMV, PPW

Four factor model four: FV, EV, SV, EMV+PPW

Three-factor model 1: F1+F2+F3, F4, F5

Three-factor model 2: F1, F2+F3+F4, F5

Three factor model three: F1, F2, F3+F4+F5

Two-factor model: F1+F2+F3, F4+F5

Single factor model: F1+F2+F3+F4+F5

In essence, the measurement tool developed for this research integrates established frameworks with insights into electric vehicle usage patterns [10]. Through pilot testing, each component was refined iteratively. Statistical analyses subsequently confirmed the robustness and credibility of the survey employed in comprehensive investigation. The primary data collected through the questionnaire exhibit high reliability, effectively and precisely capturing the determinants and variables influencing consumers' intent to purchase new energy vehicles.

4.3. Construction of Structural Equation Model

In this study, AMOS26.0 software was used to construct an equation model for the factors affecting consumers' purchase intention of new energy vehicles in Chengdu, and the first-hand data that had passed the reliability and validity tests were used for model analysis. The hypotheses proposed in the study were tested through the output results of the model.

According to the research model of influencing factors of Chengdu consumers' purchase intention of new energy vehicles proposed in this study and various hypotheses proposed in this study, the

structural equation model used in this study was drawn in the software AMOS26.0, as shown in Figure 2 reflects the path relationship of influencing effects among the variables involved in the study.

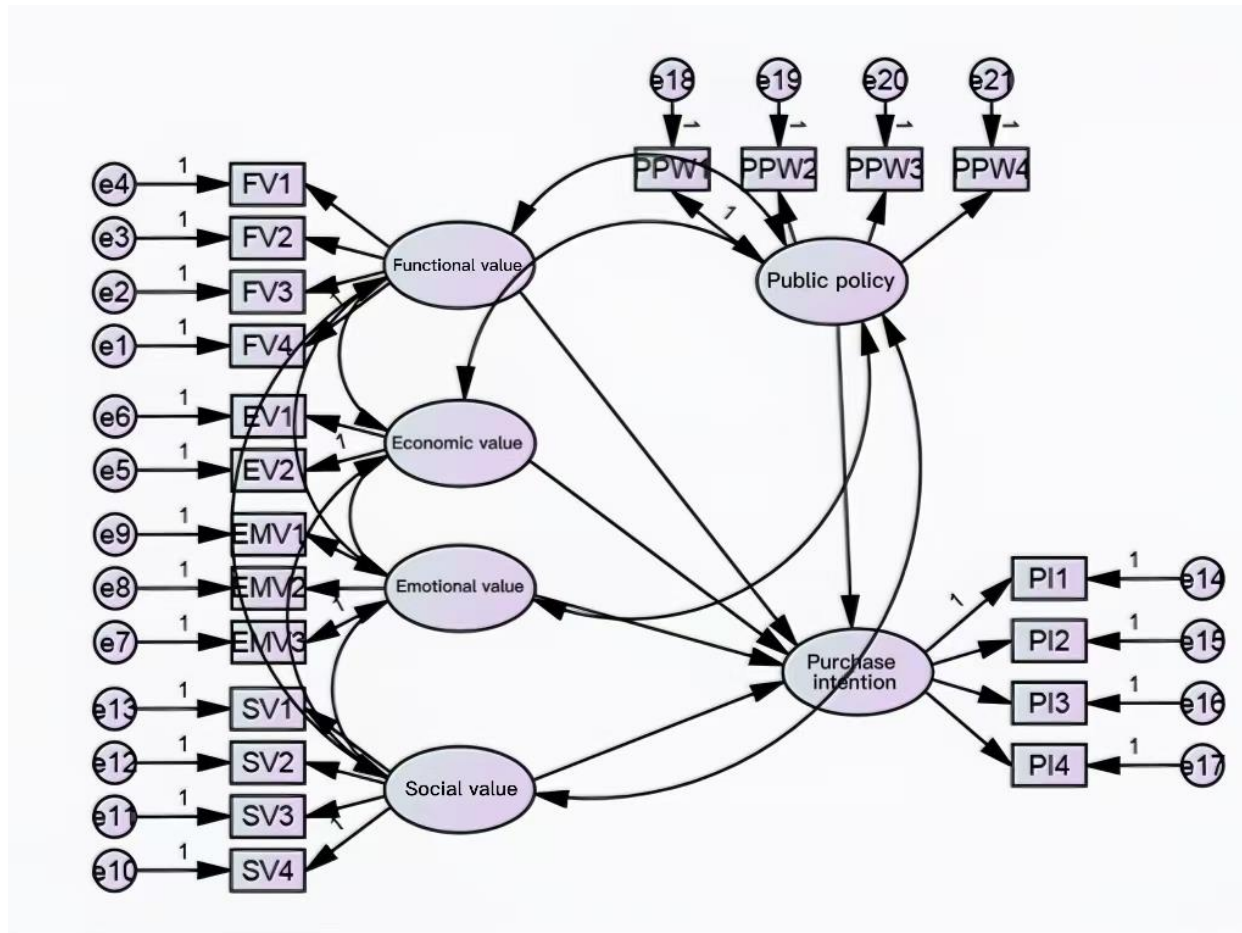


Fig. 2 Structural equation model diagram

4.4. Analysis Conclusion

AMOS26.0 software was used to load the research data into the constructed structural equation model and obtain the operation results, as shown in Table 11 below.

Table 11. Model fitting table

exponent	Absolute fit index				Value added fit index				Reduced fit index			
	χ^2/df	GFI	AGFI	RMSEA	RMR	NFI	RFI	CFI	IFI	TLI	PNFI	PCFI
Standard model	<3	>0.9	>0.8	<0.1	<0.05	>0.9	>0.9	>0.9	>0.9	>0.9	>0.5	>0.5
	1.259	0.917	0.880	0.036	0.046	0.943	0.923	0.987	0.987	0.983	0.713	0.747

It can be seen from the table that all values meet satisfactory standards, indicating that the model is well fitted, and the structural equation model path diagram is finally generated, as shown in Figure 3 below.

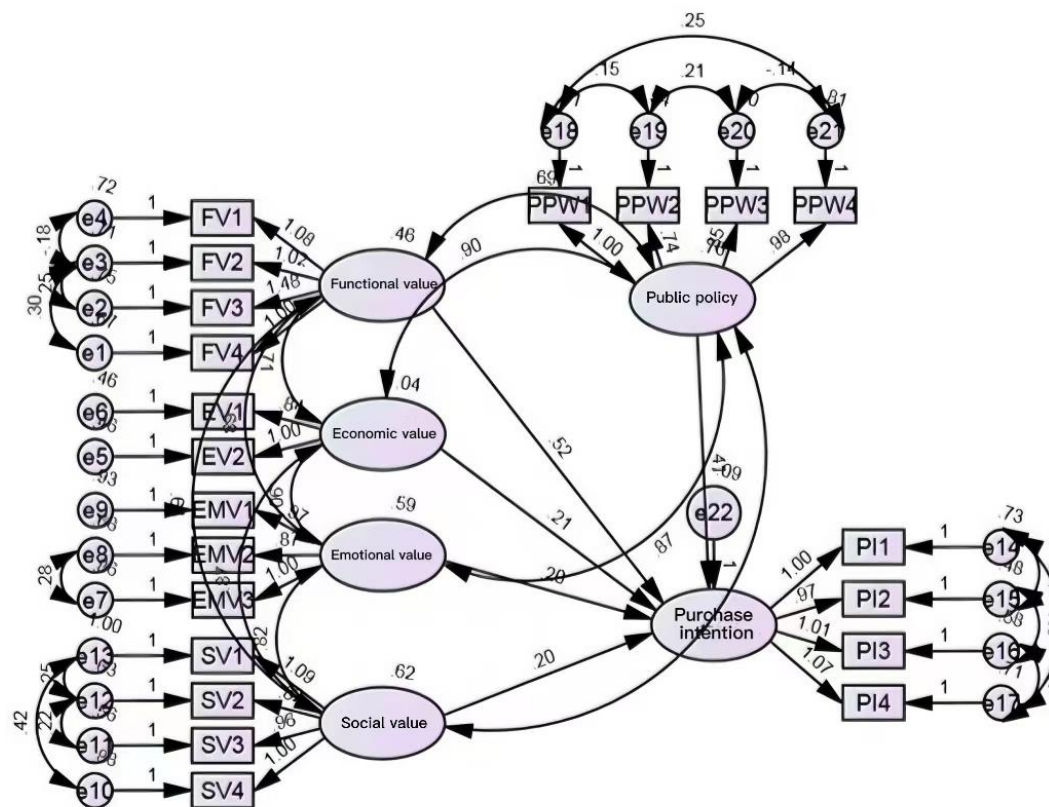


Fig. 3 Structural equation model analysis

The path coefficients and significance levels obtained by running the structural equation model of influencing factors of Beijing consumers' purchase intention of new energy vehicles through AMOS26.0 software are shown in Table 12 below.

Table 12. Results of structural equation path test

path	P	coefficient	judgment
PI ← FV	***	0.518	Accept
PI ← EV	***	0.213	Accept
PI ← EMV	***	0.204	Accept
PI ← SV	***	0.202	Accept
PI ← PPW	***	0.413	Accept

Note: ← indicates the path direction, and *** indicates $p < 0.001$.

The aforementioned table's findings reveal that all path coefficients within the structural equation model exceed zero, suggesting a positive influence dynamics between the variables. Integrating these insights with prior hypotheses, the outcome of this study's hypothesis testing, encapsulated in Table 13, emerges clearly.

The path coefficient of "functional value FV" variable → "purchase intention PI" variable is 0.518, the p value is less than 0.001, and the path significance level is very high, indicating that the functional value of Chengdu consumers for new energy vehicles can positively affect consumers' purchase intention for new energy vehicles. The hypothesis that "H1a functional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu" is verified.

The path coefficient linking the "economic value EV" variable to the "purchase intention PI" variable stands at 0.213, with a p-value under 0.001, suggesting a notably significant pathway. This indicates that Chengdu consumers' valuation of new energy vehicles has a positive influence on their inclination to acquire such vehicles. Consequently, hypothesis posits that "the H1b economic value significantly boosts consumer inclination towards purchasing new energy vehicles in Chengdu".

The statistical analysis reveals a robust positive relationship, as evidenced by a path coefficient of 0.202 for the "social value SV" variable towards the "purchase intention PI" variable. This finding, supported by a p-value significantly below the conventional threshold of 0.001, underscores the high level of statistical significance. Consequently, it is evident that Chengdu consumers' valuation of social aspects in new energy vehicles substantially influences their inclination to purchase such vehicles. Consequently, hypothesis asserting that "the social significance of H1c exerted a notably advantageous influence on the consumer choice of new energy vehicles in Chengdu" is substantiated.

The statistical analysis reveals a robust positive relationship, as evidenced by a path coefficient of 0.204 for the "emotional value EMV" variable leading to the "purchase intention PI" variable, with a p-value below 0.001. This signifies extremely strong evidence supporting the notion that Chengdu consumers' appreciation of new energy vehicles' emotional aspects significantly boosts their inclination to purchase these vehicles. Consequently, the hypothesis proposing that "H1d: emotional value exerts a substantial positive influence on consumers' acquisition of new energy vehicles in Chengdu" is substantiated by the empirical data.

The statistical analysis reveals a robust positive relationship, with a path coefficient of 0.413 for the "policy external situation PPW" variable influencing the "purchase intention PI" variable, and a p-value below 0.001 signifying a strong statistical significance. This finding substantiates the notion that Chengdu consumers' policy environment for electric vehicles significantly boosts their inclination to acquire such vehicles. Hence, it corroborates the hypothesis that external factors, including policies like H2, exert a substantial and favorable impact on consumer decisions regarding the purchase of electric vehicles.

Table 13. Verification of research hypothesis

Serial number	hypothesis	Research conclusion
H1a	Functional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	Set up
H1b	Functional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	Set up
H1c	Social value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	Set up
H1d	Emotional value has a significant positive impact on consumers' purchase of new energy vehicles in Chengdu	Set up
H2	External situations such as policies have a significant positive effect on consumers' purchase of new energy vehicles in Chengdu	Set up

5. Conclusion

From an enterprise standpoint, it is crucial for traditional automotive giants to acknowledge that electric vehicles represent the future trajectory. Consequently, companies should allocate substantial financial, human, and material resources towards the burgeoning electric vehicle sector. Secondly, this study must diligently align with consumer needs, meticulously manage the production and assembly processes for electric vehicles, and enhance staff training at the 4S outlets. Moreover, in the development of electric vehicles, integration with the internet is crucial, as its gaining prominence, the intelligence of automotive products heralds the industry's future direction.

Considering the government's perspective, initially, it is imperative for the administration to refine the subsidy guidelines for electric vehicles and escalate the fiscal incentives. The research reveals that potential buyers are keenly interested in knowing if there are tax exemptions and acquisition subsidies for electric vehicles. Subsequently, relevant governmental entities must expedite the establishment of infrastructure pertinent to electric vehicles. A primary concern among electric vehicle enthusiasts is the availability of suitable charging facilities. To address this issue effectively, the authorities ought to establish pertinent guidelines that facilitate the installation of electric vehicle

charging facilities across all auxiliary parking areas within newly constructed communities. Moreover, there is a need for governmental entities to intensify their efforts in promoting awareness and education about electric vehicles, aiming to instill a sustainable consumption mindset among consumers.

Moving forward into future studies, the methodologies employed herein can be replicated across various urban settings to ascertain the universality of the identified determinants of electric vehicle purchasing intent. Provided that suitable research conditions are fulfilled, future research can expand the pool of subjects and incorporate additional pertinent variables to enrich the analysis. This endeavor aims to ensure that conclusions are more broadly applicable to electric vehicle manufacturers and governmental entities, thereby facilitating the holistic, sustainable, and harmonious advancement of both economic systems and ecological environments.

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