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AN EMPIRICAL STUDY OF THE FACTORS INFLUENCING YOUNG CONSUMERS' INTENTION TO PURCHASE NEW ENERGY VEHICLES

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Abstract This study investigates the key factors influencing young consumers' intention to purchase new energy vehicles (NEVs) by integrating the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Value-Belief-Norm (VBN) theory. A structured online survey was administered to 434 respondents in Beijing, and the data were analyzed using structural equation modeling. The results reveal that perceived ease of use has the strongest total effect on NEV purchase intention, followed by the mediating roles of attitude and subjective norm. While perceived usefulness does not directly affect intention, it significantly influences attitude and normative beliefs. Sustainable value and facilitating conditions also contribute indirectly through cognitive and social pathways. The integrated model demonstrates excellent explanatory power and model fit, offering theoretical insights and practical implications for promoting NEV adoption among young consumers.

Keywords: new energy vehicle, purchase intention, perceived ease of use, sustainable value, attitude, subjective norm, structural equation modeling, young consumers, TAM, TPB

1.Introduction

The global transition toward sustainable mobility has catalyzed significant growth in the new energy vehicle (NEV) sector, with China emerging as the world's largest NEV market (Hao et al., 2024; Hu et al., 2024). Supported by national policies, technological innovations, and rising environmental awareness, NEV sales in China surged from 0.04 million units in 2013 to 9.5 million in 2023 (Shi et al., 2023). However, despite this robust expansion, the adoption of NEVs among young Chinese consumers—particularly those in Generation Y (aged 29–45)—remains uneven, revealing notable gaps in purchase intention and actual behavior (Pang et al., 2023).

Young consumers are often perceived as environmentally conscious, technologically savvy,

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and receptive to innovation. Yet, multiple barriers—such as high upfront costs, perceived inconvenience, and insufficient charging infrastructure—limit their willingness to invest in NEVs (Prieto-Sandoval et al., 2022; Zhang et al., 2024). Moreover, although government incentives and green marketing have increased awareness, these factors do not always translate into strong behavioral intentions (Wang et al., 2022; Yang et al., 2024). This discrepancy underscores the need for a deeper understanding of the psychological, technological, and contextual factors shaping young consumers' NEV purchase decisions.

To address this issue, this study integrates three theoretical frameworks—the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Value-Belief-Norm (VBN) Theory—to construct a comprehensive model of NEV adoption. By combining technological perceptions (e.g., perceived usefulness and ease of use), social influences (e.g., subjective norms), and environmental values (e.g., sustainable value), this research aims to explore how these factors interact to influence young consumers' attitudes and purchase intentions. Using data from 434 respondents on major automotive platforms and structural equation modeling (SEM) techniques, this study provides empirical evidence on the mediating roles of attitude and subjective norm in shaping purchase behavior. The findings offer theoretical insights into the mechanisms of sustainable consumption and practical guidance for stakeholders aiming to promote NEV adoption among China's younger generations.

2.Literature Review

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), has been widely applied to examine individuals' behavioral intentions toward adopting new technologies. TAM posits that two core constructs—perceived usefulness (PU) and perceived ease of use (PEOU)—directly influence user attitudes, which in turn shape behavioral intentions (Davis & Granić, 2024). In the context of new energy vehicles (NEVs), PU refers to the belief that NEVs offer economic or environmental benefits (He et al., 2021; Zhao et al., 2024), such as cost savings and reduced emissions, while PEOU reflects the consumer's perception of how effortless it is to operate or maintain such vehicles (Xiao & Goulias, 2022). Empirical studies confirm that both PU and PEOU significantly predict NEV adoption attitudes, particularly among young and tech-savvy consumers (Pang et al., 2023; Zhang et al., 2023; Zhao et al., 2024).

2.2 Theory of Planned Behavior (TPB)

Ajzen (1991)'s Theory of Planned Behavior (TPB) extends the Theory of Reasoned Action by incorporating perceived behavioral control, in addition to attitude and subjective norm, as determinants of behavioral intention. In NEV-related research, TPB has been instrumental in highlighting the role of social pressures and personal evaluations in shaping eco-conscious

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mobility decisions. Young consumers are particularly susceptible to social influences such as peer recommendations and media endorsements (Macheka et al., 2024; H. Zhang et al., 2022). Subjective norms, defined as the perceived expectations from significant others, strongly affect NEV purchase decisions, especially in collectivist cultures like China (Choo et al., 2024; W. Zhang et al., 2022).

2.3 Value-Belief-Norm (VBN) Theory

The Value-Belief-Norm (VBN) theory, proposed by Stern et al. (1999), provides a moral-psychological explanation for pro-environmental behavior. It emphasizes that individuals' sustainable values and environmental beliefs shape personal norms, which ultimately lead to environmentally responsible actions. In NEV studies, VBN has been employed to understand how ecological consciousness motivates purchase intention (W. Zhang et al., 2022). Sustainable value refers to consumers' recognition of NEVs as instruments for environmental preservation, such as reducing carbon emissions and conserving energy (Wang & Lin, 2024). When young consumers internalize such values, they are more likely to form favorable attitudes toward NEVs and feel a moral obligation to adopt them (Lee et al., 2025; Shen et al., 2024).

2.4 Integration of Theoretical Perspectives

While each theoretical model offers distinct insights, integrated frameworks yield stronger explanatory power for complex behaviors like NEV adoption. This study combines TAM, TPB, and VBN to capture the technological, social, and moral dimensions of consumer decision-making. In particular, facilitating conditions, such as government subsidies and charging infrastructure, are incorporated to represent contextual enablers, while attitude and subjective norm function as mediators linking cognitive and normative drivers to behavioral intention.

Recent literature increasingly supports the use of structural equation modeling (SEM) to evaluate such multidimensional models. Prior research suggests that combining TAM, TPB, and VBN allows for a more comprehensive and predictive understanding of sustainable consumer behavior (Abou Kamar et al., 2024; Hong et al., 2024; Si et al., 2019).

Thus, it leads to the following hypotheses:

H1: Perceived usefulness positively affects the new energy vehicle purchase intention.

H2: Perceived usefulness positively affects the attitude.

H3: Perceived usefulness positively affects the subjective norm.

H4: Perceived ease of use positively affects the attitude.

H5: Perceived ease of use positively affects the new energy vehicle purchase intention.

H6: Perceived ease of use positively affects the subjective norm.

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H7: Sustainable value positively affects the attitude.

H8: Sustainable value positively affects the new energy vehicle purchase intention.

H9: Sustainable value positively affects the subjective norm.

H10: Facilitating condition positively affects the attitude.

H11: Facilitating condition positively affects the subjective norm.

H12: Facilitating condition positively affects the new energy vehicle purchase intention.

H13: Attitude positively affects the new energy vehicle purchase intention.

H14: Subjective norm positively affects the new energy vehicle purchase intention.

H15: Attitude mediates the relationship between the perceived usefulness and the new energy vehicle purchase intention.

H16: Attitude mediates the relationship between the perceived ease of use and the new energy vehicle purchase intention.

H17: Attitude mediates the relationship between the sustainable value and the new energy vehicle purchase intention.

H18: Attitude mediates the relationship between the facilitating condition and the new energy vehicle purchase intention.

H19: Subjective norm mediates the relationship between the perceived usefulness and the new energy vehicle purchase intention.

H20: Subjective norm mediates the relationship between the perceived ease of use and the new energy vehicle purchase intention.

H21: Subjective norm mediates the relationship between the sustainable value and the new energy vehicle purchase intention.

H22: Subjective norm mediates the relationship between the facilitating condition and the new energy vehicle purchase intention.

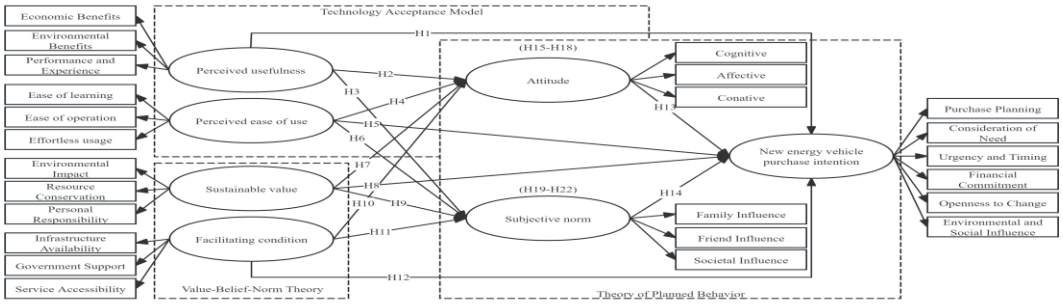

Figure 1 Framework of this study

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3.Research Method

This study employed a structured online questionnaire to collect primary data, targeting Chinese consumers aged 29 to 45—a demographic segment representing Generation Y. In total, 434 valid responses were collected. Respondents were recruited from three major automotive platforms: Yiche, Qichezhijia, and Dongchedi, which together cover a significant portion of the digitally active car-buying population in China. The rationale for focusing on this specific group lies in their pivotal role as emerging middle-class consumers with strong digital literacy and heightened environmental awareness. Understanding their purchase intentions toward new energy vehicles (NEVs) provides both practical value for market forecasting and theoretical relevance for sustainable consumption behavior research. The study adopted a non-probability convenience sampling method, distributing the questionnaire via automotive forums and social media channels. This approach was chosen due to the strong digital orientation of NEV marketing and consumer engagement in China, which makes online platforms not only effective for reaching the target population but also consistent with real-world consumption patterns. While convenience sampling has inherent limitations regarding generalizability, it allowed the study to rapidly access relevant and active participants, thereby enhancing the ecological validity of the findings within the NEV consumer context.

The questionnaire consisted of eight parts: Basic Information, Perceived Usefulness, Perceived Ease of Use, Sustainable Value, Facilitating Condition, Attitude of Planned Behavior, Subjective Norm, and New Energy Vehicle Purchase Intention. This integrated structure was designed to capture the multidimensional relationships among cognitive evaluations, environmental values, social influences, and behavioral intentions.

Table 1 presents the demographic profile of the 434 valid respondents included in this study. In terms of gender, 46.5% identified as male, 40.3% as female, and 13.1% preferred not to disclose their gender. Respondents were relatively evenly distributed across the target age range: 36.2% were between 29–35 years old, 32.5% were 36–40, and 31.3% were 41–45. Regarding platform usage, participants were users of three major automotive platforms in Beijing—Dongchedi (35.7%), Yiche (34.3%), and Qichezhijia (30.0%)—with near-equal representation. In terms of occupation, the largest groups were engineers (17.7%), self-employed individuals (16.1%), and doctors (14.3%), followed by teachers, IT professionals, and salespersons, each accounting for around 13%. The income distribution revealed that most respondents had an average annual household income between 120,000 and 449,999 RMB (76.8%), with 10.1% earning over 600,000 RMB. Educationally, the majority held a bachelor's degree (63.8%), while 17.7% had a master's degree and 6.2% a doctorate, indicating a generally well-educated sample. This demographic composition aligns with the study's objective of capturing insights from digitally engaged and economically active young consumers in China.

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Table 1 Sample Information

Information and options		Frequency	Percent
Gender	Male	202	46.5
	Female	175	40.3
	Prefer not to say	57	13.1
Age	29-35 years old	157	36.2
	36-40 years old	141	32.5
	41-45 years old	136	31.3
Which of the following platforms are you a user of	Yiche, Beijing	149	34.3
	Qichezhijia, Beijing	130	30.0
	Dongchedi, Beijing	155	35.7
Occupation	Teacher in Beijing	47	10.8
	Doctor in Beijing	62	14.3
	Engineer in Beijing	77	17.7
	Salesperson in Beijing	57	13.1
	IT Professional in Beijing	57	13.1
	Self-employed in Beijing	70	16.1
	Unemployed in Beijing	39	9.0
	Other	25	5.8
Average annual household income of your family (China Yuan)	Below 120,000	16	3.7
	120,000 - 299,999	163	37.6
	300,000 - 449,999	170	39.2
	450,000 - 599,999	41	9.4
	600,000 or above	44	10.1
Education Level	Below of Bachelor	53	12.2
	Bachelor's degree	277	63.8
	Master's degree	77	17.7
	Doctorate	27	6.2

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4.Results

Table 2 shows the descriptive statistics for all measurement items used in the study, including means, standard deviations, skewness, and kurtosis. Across all constructs perceived usefulness, perceived ease of use, sustainable value, facilitating condition, attitude, subjective norm, and purchase intention—the mean scores generally ranged from 3.53 to 3.64, suggesting a moderately positive tendency among respondents toward agreement with the statements. Standard deviations hovered around 1.00, indicating a reasonable level of variability without excessive dispersion. Skewness values for all items were negative, ranging from approximately -0.62 to -0.87, reflecting slight left-skewness and thus a mild leaning toward higher scale points. Similarly, kurtosis values were generally negative and close to zero, demonstrating relatively normal, mesokurtic distributions. These results indicate that the data are approximately normally distributed and suitable for parametric analyses, including confirmatory factor analysis (CFA) and structural equation modeling (SEM). The overall consistency across items supports the reliability and construct validity of the measurement scales used in this study (Masatlioglu et al., 2023).

Table 2 Descriptive Statistics Results

Study variables	Items	Mean	S.D.	Skewness		Kurtosis	
				Value	S.E.	Value	S.E.
Perceived usefulness	PU1	3.590	0.998	-0.762	0.117	-0.249	0.234
	PU2	3.550	1.055	-0.692	0.117	-0.402	0.234
	PU3	3.580	0.970	-0.777	0.117	-0.159	0.234
	PU4	3.630	1.028	-0.703	0.117	-0.287	0.234
	PU5	3.570	0.952	-0.673	0.117	-0.454	0.234
Perceived ease of use	PE1	3.540	1.055	-0.726	0.117	-0.329	0.234
	PE2	3.580	1.040	-0.854	0.117	-0.115	0.234
	PE3	3.56	1.02	-	0.11	-	0.23

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		0	5	0.673	7	0.527	4
	PE4	3.560	1.009	-0.781	0.117	-0.244	0.234
	PE5	3.580	0.994	-0.749	0.117	-0.293	0.234
	SV1	3.610	1.076	-0.773	0.117	-0.277	0.234
	SV2	3.510	1.025	-0.660	0.117	-0.597	0.234
Sustainable value	SV3	3.560	0.972	-0.693	0.117	-0.251	0.234
	SV4	3.590	1.010	-0.802	0.117	-0.241	0.234
	SV5	3.570	1.020	-0.700	0.117	-0.354	0.234
	FC1	3.570	0.976	-0.757	0.117	-0.233	0.234
	FC2	3.550	1.043	-0.681	0.117	-0.475	0.234
Facilitating condition	FC3	3.620	1.038	-0.727	0.117	-0.247	0.234
	FC4	3.580	0.975	-0.769	0.117	-0.139	0.234
	FC5	3.530	1.026	-0.796	0.117	-0.236	0.234
	AP1	3.640	1.024	-0.623	0.117	-0.438	0.234
	AP2	3.560	1.011	-0.722	0.117	-0.386	0.234
Attitude	AP3	3.570	0.983	-0.765	0.117	-0.208	0.234
	AP4	3.60	1.00	-	0.11	-	0.23

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		0	4	0.721	7	0.323	4
	AP5	3.600	1.015	-0.717	0.117	-0.322	0.234
	SN1	3.590	1.027	-0.674	0.117	-0.412	0.234
	SN2	3.560	1.029	-0.711	0.117	-0.371	0.234
Subjective norm	SN3	3.550	1.057	-0.664	0.117	-0.424	0.234
	SN4	3.590	1.014	-0.781	0.117	-0.153	0.234
	SN5	3.610	1.012	-0.674	0.117	-0.359	0.234
	NE1	3.600	1.011	-0.724	0.117	-0.350	0.234
	NE2	3.580	1.026	-0.741	0.117	-0.256	0.234
	NE3	3.630	1.008	-0.779	0.117	-0.085	0.234
New energy vehicle purchase intention	NE4	3.560	1.025	-0.867	0.117	-0.026	0.234
	NE5	3.590	1.004	-0.811	0.117	-0.130	0.234
	NE6	3.600	1.044	-0.779	0.117	-0.143	0.234

Table 3 reports the internal consistency reliability of the study constructs, assessed using Cronbach's alpha coefficients. All seven latent variables demonstrated high levels of reliability, with Cronbach's α values exceeding the commonly accepted threshold of 0.70. Specifically, perceived usefulness and facilitating condition both yielded alpha values of 0.868, while attitude showed the highest reliability at 0.870. Perceived ease of use (0.857), sustainable value (0.851), and subjective norm (0.850) also demonstrated strong internal consistency. Notably, the dependent variable new energy vehicle purchase intention—exhibited the highest alpha among all constructs at 0.893, indicating excellent reliability across its six items (Cheung et al.,

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2024).

Table 3 Reliability Statistics

Study variables	Number of items	Cronbach's α
Perceived usefulness	5	0.868
Perceived ease of use	5	0.857
Sustainable value	5	0.851
Facilitating condition	5	0.868
Attitude	5	0.870
Subjective norm	5	0.850
New energy vehicle purchase intention	6	0.893

Table 4 presents the results of the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity, which assess the suitability of the data for factor analysis. The KMO value of 0.944 indicates excellent sampling adequacy, well above the recommended threshold of 0.80, suggesting that the patterns of correlations among variables are compact and that factor analysis is likely to yield reliable factors. Additionally, Bartlett's Test of Sphericity yielded a highly significant result ($\chi^2 = 7979.154$, df = 630, $p < 0.001$), rejecting the null hypothesis that the correlation matrix is an identity matrix (Masatlioglu et al., 2023).

Table 4 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.944
Bartlett's Test of Sphericity	Approx. Chi-Square	7979.154
	df	630
	Sig.	0.000

Table 5 reports the model fit indices from the confirmatory factor analysis (CFA), indicating an excellent overall fit between the hypothesized measurement model and the observed data. The chi-square to degrees of freedom ratio (χ^2/df) is 1.151, which is well below the recommended threshold of 3.0, suggesting a good model fit. The Root Mean Square Error of Approximation (RMSEA) is 0.023, significantly below the cutoff value of 0.08, indicating minimal approximation error. The Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI) are 0.929 and 0.918, respectively, both exceeding the recommended threshold of 0.90. Similarly, the Normed Fit Index (NFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI) all exceed 0.94, with values of 0.942, 0.990, and 0.991, respectively, demonstrating

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excellent incremental and comparative fit.

Table 5 Measure Model Fit Metrics

Fit index	$\chi 2/df$	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standards	<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9
Result	1.151	0.023	0.929	0.918	0.942	0.990	0.991

Table 6 shows the discriminant validity assessment of the latent constructs based on the Fornell-Larcker criterion. The diagonal elements represent the square roots of the Average Variance Extracted (AVE) for each construct, while the off-diagonal elements reflect the correlations between constructs. For discriminant validity to be established, the square root of each construct's AVE should be greater than its correlations with all other constructs. As shown, the AVE square roots for all constructs PU (0.810), PE (0.798), SV (0.792), FC (0.809), AP (0.812), SN (0.791), and NE (0.807) exceed the corresponding inter-construct correlation values. For instance, the correlation between PU and PE is 0.360, which is lower than the AVE square root of both PU and PE. This pattern holds across all construct pairs, confirming that each latent variable shares more variance with its own indicators than with other constructs (Rokonuzzaman et al., 2022).

Table 6 Discriminant validity test

Latent variables	PU	PE	SV	FC	AP	SN	NE
Perceived usefulness	0.810						
Perceived ease of use	0.360	0.798					
Sustainable value	0.391	0.352	0.792				
Facilitating condition	0.456	0.400	0.392	0.809			
Attitude	0.450	0.419	0.384	0.454	0.812		
Subjective norm	0.518	0.386	0.468	0.442	0.434	0.791	
New energy vehicle purchase intention	0.419	0.496	0.419	0.358	0.495	0.497	0.807

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Note: The diagonal is the square root of the corresponding dimension AVE.

PU: Perceived usefulness; PE: Perceived ease of use; SV: Sustainable value; FC: Facilitating condition; AP: Attitude; SN: Subjective norm; NE: New energy vehicle purchase intention.

Table 7 displays the coefficient of determination (R^2) and predictive relevance (Q^2) for the key endogenous variables in the structural model. The R^2 values indicate the proportion of variance explained by the model for each construct: attitude ($R^2 = 0.337$), subjective norm ($R^2 = 0.391$), and new energy vehicle purchase intention ($R^2 = 0.420$). These results suggest that the model explains a moderate to substantial portion of the variance in each dependent variable, particularly in purchase intention, which is the outcome variable. The Q^2 values, derived via the blindfolding procedure, assess the model's predictive relevance. All Q^2 values 0.217 for attitude, 0.237 for subjective norm, and 0.268 for purchase intention are well above the recommended threshold of 0, confirming that the model has acceptable predictive accuracy. These results demonstrate that the integrated structural model possesses both explanatory power and predictive validity in capturing the behavioral drivers of young consumers' NEV purchase intentions (Bocoya-Maline et al., 2024).

Table 7 Reliability Statistics

Study variables	R^2	Q^2
Attitude	0.337	0.217
Subjective norm	0.391	0.237
New energy vehicle purchase intention	0.420	0.268

Table 8 presents the model fit indices for the structural model, indicating an excellent overall fit between the theoretical model and the observed data. The chi-square to degrees of freedom ratio (χ^2/df) is 1.152, which is well below the recommended threshold of 3.0, suggesting minimal model-data discrepancy. The Root Mean Square Error of Approximation (RMSEA) is 0.024, significantly lower than the cutoff value of 0.08, indicating a close fit. Additionally, the Goodness-of-Fit Index (GFI = 0.929) and Adjusted Goodness-of-Fit Index (AGFI = 0.918) both exceed the standard threshold of 0.90, confirming strong absolute model fit. The incremental fit indices—including Normed Fit Index (NFI = 0.942), Tucker-Lewis Index (TLI = 0.989), and Comparative Fit Index (CFI = 0.990) are all above 0.90, reflecting a high degree of model improvement over the null model.

Table 8 Model Fit Metrics

Fit index	χ2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standards	<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.9

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Result	1.152	0.024	0.929	0.918	0.942	0.989	0.990

Table 9 shows the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity, both of which assess the suitability of the dataset for factor analysis. The KMO value of 0.943 indicates excellent sampling adequacy, suggesting that the correlations among variables are sufficiently compact to justify the application of factor analysis. Additionally, Bartlett's Test of Sphericity produced a statistically significant result ($\chi^2 = 7852.134$, df = 627, $p < 0.001$), indicating that the correlation matrix is not an identity matrix and that meaningful patterns of relationships exist among the variables.

Table 9 KMO of Model

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.943
Bartlett's Test of Sphericity	Approx. Chi-Square	7852.134
	df	627
	Sig.	0.000

Figure 2 illustrates the structural equation model estimated using Advanced Statistical Software, visually representing the hypothesized causal relationships among the study's key latent variables. The ellipses denote the unobserved (latent) constructs—Perceived Usefulness, Perceived Ease of Use, Sustainable Value, Facilitating Condition, Attitude, Subjective Norm, and New Energy Vehicle Purchase Intention while the rectangles represent the observed indicators derived from survey items. Each measurement item is associated with a corresponding error term (denoted by small circles), which accounts for measurement error and unexplained variance. Unidirectional arrows between latent constructs indicate the direction and magnitude of standardized regression coefficients, which quantify the hypothesized structural relationships.

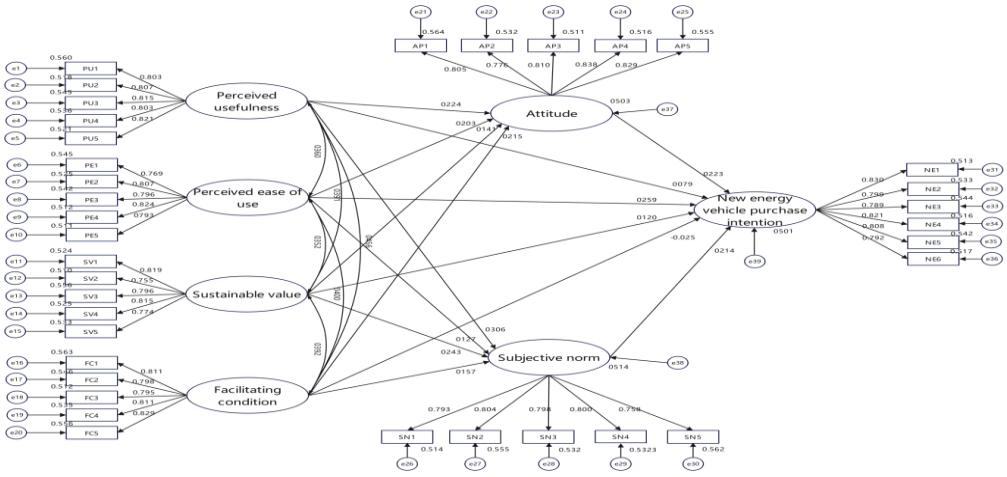

Figure 2 Advanced statistical softwar output of SEM

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Table 10 summarizes the results of the hypothesis testing conducted through structural equation modeling, displaying path coefficients, standard errors, t-values, p-values, and hypothesis outcomes. Among the 14 hypothesized relationships, 12 were supported and 2 were rejected. Notably, perceived usefulness (PU) significantly influenced attitude (H2: $\beta = 0.224$, $p = 0.001$) and subjective norm (H3: $\beta = 0.306$, $p < 0.001$), but had no significant direct effect on purchase intention (H1: $\beta = 0.079$, $p = 0.211$). Perceived ease of use (PE) demonstrated a strong influence on attitude (H4: $\beta = 0.203$, $p < 0.001$), subjective norm (H6: $\beta = 0.127$, $p = 0.020$), and purchase intention (H5: $\beta = 0.259$, $p < 0.001$), confirming its central role in consumer decision-making. Sustainable value (SV) significantly impacted attitude (H7: $\beta = 0.141$, $p = 0.015$), subjective norm (H9: $\beta = 0.243$, $p < 0.001$), and purchase intention (H8: $\beta = 0.120$, $p = 0.033$). Similarly, facilitating condition (FC) influenced attitude (H10: $\beta = 0.215$, $p = 0.001$) and subjective norm (H11: $\beta = 0.157$, $p = 0.011$), but did not show a significant direct effect on purchase intention (H12: $\beta = -0.025$, $p = 0.678$). Lastly, both attitude (H13: $\beta = 0.223$, $p = 0.001$) and subjective norm (H14: $\beta = 0.214$, $p = 0.001$)** had strong, significant effects on purchase intention, highlighting their mediating roles in the model (Bliese & Wang, 2019).

Table 10 Structural model path test

Hypothesis	Path	Effect size	S.E.	T	P	Results
H1	PU→NE	0.079	0.063	1.252	0.211	Rejected
H2	PU→AP	0.224	0.065	3.420	0.001	Accepted
H3	PU→SN	0.306	0.060	5.097	0.000	Accepted
H4	PE→AP	0.203	0.058	3.521	0.000	Accepted
H5	PE→NE	0.259	0.066	3.925	0.000	Accepted
H6	PE→SN	0.127	0.055	2.333	0.020	Accepted
H7	SV→AP	0.141	0.058	2.437	0.015	Accepted
H8	SV→NE	0.120	0.056	2.133	0.033	Accepted
H9	SV→SN	0.243	0.057	4.293	0.000	Accepted
H10	FC→AP	0.215	0.064	3.388	0.001	Accepted
H11	FC→SN	0.157	0.061	2.553	0.011	Accepted
H12	FC→NE	-0.025	0.059	0.416	0.678	Rejected
H13	AP→NE	0.223	0.066	3.388	0.001	Accepted
H14	SN→NE	0.214	0.062	3.446	0.001	Accepted

Note: PU: Perceived usefulness; PE: Perceived ease of use; SV: Sustainable value; FC:

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Facilitating condition; AP: Attitude; SN: Subjective norm; NE: New energy vehicle purchase intention.

Table 11 presents the bias-corrected bootstrap estimates of the effect paths in the structural model, including effect sizes, standard errors, and 95% confidence intervals. All direct and indirect effects are derived using 5,000 bootstrap resamples, offering robust estimates of path significance. The results confirm that perceived usefulness (PU) exerts significant indirect effects on attitude (β = 0.224, 95% CI \[0.085, 0.357]), subjective norm (β = 0.306, 95% CI \[0.184, 0.410]), and purchase intention (β = 0.194, 95% CI \[0.061, 0.314]), even though its direct effect on purchase intention was non-significant. Perceived ease of use (PE) shows the strongest total effect on purchase intention (β = 0.331, 95% CI \[0.194, 0.442]), mediated partially through both attitude and subjective norm. Likewise, sustainable value (SV) demonstrates significant pathways to attitude (β = 0.141), subjective norm (β = 0.243), and purchase intention (β = 0.204), all with confidence intervals excluding zero, indicating statistical significance. Facilitating condition (FC) significantly influences attitude (β = 0.215) and subjective norm (β = 0.157), but its effect on purchase intention (β = 0.057) is not significant, as the 95% CI \[–0.077, 0.158] includes zero. Both **attitude (β = 0.223, 95% CI \[0.095, 0.360]) and subjective norm (β = 0.214, 95% CI \[0.083, 0.322])have statistically significant direct effects on purchase intention, confirming their central mediating roles in the model. Overall, the bootstrap results reinforce the robustness of the proposed theoretical model and highlight key psychological and contextual pathways that shape NEV purchase intention (Gao et al., 2024).

Table 1 Total Effects

Effect path	Effect size	SE	Bias-Corrected 95%CI	
PU→AP	0.224	0.065	0.085	0.357
PU→NE	0.194	0.062	0.061	0.314
PU→SN	0.306	0.060	0.184	0.410
PE→AP	0.203	0.058	0.076	0.305
PE→NE	0.331	0.064	0.194	0.442
PE→SN	0.127	0.055	0.016	0.226
SV→AP	0.141	0.058	0.032	0.251
SV→NE	0.204	0.058	0.088	0.320
SV→SN	0.243	0.057	0.132	0.345

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FC→AP	0.215	0.064	0.092	0.342
FC→NE	0.057	0.059	-0.077	0.158
FC→SN	0.157	0.061	0.040	0.273
AP→NE	0.223	0.066	0.095	0.360
SN→NE	0.214	0.062	0.083	0.322

Note: PU: Perceived usefulness; PE: Perceived ease of use; SV: Sustainable value; FC: Facilitating condition; AP: Attitude; SN: Subjective norm; NE: New energy vehicle purchase intention.

5. Discussion

This study provides a comprehensive examination of the factors influencing young consumers' intention to purchase new energy vehicles (NEVs) by integrating constructs from the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), and Value-Belief-Norm (VBN) theory. The findings contribute theoretically by revealing that attitude and subjective norm serve as critical mediators in the relationship between cognitive, contextual, and value-based antecedents and behavioral intention. Specifically, perceived ease of use demonstrated both a significant direct and indirect impact on NEV purchase intention, supporting the notion that technological simplicity enhances not only user perception but also behavioral intention through favorable attitudes and normative beliefs. The significant role of sustainable value and facilitating conditions in shaping social norms and attitudes further extends existing adoption models by incorporating pro-environmental and structural dimensions. These insights enrich current understanding of green technology adoption behavior by incorporating multidimensional antecedents into a unified structural model with strong empirical support.

From a practical standpoint, the results offer actionable implications for NEV manufacturers, marketers, and policymakers. The strong influence of subjective norm on purchase intention suggests that social influence campaigns—such as endorsements by peers, influencers, or family members—can effectively enhance consumer acceptance (Kalam et al., 2025; Liang et al., 2021). The positive impact of perceived ease of use implies that NEV interfaces and systems should be designed to minimize complexity, enhance user experience, and reduce perceived learning burdens (Jiang et al., 2025; Tan et al., 2025). Furthermore, the significance of sustainable value as a predictor of both attitude and intention highlights the importance of framing NEVs not only as cost-effective or innovative products, but as symbols of environmental responsibility and long-term value (Ajina et al., 2024; Tsai et al., 2025). Policymakers are advised to continue reinforcing facilitating conditions such as charging infrastructure, incentives, and subsidies to strengthen the behavioral infrastructure for NEV

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adoption.

In synthesizing the key empirical findings, several noteworthy patterns emerge. While perceived usefulness did not have a significant direct effect on NEV purchase intention, it influenced attitude and subjective norm, indicating an indirect pathway through psychological mechanisms. In contrast, perceived ease of use had the strongest total effect on purchase intention, confirming its pivotal role in reducing resistance and increasing adoption readiness. The mediation of attitude and subjective norm between most antecedents and behavioral intention underscores the importance of internal cognitive evaluations and external social pressures in shaping green consumption behavior. The high R^2 value for purchase intention (0.420) and excellent model fit indices (e.g., RMSEA = 0.024, CFI = 0.990) confirm that the integrated model is robust and capable of capturing the complexities of consumer behavior in the NEV context (Bocoya-Maline et al., 2024).

Despite these valuable contributions, several limitations should be acknowledged. First, the sample was limited to young consumers in Beijing, which may restrict the generalizability of the findings to broader populations or other regions. Future studies could adopt a more diverse or cross-cultural sample to enhance external validity. Second, although this study employed cross-sectional data, behavioral intention is inherently dynamic; thus, longitudinal research would provide stronger causal inferences. Third, other relevant factors—such as environmental concern, perceived risks, or economic incentives—were not included in the current model and warrant future exploration. Expanding the framework to include such variables could further deepen understanding of the motivations behind NEV adoption.

6. Conclusion

This study aimed to investigate the determinants of young consumers' purchase intention toward new energy vehicles (NEVs) by developing and empirically testing an integrated model that combines constructs from the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Value-Belief-Norm (VBN) theory. Drawing on data collected through a structured online survey of 434 respondents in Beijing, the study employed structural equation modeling to explore both direct and indirect effects among perceived usefulness, perceived ease of use, sustainable value, facilitating conditions, attitude, subjective norm, and purchase intention. The empirical results demonstrate that perceived ease of use exerts the strongest total effect on NEV purchase intention, both directly and through the mediating roles of attitude and subjective norm. While perceived usefulness did not directly influence intention, it significantly impacted attitude and subjective norm, suggesting its importance in shaping the cognitive and social foundations of consumer behavior. Sustainable value and facilitating conditions were also shown to influence intention indirectly by enhancing pro-environmental attitudes and perceived social expectations. The findings highlight the importance of attitudinal

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and normative mechanisms as mediators and underscore the multifaceted nature of green technology adoption among younger demographics.

This research contributes to the literature by offering a comprehensive theoretical framework that synthesizes cognitive, normative, and value-based predictors of sustainable consumer behavior in the context of NEVs. The model achieved strong explanatory power and demonstrated excellent fit, providing a reliable foundation for future studies on sustainable mobility and consumer psychology. Practically, the study offers valuable insights for NEV manufacturers, marketers, and policymakers seeking to promote adoption through design simplicity, value-driven messaging, and infrastructure support.

The cross-sectional nature of the data restricts causal inference, and the geographic concentration of the sample in Beijing may limit generalizability. Future research is encouraged to adopt longitudinal and cross-regional designs, incorporate additional psychological or contextual variables, and explore behavioral intention across different age groups and cultural settings. Nevertheless, this study provides timely and actionable evidence for advancing both theoretical understanding and strategic efforts to foster sustainable transportation transitions.

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