

The Impact of Gen Z Consumers' Green Consumption Values on New Energy Vehicle Purchase Decisions—Based on the Theory of Planned Behavior

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Abstract:

Against the backdrop of global climate change and the explosive growth of the new energy vehicle (NEV) industry, this study, grounded in the Theory of Planned Behavior (TPB), explores how Gen Z consumers' green consumption values shape their NEV brand purchase decisions. Through rigorous analyses—including reliability and validity tests, regression analysis, and mediating effect assessments—on 107 valid samples, the research reveals that green consumption values exert a significant direct positive impact on purchase intention. Moreover, they indirectly influence purchase intention via two pathways: consumers' attitude toward NEVs and their perceived behavioral control. This study provides valuable references for future research on green consumption and NEV purchase behavior, with impacts in both theoretical and practical aspects. Theoretically, it verifies TPB's applicability in Gen Z consumption scenarios, clarifies how green consumption values influence purchase intention through “attitude” and “perceived behavioral control”, provides empirical support for research on the relationship between values and consumption decisions, and enriches the application of related theories in young consumer groups. Practically, the conclusions provide clear directions for NEV enterprises to formulate marketing strategies, such as strengthening the communication of products' environmental attributes to enhance Gen Z's attitude recognition, and optimizing charging facility layout and policy interpretation services to enhance their perceived control. This study validates TPB's applicability in Gen Z consumption research, offering theoretical support for NEV enterprises to craft targeted marketing strategies for Gen Z and for governments to formulate relevant policies, thereby contributing to the advancement of green consumption and the NEV market.

Keywords: Green consumption values; Gen Z; New energy vehicles; Theory of Planned Behavior.

1. Introduction

The study focuses on the dual contexts of the accelerating low-carbon transition and the explosive growth of the NEV industry. On the one hand, green consumption has become a social consensus. According to the 53rd Statistical Report on the Development of China's Internet released by the China Internet Network Information Center, the number of Chinese online shoppers who purchase green products has reached 230 million, with Generation Z being the main growth driver. On the other hand, as a key for energy conservation and emission reduction in the transportation sector, the NEV industry has met its golden age of rapid development with the dual drives of policy support and technological innovation. According to the data released by the China Association of Automobile Manufacturers, in 2024, the annual production and sales of NEVs in China both exceeded 10 million for the first time, having ranked the world's top position for ten consecutive years, and the NEA sales accounted for 40.9% of the total new vehicle sales, demonstrating huge market potential.

At the same time, the Spend Z: A Global Report jointly authored by NielsenIQ and GfK in collaboration with World Data Lab predicts that the purchasing power of the global "Gen Z" market (born 1997-2012) will reach \$12 trillion by 2030. Data from the National Bureau of Statistics of China shows that the Gen Z population in China has exceeded 264 million, and they are gradually becoming the main consumption force in the market. According to the Insight on the Interests of the Gen Z in New Energy Vehicles jointly released by Bilibili and TOPKLOUT.com in 2023, nearly 63% of Chinese Gen Z intend to buy NEVs in the future, and nearly 90% of Gen Z who already own cars want to buy a second NEV. However, the internal link between their green consumption values and car purchase decisions remains insufficiently explored.

This research is significant both theoretically and practically. Theoretically, it enriches the application of TPB in green consumption and reveals the mechanism by which values influence purchase decisions under Gen Z's unique consumption psychology. Practically, it provides strategic references for NEV enterprises to accurately target Gen Z and offers empirical basis for governments to formulate targeted industrial policies and promote the achievements of carbon peaking and carbon neutrality goals.

Based on TPB, the study starts from Gen Z's green consumption values, focuses on the impact paths on their NEV purchase decisions, with emphasis on exploring the mediating roles of the attitude toward NEVs and perceived behavioral control. It adopts a combination of literature analysis and empirical research. First, it sorts out literature on TPB and green consumption values to construct a theoretical model and put forward research hypotheses.

Then, it designs targeted questionnaires, collects 107 valid samples, uses descriptive statistics to analyze sample characteristics, conducts reliability and validity tests to verify the scale, and applies regression analysis and mediating effect tests (hierarchical regression) to verify hypotheses, finally clarifying the relationship strength and mechanism between variables.

The study's primary objective is to uncover the specific paths through which Gen Z's green consumption values influence NEV purchase decisions and verify the mediating effect chain of "Green Consumption Values → Attitude/Perceived Behavioral Control → Purchase Intention". To achieve this goal, rigorous scale design, data collection and statistical analysis are carried out to ensure the scientificity and reliability of the conclusions, aiming to provide theoretical support for precise marketing in the NEV industry and policy formulation.

2. Theoretical Basis and Hypotheses

The Theory of Planned Behavior (TPB) proposed by Ajzen holds that behavioral intention is affected by attitude, subjective norms and perceived behavioral control, which is an important theoretical framework for studying consumers' purchase decisions [1]. In the field of NEVs, Liu Tengfei confirmed through a questionnaire survey and structural equation model test on Beijing consumers that attitude, subjective norms and perceived behavioral control all can influence NEV purchase intention positively [2]. Nevertheless, Tian Zongbo et al. found that consumers' consumption attitude and subjective norms are positively correlated with purchase intention, while perceived behavioral control is negatively correlated, indicating variables could play different roles in the TPB model in different contexts [3]. Liu Kaiqiang et al.'s further study on Shanghai residents found that consumers' past behavioral experience will indirectly affect purchase intention through perceived behavioral control, expanding the application of TPB in NEV purchase decisions [4]. These studies have verified the rationality of applying TPB to study NEV purchase intention, but also indicate that the model needs to be adjusted according to the characteristics of specific consumer groups.

The individuals' tendency to recognize and practice environmentally friendly consumption is referred to as green consumption values., which are closely related to NEV purchase decisions. Based on the Value-Belief-Norm (VBN) theory, scholars have found that different values have different impacts on NEV purchase intention. Yang Wu's research shows that green perceived value and environmental personal norms will affect purchase intention [5]. With environmental value orientation as an exogenous variable, Zu Ming et al. also confirmed that altruistic value orientation is able to impact NEV purchase intention re-

markably through green perceived value [6]. These studies show that green consumption values exert a remarkable positive impact on NEV purchase decisions. The stronger Gen Z's green consumption values are, the more positive their attitude toward NEVs with environmental protection functions will be, and the more likely they are to convert their environmental protection needs into purchase intention for NEVs.

Thus, this paper proposes:

H1: Green consumption values have a direct positive impact on purchase intention.

H2: Green consumption values positively affect purchase intention through the mediating role of "Attitude toward NEVs".

Gen Z's perception of perceived behavioral control has distinct generational characteristics. On the one hand, they are more accepting of new technologies, which may weaken the impact of traditional obstacles such as charging convenience on purchase decisions. On the other hand, their consumption capacity is still in the forming stage, making them more sensitive to car purchase budget and policy subsidies. Jiang Ran et al. found that the technology learning rate affects the price of NEVs, thereby affecting purchase intention, which has a significant impact on price-sensitive Gen Z [7]. Liu Kaiqiang et al. found that past behavioral experience (such as test-driving experience) will indirectly affect purchase intention through perceived behavioral control, and Gen Z is more likely to form a sense of controllability of products through offline experience stores and test-driving activities [4]. The higher the controllability of purchasing NEVs perceived by Generation Z (such as convenient charging and sufficient policy support), the stronger their purchase intention. Green consumption values may prompt individuals to actively pay attention to charging facilities and policy preferences, thereby enhancing the sense of perceived control and reducing purchase barriers.

Thus, this paper proposes:

H3: Perceived behavioral control influences purchase intention positively.

H4: Through the mediating role of perceived behavioral control, green consumption values have a positive impact on purchase decisions.

This paper suggests a theoretical framework based on these hypotheses:

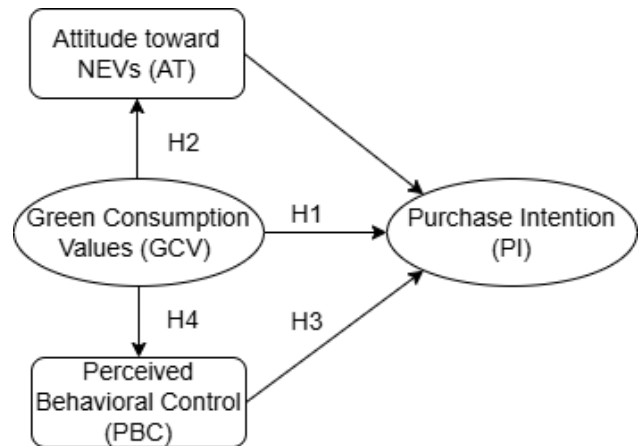


Fig. 1 Hypothesis Model

The model shows the relationships between green consumption values, attitude toward NEVs, perceived behavioral control and purchase intention. Green consumption values are at the core, directly affecting purchase intention through path H1. At the same time, green consumption values indirectly affect purchase intention by acting on attitude toward NEVs through path H2. In addition, perceived behavioral control directly affects purchase intention through path H3. Green consumption values also indirectly affect purchase intention by acting on perceived behavioral control through path H4.

3. Research and Questionnaire Design

The scale design is fully drawn on mature scales in previous studies, and combines the unique consumption characteristics of Gen Z to adapt and innovate for the consumption object of NEVs. The final scale structure is shown in Table 1.

Table 1. Measurement Indicators of Variables [8-10]

Variable	Code	Item Content	Source
Green Consumption Values (GCV)	GCV1	Using environmentally friendly products is important to me	Haws et al. (2014)
	GCV2	I consider the potential environmental impact of my actions	
	GCV3	My purchasing habits are influenced by my environmental awareness	
	GCV4	I worry about resource waste	
	GCV5	I feel a sense of environmental responsibility	
	GCV6	I am willing to pay extra for environmentally friendly behaviors	

Attitude toward NEVs (AT)	AT1	I like driving/riding in NEVs	Do Paco et al. (2019)
	AT2	Driving/riding in NEVs makes me feel happy	
	AT3	I recognize NEVs' technical advantages in reducing carbon emissions	
	AT4	Driving NEVs makes me feel more in line with young people's fashion attitudes	
Perceived Behavioral Control (PBC)	PBC1	I have enough time and money to buy an NEV	Jiang Ran et al. (2014)
	PBC2	I think buying an NEV is convenient and easy	
	PBC3	I have the knowledge and skills related to buying NEVs	
	PBC4	I understand the preferential policies for buying NEVs	
Purchase Intention (PI)	PI1	Compared with traditional cars, I prefer to buy an NEV	Dodds et al. (1991)
	PI2	When buying a car, I will actively pay attention to NEVs	
	PI3	I plan to buy an NEV as my next car	
	PI4	I will recommend buying NEVs to people around me	

4. Data Analysis

4.1 Descriptive Statistical Analysis

To explore Gen Z consumers' preferences and influencing factors in NEV purchases, a questionnaire survey was designed. A total of 119 valid questionnaires were collected, among which 107 respondents had driver's licenses, serving as valid samples with an effective rate of 89.9%.

Sample characteristics are as follows: In terms of gender, males account for 59.8%, showing slightly higher attention to NEVs. Ages are concentrated in 24-29, highly consistent with Gen Z, ensuring representativeness. Educationally, 46.7% have bachelor's degrees and 52.3% have master's or higher, with nearly 100% being highly educated. In terms of income, over 70% are middle- and high-income groups that earn more than 8,000 yuan

monthly., having strong consumption capacity and serving as core potential NEV consumers. Geographically, nearly 80% are from cities above second-tier, concentrated in economically developed, populous eastern and southern urban agglomerations, consistent with high NEV penetrated areas. The car ownership situation shows that most subjects do not own a car, and those owning NEVs account for less than 15%. Over half have more than 3 years of driving experience but mainly use public transportation for daily travel.

Overall, respondents are mostly 24-29-year-old highly educated young people in new first-tier/second-tier cities with middle and high incomes. Non-car owners are potential main consumers, but the actual NEV purchase rate is low, possibly due to the coexistence of theoretical awareness and constraints like price and infrastructure.

4.2 Reliability Analysis

Table 2. Reliability Analysis

Dimension	Cronbach's Alpha Coefficient
Green Consumption Values (GCV)	0.938
Attitude toward NEVs (AT)	0.879
Perceived Behavioral Control (PBC)	0.942
Purchase Intention (PI)	0.939

As shown in Table 2, the Cronbach's Alpha values of GCV, AT, PBC, and PI are 0.938, 0.879, 0.942, and 0.939, respectively. All exceed 0.7, indicating good internal consistency among items in each dimension, high scale reliability, and reliable collected data.

4.3 Validity Analysis

Using principal component analysis combined with Kaiser normalized varimax rotation, factor analysis was conducted on independent variables, with results as follows (Table 3):

According to the results of KMO and Bartlett's test, the

sample data is suitable for factor analysis, with a KMO value of 0.805 (>0.7). Bartlett's test of sphericity resulted in a chi-square value of 2425.423 ($df=91$, $p<0.001$), which contradicts the null hypothesis of no correlation between variables and supports the use of factor analysis.

Total variance explanation showed that the first 3 principal components had initial eigenvalues >1 , with a cumulative variance contribution rate of 85.967%. After rotation, the variance contribution rates of the 3 components were 33.243%, 30.239%, and 22.484%, with the cumulative rate remaining unchanged, indicating a stable factor struc-

ture.

The rotated component matrix showed variables clearly divided into 3 dimensions with high loadings (>0.6):

Perceived Behavioral Control (PBC): Including PBC1-PBC4, with loadings ranging from 0.749 to 0.939;

Attitude toward NEVs (AT): Including AT1-AT3, with loadings ranging from 0.773 to 0.848;

Green Consumption Values (GCV): Including GCV1-GCV3, with loadings ranging from 0.689 to 0.823.

These results verify the good construct validity of the scale.

Table 3. Factor Analysis

Rotated Component Matrixa			
	Component		
	Perceived Behavioral Control (PBC)	Attitude toward NEVs (AT)	Green Consumption Values (GCV)
PBC3	939		
PBC2	856		
PBC4	809		
PBC1	749		
AT1		848	
AT2		839	
AT3		773	
GCV2			823
GCV1			756
GCV3			689
Extraction method: Principal component analysis.			
Rotation method: Kaiser normalized varimax rotation.			
a. Rotation converged after 6 iterations.			

4.4 Regression Analysis

4.4.1 Impact of Green Consumption Values on Attitude

The model results of GCV predicting attitude (AT) (see Table 4) showed:

$R^2=0.445$, adjusted $R^2=0.439$, meaning GCV explains about 44.5% of the variance in AT; $F=84.051$ ($p<0.001$), indicating a significant equation; GCV's standardized coefficient $\beta=0.667$, $t=9.168$ ($p<0.001$), confirming that green consumption values have a significant positive impact on attitude.

Table 4. GCV-AT Regression Analysis

Coefficientsa						
Model B		Unstandardized Coefficient		Standardized Coefficient	t	Significance
		Std. Error	Beta			
1	(Constant)	1.333	297		4.482	.000
	GCV	.751	.082	.667	9.168	.000
a. Dependent variable: AT						

4.4.2 Hierarchical Regression Test

Hierarchical regression was employed in this study to examine the relationship between green consumption values, attitude toward NEVs, and purchase intention. Two models were proposed: Model 1 only tested GCV's impact on purchase intention; Model 2 tested GCV+AT's impact on purchase intention.

As shown in Table 5, Model 1 had $R^2=0.673$, explaining 67.3% of the variance; Model 2 had $R^2=0.752$ ($\Delta R^2=0.079$, $p<0.001$), with stronger explanatory power than Model 1,

indicating a better model with the mediating variable.

As shown in Table 6, in Model 1, GCV's $\beta=0.820$ ($p<0.001$), indicating green consumption values impact consumers' purchase intention in a positive way significantly, verifying H1. In Model 2, AT's standardized coefficient $\beta=0.494$ ($p<0.001$), indicating attitude toward NEVs significantly affects purchase intention; meanwhile, GCV's $\beta=0.415$ ($p<0.001$), much smaller than that in Model 1, indicating attitude toward NEVs plays a partial mediating role, verifying H2.

Table 5. Hierarchical Regression Analysis

Model Summar					
Model	R	R ²	Adjusted R ²	Estimated Std. Error	Significance
1	820a	673	670	33290	000
2	867b	752	747	29126	000
a. Predictors: (Constant), GCV					
b. Predictors: (Constant), GCV, AT					

Table 6. Hierarchical Regression Coefficients

Coefficientsa						
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Significance
		Std. Error	Beta			
1	(Constant)	383	230		1.664	099
	GCV	909	062	820	14.706	000
2	(Constant)	016	211		076	939
	GCV	459	095	415	4.839	000
	AT	502	087	494	5.759	000
a. Dependent variable: PI						

4.4.3 Impact of Green Consumption Values on Perceived Behavioral Control

The model results of GCV predicting perceived behavioral control (PBC) (see Table 7) showed:

$R^2=0.567$, adjusted $R^2=0.563$, meaning GCV explains

about 56.3% of the variance in PBC; $F=137.516$ ($p<0.001$), indicating a significant equation; GCV's standardized coefficient $\beta=0.762$, $t=11.727$ ($p<0.001$), confirming that green consumption values have a significant positive impact on perceived behavioral control.

Table 7. GCV-PBC Regression Analysis

Coefficientsa						
Model B		Unstandardized Coefficient		Standardized Coefficient	t	Significance
		Std. Error	Beta			
1	(Constant)	739	242		3.056	003
	GCV	762	065	753	11.727	000
a. Dependent variable: PBC						

4.4.4 Hierarchical Regression Test

Hierarchical regression was employed to investigate the link between green consumption values, perceived behavioral control, and purchase intention. Two models were proposed: Model 1 only tested GCV's impact on purchase intention; Model 2 tested GCV+PBC's impact on purchase intention.

As shown in Table 8, Model 1 had $R^2=0.673$, explaining 67.3% of the variance; Model 2 had $R^2=0.808$ ($\Delta R^2=0.135$,

$p<0.001$), with stronger explanatory power than Model 1, indicating a better model with the mediating variable.

As shown in Table 9, in Model 2, PBC's standardized coefficient $\beta=0.559$, $t=8.565$ ($p<0.001$), indicating perceived behavioral control significantly affects purchase intention, verifying H3; meanwhile, GCV's $\beta=0.400$ ($p<0.001$), much smaller than that in Model 1, indicating perceived behavioral control plays a partial mediating role, verifying H4.

Table 8. Hierarchical Regression Analysis

Model Summar					
Model	R	R ²	Adjusted R ²	Estimated Std. Error	Significance
1	820a	673	670	33290	000
2	899b	808	805	25614	000
a. Predictors: (Constant), GCV					
b. Predictors: (Constant), GCV, PBC					

Table 9. Hierarchical Regression Coefficients

Coefficientsa						
Model B		Unstandardized Coefficients		Standardized Coefficients	t	Significance
		Std. Error	Beta			
1	(Constant)	383	230		1.664	099
	GCV	909	062	820	14.706	000
2	(Constant)	-.069	185		-.376	708
	GCV	443	072	400	6.127	000
	PBC	612	071	559	8.565	000
a. Dependent variable: PI						

5. Conclusion

Based on TPB, through empirical analysis of 107 valid samples, this study finds that green consumption values have a significant direct positive impact on NEV purchase intention ($\beta=0.820$, $p<0.001$), explaining 67.3% of the variance. This impact is also indirect through two paths: "attitude toward NEVs" plays a partial mediating role ($\Delta R^2=0.079$, $p<0.001$), and "perceived behavioral control" has a stronger mediating effect ($\Delta R^2=0.135$, $p<0.001$). Moreover, perceived behavioral control has a stronger direct impact on purchase intention ($\beta=0.559$, $p<0.001$) than attitude ($\beta=0.494$, $p<0.001$). In addition, sample characteristics show that highly educated, middle and high-income Gen Z in cities above second-tier have high awareness and purchase intention of NEVs, but actual ownership is less than 15%, indicating a potential gap

between cognition and behavior. Thus, the conclusion is that Gen Z's green consumption values are a core driver of NEV purchase decisions, with both direct and indirect impacts through "attitude" and "perceived behavioral control." Perceived behavioral control plays a more critical role in decision-making, closely related to Gen Z's high attention to purchase controllability (e.g., policy support, facility convenience).

This study provides valuable references for future research on green consumption and NEV purchase behavior, with impacts in both theoretical and practical aspects. First, theoretically, it verifies TPB's applicability in Gen Z consumption scenarios, clarifies how green consumption values influence purchase intention through "attitude" and "perceived behavioral control", provides empirical support for research on the relationship between values and consumption decisions, and enriches the application

of related theories in young consumer groups. Second, practically, the conclusions provide clear directions for NEV enterprises to formulate marketing strategies, such as strengthening the communication of products' environmental attributes to enhance Gen Z's attitude recognition, and optimizing charging facility layout and policy interpretation services to enhance their perceived control. For governments, the results also provide a basis for promoting green consumption among Gen Z, helping to improve infrastructure and subsidy policies targeting at narrowing the gap between cognition and behavior.

Future research should focus on the following directions. First, expand research variables and model dimensions by introducing variables like subjective norms and brand trust to analyze how social circles, KOL influences, or brand differences regulate core paths, enriching the model's completeness and explanatory power. Second, expand the sample coverage and conduct segmented research. The current sample is small and concentrated in highly educated groups; future studies can include Gen Z groups with different incomes and urban tiers, improving conclusions' universality through comparative analysis. Third, focus on the obstacle mechanism of behavior transformation. For the phenomenon of "high intention but low purchase," deeply analyze barriers like price sensitivity and technical anxiety, and explore the transformation path from purchase intention to actual behavior. Finally, conduct dynamic scenario tracking combined with technological iterations (e.g., improved battery life) and policy changes (e.g., subsidy adjustments) to explore the long-term changing rules of Generation Z's perceived behavioral control, providing a more comprehensive perspective for understanding the long-term impact logic of their car purchase decisions.

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