



Research Article

The Impact of the Development Trend and Policy Optimization of NEV on Guizhou Consumers' Usage Behavior Based on Its Natural Environment

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Abstract: The study The Impact of Development Trends and Policy Optimization of New Energy Vehicles (NEVs) on Consumer Usage Behavior in Guizhou explores the relationship between the evolving NEV landscape and consumer behavior in Guizhou, focusing on environmental considerations. It emphasizes that as awareness of environmental issues grows, consumers are more willing to adopt NEVs, influenced by both government policies and social factors. The research highlights how policy optimization—such as financial incentives and educational initiatives—can encourage NEV adoption. It also underscores the importance of social influence in shaping consumer attitudes and behaviors toward sustainable transportation. The study examines these dynamics within the context of Guizhou's natural environment, offering valuable insights into developing a sustainable transportation framework that aligns with both consumer preferences and ecological goals. Using a sample of 390 consumers, the research demonstrates how effective policy and social factors can drive the adoption of NEVs, contributing to a greener future. This study provides important perspectives for policymakers aiming to promote sustainable transportation and environmental awareness.

Keywords: Consumer Behavior; Guizhou; Natural Environment; Social Influence; Trend and Policy Optimization

1. Introduction

Artificial Intelligence The global energy supply currently faces significant challenges that threaten the environment and impact the climate. Key issues such as water pollution, air contamination, ocean degradation, and climate change have escalated into urgent crises requiring immediate and practical solutions (Lin, Boqiang, 2021). To address these environmental concerns, governments and advocacy organizations are actively promoting initiatives to reduce energy consumption and achieve carbon neutrality. A critical component of this strategy is the increasing adoption of hybrid and electric vehicles (EVs), which are recognized as essential to a holistic approach to tackling these environmental issues (Li, Jingjing, Jianling Jiao, Yuwen Xu, 2021). Comprehensive research has been dedicated to evaluating the environmental impact of electric vehicles and examining consumer attitudes and behaviors to identify the key factors motivating individuals to adopt EVs. Government policies play a pivotal role as catalysts in promoting and increasing the adoption of new energy vehicles (NEVs) among consumers (Zuo, Wenchao, Yueqing Li, 2019) Robust governmental support, showcased through various fiscal incentives such as tax breaks and subsidies, as well as the introduction of dual credits, has successfully boosted consumer interest and contributed to the impressive expansion of the NEV market. This collective effort highlights the importance of collaboration between policymakers and the public in addressing the pressing environmental challenges (Yang, Tong, Ziwei Yuan, 2022) This evolution in the NEV sector has not only reshaped market dynamics, fostering increased

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consumer interest and investment, but has also profoundly influenced key elements of China's socio-economic landscape. The integration of NEVs into daily transportation is facilitating a shift towards cleaner energy solutions, contributing to environmental sustainability, creating new job opportunities, and stimulating innovation across various industries. As a result, the impact of NEVs extends well beyond the automotive sector, affecting urban planning, public health, and energy consumption patterns across the nation (Yoon, Y., Chu, T., and Hu, 2022).

2. Research Objectives

This study explores NEV consumers' usage behavior through the development trend and policy optimization of the natural environment, with the following objectives: (1) To examine the influencing mechanisms of enhancing the Guizhou NEV consumers' usage behavior through trend and policy based on government incentives, environmental awareness, and social influence. (2) To offer suggestions for the development trend and public policy optimization on improving Guizhou NEV consumers' usage behavior by enhancing their attention on the natural environment.

3. Theoretical Foundation

Definition of the Theory of Planned Behavior on NEV Usage Behavior Regarding the Trend and Policy Optimization

The Theory of Planned Behavior (TPB) provides a valuable framework for analyzing the factors influencing the adoption of New Energy Vehicles (NEVs), particularly in relation to emerging trends and the optimization of related policies (Hagger, M. S., and Hamilton, 2021). According to TPB, individual behavior is primarily driven by intentions, which are determined by three key elements: attitudes, subjective norms, and perceived behavioral control. In the context of NEVs, there is a notable shift toward more positive attitudes as a result of increasing environmental awareness and a growing emphasis on sustainable transportation. As discussions around climate change and pollution intensify, consumers are increasingly likely to perceive NEVs as advantageous, which enhances their intention to adopt these technologies. To effectively promote NEV adoption, policies need to align with these psychological factors. Implementing strategic communication initiatives can help bolster positive attitudes toward NEVs, while community-based programs can reinforce the subjective norms surrounding their use. Additionally, fostering an environment where consumers feel capable and supported in their decision-making process regarding NEVs can significantly aid in advancing the transition to sustainable transportation (Moons, Ingrid., and Pelsmacker, 2015).

Definition of Technology Acceptance Model on NEV Usage Behavior Regarding the Natural Environment

The Technology Acceptance Model (TAM) serves as a constructive framework for understanding how consumers engage with New Energy Vehicles (NEVs) in relation to environmental stewardship. Central to TAM are two vital concepts: perceived usefulness and perceived ease of use (Sun, Zhiyou, and Lee, 2024). In the realm of NEVs, perceived usefulness embodies consumers' beliefs about the significant environmental advantages these vehicles offer, such as reduced emissions and a decreased carbon footprint. As public awareness of environmental issues continues to grow, more consumers are beginning to appreciate the importance of adopting NEVs as a proactive step towards positively impacting the environment. Furthermore, external factors like government incentives and environmental policies play a crucial role in shaping both perceived usefulness and ease of use. By implementing policies that promote NEV adoption—such as subsidies and the expansion of charging infrastructure—governments can enhance the practical appeal of NEVs while simultaneously reinforcing their environmental benefits. By effectively connecting the advantages of NEVs with consumers' ecological values and facilitating their use, the Technology Acceptance Model can guide impactful strategies aimed at increasing NEV adoption and paving the way for a more sustainable future (Liu, R.; Ding, Z.; Wang, Y.; Jiang, X.; Jiang, X.; Sun, W.; Wang, D.; Mou, Y.; Liu, 2020).

Definition of Terms

- a. Concerns about the environment and a heightened awareness of sustainability are significantly influencing consumer behavior towards New Energy Vehicles (NEVs). Many individuals aim to reduce their carbon footprints and embrace eco-friendly practices. As awareness of climate change grows, NEVs are increasingly seen as alternatives to traditional vehicles that help mitigate pollution and conserve natural resources. Additionally, social dynamics and peer influence play a vital role in promoting these sustainable choices. As more people adopt NEVs, they create a community that values sustainable transportation, inspiring others to make environmentally conscious decisions and contribute to a greener future. Consumer usage behavior towards NEVs is a complex interplay of environmental awareness, perceived benefits, usability, and social dynamics, all of which together drive the shift towards more sustainable transportation options (Pan, Ruoxi., Liang, Yiping., Li, Yifei., Zhou, Kai., and Miao, n.d.)
- b. Government incentives significantly influence consumer behavior related to environmental issues. When policies such as tax credits, rebates, or subsidies are enacted for New Energy Vehicles (NEVs), they alleviate the financial burden on consumers, making these eco-friendly options more appealing. These incentives increase the perceived value of NEVs, encouraging consumers to consider them as a viable alternative to conventional vehicles. Additionally, public awareness campaigns supported by government initiatives play a crucial role in enhancing environmental awareness, educating consumers about the benefits of NEVs, and their role in reducing carbon footprints (Chen, Pei., Selamat, Mohmaad-Hisyam., and Lee, 2025)
- c. Environmental awareness plays a crucial role in shaping consumer behavior towards New Energy Vehicles (NEVs) amid growing environmental concerns. As individuals become more educated about the detrimental effects of conventional vehicles on air quality and climate change, they increasingly acknowledge the necessity of transitioning to sustainable alternatives. This heightened awareness fosters a shift in attitudes, prompting consumers to prioritize eco-friendly options such as NEVs. Consequently, environmental awareness not only enhances understanding of the advantages and practicality of NEVs but also encourages a collective movement towards more sustainable transportation solutions (Arundati, R., Sutiono, H. T., and Suryono, 2020)
- d. Social influence significantly impacts consumer behavior regarding New Energy Vehicles (NEVs), particularly in relation to environmental concerns. As more individuals start using NEVs, they contribute to a cultural shift that emphasizes sustainable transportation, encouraging others to adopt similar practices. This collective behavior often leads to greater acceptance and normalization of NEVs within communities, as the actions of peers and social networks play a crucial role in shaping perceptions. Moreover, consumers often seek validation through their choices, viewing the ownership of NEVs as a demonstration of their commitment to environmental sustainability. This desire for social recognition can enhance individuals' willingness to invest in NEVs, as they aim to maintain a positive image among their peers (Shah, S., and Asghar, 2023)

Conceptual Framework

Understanding how government incentives, environmental awareness, and social influence intricately shape consumer choices is crucial, especially when examining contemporary trends in development and environmental policies. These elements collectively play a significant role in molding consumer behavior and decision-making processes. Government incentives serve as a powerful catalyst for encouraging the adoption of New Energy Vehicles (NEVs). Financial measures such as tax breaks, rebates, and subsidies greatly enhance the affordability of these eco-friendly vehicles. This financial support not only makes NEVs more attractive to potential buyers but also aligns with broader environmental objectives aimed at reducing carbon emissions and fostering sustainable practices (Chao, W., Yao, X., Sinha, P., and Su, 2022) Environmental awareness is another key driver influencing consumer attitudes towards purchasing decisions. As individuals become increasingly informed about pressing environmental issues and the numerous advantages of NEVs—such as reducing air pollution and reliance on fossil fuels—they are more likely to opt for these sustainable alternatives. This heightened awareness fosters a sense of personal responsibility, inspiring consumers to make choices that may involve higher upfront costs in favor of long-term ecological benefits (Kumar, V., & Hundal, 2019)

Additionally, social influence exerts a significant impact on consumer behavior. The actions and choices of friends, family, and peers can substantially sway individual preferences, as people often seek validation and acceptance within their social circles. When individuals observe their friends embracing NEVs or engaging in other sustainable practices, they may feel a compelling urge to follow suit, driven by a desire to conform to prevailing social norms and trends in sustainability (Gnann, 2018). Together, these interconnected factors promote a transformative shift towards more sustainable transportation solutions. This underscores the pressing need for comprehensive policies that address financial incentives, enhance educational initiatives, and leverage social influence effectively. By thoughtfully integrating these components, we can catalyze meaningful changes in consumer behavior, steering society toward a more sustainable future.

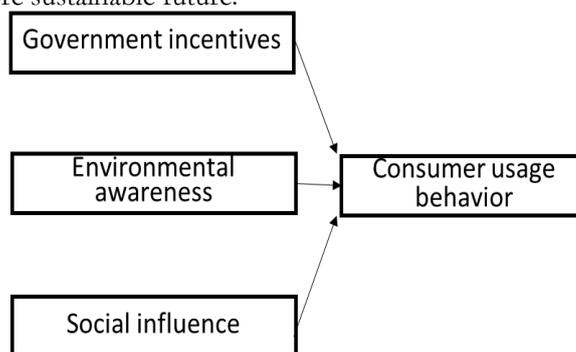


Figure 1. The Conceptual Framework

Research Restriction

Research on the development trends and policy optimization of New Energy Vehicles (NEVs), particularly concerning consumer usage behavior and the natural environment, faces several challenges. One primary limitation is the variability in consumer attitudes and behaviors across different demographics and geographic regions, which complicates the generalizability of findings. Additionally, the rapid evolution of NEV technology and market dynamics can result in outdated data and insights, making it challenging to maintain relevance over time. Furthermore, external factors such as economic conditions, fuel prices, and public perceptions of climate change can introduce confounding variables that influence consumer behavior, making it challenging to isolate the impact of NEVs and policy measures. Lastly, the potential for bias in self-reported data from consumers regarding their motivations and behaviors may further restrict the accuracy of research conclusions. These limitations underscore the need for a nuanced approach to studying the relationship between NEVs, consumer behavior, and environmental policy.

Research Hypothesis

The Correlation between Government Incentives and Consumer Usage Behavior

The hypothesis posits that government incentives influence consumer usage behavior regarding New Energy Vehicles (NEVs) in Guizhou, particularly within the framework of development trends and policy optimization aimed at enhancing the natural environment. It suggests that as government incentives, such as subsidies, tax breaks, and investments in charging infrastructure, increase, consumers in Guizhou will be more likely to adopt NEVs. This correlation is expected to be driven by the reduction of economic barriers associated with purchasing and operating NEVs, thereby making them more attractive to consumers. Additionally, the hypothesis implies that effective policy optimization, which tailors these incentives to the specific needs and preferences of Guizhou's consumers, will further enhance this relationship (Liu, X., Jiang, C., Wang, F., and Yao, 2021)

H1: There is a positive correlation between government incentives and Guizhou consumer usage behavior related to the development trend and policy optimization.

The Correlation between Environmental Awareness and Consumer Usage Behavior

The hypothesis being studied suggests that when people in Guizhou become more aware of environmental issues like pollution and climate change, they are more likely to choose New Energy Vehicles (NEVs). This indicates a connection between people's concern for the environment and their willingness to adopt NEVs, as they recognize the benefits of reducing their carbon footprint and contributing to environmental protection. Effective policies also play an important role in this relationship. Programs like educational

campaigns and incentives that highlight the advantages of NEVs can encourage more people to adopt them. By educating consumers about the environmental impacts and implementing supportive policies, we could see a significant behavior change, leading to more people choosing NEVs as their preferred mode of transport. This shift towards sustainable transportation in Guizhou shows a growing commitment to environmental responsibility (Wang, Z., Ma, Y., Wang, S., and Luo, 2023)

H2: There is a positive correlation between environmental awareness and Guizhou consumer usage behavior related to the development trend and policy optimization.

The Correlation between Social Influence and Consumer Usage Behavior

The hypothesis suggests that social influence is important in shaping how people in Guizhou choose to adopt New Energy Vehicles (NEVs). It highlights the need for better policies and development trends to help the environment. As consumers in Guizhou interact with social networks, see favorable media coverage, and follow cultural norms that support eco-friendly practices, they are more likely to adopt NEVs. This relationship demonstrates the power of positive social support, like seeing friends and community members using NEVs, which can encourage people to choose greener transportation options. Moreover, innovative policies that make use of social influence—like campaigns featuring community leaders or influencers who support NEVs—can strengthen this connection. By creating an environment where eco-friendly behaviors are recognized and promoted, the hypothesis predicts that consumer attitudes will shift towards more acceptance and use of NEVs. This shift can lead to a collective move towards sustainable transportation in Guizhou (Lampo, A., and Silva, 2022)

H3: There is a positive correlation between social influence and Guizhou consumer usage behavior related to the development trend and policy optimization.

4. Research Methods Population and Sample

This research population was selected in Guizhou, China, to study NEV usage behavior in relation to the natural environment. A sample of 390 was collected for this study’s analysis in September 2025 through the WeChat Survey Platform.

This study's minimum research sample size is as follows:

- a. The margin of error (confidence interval) – 95%
- b. Standard deviation 0.5
- c. 95% - Z Score = 1.96
- d. Sample size formula = $(Z\text{-score})^2 * Std\ Dev*(1\text{-}StdDev) / (\text{margin of error})^2$
- e. $(1.96)^2 * 0.5(0.5) / (0.05)^2$
- f. $(3.8416 * 0.25) / 0.0025$
- g. $0.9604 / 0.0025 = 384$
- h. 384 respondents would be needed for this study based on a confidence level of 95%

Research Model Correlation Analysis

Correlation analysis is widely used to measure the degree of association between different variables. The Pearson correlation coefficient is commonly used to test the correlation between variables. The value of the correlation coefficient (r) indicates the strength of the correlation between variables, while the significance level of the correlation is shown in the P- value.

Table 1. Correlation Coefficient Classification.

Correlation coefficient r	Degree of relevance
$r = 1$	Totally correlated
$0.70 \leq r < 0.99$	Highly correlated
$0.40 \leq r < 0.69$	Moderately correlated
$0.10 \leq r < 0.39$	Low correlation
$ r < 0.10$	Weak or unrelated

Correlation Analysis of Government Incentives and Consumer Usage Behavior

The correlation coefficient r between government incentives and consumer usage behavior is 0.802, and $P=0.000$ is less than 0.01. Thus, government incentives significantly.

Table 2. Correlation analysis results between government incentives and usage behavior.

	Government Incentives
Consumer Usage Behavior	1
Sig. (1-tailed) User	
Government Incentives	.802**
Sig. (2-tailed)	(.000)

Correlation Analysis of Environmental Awareness and Consumer Usage Behavior

The correlation coefficient r between environmental awareness and consumer usage behavior is 0.788, and $P=0.000$ is less than 0.01. Thus, environmental awareness significantly

Table 3. Correlation analysis results between environmental awareness and usage behavior.

	Environmental Awareness
Learning Satisfaction	1
Sig. (1-tailed) User	
Environmental Awareness	.788**
Sig. (2-tailed)	(.000)

Correlation Analysis of Social Influence and Consumer Usage Behavior

The correlation coefficient r between social influence and consumer usage behavior is 0.792, and $P=0.000$ is less than 0.01. Thus, social influence significantly correlates with consumer usage behavior.

Table 4. Correlation analysis results between social influence and usage behavior.

	Social Influence
Learning Satisfaction	1
Sig. (1-tailed) User	
Social Influence	.792**
Sig. (2-tailed)	(.000)

5. Conclusions Research Results

The observed positive correlation among government incentives, heightened environmental awareness, and social influence significantly shapes consumer behavior regarding New Energy Vehicles (NEVs) in Guizhou, revealing a comprehensive strategy aimed at fostering sustainable transportation.

Government incentives, which include generous subsidies and tax breaks, effectively reduce financial hurdles for potential buyers. By alleviating the initial costs associated with purchasing NEVs, these incentives enhance their appeal, making them a more viable and attractive option for consumers. As the availability of these financial incentives grows, consumer enthusiasm for adopting greener vehicles also increases, fostering alignment with broader environmental ambitions that seek to reduce carbon footprints (Liu, X., Xie, F., Wang, H., and Xue, 2021)

Moreover, environmental awareness is a critical component in this dynamic. As consumers increasingly recognize the urgent challenges posed by climate change and pollution, their willingness to choose sustainable alternatives, such as NEVs, rises significantly. This growing consciousness not only boosts demand for cleaner technologies but also cultivates an environment that is supportive of government policies designed to encourage eco-friendly choices (Wang, Z., Ma, Y., Wang, S., and Luo, 2023)

Adding another layer to this phenomenon is social influence, which further magnifies the positive effects of these incentives and aware-ness. When individuals witness their peers transitioning to NEVs or actively participating in environmentally responsible behaviors, they are often inspired to make similar choices. This kind of social reinforcement fosters a community ethos that prioritizes sustainability, ultimately increasing the overall acceptance and prevalence of NEVs in the region (Lampo, A., and Silva, 2022)

H1: There is a positive correlation between government incentives and Guizhou consumer usage behavior related to the development trend and policy optimization.

H2: There is a positive correlation between environmental awareness and Guizhou consumer usage behavior related to the development trend and policy optimization.

H3: There is a positive correlation between social influence and Guizhou consumer usage behavior related to the development trend and policy optimization.

6. Managerial Implications

The research findings highlight that consumers in Guizhou are significantly motivated to adopt New Energy Vehicles (NEVs) due to a profound commitment to both environmental sustainability and social responsibility. This creates a distinctive opportunity for automakers to transcend traditional marketing strategies that focus solely on functional attributes or economic incentives. Instead, they can develop a holistic approach that resonates with consumers' deeper values and aspirations. To effectively engage this market, it is essential to position NEVs not just as mere modes of transportation but as potent symbols of a progressive lifestyle that prioritizes community welfare and environmental stewardship. This strategy involves showcasing the company's dedication to social responsibility within the Guizhou community through tangible actions. Automakers could invest in local charging infrastructure to encourage the growth of green technologies, create green job opportunities in the manufacturing and service sectors, and support cultural and educational projects that enrich the local community. By implementing a comprehensive communication plan that addresses both environmental and social dimensions, consumers will be reassured that their choice to purchase an NEV aligns with a company that shares their values. This transforms the act of buying a vehicle into a meaningful, socially conscious decision. Ultimately, for the value-driven consumers in Guizhou, the most effective strategy will be one that convincingly illustrates how adopting an NEV serves as a powerful expression of their dedication to environmental awareness and their desire to foster social progress (Zhao, Y., Hu, Y., and Gong, 2021)

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