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A Review Of Factors Influencing Consumers' Purchase Intention Of New Energy Vehicles

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Abstract:
Driven by increasing environmental concerns, technological advances and increased policy interventions, the global automotive industry is accelerating its transition to sustainable mobility. The production of new electric vehicles (NEVs), including pure electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), has become a key solution to reduce greenhouse gas emissions and reduce dependence on fossil fuels. The transition to new energy vehicles is an important step towards achieving sustainable transport and decarbonisation goals. However, despite the significant advantages of these vehicles in terms of environmental protection, the acceptance of them by consumers in different regions still varies. Therefore, it is necessary to conduct a comprehensive analysis of the factors that affect consumers' willingness to buy. Consumer adoption of new energy vehicles is a complex process that is influenced by a variety of factors, such as technological innovation, policy incentives and socio-economic conditions. This article reviews recent research on influencing consumers' willingness to purchase NEVs, highlighting the multi-dimensional nature of this decision-making process. By exploring factors such as demographics, environmental awareness, vehicle performance, infrastructure availability and policy impact, the study aims to gain a deeper understanding of the drivers and barriers to new energy vehicle adoption. The findings suggest that to accelerate the adoption of NEVs, a comprehensive strategy is needed to address consumer concerns and systemic challenges.
***Key words**: New energy vehicles ; Consumers' purchase intentions*

1. INTRODUCTION

The global push for sustainable mobility has led to a greater focus on new energy vehicles (NEVs) as an important alternative to traditional internal combustion engine vehicles (ICEVs). New energy vehicles (NEVs), which include pure electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs) and fuel cell vehicles (FCVS), show significant potential to reduce greenhouse gas emissions and reduce dependence on fossil fuels. Driven by global technological innovation, policy support and changing consumer preferences, the popularization of new energy vehicles is accelerating. However, the degree of perfection of the charging infrastructure, changes in social and cultural dynamics, and the continuous evolution of market technology still have a profound impact on its adoption model and promotion speed. Despite technological progress and increasing policy support, consumer acceptance of NEVs remains lower than anticipated. A comprehensive understanding of the critical factors affecting consumers' purchasing intentions is essential for policymakers, automakers, and other stakeholders. By synthesizing empirical data and theoretical insights from multidisciplinary research, this review systematically identifies the core determinants of NEV adoption, including policy frameworks, consumer perceptions, market dynamics, and sociocultural influences. Through a rigorous analysis of these factors, this paper integrates the latest evidence from policy reports, market studies, and behavioral science research to refine existing theoretical frameworks and uncover emerging trends. This literature review aims to consolidate recent research findings on the key factors influencing consumers' willingness to purchase NEVs, delineate contributing factors and barriers, address existing research gaps, and

offer actionable recommendations for policymakers and industry stakeholders.

1.1 Background

The transport sector accounts for approximately 24% of global CO2 emissions, with conventional Internal Combustion Engine (ICE) vehicles being the main source of emissions (IEA, 2023). New energy vehicles offer a viable path for decarbonizing the industry, but their market penetration is still below the targets set by many countries. For example, while China dominates global NEV sales as depicted in Figure 1 (59% of total global sales in 2022), regions such as Europe and North America are lagging behind in adoption due to inadequate infrastructure and barriers to consumer behavior (IEA, 2023). Such regional differences highlight the importance of exploring the drivers of consumer behaviour, including regional and universal influences.

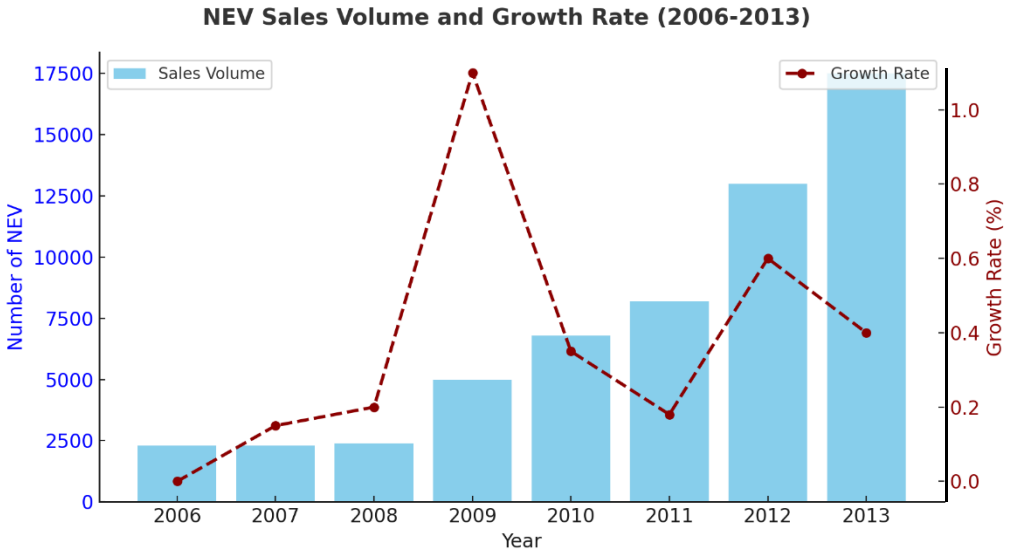

Figure 1. Sales volume and annual growth rate of NEV in China between 2006 and 2013 (Yuan et al., 2015)

1.2 Research Significance

Understanding consumers' willingness to buy is critical to meeting climate goals and driving sustainable industries. However, existing research often focuses on a single factor, such as subsidy policies or charging infrastructure, and lacks a systematic analysis of the interaction of policy, technology, and culture. This review aims to build a coherent and comprehensive theoretical framework by integrating research results from different fields to fill the gaps in current research and provide scientific support for stakeholders to develop systematic strategies for the promotion of new energy vehicles.

2. Demographic and socio-economic factors

2.1 Age and sex

Existing research shows that age and gender have a significant impact on consumer preferences as well as the adoption of new technologies. Bai and Tan (2021) found that older consumers (36-55 years old) are more inclined to buy new energy vehicles than younger consumers (18-35 years old). This could be attributed to its more stable lifestyle and sensitivity to the long-term cost savings of NEVs. In addition, gender also plays an important role in this process. Several studies have shown that as men generally show higher technological interest and environmental awareness, they are more likely to choose new energy vehicles (Bai & Tan, 2021). At the same time, Li et al. (2020) pointed out that the young generation (such as Generation Z), which is greatly influenced by social media and has a deeper understanding of technology, has a higher acceptance of new energy vehicles (Aimee et al., 2020).

2.2 Income and education level

Income and education levels are central factors in determining consumer purchasing power and awareness. High-income households can usually afford the higher initial purchase cost of new energy vehicles, while consumers with higher education are more inclined to choose new energy vehicles due to their stronger environmental awareness and understanding of new technologies (Bai & Tan, 2021; Li et al., 2020).

2.3 Cultural and regional differences

Cultural and geographical differences have had a profound impact on the adoption of new energy vehicles. For example, in the Asia-Pacific region, the consumption preferences and behavioral characteristics of Generation Z consumers (those born between 1996 and 2010) are significantly different from those of the older generation, which further affects the market performance of new energy vehicles. They are heavily influenced by social media, value personalized brands, and have strong environmental awareness. However, despite this, they may not always be willing to pay a premium for environmentally friendly products (Aimee et al., 2020).

3. Environmental awareness and attitude

3.1 Environmental Problems

Environmental awareness and attitude is one of the important factors to promote the adoption of NEVs as illustrated in Figure 2. Consumers concerned about environmental issues are more likely to view NEVs as a sustainable transportation solution. Studies have shown that environmentalists are more likely to choose hybrid or electric vehicles as a means of mobility than people who are less environmentally conscious (Kahn, 2007; Axsen & Kurani, 2013).

3.2 Perception of environmental benefits

The environmental benefits of new energy vehicles, such as reduced emissions and lower carbon footprint, play an important role in influencing consumers' willingness to buy. However, its actual environmental impact is constrained by a number of factors, including the power source structure and vehicle life cycle assessment (Xia & Li, 2022). The level of consumer cognition may be influenced by the popularization of education and publicity. Anderhofstadt & Spinler (2020) research shows that German consumers have a high degree of environmental recognition of new energy vehicles. However, Zhou & Albayati (2024) attributed the rapid growth of China's NEV market to the "green lifestyle" campaign advocated by the government. In addition, Rong et al. (2023), extending their study based on Planned behavior Theory (TPB), found that values centered on self-transcendence (such as environmental protection awareness) significantly promoted the adoption rate of NEVs after subsidy policies, especially among the younger generation. This conclusion is in contrast to the skeptical findings of He et al. (2024) regarding the middle-aged group.

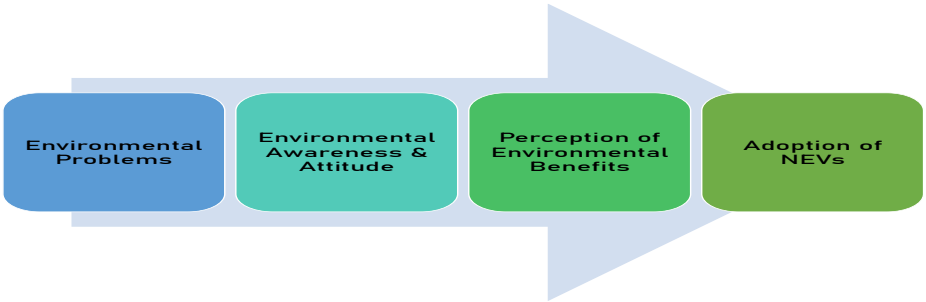

Figure 2. Pathway from environmental problems to the adoption of NEVs

4. Technical and performance factors

4.1 Vehicle quality and reliability

The quality and reliability of vehicles are the core factors that determine consumers' willingness to buy. If consumers believe that new energy vehicles have high reliability and good quality, they are more inclined to choose such products. However, issues such as battery life, charging time and overall vehicle performance remain major obstacles (Bai & Tan, 2021; Li et al., 2020).

4.2 Range anxiety

Range anxiety, the fear of running out of batteries while on the road, is one of the main concerns for potential NEV buyers. The coverage and accessibility of charging infrastructure is critical to alleviating this anxiety. Studies have shown that when consumers can easily use fast charging facilities, their acceptance of new energy vehicles will be significantly improved (Yu et al., 2021; Browne et al., 2012). Perceived risks, such as range anxiety and battery life issues, remain key factors hindering market penetration. Wang Wen et al. (2023) pointed out that charging time and infrastructure construction were the top concerns of Chinese respondents.

4.3 Technological Progress

The rapid development of battery technology and charging infrastructure is of great significance to enhance the attractiveness of new energy vehicles. Innovative technologies such as solid-state batteries and wireless charging are expected to significantly enhance consumer confidence and promote market penetration (Chen et al., 2021). Although both Chen et al. (2021) and Xia & Li (2022) discussed technological risks, their emphases were different. Through systematic risk analysis, Chen et al. pointed out that battery safety and recycling are key bottlenecks in the development of the industry, and called for the development of a unified industry standard; Xia and Li, based on the Life cycle assessment (LCA) approach, emphasize the advantages of new energy vehicles in terms of carbon emission reduction, while pointing out their disadvantages in terms of mineral resource consumption. The former focuses more on industry risk management, while the latter focuses on environmental tradeoff analysis. Chen and others advocate stronger regulation, while Xia and Li suggest accelerating clean energy integration. Both studies agree that circular economy strategies, such as battery recycling, are essential to mitigate the negative impacts of NEVs. MarkLines (2024) reports that solid-state battery technology is expected to achieve a cost reduction of 40% by 2030, echoing the battery safety concerns raised by Chen et al., while challenging Xia and Li's warnings about resource depletion by introducing alternative materials.

5. Economic Factors

5.1 Purchase Cost and Incentives

The high initial purchase cost of NEVs remains a significant barrier to widespread adoption. However, government subsidies and incentives, such as purchase tax relief and charging facility subsidies, have been shown to significantly influence consumer purchase intentions (Bai & Tan, 2021; Li et al., 2020). In China, the government has implemented various subsidy policies to promote NEV adoption, with mixed results (Zhang & Cai, 2020).

5.2 Lifecycle Cost Savings

While the initial cost of NEVs is high, they offer significant lifecycle cost savings due to lower operational and maintenance costs. Consumers who are more sensitive to long-term cost savings are more likely to consider NEVs as a viable option (Caperello & Kurani, 2012).

6. Policy and Infrastructure Factors

6.1 Government Policies

Government-led infrastructure development remains a cornerstone of NEV adoption. China's 2030 charging infrastructure roadmap exemplifies strategic policy alignment with market needs. The State Council's 2021 directive (Global Times, 2021) emphasized intelligent charging networks and grid modernization, while recent initiatives (Xinhua, 2023; China Daily, 2025) prioritize rural coverage to bridge urban-rural adoption gaps. A ScienceDirect (2020) study modeled how public and home charging accessibility boosts NEV sales by 25–30%, particularly in regions with high ICE dependency.

Government policies are universally recognized as primary drivers of NEV adoption. Subsidies and tax incentives directly reduce upfront costs, a significant barrier for consumers. For instance, the research conducted by Bai and Tan (2021) demonstrates that the subsidy program implemented in China from 2009 to 2022 has substantially accelerated the growth of new energy vehicle (NEV) sales, maintaining an annual growth rate within the range of 12% to 18%. Concurrently, Azarafshar and Vermeulen's (2020) study reveals that Canada's provincial tax rebate policy successfully enhanced the market penetration rate of NEVs by 15%-30%. Nevertheless, as Wang et al. (2019) emphasize, abrupt reductions in subsidies can lead to market instability, thereby highlighting the necessity of gradual policy adjustments. Moreover, regulatory measures such as emission standards and the planned phase-out of internal combustion engine vehicles have also contributed to the increased adoption of NEVs to a certain extent. By establishing an information asymmetry model between the government and manufacturers, Zhang and Cai (2020) examined the influence of incomplete information on subsidy efficiency and recommended that adaptive policies should be dynamically adjusted based on market maturity. In contrast, Adu-Gyamfi et al. (2022) underscore the significance of innovative solutions like battery swapping technology in mitigating range anxiety, while noting that their large-scale implementation requires standardized regulations. Overall, government policies have been instrumental in promoting the adoption of NEVs. Numerous countries have implemented diversified policy measures, including purchase subsidies, tax incentives, and infrastructure support, to encourage consumers to opt for NEVs. However, the actual effectiveness of these policies varies depending on market conditions and consumer behavior (Li et al., 2020; Zhang & Cai, 2020). Zhao et al. (2021) and Zhang and Cai (2020) analyzed the efficacy of subsidies from different perspectives. The former utilized a three-stage evolutionary game model to simulate the diffusion process of NEVs within network topology . The latter analyzes the information asymmetry between the government and the manufacturer based on the signal game model, and emphasizes that the subsidy policy should match the industry life cycle. Specifically, early-stage R&D subsidies help promote technological innovation, while late-stage market subsidies should focus on infrastructure development and consumer incentives. Despite differences in their analytical frameworks, both agree that dynamic subsidy frameworks need to take into account market structure and life cycle stages.

Table 1. Summary of key methodologies, insights, and policy recommendations on NEV subsidies

Factor	**Zhao et al. (2021)**	**Zhang & Cai (2020)**	**Wen Wang et al. (2023)**
Methodology	Evolutionary game theory, network simulations	Signaling game model, industry lifecycle analysis	Empirical matrix model, SPSS analysis

Factor	Zhao et al. (2021)	Zhang & Cai (2020)	Wen Wang et al. (2023)
Key Insight	Subsidy thresholds depend on network topology	Subsidies must evolve with industry maturity	Economic/tech factors dominate purchase intent
Policy Recommendation	Tailor subsidies to market structure	Stage-dependent subsidy allocation	Prioritize charging infrastructure investment

Wang et al. (2019) further assessed the risk of sudden subsidy removal using a system dynamics model, predicting that NEV sales could fall by 42% in the absence of complementary policies (such as driving restrictions or NEV mandates). This result is consistent with Zhao et al. 's view of gradually scaling up the network, but contradicts the hypothesis of seamless subsidy transition proposed by Zhang and Cai.

6.2 Charging Infrastructure

The improvement of charging infrastructure is crucial to alleviate range anxiety and enhance consumer confidence (Yu et al., 2021; Browne et al., 2012). In China, the government has made the construction of charging facilities one of its priorities to support the development of the NEV market (Zhang & Cai, 2020). With the rapid adoption of new energy vehicles, China's charging infrastructure has also achieved significant expansion. The development of charging facilities can not only alleviate consumers' charging anxiety, but also be seen as an important driving force to promote clean energy transition and regional economic growth. For example, in places such as Fujian, local governments are actively promoting the upgrading of smart charging infrastructure and distribution networks to meet the growing demand. It is expected that by 2030, China will build a high-quality charging network covering both urban and rural areas, thus providing a solid guarantee for the widespread use of new energy vehicles. The guideline issued by The State Council clearly emphasizes the key significance of the construction of charging infrastructure for the popularization of new energy vehicles. Local governments are also accelerating related projects in response to the rapid growth of the new energy vehicle market. These efforts are expected to significantly increase the number of charging stations, effectively addressing consumer concerns about range anxiety.

The role of charging infrastructure in driving the Chinese electric vehicle market has been modeled and analyzed, clearly reflecting the key position of public and home charging facilities. At present, China is accelerating the expansion of the charging network in rural areas to meet the growing demand for new energy vehicles. In addition, advances in solid-state battery technology and hybrid power systems have significantly promoted consumer acceptance of new energy vehicles. The popularity of charging facilities has enabled more families to use new energy vehicles for long-distance travel during holidays, further highlighting the central role of charging infrastructure in promoting the popularity of new energy vehicles. Yu et al. (2021) optimizes charging station investment strategy through game theory and emphasizes the importance of public-private cooperation in reducing construction costs. Zhao et al. (2021) studied the subsidy diffusion effect based on a complex network model, and the results showed that infrastructure development amplified the policy effect by 20%-35%. Despite the rapid expansion of charging networks driven by top-down policies, regional imbalances remain significant. For example, the Anhui provincial government (2023) reports that rural charging networks, while effective in alleviating range anxiety, face sustainability challenges due to high maintenance costs in low-density areas. Future studies should compare different models (such as public-private partnerships in the EU) in depth to assess their long-term sustainability potential.

6.3 Policy Coordination

Effective policy coordination among national, regional and local governments is a core element for the successful implementation of the new energy vehicle promotion strategy. The Policy Dependence Mapping (PDM) method proposed by Zhang and Cai (2020) reveals the importance of the interdependence between policies at all levels, which is crucial for achieving the goal of popularization of new energy vehicles. Most of the existing policy studies focus on fiscal incentives, but often ignore the impact of regional socioeconomic differences. For example, Yu et al. (2020) showed that subsidy policies mainly benefit urban high-income groups, thus exacerbating the equity gap. Therefore, future policy design needs to strike a balance between universal incentives and targeted programs for vulnerable groups to ensure inclusive and fair policies.

7. Social and behavioral factors

7.1 Social influence and peer effect

Social influence and peer effect play an important role in the formation of consumers' purchase intention. When consumers observe positive usage experiences and recognition in social networks, their purchase intention is significantly enhanced (Axsen et al., 2009; Zhang et al., 2011). Cultural norms and social influences profoundly influence the adoption decisions of new energy vehicles through peer effects and status signals. Tan & Rong Onnam (2024) found that middle-aged men tend to regard new energy vehicles as a symbol of modernity and social responsibility, which further strengthens their purchase intention. However, sociocultural studies often rely on self-reported data and may carry the risk of bias in social expectations. To this end, He et al. (2024) used grounded theory interviews to reveal how group psychology (such as peer comparison) and distrust in the reliability of new energy vehicles inhibit adoption behavior. This is in contrast to the quantitative study by Wang Wen et al., highlighting the value of mixed research methods. The research shows that consumers' purchase intention is significantly affected by perceived usefulness, perceived ease of use and perceived risk, in which attitudinal ambivalence plays a partial mediating role. The extended Technology Acceptance Model (TAM) framework (ScienceDirect, 2023) further validates this conclusion, pointing out that perceived utility (e.g., cost savings) and perceived ease of use (e.g., ease of charging a device) are the main factors driving consumer decision making. Perceived risks, such as battery performance degradation, have led to a 12-15% drop in product adoption. In addition, according to MDPI (2020), specific policy combinations, such as providing recycling incentives, can significantly improve the perceived usefulness of consumers, especially among ecologically conscious target groups. In China, "face consciousness" and green peer pressure significantly influence the adoption behavior of new energy vehicles (Frontiers in Psychology, 2022). Urban consumers gradually regard NEVs as status symbols, a trend consistent with the findings of Zhou & Albayati (2024) on the government-led "green lifestyle" movement. Conversely, Beijing's lower-income groups prioritize policy benefits (e.g., license plate quotas) over environmental motives (SHS Web of Conferences, 2023), highlighting socio-economic stratification.Zhou & Albayati (2024) and Tan & Roung Onnam (2024) examine cultural drivers but differ in scope. Zhou & Albayati analyze China's government-led "green lifestyle" campaigns, linking NEV adoption to status signaling (e.g., NEVs as symbols of modernity). Tan & Roung Onnam, however, apply perceived value theory to show that middle-aged consumers prioritize functional benefits (e.g., cost savings) over status. Zhou & Albayati emphasize collective norms ("mianzi"), while Tan & Roung Onnam focus on individual utility. The former targets urban elites, the latter middle-aged pragmatists. Both studies confirm that cultural narratives (e.g., nationalism, modernity) can amplify policy effectiveness if aligned with consumer values.

Cross-cultural comparisons are limited. While “mianzi” drives Chinese adoption, European studies (Anderhofstadt & Spinler, 2020) emphasize individualism and environmental identity, suggesting tailored marketing strategies are essential.

7.2 Brand and Consumer Trust

Brand reputation and consumer trust are critical factors influencing NEV adoption. Consumers are more likely to purchase NEVs from well-known and trusted brands, as they perceive these vehicles to be of higher quality and reliability (Bai & Tan, 2021).

Cross-cultural studies are sparse. Most research focuses on China and Europe, neglecting emerging markets like India and Southeast Asia. Additionally, the role of emotional appeal (e.g., brand prestige) in NEV marketing remains underexplored.

7.3 Consumer Preferences and Personalization

Consumer preferences for personalized and customized products are increasingly influencing purchase decisions. NEV manufacturers need to offer a range of options to meet the diverse needs and preferences of consumers, including design, features, and performance (Aimee et al., 2020).

Consumer cognition and attitudes are pivotal in bridging the "attitude-behavior gap" in sustainable consumption. Environmental awareness positively correlates with NEV adoption, yet its impact is moderated by practical concerns. Li et al. (2021) found that Chinese consumers prioritize cost savings and fuel efficiency over ecological benefits, aligning with Xia & Li (2022), whose life-cycle analysis revealed misconceptions about NEV environmental impacts (e.g., battery production emissions).

Wen Wang et al. (2023) and Li et al. (2022) explore consumer attitudes but differ in theoretical grounding. Wen Wang et al. apply a matrix model to categorize factors (economic, technological, political) influencing Chinese NEV purchases, identifying economic and technological factors as dominant. Their survey of 526 consumers reveals that charging infrastructure and battery longevity are top concerns. Conversely, Li et al. (2022) integrate BRA theory and environmental cognition, finding that perceived value and environmental altruism outweigh economic factors among eco-conscious demographics.

Wen Wang et al. target general Chinese consumers, while Li et al. emphasize urban, tech-savvy cohorts. Wen Wang et al. use empirical categorization, whereas Li et al. employ psychological constructs (e.g., perceived risk). Both studies underscore the attitude-behavior gap, where practical concerns (e.g., charging time) often override environmental intentions.

8. Technological and Market Evolution

8.1 Technological Innovations

Rapid technological innovations in the NEV sector are essential for overcoming existing barriers and enhancing consumer adoption. Advances in battery technology, charging infrastructure, and vehicle performance are critical for improving the attractiveness of NEVs (Chen et al., 2021).

Technological advancements in battery energy density and cost reduction enhance NEV competitiveness. Chen et al. (2021) identified battery safety and recycling as critical risks, while Rong et al. (2023) argued that subsidy withdrawals could spur innovation, as seen in Tesla’s market-driven success.

Most studies assume linear technological progress, ignoring potential disruptions (e.g., solid-state batteries). Furthermore, the secondary market for NEVs (e.g., resale value) is rarely addressed, deterring cost-sensitive consumers.

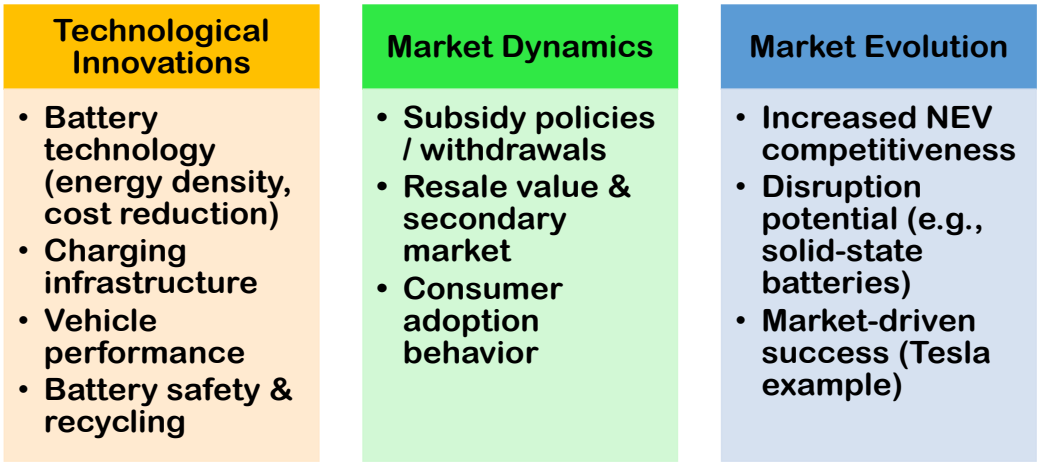

Figure 3. Technological and market evolution in the NEV sector

8.2 Market Evolution and Consumer Adaptation

The development of the new energy vehicle market has shown significant characteristics such as increasing consumer awareness, accelerating technological innovation and strengthening policy support. However, consumer adaptation to new technologies and changes to market conditions remain a complex and multi-dimensional process, influenced by a number of factors, including economic incentives, socio-cultural influences, and personal preferences (Bai & Tan, 2021; Li et al., 2020). Among them, the improvement of charging infrastructure is considered to be a key link to enhance consumer confidence. The widespread deployment of fast charging stations makes the use of NEVs in high-demand scenarios such as the tourist peak season possible (China Daily, 2025), thus effectively alleviating historical concerns about the feasibility of long-distance driving. In addition, breakthroughs in solid-state battery technology (MarkLines, 2024) are expected to further improve charging efficiency and endurance, thereby gradually reducing the market's dependence on subsidy policies.Technological acceptance models further elucidate adoption barriers. The PLS-SEM analysis (Heliyon, 2024) identified vehicle quality and after-sales service as key predictors of NEV acceptance, surpassing even price sensitivity. This aligns with Rong et al. (2023), who argued that post-subsidy markets prioritize product reliability over fiscal incentives.

Most infrastructure studies focus on quantitative metrics (e.g., charger density), neglecting qualitative aspects like user experience. For example, Ant Forest's gamified carbon-tracking app (Journal of Environmental Management, 2024) increased NEV interest by 18% through behavioral nudges, suggesting hybrid digital-physical strategies could enhance engagement.

8.3 Future Trends and Challenges

Looking ahead, the trend of the new energy vehicle market will be driven by continued technological innovation and policy adjustments. Consumer acceptance of new energy vehicles is influenced by policy support, technological progress, consumer awareness and market dynamics. Therefore, building a high-quality charging infrastructure system, promoting technological innovation, and developing supportive policies will be the core strategies to promote the widespread adoption of new energy vehicles by consumers. Future research should focus on in-depth analysis of the impact of these key factors on consumer behavior and long-term market trends. At the policy level, it is recommended to gradually reduce direct subsidies and guide the development of the industry through market-based means such as carbon pricing mechanisms.

At the same time, subsidy resources can be more invested in infrastructure equity projects, such as subsidies for charging facilities in rural areas, to avoid regional development

imbalances caused by urbanization tendencies. Technology: AI-driven charging optimization and battery-as-a-service models. Prioritize R&D in battery recycling and fast-charging solutions to address lifecycle concerns. Consumer Engagement: Gamified apps to educate users on NEV benefits. Leverage cultural narratives (e.g., "mianzi") and digital platforms to reduce attitudinal ambivalence.Global Equity: Tailored programs for low-income and rural populations. Adopt hybrid infrastructure models (e.g., EU's public-private partnerships) to balance scalability and sustainability. Infrastructure Intelligence: China's 2030 vision integrates smart grids and vehicle-to-grid (V2G) technologies to optimize energy use (Global Times, 2021).Battery technology innovation: It is anticipated that the cost of hybrid power systems and solid-state batteries will decrease by 40% by 2030, thereby significantly accelerating their adoption in rural regions. Behavioral intervention strategy: The digital platform exemplified by Ant Forest has effectively demonstrated how environmental awareness can be translated into tangible purchasing behavior for new energy vehicles through technological means.

9. CONCLUSION

This section provides a critical evaluation of research methodologies, theoretical frameworks, and findings related to the adoption drivers of new energy vehicles (NEVs), with an emphasis on the influence of policy design, consumer behavior, and socio-cultural dynamics. By conducting a comparative analysis with literature addressing similar topics but differing in scope, context, or analytical methods, this study reveals that NEV adoption is driven by multi-level interactions such as policy adaptability, trust in technology, and cultural resonance. For instance, Zhao et al. (2021) and Zhang & Cai (2020) offer complementary insights from the perspective of subsidy design; research on consumer behavior (Wen Wang et al., 2023; He et al., 2024) further underscores the significance of region-specific behavioral interventions. Future studies should strive to integrate macro-level policy modeling with micro-level cultural analysis to bridge the gap between theoretical frameworks and practical applications.

This review synthesizes four key and interdependent factors influencing NEV purchase intentions: (1) policy coherence (balancing subsidies with infrastructure investment), (2) consumer education (addressing misconceptions regarding costs and environmental benefits), (3) market innovation (expanding fast charging networks and advancing battery recycling technologies), And (4) cultural coherence (harnessing social norms to facilitate a green transition). Given the complexity and interdisciplinary nature of this field, it is imperative to enhance the integration of comprehensive research across multiple disciplines, including behavioral economics, engineering, and sociology, in order to construct a more comprehensive and systematic theoretical framework.

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