Influencing Factors and Enhancement Strategies of Consumer Perceived Value in Used Electric Vehicles

Yan Song[a], Gumporn Supasettaysa[b], Thanaphon Ratchatakulpat[c]

Faculty of Business Administration, Rajamangala University of Technology Phra Nakhon, Bangkok 10300, Thailand

[a]yan-s@o365.rmutp.ac.th, [b]gumporn.s@rmutp.ac.th, [c]thanaphon.r@rmutp.ac.th

Abstract

With the rapid development of the new energy vehicle industry, the used electric vehicle (EV) market possesses significant potential. However, major challenges in the market, like uncertainty about quality due to uneven information and the absence of a system to assess the remaining value of power batteries, have seriously limited both how much value consumers see in these vehicles and the overall growth of the market. Based on the consumer perceived value theory, this study performs an in-depth analysis of the used EV market characteristics, with the dual objectives of exploring key factors affecting Chinese consumers' perceived value of used electric vehicles (EVs) and advancing the application of this theory in the used EV domain. At the same time, feasible strategies are proposed to address these influencing factors to improve consumer acceptance of used EVs and promote the healthy development of the market.

Keywords

Used EV, Consumer Perceived Value, Influencing Factors.

1. Introduction

The EV has experienced accelerated growth, driven by growing environmental awareness and technological advancements in sustainable transportation. IEA data shows that by 2024, EVs will have a market share of 45% in China, 25% in Europe, and more than 11% in the United States. Concurrently, rising EV adoption is projected to drive a corresponding expansion in the used EV market (Li & Cronje, 2023). The global used car market is estimated to be $1.67 trillion in 2023 and is expected to reach around $3.05 trillion by 2033 (Patil et al., 2024). China's used EV market is also growing rapidly. 1,128,500 used new energy vehicles were traded in 2024, a 47.9% increase from the same period in 2023. However, compared to the total used car market volume of 19,614,200 units traded in the year, the share of used EVs was only 5.8%, which is still at a low level (Association, 2025). This data suggests that despite the significant growth rate of the used EV market, there is still much room to increase its penetration in the overall used vehicle market, and that there is a huge potential for future growth, which necessitates focusing on it and making it more attractive to customers. However, global consumers, including those in China, are not welcoming of used EVs (Raymunt, 2023).

In the field of consumer behavior, previous studies have extensively explored the factors influencing EV purchase intentions. However, few of them have focused on used EVs. Based on the theory of consumer perceived value, this paper conducts an in-depth analysis of the characteristics of the used EV market, aiming to explore the key factors affecting Chinese consumers' perceived value of used EVs, and then improve the application of the theory of consumer perceived value in the field of used EVs.

2. Consumer Perceived Value Theory

Perceived value theory suggests that consumers' purchasing behavior depends not only on the objective attributes of a product or service, but also on the value consumers subjectively perceive for it.

2.1. The Concept of Consumer Perceived Value

Various definitions of "perceived value" are provided in the literature. Kotler and Levy (1969) argue that the perceived value of a consumer's brand is a prerequisite for consumer satisfaction, which is one of the earliest discussions of the concept of consumer perceived value. Zeithaml (1988) argues that the perception of value is highly individualized and unique, and that what consumers get is different from person to person. What consumers get varies from person to person. Some focus on quantity, others seek high quality, and still others value convenience. And the terms of payment also vary from person to person, with some focusing only on money spent and others on time and effort. Consumer perceived value (CPV) is the consumer's overall evaluation of the utility of products and services after weighing the trade-off between giving and getting when acquiring them.

2.2. The Component of Consumer Perceived Value

Sweeney and Soutar (2001) categorized consumer perceived value into four dimensions, namely functional, social, price, and emotional value.

2.2.1. Functional Value

Functional value is the utility that consumers derive from the perceived quality and expected performance of a product (Sweeney & Soutar, 2001). For example, buying a car brings a lot of convenience to one's work and life, which is a reflection of functional value. Consumers primarily purchase a product based on its function and performance. In marketing, functional value usually refers to the functions or problems that a product or service can fulfill or solve and the extent to which these functions and solutions match the actual needs and expectations of consumers.

2.2.2. Price Value

Price value centers on whether consumers perceive the price as matching the benefits provided by the product. In other words, price value refers to the utility perceived by consumers in the short or long term based on cost savings and whether the product or service is considered worth the price (Sweeney & Soutar, 2001). Price value encompasses not only economic costs but also non-economic costs (e.g., time, effort), representing a comprehensive assessment by consumers of the relationship between price and overall benefits.

2.2.3. Social Value

When making a purchase, consumers seek to express their identity, enhance their status, gain social recognition, and strengthen their self-perception. They also derive perceived benefits from a product's association with a particular social class, status, or group (Reed, 2002). Social value, as one of the important dimensions of perceived value, reflects the social recognition, status enhancement, and sense of belonging to a group that consumers obtain through the purchase and use of a product or service. For example, when a consumer purchases a specific brand of electronic device or a stylish dress and receives praise or recognition from others, it reflects the real-world social value of that product.

2.2.4. Emotional Value

Emotional value refers to the emotional response that consumers experience during the consumption process, such as pleasure, excitement, security, and a sense of belonging (Arslanagic-Kalajdzic & Zabkar, 2017). Unlike functional and social value, emotional value

focuses on the subjective feelings of the consumer. This emotional experience directly affects the consumer's overall evaluation of the product or service and willingness to purchase (Prabowo & Aji, 2021).

3. Analysis of Consumers' Perceived Value of Used EVs

3.1. Functional Value of Used EVs

The functional values of used EVs, such as reliability, ride comfort, ease of use or operation, range, and charging time, have a significant impact on their market acceptance (Zhang et al., 2013). EVs have the advantages of fast acceleration and smooth driving, which can provide a good driving experience even for used vehicles. Modern EVs are usually equipped with various driver assistance and smart connectivity features, which can also be used in used cars, significantly improving driving convenience and safety, which is quite attractive to consumers.

However, the main issues that urgently require attention are consumers' concerns about the range and maintenance of used EVs. Therefore, the completeness of charging infrastructure, technical reliability, and after-sales service directly affect consumers' perception of the functional value of sused EVs.

3.2. Price Value of Used EVs

Price value is the consumer's perception of the reasonableness of the price of a used EV. The price advantage of used EVs over new vehicles is an important factor in their appeal to consumers. Charging EVs at a lower cost than refueling traditional fuel vehicles enhances consumers' perception of the price value of used EVs. The price value of used EVs is a comprehensive assessment by consumers of price and vehicle performance, quality, cost of use, and other factors.

Factors affecting the price value of used EVs include initial purchase price, battery status, range, make and model, policies and subsidies, insurance costs, exterior and interior, and technical configuration (Roberson et al., 2024; See et al., 2024). For example, brands such as Tesla tend to have higher price values for their used cars due to their technological advantages and market reputation (Mukesh & Narwal, 2023). Consumers will take these factors into consideration when purchasing and choose the vehicle that offers the best value for money.

3.3. Social Value of Used EVs

Social value plays an important role in the consumption of used EVs, which covers the social identity, sense of group belonging, and the demonstration of environmental awareness and status symbols that consumers obtain through the purchase and use of such vehicles (Wang et al., 2024). First, driving an EV is seen as an environmentally friendly behavior, and consumers gain social identity by demonstrating their environmental awareness through the purchase of used EVs. Second, EVs are portrayed in consumers' minds as more than just a means of transportation, but also as a reflection of lifestyle and values. Purchasers of EVs are often regarded as a forward-looking, innovative and socially responsible group. In addition, EV owner groups, such as the Tesla Owners Club, provide consumers with a social platform that strengthens their connection and sense of belonging. This community experience further enhances the social value of EVs.

3.4. Emotional Value of Used EVs

In the EV sector, emotional values may include such things as driving pleasure, environmental responsibility, social identity, and excitement about new technology. EVs represent the future direction of technology, and consumers experience a sense of technological and psychological satisfaction by purchasing a used EV. Purchasing used EVs is considered an environmentally responsible behavior that extends the service life of the vehicle and reduces the environmental

impact of its life cycle. Consumers are able to experience a sense of accomplishment in contributing to environmental protection, thus enhancing their emotional value. As a symbol of green mobility, EVs enable consumers to gain identity in social situations.

4. Determinants of Consumer Perceived Value in Used EVs

4.1. Uncertainty about Vehicle Quality

Uncertainty in the vehicle quality of used EVs can have an impact on consumers' perceived functional value and reduce willingness to buy. Uncertainty in vehicle quality is mainly reflected in battery health, technology updates, and software compatibility, as well as vehicle history and usage. Batteries are the core component of EVs, and their health directly affects the range and service life of the vehicle. Used vehicles may have outdated software versions or hardware that does not support the latest features, resulting in outdated technical performance. Historical usage of used EVs (e.g., accident records, maintenance records, mileage, etc.) Lack of transparency about a vehicle's history increases consumers' perception of risk, which reduces their willingness to pay. These uncertainties reduce consumers' trust and perceived value of used EVs.

4.2. Consumer Characteristics

Consumer characteristics significantly influence the perceived value of used EVs, mainly in terms of personal environmental awareness, knowledge level and technology acceptance. Consumers with higher environmental awareness are more likely to recognize the sustainability value of used EVs, despite the uncertainty of their battery health status. Consumers' knowledge of EV technology, performance, and battery life directly affects their judgment of the value of used EVs (Larson et al., 2014). The more technologically knowledgeable consumers are, the more rationally they can assess their value and the more inclined they are to purchase used EVs. In addition, consumers' knowledge of EV technology influences their perceived value. Consumers who are more technologically receptive are more concerned about the vehicle's smart features and potential for software updates, while technologically conservative consumers are skeptical about its performance and technology and underestimate its value .

4.3. Policy and Market Environment

Government support for EV acquisition subsidy policies, acquisition tax exemption policies, and used car trading policies directly affect consumers' perceived value of used EVs. The government's purchase subsidies for new energy vehicles not only stimulate consumption in the new car market, but also indirectly promote the activity of the used EV market, affecting its supply-demand relationship and price level. In China, subsidy policies tend to be oriented towards new cars, and used cars lack incentives. In addition, the market environment (including market maturity, the degree of improvement in charging infrastructure, and advances in battery technology) determines the liquidity and residual value level of used EVs. Market supply and demand, the degree of industry standardization, and the transparency of used car platforms also affect consumer confidence and acceptance of used EVs.

5. Discussion and Recommendations

5.1. Strengthening Brand Trust and Ensuring Market Transparency

To address the quality uncertainty of used EVs, we need to construct a dual-wheel drive system based on brand trust and market transparency. Consumers have higher trust in well-known brands and consider their product quality, technical reliability, and after-sales service to be more guaranteed, which enhances the perceived value of used EVs (Liao et al., 2017). Used EVs

from well-known brands (e.g., Tesla, BYD) usually have higher perceived value. Consumers prefer brands with excellent market reputation and reliable quality because trust reduces perceived risk and enhances purchase intention (Chaudhuri & Holbrook, 2001).

In addition, a multi-stakeholder governance framework should be implemented to address the challenges of information asymmetry in the used EV market. First, a reliable information website run by a government agency or industry group should be created to gather important vehicle information, such as maintenance history, battery health reports, and accident records, and make it available to consumers in real-time. At the same time, blockchain-enabled traceability systems should be deployed to record vehicle lifecycle data from manufacturing, use, and maintenance to end-of-life recycling. This combination of government oversight and new technology ensures that the market is clear and the data is trustworthy, which helps reduce the chances of unfair information in used EV sales.

5.2. Consumer Education Initiatives

First, conduct comprehensive online and offline educational activities to improve consumers' understanding of EV technology and emphasize the economic and environmental benefits of used EVs, thereby addressing widespread consumer misconceptions. Second, organize test-drive experience activities for used EVs so that consumers can experience the driving pleasure and comfort of EVs firsthand. At the same time, we will answer questions about batteries, range, maintenance, etc., so as to enhance consumers' confidence in purchasing. Third, encourage owners of used EVs to share their experiences and tips, and through social media and word-of-mouth marketing, deliver real and positive messages to influence potential consumers' decisions (Wei San & Robert, 2024).

5.3. Promoting Policy Support and Market Regulation

It is important to establish a policy support system and market-oriented operations to systematically enhance circulation efficiency and residual value management in the used EV market. The government may lower the acquisition cost of pre-owned EVs via subsidies and tax exemptions while promoting businesses to offer innovative services, such as battery leasing and trade-in options. Multifaceted market guidance tactics may be employed to promote the circulation and residual value of the used EV market while bolstering consumer confidence and acceptance. In the administration of used car platforms, it is essential to publicly reveal information and incorporate third-party testing to facilitate a systematic technical assessment of used EVs, thereby ensuring the impartiality and professionalism of this review. Additionally, we ought to implement a transaction assurance system that includes an officially accredited pre-owned vehicle program and extended warranty services for critical components. Establishing a credible evaluation system and a transaction assurance mechanism elevates the perceived worth of pre-owned EVs and directs consumers in their decision-making process.

6. Conclusion

With the rapid development of the new energy vehicle industry, the used electric vehicle market shows great potential, but the core pain points such as quality uncertainty due to information asymmetry and the lack of a residual value assessment system for power batteries have seriously constrained the enhancement of consumer-perceived value and the sustainable development of the market. Based on the theory of consumer perceived value, this paper focuses on the characteristics of China's used electric vehicle market, and systematically analyzes the key influencing factors of consumer perceived value. It is found that uncertainty in vehicle quality (e.g., battery health status, transparency of historical vehicle conditions), differences in consumers' individual characteristics (e.g., risk preference, environmental awareness), as well as the strength of policy support and the standardization of the market

environment significantly affect consumers' value judgment of used electric vehicles. In order to solve the above dilemma, this paper proposes to strengthen policy support (such as improving residual value assessment standards, providing subsidies for vehicle purchase), standardize market order (establish third-party testing and certification system, promote the construction of data sharing platform) and strengthen consumer guidance (popularize the knowledge of battery technology, publicize the environmental protection and economic value) and other strategies, which are aimed at improving consumer trust and perceived value through multi-dimensional paths, enhancing market acceptance, and finally The aim is to enhance consumer trust and perceived value through multi-dimensional paths, increase market acceptance, and ultimately promote the high-quality development of the used electric vehicle market, and inject new momentum into the green, low-carbon and recycling economy.

References

[1] Arslanagic-Kalajdzic, M., & Zabkar, V. (2017). Is perceived value more than value for money in professional business services? Industrial Marketing Management, 65, 47-58.

[2] Association, C. A. D. (2025). In-depth Analysis of the National Used Car Market, December 2024.

[3] Chaudhuri, A., & Holbrook, M. B. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. Journal of marketing, 65(2), 81-93.

[4] Kotler, P., & Levy, S. J. (1969). Broadening the concept of marketing. Journal of marketing, 33(1), 10-15.

[5] Larson, P. D., Viáfara, J., Parsons, R. V., & Elias, A. (2014). Consumer attitudes about electric cars: Pricing analysis and policy implications. Transportation Research Part A: Policy and Practice, 69, 299-314.

[6] Li, Y., & Cronje, T. (2023). A Case Study of a Second-Hand EV's Performance and Charging Infrastructure.

[7] Liao, F., Molin, E., & van Wee, B. (2017). Consumer preferences for electric vehicles: a literature review. Transport Reviews, 37(3), 252-275.

[8] Mukesh, & Narwal, M. (2023). Predicting consumer purchase intention on electric cars in India: Mediating role of attitude. Business Strategy & Development, 6(4), 942-956.

[9] Patil, G., Pode, G., Diouf, B., & Pode, R. (2024). Sustainable Decarbonization of Road Transport: Policies, Current Status, and Challenges of Electric Vehicles. Sustainability, 16(18), 8058.

[10] Prabowo, D. S. P., & Aji, H. M. (2021). Visual packaging and perceived emotional value: A study on Islamic branded cosmetics. The South East Asian Journal of Management, 15(1), 4.

[11] Raymunt, M. (2023). No One Wants Used EVs, Making New Ones a Tougher Sell Too (Bloomberg News). In.

[12] Reed, A. (2002). Social identity as a useful perspective for self-concept–based consumer research. Psychology & Marketing, 19(3), 235-266.

[13] Roberson, L., Pantha, S., & Helveston, J. P. (2024). Battery-powered bargains? Assessing electric vehicle resale value in the United States. Environmental Research Letters, 19(5), 054053.

[14] See, C. Y., Santos, V. R., Woodley, L., Yeo, M., Palmer, D., & Zhang, S. (2024). Prices and preferences in the electric vehicle market. arXiv preprint arXiv:2403.00458.

[15] Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. Journal of retailing, 77(2), 203-220.

[16] Wang, Z.-X., Chee, W. M., Jantan, A. H. B., Xia, Y.-H., Xue, H., Ye, M.-J., Zhang, Q., Wong, P. P. W., Gong, Y., & Wang, L. (2024). Impact of perceived value in virtual brand communities on purchase intention of domestic electric vehicles. Acta Psychologica, 248, 104371.

[17] Wei San, L., & Robert, B. N. (2024). Concerns expressed by used electric vehicle owners based on surveying social media. Transportation research part D: transport and environment, 128, 104086.

[18] Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. Journal of marketing, 52(3), 2-22.

[19] Zhang, X., Wang, K., Hao, Y., Fan, J.-L., & Wei, Y.-M. (2013). The impact of government policy on preference for NEVs: The evidence from China. Energy Policy, 61, 382-393.