



Problems and Countermeasures in China's New Energy Vehicle Industry

Jiaying Wang

Business School, Zhejiang Wanli University, Ningbo, China
632960140718@webmail.spobcollege.edu

Abstract. With the global community placing significant importance on environmental preservation and sustainable development, the realm of new energy vehicles has become a key field in propelling the green economic transformation. Given that China represents the largest new energy vehicle market globally, the progress of its industry holds immense significance for the worldwide energy transition and climate change goals. However, since China's new energy vehicle industry has started moving forward at a fast-paced expansion, it is also confronted with problems like insufficient technological innovation, fierce marketing competition and incomplete infrastructure. This study rigorously scrutinized the current status, looking into the present-day problems of China's new energy vehicle industry, probed into the reasons for their occurrence, and presented corresponding strategies and advice. Research findings show that strengthening core technology research and development and improving charging infrastructure serves as the cornerstone for promoting the vigorous development of the industry. The findings and suggestions of this study have significant reference value for policymakers, industry participants and relevant research institutions. They are instrumental in driving the sustainable progression of China's new energy vehicle industry, and concurrently, they furnish crucial empirical references and best-practice models to navigate and drive the growth and progress of the international new energy vehicle industry.

Keywords: China, New Energy, Vehicle.

1 Introduction

In the context of the worldwide drive for climate change mitigation and energy transformation, the new-energy vehicle industry acts as a crucial strategic catalyst, steering the nation and the world towards green and low-carbon development, gradually becoming a new high ground in economic competition among countries [1]. Since the beginning of the 21st century, owing to their inherent environmental friendliness, new-energy vehicles have garnered widespread global attention and have been witnessing a phase of rapid advancement on a worldwide scale, efficient and sustainable characteristics. From early technological exploration to today's policy support and market-driven development, not only has the new energy vehicle industry rewritten the development, not only has the new energy vehicle industry rewritten the rules of the

traditional automotive industry's competitive landscape but also made significant contributions to the optimization of the global energy structure and environmental protection [2].

With an eye to improving China's energy configuration and enabling industrial evolution, the new energy vehicle industry has acquired distinctive strategic value. In the global automotive market and consumers of new energy vehicles, it holds the preeminent position as the largest market. China regards new energy vehicles as a key approach to achieving a leapfrog development in the automotive industry and promoting high-quality economic growth. In recent years, driven by both policy guidance and market demand, the new energy vehicle industry in China has secured truly outstanding achievements that have attracted worldwide attention. It has not only made significant progress in technological innovation and industrial chain construction but also played a crucial role in promoting economic growth, fostering employment, and enhancing international competitiveness [3].

However, while developing rapidly, China's new energy vehicle industry is also confronted with numerous challenges. Problems such as insufficient technological innovation, incomplete charging infrastructure, strong policy dependence, and insufficiently close industrial chain collaboration have restricted the further healthy development of the industry. These problems not only affect the market promotion and user experience of new energy vehicles but also pose a potential threat to the long-term development of the industry [4].

In view of this, this study endeavors to conduct an exhaustive and systematic examination of the challenges confronting China's new energy vehicle sector, along with a thorough investigation into their root causes. The research not only focuses on the identification and analysis of problems but also emphasizes the proposal of solutions and the design of implementation paths, in order to offer robust backing for the sustainable growth of China's new energy vehicle industry. The value of this research is that it not only aids in advancing the sound and swift development of China's new energy vehicle sector, presents a Chinese approach for the global development of the new energy vehicle industry, but also supplies a scientific foundation and reference for formulating relevant policies, industrial planning, and corporate decision-making.

2 Problem

2.1 Technical Bottleneck

Although China's new energy vehicles have made significant technological progress, they still face challenges in some key technology areas, such as chips and battery technology. At present, although the energy density of mainstream new energy vehicle batteries (such as lithium-ion batteries) has improved, there is still a gap compared with traditional fuel. The increase in energy density means that the battery can store more electricity for the same volume or weight, thus increasing the range of vehicles. However, the current rate of improvement in battery energy density is still not keeping up with consumer demand for increased range. At the same time, in comparison to the

fuel-filling speed of conventional fuel vehicles, the charging speed of new energy vehicles is generally lower. Notwithstanding the implementation of fast-charge technology, it takes a long time to fully charge the battery. The slow charging speed not only affects the user experience but also limits the applicability of new energy vehicles in long-distance travel and emergency situations [5]. The cost of batteries constitutes a sizable portion of the overall cost of new energy vehicles. Even though battery prices have dropped over recent years, they remain greater than the combined costs of engines and fuel tanks in conventional gasoline-powered vehicles. Due to the elevated cost of batteries, new energy vehicles lack price competitiveness in the marketplace, thereby impeding the pace of their market dissemination. Frequent charging and discharging will affect the battery life and cycle performance. In extreme environments, such as low or high temperatures, battery performance deteriorates at an accelerated rate. Furthermore, the endurance capacity of the battery systems in new energy vehicles is usually short and needs to be replaced regularly, increasing the cost of use.

2.2 Intensified Market Competition

Over the past few years, China's new energy vehicle market has seen substantial development, with sales figures constantly reaching new peaks. Based on the figures released by the China Association of Automobile Manufacturers, the output of China's new energy vehicles in 2023 will be 9.587 million, and the sales volume will reach 9.495 million, an increase of 35.8% and 37.9% respectively. From January to May 2024, the cumulative sales volume of new energy vehicles reached 3.89 million, an increase of 32.5% year-on-year [6]. With the continuous expansion of the new energy vehicle market, the domestic market competition is becoming increasingly fierce. At the same time, foreign auto brands have also increased their investment in the Chinese market, more strongly intensifying market contention. How to stand out in the fierce market competition is a problem that China's new energy vehicle enterprises need to face.

Many participants have been drawn to China's new energy vehicle market, including traditional automobile enterprises, new power car manufacturers and technology companies. These enterprises have their own advantages in technology, capital, brand and so on, resulting in increasingly fierce market competition. Some enterprises have homogeneity in new energy vehicle products, lacking unique technological innovation and product characteristics. Homogeneous competition leads to frequent price wars and reduces the overall profit level of the industry. With the intensification of market competition, brand concentration will be further enhanced. With its technological accumulation, brand influence and sales channel advantages, the head car enterprises will occupy a larger share in the market. The weaker enterprises will face survival difficulties, and the industry reshuffle is inevitable.

2.3 Inadequate Infrastructure

The lagging construction of charging infrastructure has emerged as a critical constraint that impedes the advancement of new energy vehicles. The coverage rate and charging speed of charging piles are inadequate to fulfill the escalating demand within the new energy vehicle sector, especially in long-distance travel or remote areas, charging anxiety caused by insufficient charging facilities is still the focus of consumers [7]. At the same time, the waste battery recycling system is not perfect, the recycling channel is

not smooth, and the recycling technology and cost are also facing challenges. Most used batteries have not been effectively recycled, leading to the inefficient utilization of resources, but also increase the pressure on environmental protection. New energy vehicles from various brands and models vary in their charging interfaces, resulting in some charging piles cannot be universal. This brings great inconvenience to users and also limits the sharing and utilization efficiency of charging facilities. Some charging piles have a high failure rate due to less timely maintenance or improper use [8]. This not only affects the user's charging experience but also may lead to charging safety hazards. The maintenance and management of charging facilities are relatively backward, resulting in some charging piles cannot be used normally or their service life is shortened. This increases the user's charging cost and waiting time, reducing user satisfaction.

3 Counterplan

3.1 Technological Research

The government and enterprises should enhance the investment in battery technology research and development and focus on breaking through key technical problems such as energy density improvement, charging speed acceleration, and cost reduction. At the same time, strengthen the research and development of battery recycling and reuse technology to drive the sustainable growth of the battery industry.

For hydrogen fuel cell technology, the government ought to boost policy backing and encourage businesses to raise investment in research and technological development [9]. At the same time, strengthen the construction and planning of hydrogen refueling facilities, and promote the demonstration application and commercialization of hydrogen fuel cell vehicles.

3.2 Market Competition Environment

The government should strengthen the supervision of the new energy vehicle market and crack down on unfair competition. Through the formulation of relevant laws and regulations and industry standards, regulate the market order and protect the legitimate rights and interests of consumers. Enterprises should strengthen brand building, clear market positioning and target user groups. Through technological innovation and product upgrading, improve product quality and performance, and form unique competitive advantages and value. Meanwhile, intensify marketing and promotion to improve brand recognition and prestige. At the same time, strengthen the cooperation and collaborative development of businesses situated at different stages of the industrial chain such as automobile enterprises, battery enterprises, charging facilities enterprises. Through sharing resources with one another and making use of complementary merits, the competitiveness and innovation capacity of the entire industrial chain will be enhanced.

3.3 Improved Infrastructure

The government and enterprises are expected to boost investment in building charging piles, particularly in rural and remote areas [10]. Incentivize social capital to get involved in the building of charging piles through the formulation of preferential policies

and the provision of financial support. At the same time, strengthen the planning and management of charging piles to ensure a reasonable layout and effective use of charging piles. Enhance the construction of charging facility interface standards to boost compatibility, and versatility of charging piles. Concurrently, augment the upkeep and supervision of charging infrastructure to ensure the normal operation and service life of charging piles. By providing convenient and efficient charging services, users can improve their experience and satisfaction. Strengthen the optimization and upgrading of the power grid structure, enhance the power-grid's power supply capabilities and its stability. Through the construction of smart grids, the promotion of distributed energy and other ways to ease the pressure of the power grid, to satisfy the charging requirements of new energy vehicles. Moreover, enhance the coordinated planning and building of power grids and charging infrastructure to guarantee the synchronized development of power grids and charging setups.

4 Conclusion

This study, through in-depth analysis into the current scenario and difficulties within China's new energy vehicle industry, systematically summarizes the problems existing in the industry in terms of technological innovation, infrastructure construction and industrial competition, and puts forward corresponding countermeasures and suggestions. Research has found that strengthening core technology research and development, improving the charging infrastructure network and enhancing the overall competitiveness of the industrial chain are the key paths to support the stable and healthy progress of China's new energy vehicle industry. These conclusions not only provide decision-making references for policymakers but also point out the development direction for industry participants, which is of great significance for promoting the transformation and upgrading and to drive the long-term and sound development of China's new energy vehicle industry

However, this study also has certain limitations. Firstly, in terms of data collection, owing to the swift development of the new energy vehicle industry and the uncertainty of market changes, some data may have a certain lag or be not completely accurate, which may have a certain impact on the precision of the research results. Secondly, the research mainly focuses on the analysis and countermeasure suggestions at the macro level, while there is insufficient exploration of the operational strategies and implementation details at the specific enterprise level. Future research can further delve into enterprise cases to provide more operational guidance. Finally, the countermeasures and suggestions proposed in this study may need to be flexibly adjusted and optimized according to specific circumstances in practical applications to ensure their effectiveness and feasibility. Therefore, future studies ought to keep an eye on industry trends, constantly improve and deepen the understanding of the developmental principles of China's new energy vehicle sector and offer more systematic and thorough backing for the sound growth of the industry.

References

1. Zhang, Y. X., Tang, X. H.: The current situation, problems and countermeasures of China's new energy vehicle industry development under the "dual carbon" goal. *China Resources Comprehensive Utilization* **42**(6), 149-153 (2024)
2. Cai, G. C.: Research on the Problems and Countermeasures in the Development Policies of the New Energy Automobile Industry: Taking the Policy Texts since the "13th Five-Year Plan" as an Example. South China University of Technology, (2023)
3. Xu, W. X., Chen, Z. C., Zhou, J. P., et al.: Analysis of the pattern and influencing factors of China's new infrastructure: taking new energy vehicle charging piles as an example. *Exploration of Economic Issues* (7), 43-53 (2023)
4. Ouyang, M. G.: From the perspective of the evolution of the new energy vehicle revolution, the competitive situation and trend of the automotive industry. *China Industry and Information Technology* (5), 110 (2025)
5. He, Y. F.: Research on the Marketing Strategy of OL New Energy Automobiles. Hebei University of Science and Technology, (2024)
6. Luo, J.: Research on the marketing strategy of new energy vehicles. *Journal of Qiqihar Institute of Technology* **5**(2), 52-54 (2021)
7. Huang, Y.: Research on the marketing strategy of new energy vehicles in the era of big data. *Automobile Knowledge* (6), 23-25 (2021)
8. Jiang, B. B., Xu, B. L.: Research on the marketing strategy of new energy automobile enterprises under environmental uncertainty-a comparison between BYD and Tesla. *China Business Review* (2), 37-40 (2022)
9. Drumond, P., et al.: Strategy study to prioritize marketing criteria: an approach in the light of the DEMATEL method. *Procedia Computer Science* **199**, 448-455 (2022).
10. Kasjan, S. J.: Formation of Marketing Strategies of Automobile Construction Enterprises at The Launch of New Products on the Target Markets. *Economic Scope* (136), 121-123 (2018)

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

