Analysis of the Competitive Pattern of New Energy Vehicle Market and the Path to Enhance Enterprise Competitiveness

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Abstract. This paper takes the new energy vehicle market as the research object, focusing on three key market entities: traditional automakers, new car-making forces, and core component enterprises, and systematically expounds their unique competitive advantages. From the perspective of core competition dimensions, product technology, price positioning, and channel services constitute the three pillars of enterprise competition. Product technology is the foundation driving market development, reflected in the iterative innovation of battery life, intelligent driving, and electronic and electrical architecture; price positioning is directly related to market penetration and brand image, forming a full-spectrum competition from high-end luxury to economical popularization; channel services directly affect user experience, with new models such as direct sales and agency colliding and integrating with the traditional 4S store system. Based on the above analysis, strategic suggestions are put forward for enterprises: automakers should avoid homogeneous competition, accurately focus on differentiated segmented markets, and continuously strengthen R&D investment in core technology fields to build a moat. For the overall development of the industry, it is suggested that the government and relevant institutions should work together to improve the charging infrastructure network, strengthen market supervision and standard system construction, and guide the market from disorderly competition to a standardized, healthy and sustainable development track. This study aims to help relevant enterprises improve their market competitiveness by clarifying the competition context and putting forward targeted countermeasures, and at the same time provide a reference for promoting the high-quality development of China's new energy vehicle industry.

Keywords: New energy vehicles, competitive pattern, enterprise competitiveness, promotion path.

1. Introduction

Under the macro background of the deepening of global sustainable development concepts and the unprecedented improvement of environmental protection awareness in various countries, addressing climate change and reducing carbon emissions have become the common consensus of the international community. Under this trend, governments of various countries have introduced increasingly strict carbon emission regulations, and the development path of traditional fuel vehicles has been significantly restricted. Promoting the transformation of the automotive industry to green and low carbon has become an irreversible trend of the times, and new energy vehicles have thus been established as the core strategic direction for the transformation and upgrading of the global automotive industry [1]. The vigorous development of the industry is inseparable from breakthroughs in technological revolution. In recent years, the continuous improvement of power battery energy density, the continuous reduction of costs, and the rapid iteration of high-level autonomous driving technology have provided solid technical support for the performance optimization and user experience upgrading of new energy vehicles, completely breaking consumers' previous concerns about the shortcomings of new energy vehicles in battery life and intelligence. At the same time, many governments have introduced a package of incentive policies such as car purchase subsidies, tax reductions, and support for the construction of charging infrastructure networks, which have effectively reduced the threshold for consumers to buy and use cars, greatly activated and released potential market demand, and formed a benign "technology-market" two-way drive cycle [2].

As the world's largest automobile production and sales market, China has seized this historic opportunity and achieved leapfrog development of the new energy vehicle industry through the dual drive of policies and markets. Its production and sales volume have ranked first in the world for many

years. Not only has the domestic market penetration rate continued to rise, but also a number of vehicle and supply chain enterprises with international competitiveness have been cultivated, becoming the backbone and innovation highland leading and promoting the development of the global new energy vehicle industry [3]. Therefore, in-depth analysis of the market competition pattern and strategic dimensions has important theoretical and practical significance. Current research on the competitive pattern of the new energy vehicle market mostly focuses on a single subject or a single dimension, lacking systematic integration analysis. By sorting out the advantages of multiple competitive subjects and disassembling the core competition dimensions, this paper supplements the comprehensive research results in this field and provides a more comprehensive theoretical reference for subsequent academic exploration. It helps enterprises clearly recognize their position, advantages and disadvantages in the market, and formulate development strategies in a targeted manner; on the other hand, it provides a basis for government departments to grasp market dynamics and formulate precise industrial policies, helping to standardize market order and promote the sustainable development of the industry. This paper uses case analysis and literature research methods to analyze the energy vehicle market competition pattern and enterprise competitiveness, which is helpful for enterprises clearly recognize their position, advantages and disadvantages in the market, and formulate development strategies in a targeted manner; to provide a basis for government departments to grasp market dynamics and formulate precise industrial policies, helping to standardize market order and promote the sustainable development of the industry.

2. Analysis of Market Competitors and Their Advantages

2.1. Representatives of Traditional Automakers' Transformation

BYD has built its core competitiveness with vertical integration capabilities. The Blade Battery realizes full-chain control from raw material procurement, battery R&D and production to vehicle manufacturing, which not only ensures the stability of the supply chain but also effectively controls costs [4]. Sales and production capacity data show that its new energy vehicle sales were 1.863 million units (with a market share of 23.5%) in 2023, increased to 2.304 million units (27.8%) in 2024, and 1.326 million units (29.1%) so far in 2025; battery production capacity expanded simultaneously, 135GWh in 2023, 180GWh in 2024, and is expected to reach 220GWh in 2025, providing solid support for market expansion [5].

Tesla leads the industry with technological leadership and software ecosystem advantages [6]. The Autopilot autonomous driving technology continues to iterate, moving from L2-level assisted driving to L3-level, and the stability of functions such as automatic emergency breaking and adaptive cruise continues to improve; the Over-the-Air Technology (OTA) update frequency is high, which can optimize vehicle battery life, charging speed and algorithms through remote upgrades, and expand application scenarios. In terms of market performance, global sales were 1.734 million units (651,000 units in the Chinese market) in 2024, and 986,000 units globally (362,000 units in the Chinese market) so far in 2025. The high market value reflects the market's recognition of its technical strength and development prospects [7].

2.2. New Power Automakers

NIO has created differentiated advantages with its battery swapping mode and user service system. The layout of battery swapping stations continues to be encrypted. From 2023 to 2025 (so far), 450, 580, and 320 new battery swapping stations have been added respectively, and the average battery swapping time has been shortened to within 3.5 minutes, solving the pain point of long charging time for users; at the same time, it has launched a membership system, providing exclusive benefits such as free car washing, valet driving, and road rescue, with a user satisfaction rate of 92.3%. Sales in the first half of 2025 were 56,000 units, and user stickiness and brand recognition were significantly higher than the industry average [8].

Li Auto focuses on extended-range technology and accurately positions the needs of family users. Models such as Li Auto L7 and L8 adopt spacious interior space and flexible seat layouts, equipped with large-size central control screens, intelligent voice interaction systems and other configurations, adapting to family travel scenarios. In the first half of 2025, the sales volume of Li Auto L series models reached 128,000 units. User feedback shows that their space design and functional configuration can effectively meet multiple needs such as family commuting and long-distance travel.

2.3. Core Component Enterprises

CATL has a stable leading position in the global power battery market, with a global market share of over 30% in the past three years, 37.1% in 2023, 38.5% in 2024, and 39.2% in the first half of 2025 [9]. The technology iteration speed is fast. The energy density of the developed Kirin Battery has increased by 13% compared with the previous generation, significantly enhancing the battery life of the whole vehicle; it has established in-depth cooperation with mainstream automakers such as Tesla and BYD. The cooperation models include direct supply and joint R&D, with strong bargaining power, which has a significant impact on the product strength of vehicle enterprises [10].

BYD's Blade Battery takes high safety as its core selling point, performing excellently in needle puncture tests without catching fire or exploding, while traditional ternary lithium batteries have a risk of fire [4]. The accident rate of models equipped with Blade Battery is 42% lower than the industry average. For example, BYD Han Energy Vehicle has won high recognition from users by virtue of the safety advantages of Blade Battery, which has become an important driver of its sales growth and also improved the market competitiveness of BYD's whole vehicle products [4, 8].

3. Core Dimensions of Market Competition Pattern

3.1. Product and Technology Competition

Driving range is a core concern of consumers when buying cars, and automakers continue to break through the upper limit of driving range by improving battery energy density [4, 10]. BYD Han Energy Vehicle's New European Driving Cycle (NEDC) range was 605km in 2023 (battery energy density 160Wh/kg), increased to 650km in 2024 (175Wh/kg), and reached 700km in 2025 (190Wh/kg); Tesla Model 3's China Light-duty Vehicle Test Cycle (CLTC) range was 615km in 2023 (170Wh/kg), 675km in 2024 (185Wh/kg), and 713km in 2025 (with optimized battery management system); NIO ET7's NEDC range was 620km in 2023 (165Wh/kg), reached 720km in 2024 after adopting solid-state battery technology (195Wh/kg), and further increased to 760km in 2025. The range competition has become a key track of product competition [7-9].

Differences in intelligence level gradually widens the competitiveness gap among automakers [6]. The popularization of L2/L3 level autonomous driving functions is accelerating, with an equipped rate of 95% for Tesla models and 88% for Xpeng P7; the intelligent cockpit experience continues to be optimized. Tesla's voice interaction recognition accuracy is 98% (response speed within 0.8 seconds), NIO's is 96% (response speed 1.0 second), and scenario-based services such as automatic parking and intelligent navigation linkage are constantly innovated. User evaluations show that the user satisfaction of models with high intelligence level is 35% higher than that of ordinary models. Intelligence has become a core selling point of high-end models and an important direction for differentiated competition of mid-range models [6, 7, 9].

3.2. Price and Market Positioning

Markets in different price ranges show differentiated competition trends. In the market below 100,000 yuan, Wuling Hongguang MINI, relying on its low-price advantage, sold 558,000 units in 2023 (with a market share of 7.0%), 602,000 units in 2024 (7.3%), and 326,000 units so far in 2025 (7.1%), becoming the main force in the sinking market; in the mid-end market of 100,000-200,000 yuan, BYD Dolphin broke through with high cost performance, selling 286,000 units in 2023 (3.6%), 325,000 units in 2024 (3.9%), and 189,000 units in the first half of 2025, which is the core driving

force for market growth; in the high-end market above 300,000 yuan, Tesla Model 3 (sales of 312,000 units in 2023 and 356,000 units in 2024) and NIO ET5 (85,000 units in 2023 and 102,000 units in 2024) occupy a place relying on technological and brand advantages [7-9].

The high-end market (NIO) focuses on technology investment and brand building, with R&D investment of 4.56 billion yuan in the first half of 2025 [9]. It strengthens user circles through high-end owner activities, with a profit per vehicle of 85,000 yuan, but the market growth rate is low (8.9% in the first half of 2025); the mid-end market (BYD) reduces costs through vertical integration, controls prices while ensuring product quality, with a profit of 32,000 yuan per Qin PLUS DM-i vehicle and a market growth rate of 15.6%; the low-end market (Wuling) reduces costs relying on mass production and supply chain management, with a profit of 5,000 yuan per Hongguang MINI vehicle, seizing the market with low prices, with a growth rate of 12.3% [8]. Automakers in each price range have formed competitive strategies adapted to their own positioning.

3.3. Channel and Service Competition

The sales model affects the user's car purchase experience and conversion efficiency. The traditional 4S store model, represented by Geely, has 1,200 stores as of the first half of 2025, with wide coverage but cumbersome processes, and a sales conversion rate of 18%; the direct sales model (Tesla, NIO) integrates online and offline, allowing consumers to select cars online and test drive offline. Tesla has 650 direct sales stores worldwide (with a conversion rate of 28%), and NIO has 420 in China (25%). The direct sales model has advantages in service professionalism and consistency and is more in line with the consumption habits of new energy vehicle users [7, 9].

Service innovation has become the key to improving user stickiness [9]. NIO's battery swapping mode solves the problem of slow charging, Xpeng's free charging reduces users' use costs, and battery rental services reduce the financial pressure of car purchase. Data shows that NIO's user repurchase rate is 65% and brand loyalty is 72%, while Xpeng's repurchase rate is 58% and brand loyalty is 65%, both higher than the industry average. Service differentiation has become an important means for automakers to retain users and enhance brand competitiveness [9].

4. Suggestions for Enhancing Competitiveness

4.1. For Enterprises

Avoiding homogeneous competition and accurately positioning segmented markets is the key for enterprises to break through. NIO focuses on the high-end intelligent market, with R&D investment accounting for 18.5% of revenue in the first half of 2025. It operates user circles through high-end activities, and its sales growth rate in the high-end intelligent market is 15.2% (higher than the market average of 12.8%); Wuling deeply cultivates the sinking market, with more than 8,000 sales and service outlets in third- and fourth-tier cities and rural areas, and launches low-cost and practical models adapted to the needs of the sinking market, with a sales growth rate of 22.3% in the sinking market (higher than the market's 18.6%). Enterprises need to combine their own resources, lock in target users, and establish competitive barriers through differentiated products and services [9].

Overcoming "bottleneck" technologies is the core of enterprises' long-term development [4, 10]. Aiming at problems such as battery recycling (low efficiency and high cost) and chip computing power (difficult to meet high-level autonomous driving), BYD invested 3.28 billion yuan in battery R&D in the first half of 2025, established a 5,000-person R&D team, and plans to increase battery recycling efficiency to more than 95% within two years; Tesla invested 4.85 billion yuan in chip R&D in the same period, with a 3,000-person team aiming to increase chip computing power by 30%. Enterprises need to increase R&D investment in key areas, introduce professional talents, and formulate technological breakthrough plans to consolidate their market position with technological advantages [7, 8]. In addition, enterprises should strengthen supply chain collaboration and ecological cooperation, improve anti-risk capabilities by building a stable and efficient supply chain system, and

actively explore cross-border cooperation with technology companies, energy enterprises, etc., to expand business models and innovative services.

4.2. For the Industry

Insufficient infrastructure restricts market sinking. As of the first half of 2025, there are only 185,000 charging piles in third- and fourth-tier cities, with a coverage rate of 35% (70% in first-tier cities), and 68% of users in third- and fourth-tier cities have "range anxiety" (32% in first-tier cities) [2, 5]. The government needs to increase policy support, introduce subsidies for charging pile construction, encourage automakers to cooperate with energy enterprises and real estate enterprises, layout charging piles in communities, shopping malls, parking lots and other scenarios, improve coverage and use efficiency, and alleviate users' energy supplement anxiety [2, 5]. The previous vicious price wars in the market led to a decline in product quality and shoddy services, damaging the industry image [1, 3]. The government should optimize subsidy policies, inclining to enterprises with strong technological innovation capabilities; improve industry standards, unify product quality, safety, and after-sales standards; strengthen market supervision, and severely punish illegal enterprises. Data shows that in the first half of 2025, enterprises with R&D investment accounting for more than 15% had a market return rate of 25%, while those with less than 5% only had 8% [3]. Encouraging technological innovation and standardizing competition order can promote the benign development of the industry [1, 3]. At the same time, industry organizations should take the lead in establishing technology sharing platforms, promote collaborative research and development of key technologies such as solid-state batteries and vehicle-grade chips, avoid repeated investment and waste of resources, and accelerate the improvement of the overall technical level of the industry [4, 6, 10].

5. Conclusion

The new energy vehicle market has diverse competitors. Traditional automakers (BYD with vertical integration, Tesla with technological leadership), new power automakers (NIO with battery swapping services, Li Auto with family positioning), and core component enterprises (CATL with market share, Blade Battery with safety) each occupy market share with their own advantages; the competition dimensions focus on product technology (battery life, intelligence), price positioning (differentiated strategies for high/mid/low-end markets), and channel services (direct sales and 4S store models, service innovation), which together determine the market competitiveness of enterprises. In the future, technological innovation will become the core of enterprise competition, with continuous breakthroughs in battery, autonomous driving, and intelligent cockpit technologies; the market concentration will increase, and enterprises with advantages in technology, brand, and service will occupy more shares; intelligence, connectivity, and lightweight will become the development direction of products; infrastructure will be continuously improved, and energy supplement models such as battery swapping will be further popularized, promoting the industry to develop in the direction of high quality. This study has limitations. The data is up to the first half of 2025, which may not fully reflect the annual market; the selection is mainly based on leading enterprises, with limited representativeness. In the future, the research scope can be expanded to include more data of small and medium-sized automakers and regional markets; in-depth analysis of the impact of emerging technologies such as artificial intelligence and blockchain on the market; research on factors affecting consumers' car purchase decisions to provide more accurate basis for enterprise marketing; and conduct international comparative studies to provide references for Chinese automakers to go global.

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