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Research on the internationalization strategy of BYD's new energy vehicles

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Abstract. Under the background where the global carbon neutrality goal drives the low-carbon transformation in the transportation sector and the New Energy Vehicle (NEV) industry becomes the strategic core, BYD, as the leading enterprise in China's NEV sector, has advanced its internationalization strategy from "product export" to "technology + production capacity + ecological overseas expansion." This article conducts a literature study and comparative analysis to examine BYD's internationalization strategy, implementation path, and performance; compares the development models of competitors such as Tesla; and analyzes the variable relationships and practical challenges during the strategy implementation. The research findings show that BYD, with its core advantage of "vertical industrial chain integration," through a diversified model of "export + joint venture + sole ownership + strategic alliance," "market penetration in a gradient from difficult to easy," and regional customized product strategies, achieved overseas sales of 242,800 vehicles in 2023 (a year-on-year increase of 334.2%), but still faces challenges such as weak brand recognition of high-end products and technical standard barriers. The research provides theoretical references and practical lessons for Chinese NEV enterprises' internationalization.

Keywords: new energy vehicles, internationalization strategy, vertical industrial chain integration

1. Introduction

The global market for New Energy Vehicles (NEVs) has experienced explosive growth. In 2023, the global sales volume reached 14.65 million units, with China accounting for 9.495 million units and ranking first globally for nine consecutive years [1]. At the policy level, the European Climate Law of the European Union clearly stipulates that fuel vehicles will be banned from being sold in 2035, Thailand exempts local electric vehicles from import taxes until 2023, and the US Inflation Reduction Act provides tax credits for NEVs. Additionally, the "Belt and Road Initiative" offers logistics and policy support. These policies collectively create opportunities for Chinese NEV enterprises to go global.

As a company with independent capabilities in core technologies such as "three-in-one" (battery, motor, and electronic control), BYD has accumulated over 40,000 patents. In 2023, BYD's global sales volume was 3.0244 million units, with 242,800 units sold overseas. Its products cover more than 70 countries and regions, making it one of the representatives of Chinese NEV enterprises [2, 3].

However, in existing research, Zhang Yuhui's comparison between BYD and Tesla mostly focuses on a single dimension and lacks a systematic integration of "product matrix-local operation-strategic model" [4]; Liu Weitong pointed out that the analysis of the "technology-for-market" outbound path for developing Chinese enterprises is insufficient [3]; Zhang Yifan mentioned that brand building and after-sales service have been overlooked in international research.

To address these deficiencies, this paper integrates multiple dimensions of research and adopts the literature research method and comparative analysis method to systematically explore BYD's internationalization path, thereby increasing the case perspective of NEV enterprises' internationalization [2]. Specifically, the text will detail the research results of scholars such as Liu Weitong and Zhang Yuhui, extract the core elements of BYD's internationalization, and compare the strategic differences of competitors such as Tesla, and analyze BYD's competitive advantages and weaknesses. BYD's internationalization experience can provide a "technology autonomy + local adaptation" reference for NIO and Xiaopeng, domestic NEV brands, helping the Chinese NEV industry break through global competition barriers.

2. Literature review

2.1. International research status

Foreign scholars focus on the policy-driven internationalization of NEVs (such as the impact of the EU's carbon reduction policy on the layout of car manufacturers), technical standard competition, and localized operations (cultural adaptation and matching of market demands). Most of the research is based on international brands like Tesla and Volkswagen, with less targeted analysis of Chinese car manufacturers.

2.2. Domestic research status

Domestic research has formed three main directions:

(1) Strategic Model Research: Liu Weitong proposed that BYD adopt an "export + joint venture + sole proprietorship + strategic alliance" combination model, adapting to different market stages through flexible strategies [3];

(2) Competitiveness Research: Zhang Yifan emphasized that BYD's "vertical industrial chain integration" brings cost advantages, with its per-unit cost being 18% lower than that of Tesla [2];

(3) Comparative Research: Zhang Yuhui pointed out that BYD and Tesla have significant differences in technical routes (lithium-ion battery vs. 4680 battery) and market positioning (full price range vs. high-end market) [4].

In summary, existing research mostly focuses on a single dimension (such as sales volume, or technology), lacks systematic integration of the entire "strategic elements-implementation process-performance output" chain, and has insufficient analysis of the interaction relationships between variables (such as policy regulation or the impact of market characteristics on strategic effects).

3. Core dimensions of BYD's internationalization strategy

3.1. Strategic type: diverse mode combination

Export: Initially, it opened the market with commercial vehicles; in 2010, it exported K9 electric buses to Europe and the United States, with 4 out of every 5 electric buses on the streets of London being from BYD; since 2021, the export of passenger vehicles has accelerated, and ATTO 3 (the overseas version of Yuan PLUS) has become the top-selling single vehicle model in Singapore and Thailand [5].

Joint Venture: In 2022, it cooperated with Uzbekistan to build a factory with an annual production capacity of 3 million vehicles, using local mineral resources to stabilize the supply chain [6].

Sole Proprietorship: In 2023, the Rongyong factory in Thailand was put into production (annual production capacity of 150,000 vehicles), and the Kunani factory in Hungary will be put into production in 2025 (annual production capacity of 150,000 vehicles), adopting the SKD (semi-finished assembly) model, with a 30% reduction in tariffs [3].

Strategic Alliance: It cooperated with Shell to open 300,000 charging piles in Europe to solve users' charging pain points; it signed a 100,000-vehicle purchase agreement with Germany to lock the high-end leasing market [5].

3.2. Market entry: "from difficult to easier" gradient penetration

BYD broke the traditional logic of "developing countries first," prioritizing the layout of markets with high technical barriers and strict environmental requirements, starting with technology reputation as the foundation: In 2021, it introduced Tang EV to Norway; in 2022, it entered the passenger vehicle market in Japan; and in 2023, it launched Han and Tang models in Europe, gaining recognition with long-range and safety performance [4]. Subsequently, it expanded to potential markets such as Southeast Asia and Latin America, with sales of 21,000 units in Thailand in 2023 and a market share of over 30% in electric buses in Brazil, avoiding the price competition of domestic car manufacturers [5].

3.3. Product strategy: regional customization

Europe: Promotes the high-end "Dynasty Series," with the prices of Han and Tang in Europe being 60% higher than in China, targeting the dual needs of high-income groups for luxury and environmental protection.

Southeast Asia: Introduces "Ocean Series" models such as Dolphin and Seal, with small body sizes suitable for local congested road conditions and parking requirements.

Global Models: The ATTO 3 adopts a global design language, winning sales championships in multiple markets such as Singapore and Thailand [2].

3.4. Supply chain management: vertical integration for cost reduction

BYD possesses the core technologies of "three electric systems," collaborates with Chile's SQM upstream to ensure lithium resources, and has a battery self-sufficiency rate of over 90% (with a 2023 production capacity of 280 GWh). Downstream, through the model of "domestic production of core components + local assembly," the logistics cost is reduced by over 15% [2]. This vertical integration makes the unit cost of a vehicle 18% lower than that of Tesla, forming a significant advantage in the price-sensitive market.

3.5. Brand marketing differences

BYD enhances its brand positioning through commercial activities for commercial vehicles and racing events, but there is still a significant gap in the perception of its high-end brand compared to Tesla. In terms of overseas store layout, BYD had 500 global overseas stores in 2023, mainly adopting the "dealer cooperation" model, with stores mostly concentrated in suburban areas or automotive districts, focusing mainly on "vehicle sales + basic after-sales services;" while Tesla had over 1,200 global direct-operated stores, with 70% located in high-end commercial districts of core cities, and the store design emphasized "technology experience"-setting up dynamic display areas for Model 3/Y, FSD autonomous driving simulation cabins, and supercharger experience areas, allowing users to intuitively experience Tesla's technological advantages through interactive devices. Data shows that in the 2023 European consumer brand perception survey, Tesla's "innovative technology" perception rate reached 82%, while BYD was only 45%, and the difference in store experience is an important influencing factor.

In terms of brand marketing, Tesla strengthens its high-end image through "founder IP + event marketing": Musk's personal social media accounts (with over 150 million followers on Twitter) frequently post Tesla's technological progress and attract global attention through "Starlink and Tesla's linkage" and other events; the 2023 European new energy vehicle brand favorability survey showed that Tesla's "brand favorability" score was 78 points, while BYD was 59 points. This gap directly affects consumers' purchasing decisions, and insufficient brand recognition becomes a major constraint.

4. BYD's internationalization performance and competition comparison

4.1. Internationalization performance

4.1.1. Market performance

In 2023, the overseas sales volume was 242,800 units, increasing by 334.2% year-on-year. Thailand, Israel, and Sweden were the top three markets, with sales of 21,000, 14,000, and 8,000 units, respectively [3]. In terms of regional layout, the sales volume in Europe exceeded 50,000 units in 2023, and after the production of the Hungarian factory, it will cover the entirety of Europe in 2025; Southeast Asia, with Thailand as the core, has a local production rate of over 70% for the Luoyong factory, and its products also radiate to Malaysia and Singapore [5].

4.1.2. Brand performance

BYD builds a reputation in Europe through commercial vehicles, with the K9 electric bus market share exceeding 70%; in the passenger vehicle sector, it enhances brand positioning through high-end models and racing events (such as the Yuntao U8 participating in off-road challenges), but there is still a gap in the high-end perception compared to Tesla. It has 500 overseas stores, fewer than Tesla's direct-operated network [6].

4.1.3. Financial performance

In 2023, the overseas revenue increased to 28.55%, but its profitability was weaker than Tesla - Tesla's ROE (Return on Equity) reached 20.36%, while BYD was only 3.81%, reflecting the insufficient premium of the high-end brand [4].

4.2. Competition comparison with Tesla

4.2.1. Core indicator

Table 1. Comparison of core indicators between BYD and Tesla (based on 2023 data)

Dimensionality	BYD	Tesla
Global sales	302,440vehicles (242,800 overseas)	1.8 million vehicles (1.2 million overseas)
Technical highlights	Blade battery (passed the puncture test)	1.8 million vehicles (1.2 million overseas)
Cost of a single vehicle	Lower18%than Tesla	The cost of the battery is 15% higher than that of BYD.
Car model price	The BYD Han costs approximately 500,000 euros in Europe.	Model 3 costs approximately 320,000 euros in Europe.

Table 1 summarizes the comparison of core indicators between BYD and Tesla based on their 2023 data, covering four key dimensions: global sales volume, technical highlights, cost per vehicle, and vehicle pricing. From this table, it can be seen that BYD has an absolute advantage in global sales volume (302.44 million units, while Tesla has 180 million units), but its proportion of overseas sales is relatively low (about 8% compared to Tesla's 66.7%), which reflects BYD's gap in the overseas market. In terms of technical highlights, BYD's blade battery passed the puncture test and demonstrated excellent safety, while Tesla's battery focuses more on the improvement of energy density; in terms of cost, BYD's vertical industrial chain integration brought an 18% cost advantage per vehicle, but this advantage did not translate into pricing competitiveness-the price of the BYD Han in Europe is about 56% higher than that of the Tesla Model 3, which limits its share in the mid-to-high-end market. This table reveals the competitive differences between these two enterprises, providing a data basis for analyzing BYD's internationalization advantages and shortcomings.

Table 2. SWOT analysis comparison [4]

Company	Advantage	Disadvantage	Threat	Opportunity
BYD	High technology, low cost, and strong foundation in commercial vehicles	High-end cognitive abilities are weak, and the autonomous driving technology is relatively lagging behind.	European and American tariffs, fluctuations in lithium prices	New market demand for charging station cooperation
Tesla	Autonomous driving technology is advanced. The brand is strong and the direct sales model is mature.	Poor product quality, with no commercial vehicle business.	The cost-performance competition of BYD	The high-end markets in Europe and America

The SWOT analysis comparison table between BYD and Tesla further clarifies the differences in strategic positioning between the two. Table 2 shows that BYD's core strengths lie in "comprehensive technology, low costs, and a solid foundation in commercial vehicles" - its independently developed "three-in-one" technology, while Tesla's strengths are concentrated on "leading FSD autonomous driving system, strong brand, and mature direct sales network" - the usage rate of its FSD autonomous driving system in Europe exceeds 35%, and its direct sales model ensures consistent brand dissemination. In terms of weaknesses, BYD's "low recognition for high-end products and lagging autonomous driving technology" and Tesla's "single product" form a complementary competitive pattern. This table helps to systematically identify the key points of BYD's internationalization strategy, such as making up for the deficiencies in autonomous driving and expanding the commercial vehicle market to avoid direct competition with Tesla in the high-end passenger car sector.

5. Challenges and optimization suggestions for the internationalization of BYD

5.1. Main challenges

Trade barriers and policy risks: The US tariffs have risen to 100%, increasing the cost of going global; some countries have strict technical standards (such as the ADAS certification in Europe), delaying the product's market entry.

Delayed construction of high-end brand: There is a significant gap in brand premium compared to Tesla. The Model 3 has a premium rate of over 40% in Europe, while the BYD Han is only around 20%.

Supply chain and cost fluctuations: The price of lithium resources is greatly influenced by the international market. In 2023, the lithium price rose by 40%, squeezing the profit margin.

5.2. Optimization suggestions

Dual upgrade of technology and brand: Accelerate the research and development of L3-level autonomous driving technology and launch related products by 2025; enhance brand image through high-end event marketing of the "Yunwei" series (such as desert off-road and extreme environment tests).

Localization and policy coordination: Increase the local production rate of overseas factories (such as the local component rate of the European factory reaching 50%), utilize the Hungarian factory to avoid EU tariffs; and actively participate in the policy-making of target countries (such as the charging standards of ASEAN).

Supply chain strengthening: Establish more long-term partnerships to reduce reliance on upstream resources.

6. Conclusion

Overall, BYD's internationalization strategy presents the characteristics of "flexible model, gradient market, and collaborative capabilities": Adapt to different market stages with diverse models, first establish a reputation in the high-end market such as Europe and the United States, then expand into emerging markets. Technology, cost, and channels form a synergy to support differentiated competition. From the performance perspective, the overseas sales of 242,800 vehicles in 2023, with a year-on-year growth of 334.2%, prove the effectiveness of this strategy. Especially in Europe and Southeast Asia, it successfully broke the monopoly of international brands and became a benchmark for the internationalization of Chinese new energy vehicles. In the future, BYD needs to advance from "product export" to "technology export + brand export": In the technical aspect, accelerate the research and development of L3-level autonomous driving and participate in the formulation of new energy vehicle standards in ASEAN and the EU to enhance technical discourse power; in the brand aspect, through high-end marketing of the "Yunwei" series and the construction of core shopping mall experience stores, strengthen the brand image of "high-tech"; in the supply chain aspect, increase long-term cooperation and simultaneously increase the local production rate of factories in Europe and Southeast Asia to cope with overseas trade protection and competition from Tesla. BYD's internationalization practice provides a reference path of "technology foundation-ecological collaboration-local adaptation" for Chinese new energy vehicle enterprises. With the intensification of global NEV market competition, Chinese enterprises should draw lessons from BYD, avoid "low-price internal competition," and instead build long-term competitiveness through technological innovation and brand building, jointly promoting the transformation of China's new energy vehicle industry from "scale export" to "value export." Provide a more accurate decision-making basis and development prospects for the internationalization of Chinese NEV enterprises.

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