

Competitive Strategies of New Energy Vehicle Enterprises: Taking BYD as an Example

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Abstract. The new energy automobile industry is experiencing rapid growth, with BYD emerging as a prominent player due to its market competitiveness and innovation capabilities. This study focuses on BYD's development of new energy vehicles and analyses its competitive strategy. BYD is featured by its vertical integration model, focusing on technological innovation and independent research and development. It has a high potential for development under the domestic conditions of large market size and rapid technological development. Through SWOT analysis and the construction of Porter's Five Forces model, this thesis points out the importance of cost control, development and innovation, and expansion of user scale of this company. In addition, this paper analyses the company's aspects that need to be improved and puts forward corresponding suggestions for improvement. This thesis aims to provide suggestions and references for the development of BYD's new energy vehicles and hopes to promote the further development of China's new energy vehicles.

Keywords: New energy vehicles, BYD, Vertical Integration, Competitive Strategy.

1. Introduction

The new energy automobile industry is growing rapidly, becoming a vital sustainable development field [1]. The BYD, one of the most famous new energy automobile manufacturers, has made an enormous breakthrough in the new energy automobile market with its unique and powerful market competitiveness and innovation capability [2].

In this paper, we aim to research and analyze the development strategy of BYD in the new energy automobile industry. According to BYD's general situation and business in the new energy automobile industry, we use SWOT analysis and Michael Porter's Five Forces Model to assess BYD synthetically. With these research results, readers can further comprehend the special advantages and challenges BYD faces in the market competition.

After research, we conclude that BYD has made a remarkable achievement by using the vertical integration model, enhancing technological innovation capacity and independent research and development ability. However, the BYD needs to resolve challenges to control costs, satisfy consumers with customer service, and develop digital management. To enhance their competitiveness and satisfy customers' needs, BYD has to pay more attention to cost control and the uniqueness of products, promote production efficiency and accelerate the development of technical innovation.

The research aims to make recommendations and strategic guidance for further development of the BYD. At the same time, they can provide references on the development tendency and competitive strategy for the new energy automobile industry. Through this research, we desire to contribute to the sustainable development of BYD and other manufacturers and boost the popularization of vehicles in green power.

2. Case description

The BYD has developed a variety of fields, including the battery, the electricity, the new energy automobile, the rail traffic and so on [3]. We mainly focus on the new energy automobile field of the BYD in the paper.

The BYD stresses the importance of technical innovation when operating. For instance, the "E-Platform 3.0" and the "Dilinks Technology" promote the extent of intelligence of the vehicle, the cloud services that can control the vehicle by mobile phones, the "CTB technology", a technology making the battery and the body of vehicle a whole, the "DM-i super hybrid technology" which increases the performance of vehicles. It is shown that BYD had invested 20.223 billion yuan in total in 2022, with a year-on-year growth rate of 90.31%. Until the end of 2022, the quantity of patents that the BYD had applied for is more than 40 thousand. Besides, the quantity of authorized patents is over 28 thousand, and the BYD has up to 69 thousand staff [4].

The vertical integration model is one of the biggest characteristics of BYD. Since BYD purchased the Qingchuan automobile and started fabricating vehicles, the vertical integration model has been used for almost a decade. The BYD keeps self-sufficiency from lithium resources in the Salt Lake, metallic material, battery, and electrical machinery to the whole car [5].

The blade battery of the BYD is also significant, which leads to a proper return of the choice of battery. In addition, it solves the safety and the shortage of rare metals, contributing to the sustainable development of the Chinese battery and the Chinese new energy automobile industry [6].

In the market of new energy automobiles, the BYD is now competitive enough to take the lead in the domestic new energy automobile industry with its superior technology, product diversity and technical innovation, globalization strategy, vertical integration model, sustainable development style and environmental protection [7].

3. Analysis of Competitive Strategies

3.1. SWOT analysis

3.1.1. Internal and external factors

Strengths: Vertical integration model to reduce production process dependency; Self-innovation and technological advancement.

Weaknesses: Difficulty in controlling costs; Long product delivery time; Poor quality in the short term; Poor after-sales service development [8].

Opportunities: Rapid development of smart connectivity and artificial intelligence; Huge China's new energy vehicle market; Policy Support (Source: Ministry of Finance of the People's Republic of China: Vehicle Purchase Tax Preferential Policies Extended Total Reductions and Exemptions Expected to Reach RMB 520 billion - Precise Policies to Help New Energy Vehicles Expand in Quantity and Improve in Quality).

Threats: Competition is fierce and wide-ranging; Charging devices have yet to be widespread across the country; Cold weather has a big impact on new energy vehicles.

3.1.2. SO ST WO WT

SO (combining strengths and opportunities): Introduce technical talents and develop advanced technology; Grasp the policy support to develop the market fully; Take advantage of the low dependence on the full development of product uniqueness and enhance the technical production of irreplaceability.

ST (combining advantages and threats): Invest in developing the charging pile industry; Develop technology to cope with cold conditions to preserve quality; Highlight product uniqueness and adopt differentiated competitive strategies.

WO (combining weaknesses and opportunities): Using the network interconnection technology to save management costs and scale up production. Enhancing digital supply chain management model; Launching consumer online service software.

WT (combining weaknesses and threats): Enhance internet publicity of new energy vehicle products and develop public praise on the internet; Prioritize the development and expansion of the southern market to enhance competitiveness.

3.1.3. Summary of SWOT

BYD's strengths are mainly twofold. The first is adopting a vertical integration model, which effectively reduces the high degree of dependence on other component manufacturers in the production process; the second is that BYD promotes the spirit of independent innovation and focuses on technological progress.

But at the same time, several shortcomings have also emerged. The most prominent is the increase in cost, which in turn has a great risk in the return of capital; in addition, BYD also needs to improve in after-sales service, such as the long delivery time of the product, poor after-sales service and so on.

In today's social trend, BYD Company has ample opportunities. Not only the rapid development of smart connectivity and artificial intelligence but also the strong support of national policies, in addition to the dividends of new energy license plates and the gradual popularity of charging piles, the domestic new energy vehicle market is also very large, which gives domestic new energy vehicle manufacturers more than enough opportunities.

There are advantages and disadvantages. There are more domestic car brands, which makes BYD's market competition fierce. In addition, the speed of charging pile construction makes it difficult to catch up with the popularity of new energy vehicles, and it is even impossible to find charging piles in mountainous or underdeveloped areas. At the same time, the quality of new-energy vehicle batteries in cold conditions has also shaken the confidence of many consumers in buying new-energy vehicles.

3.2. Porter's Five Forces Model

Bargaining power of suppliers: Even though the vertical integration model raises BYD's production costs, it does reduce the company's dependence on the production process. By processing most of the parts supplied by its production and sourcing only a small number of materials from outside, the model reduces the bargaining power of BYD's suppliers.

Bargaining power of buyers: There are two scenarios for consumers of the car company. One is bulk purchases by the government or other companies, and the other is by general consumers. The former has a higher bargaining power because of the large number of one-time purchases and orders compared to the latter. In contrast, as a general consumer, the latter has a lower bargaining power because the demand for vehicles is generally not more than a single-digit number, and the group of such consumers consists of several small units.

Threat of new entrants: As a new energy vehicle, the factors that hinder new entrants are a unique vehicle production chain, corresponding technical support, policy subsidies, and sufficient financial support. New entrants are also divided into two categories. One is the transition of traditional fuel automobile companies to new energy vehicles; the other is the entrepreneurs whose main business is new energy vehicles. The former has accumulated a corporate reputation and consumer base based on the existing foundation, coupled with funds from selling traditional fuel vehicles and talent training, making it easier to enter the new energy vehicle industry. On the other hand, the latter need help entering the field due to impediments such as fundraising, talent recruitment, and lack of technical support.

The threat of alternatives: Similar to the automobile production company, BYD's new energy vehicle enterprise substitutes other companies that produce cars. This includes traditional fuel vehicles and other brands of new energy vehicles. BYD's substitutes for the production of many types of vehicles, coupled with the higher price tag of BYD in the field of new energy vehicles in the

country, lead to the threat of substitutes for the products produced by the enterprise and cannot be ignored.

Competition from existing competitors in the industry: For automobile production companies, the main companies competing for market share with BYD in the domestic market are Chery Automobile, Great Wall Motor, Geely Holdings, BAIC Group, GAC Group, Changan Automobile, Dongfeng Corporation, SAIC Group, China FAW, etc. (Source: China Association of Automobile Manufacturers - Domestic Data). In the domestic development stage of new energy vehicles, BYD has greater competition within the market.

To sum up, BYD should mainly focus on transitioning other traditional fuel vehicles to this field, the threat of substitutes and competition from the same industry in the competitive process. As a result, enhancing the uniqueness of BYD's products and strengthening product innovation are still an important part of enhancing the company's competitiveness.

3.3. Comprehensive Analysis

Combined with the SWOT and Porter's Five Forces model analyses of BYD above, the following considerations for improving the competitiveness of this company were synthesized:

3.3.1. Cost control

Below is a positive feedback loop sorted out by this research: Vertical Integration - Higher Costs - Higher Prices - Reduced Demand - Focus on Technological Innovation - Higher Prices.

Higher costs triggered by the nature of the firm itself, caused by the vertical integration model, will put it at a disadvantage in the cost competition in the product market. In this way, it drives the firm's technological innovation. It leads the brand towards a high-quality, high-technology marketing model, which will also lead to higher prices to a certain extent.

Table 1. Source: Baidu Stock Market

vintages	Total operating costs	total revenue	R&D costs
2021	212.6 billion yuan	216.1 billion yuan	7.991 billion yuan
2022	401.2 billion yuan	424.1 billion yuan	18.654 billion yuan
First quarter of 2023	115.2 billion yuan	120.2 billion yuan	6.238 billion yuan

Based on Table 1, it can be seen that BYD's investment in R&D costs is continuing to rise, with R&D costs in just the first quarter of 2023 almost catching up with total annual R&D costs in 2021 and the gap between total revenue and total operating costs is not slightly smaller. Therefore, cost reduction is promising to help BYD break through the bottleneck of low net profit.

3.3.2. Product innovation and product uniqueness

BYD is a leader in core technology. They continue to develop new energy vehicles to meet consumer demand for features, safety and price. BYD innovates in automobile manufacturing technology to increase the technological content of its vehicles and invests heavily in technological innovation and patent research and development. Their number of patent applications in new energy vehicle technology research and development ranks at the forefront of the industry, and they have become a leading company in the field of new energy vehicles.

Combining the two modes of analysis, both point out that developing new energy vehicles is in a stage of co-existence of opportunities and competition. The favorable conditions of policy support, scientific and technological progress, and large market scale can make the field further bigger and stronger. But simultaneously, the fierce competition among enterprises is equally intense. Combined with the cost control problems of the enterprise above, continuing to pay attention to the uniqueness of product innovation will greatly enhance the competitiveness of BYD and strengthen its irreplaceability.

3.3.3. Expansion of market size, Internet online services

The domestic new energy vehicle market is huge, and the competition among auto brands is large. If you want to get stronger competitiveness, you have to pay attention to the method of market scale expansion. With the rapid development of the Internet and online media, artificial intelligence should also be considered to build a network of consumer interaction platforms, improve the quality of consumer online services simultaneously, increase media publicity, and enhance brand goodwill and popularity. Rapid market expansion is a major competitive advantage in the rapidly developing new energy automobile industry.

4. Competitive Strategy Improvement

4.1. Continuous Focus on R&D Investment

The competitiveness of new energy vehicles mainly lies in the characteristics of batteries and engines. Consumers prioritize performance and value when choosing a car. Continuous battery capacity and safety performance improvement are necessary to achieve a larger market share for new energy vehicles. BYD has been making continuous technological progress in new energy vehicles by optimizing the characteristics of batteries and engines, thereby gaining a technological advantage. For example, in power batteries, BYD has successfully developed blade-type batteries, improved battery pack integration, and reduced size and cost. In the engine field, BYD has introduced a series of hybrid engines and continuously reduced costs, achieving affordability for plug-in hybrid vehicles. In addition, BYD has a complete set of IGBT production lines for the electric control system and has launched multiple generations of IGBT chips with leading performance levels. BYD has established new profit growth points in the market for new energy vehicles and provides services to other engine and electric control system manufacturers [9].

4.2. Strengthen Brand Marketing and Market Positioning

Brand marketing and market positioning can be strengthened through market segmentation and integrating online and offline channels. A deep understanding of consumer needs and preferences in the target market is necessary to position BYD's products in specific market segments. Market segmentation can be done for different groups, such as urban residents, business professionals, and families, and corresponding products and marketing strategies can be developed to meet their unique needs. Furthermore, integrating online and offline channels can provide diversified car purchase and after-sales service experiences. Online channels can include official websites, mobile applications, and social media platforms, providing product information, online reservations, and consumer interaction. Offline channels include sales outlets, exhibition centers, and experiential activities, offering consumers practical test drives, consultations, and after-sales services. By implementing targeted brand marketing and market positioning strategies, BYD can enhance brand awareness, improve product competitiveness, establish strong relationships with consumers, and gain a larger market share and business growth in the new energy vehicle market [10].

4.3. Strengthen Diversified Investments

Firstly, increasing investment in charging infrastructure construction by building more charging piles and stations to improve the convenience and satisfaction of users. Focus should also be placed on technological research and innovation to enhance product performance and usability, including improvements in battery technology, vehicle intelligence, and the integration of intelligent transportation systems. BYD can explore the extension of the new energy industry chain, including battery material manufacturing, power battery recycling and utilization, and electric vehicle charging services. Moreover, seeking strategic partnerships with other companies to share resources, technology, and market channels can achieve large-scale development. Consider technological investments, mergers, and acquisitions to gain advanced technologies and talents. Through diversified

investments, BYD can expand its product line, strengthen its technological capabilities, master the supply chain, and establish a solid foundation for sustainable development in the new energy vehicle market.

4.4. Continuously Reduce Costs

From an overall automotive industry perspective, BYD should open its supply chain further. BYD's new energy vehicle company has gradually achieved full openness of the product supply chain and formed independent legal entities for internal component suppliers, providing more flexibility for selling products to the external market. It is suggested that BYD's new energy vehicle company accelerate the pace of external supply, increase investment in external sales and product technology integration, and further enrich the product line to ensure continuous competitiveness. This will help the company quickly meet market demands, expand its business scope, and promote continuous growth.

In terms of production, BYD utilizes economies of scale by expanding production scale to achieve economies of production cost. Additionally, the company optimizes research and development and design processes, using advanced virtual design and simulation technologies to reduce the need for physical prototypes and testing, thereby reducing development costs. Furthermore, BYD actively promotes the application of industrial automation and intelligent manufacturing technologies to reduce labor costs and improve production efficiency and quality, utilizing automated production lines, intelligent robots, and Internet of Things technologies.

Regarding company management, costs can be further reduced through optimization of resource utilization, waste reduction, and continuous process improvement measures. By implementing these measures, BYD can provide competitive products at lower costs.

5. Conclusion

BYD has a bright future in new energy vehicles but must deal with various challenges. This paper analyses its competitive strategy through SWOT analysis and Porter's Five Forces model and suggests suggestions to improve its competitive strategy. BYD New Energy Vehicle Company has the competitive advantages of low price, high quality and leading technology, so it is suggested that its competitive strategy should focus on brand marketing, strengthen diversified investment, continue to focus on research and development and continue to take the low-cost route. These strategies enable BYD to meet consumer demand, maintain its leading position, and expand its market share.

Authors Contribution

All the authors contributed equally, and their names were listed alphabetically.

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