

# ***Analysis on BYD Current Development and Future Direction***

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**Abstract.** The issue of vehicle emissions is one of the primary contributors to greenhouse gases and, by extension, global warming. One of the current solutions to the emissions problems caused by vehicles is the use of new energy vehicles to supplant fuel vehicles. This paper concentrates on a SWOT analysis of BYD using secondary data to understand BYD's current external and internal situation and to investigate what factors may be impeding BYD's advancement in the new energy vehicle market. The paper concludes that BYD's reliance on policy subsidies as well as its bad after-sales service and supporting facilities may account for the company's slow continued growth. By establishing a solid after-sales system and expanding its global market, BYD will be able to address the aforementioned issues. Consequently, by analysing BYD as a leading player in China's new energy vehicle market, the results of this paper can be beneficial for the Chinese new energy vehicle market and can also serve as a reference for other new energy vehicle companies confronting comparable issues. It can assist investors in comprehending the current state of BYD.

**Keywords:** new energy vehicle, BYD, government subsidies, SWOT

## **1. Introduction**

Under the strategy of global sustainable development, individuals began to recognise the significance of reducing carbon emissions. Transportation contributed 37% of global carbon emissions, and more than 90% of total vehicle emissions can be attributed to particulate emissions from traditional fuel vehicles [1]. The use of new energy vehicles as opposed to fuel-powered vehicles can reduce total vehicle emissions, which can significantly alleviate the current carbon emissions problem. Therefore, the rapid development of the new energy vehicle industry has attracted significant investor and government support and funding. BYD is a high-tech company committed to "meeting the aspirations of people for a better life through technological innovation" [2].

After more than 20 years of rapid growth since its establishment in February 1995, BYD has constructed more than 30 industrial plants worldwide, contributing significantly to the development of its industrial chain and the exploration of international markets [3]. BYD focuses on technological innovation and employs more than 20,000 R&D personnel worldwide, fostering independent innovation and international development. BYD's innovations include a number of industry-leading technologies and patents, the majority of which are world leaders. The new energy vehicle industries are essential to BYD's development in the future [2]. However, there is still a substantial disparity between the market share of new energy vehicles and fuel vehicles [4]. This indicates that BYD requires additional development to increase the market share of new energy vehicles. Numerous

researchers conduct SWOT analyses of BYD or other new energy vehicle companies, and the author observes that people will mention the assistance of Chinese policy for new energy vehicles; however, the dependence on policy subsidies must be taken into account. Additionally, the author will elaborate on this subject.

This paper analyses BYD's current market position and uses SWOT analysis to investigate what has delayed BYD's development and how it can promote BYD's future growth. The analysis assists the public in comprehending the current state of new energy vehicles in China, including what strengths new energy vehicle companies should possess, what deficiencies may hinder their development, and what opportunities and threats they face. This paper's analysis will assist investors in BYD in gaining a better understanding of the current situation and will contribute to the provision of constructive advice on the development of the new energy vehicle sector. It can also provide beneficial solutions for businesses in the new energy vehicle industry that are experiencing similar issues.

## 2. SWOT Analysis

### 2.1. Strength

#### 2.1.1. Technology Status and the Full Supply Chain

BYD is the only manufacturer of electric vehicles with a complete three-electric industry chain. (electric power, electric motor, and electric control). This assures its advantage in providing superior technology integration and competitive pricing, making it difficult for any automaker in the world to catch up. BYD's electric control system is a self-developed SiC MOSFET, and its motor is a permanent magnet synchronous motor that is smaller and lighter than other motors with the same power and torque, allowing for more battery capacity. The BYD battery is the only blade battery in the world to pass the nail penetration test, indicating that it cannot catch fire [5]. It is a highly professional barrier due to the heat resistance, high pressure resistance, crystallisation resistance, and high density of its ultrathin heat sink.

#### 2.1.2. The Wide Product Portfolio

BYD's extensive product portfolio, which includes electric vehicles, batteries, solar panels, energy storage systems, 'Total Solutions' for eMobility, and monorails, enables the company to diversify its revenue streams and reduce its reliance on a single product or market.



Figure 1: The product of BYD (Source: <https://www.bydglobal.com/en/index.html>).

The extensive product lineup of BYD gives the company a competitive advantage over its rivals. It enables BYD to offer a variety of solutions to its customers and to satisfy their diverse needs, which can help the company attract more customers and expand its market share. BYD's business structure incorporates the disciplines of electronics, automotive, new energy, and rail transportation, and it plays a significant role in these industries from energy acquisition, storage, and application to build a comprehensive, zero-emissions new energy solution [3]. In the case of BYD cloud rail, the cost of construction is only one-fifth that of underground; the cost of construction time is only one-third that of underground; and the electricity consumption of cloud rail is approximately 0.57 degrees/km per 100 people, making it the best mode of public transportation for cities with low population density,

urban and rural areas, and major tourist attractions [6]. The initiative has also received bids from numerous nations and regions. Multiple nations and regions have submitted winning bids for the undertaking.

## 2.2. Weakness

### 2.2.1. Poor Ancillary Facilities and After-Sales Management

After-sales service plays a crucial role in moulding consumers' perceptions of a car brand and can have a substantial impact on their purchase decision [7]. According to the data, China's consumer associations received 649 complaints, 279 of which concerned BYD's after-sales service [8]. Undoubtedly, BYD has the most after-sales service complaints on the Chinese auto market [8-9]. It can demonstrate that BYD's after-sales service is a severe issue that could impact the company's reputation and sales volume [10].

After-sales service is a potent safeguard for the rights and interests of consumers. The fundamental objective of after-sales service is to protect the rights and interests of consumers. After-sales service is not standardized, and the unbalanced development of product quality and product technology will become a limiting factor in BYD's ability to actively compete with well-known foreign automakers. In addition, a paucity of charging stations for new energy vehicles and higher prices will be emphasized, making consumers less likely to purchase BYD products [11]. The fundamental charging facilities for BYD's new energy vehicles are also primarily concentrated in cities of the first and second tiers, whereas there are even fewer charging piles in other cities. As BYD's R&D and production base for new energy vehicles, Xi'an is unable to address the charging problem of new energy vehicles.

### 2.2.2. Over-Dependence on Policy Support

According to Figure 2 of BYD's annual report, one of its disadvantages is its excessive reliance on the Chinese market. Not only is it detrimental to BYD's development on the international market, but it is also susceptible to domestic economic and policy influences [2]. BYD depends significantly on government support. BYD's 2021 Annual Report indicates it received CNY 2.3 billion in government subsidies in 2021, which accounted for approximately 57% of its net income that year [2]. Other forms of government support that benefit BYD include local government purchases of businesses. As the industry leader, BYD has financial assistance income of RMB2,263 million, RMB1,678 million, and RMB1,678 million included in current profit and loss for 2019-2021, accounting for 91.94 percent, 39.63 percent, and 74.3 percent of the year's net profit, respectively.

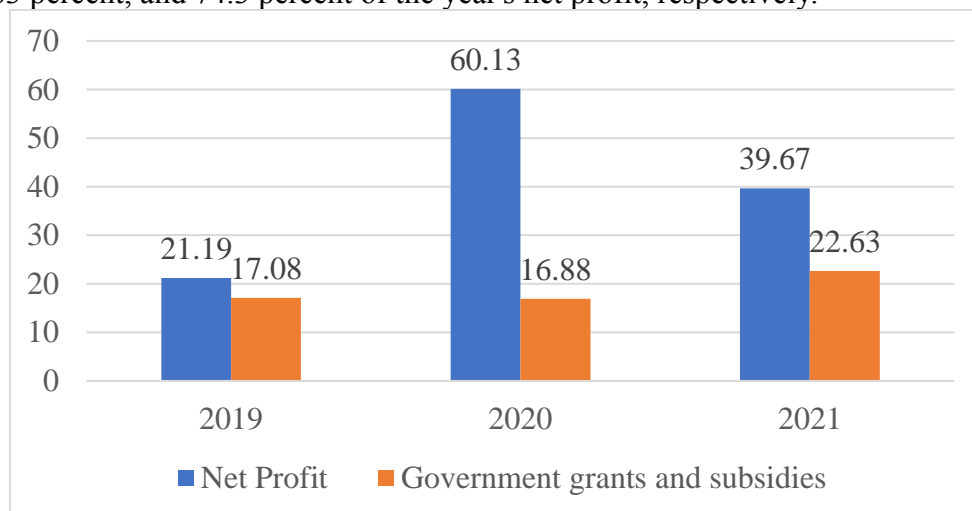


Figure 2: The data of government grants and subsidies and net profit on BYD from 2019-2021 [2] [12-13].

## 2.3. Opportunity

### 2.3.1. Policy Subsidies

In China, policy support for new energy vehicles has been progressively elevated to the level of a national strategy, and government agencies at all levels have provided substantial support for the development of new energy vehicles. The Chinese government has implemented a series of vehicle consumption stimulative policies, including a 50% reduction in purchase tax, monetary subsidies, and consumption vouchers, to stimulate market dynamics and promote vehicle consumption. With policy support, BYD can reduce production costs and increase technological research and development, thereby expanding its market share and enhancing its corporate reputation. National policy, social philosophy, and market outlook all point to a tremendous opportunity for BYD to accomplish industrial upgrading as the leader of the domestic automobile industry.

### 2.3.2. Global Market

BYD finds Europe and Southeast Asia to be an attractive market. Although Europe is the second largest market for new energy vehicles in the world, with new energy vehicles accounting for 27.2% of the global market, the penetration rate is only 18.1%, with pure electric vehicles accounting for 12.1% of the car market, leaving ample room for growth [14]. All European nations have enacted legislation to support the development of new energy vehicles, making Europe the region with the shortest energy transition worldwide. Europe is also the most economically developed region in the world, with the greatest per capita wealth, so expanding its presence in Europe will aid in enhancing its reputation.

Southeast Asian nations support the development of new energy vehicles through their legislation, and the trend towards electrification is quite evident. In addition, Southeast Asia is a significant source of upstream raw materials, and the expansion of new energy businesses in the region would enable BYD's entire industrial chain to maximise its advantages more effectively. Therefore, BYD must take advantage of the global market's development opportunities in order to introduce its new energy vehicles to the global market.

## 2.4. Threat

### 2.4.1. Policy Uncertainty

Government subsidies are a significant factor in the advancement of novel energy vehicles. The three primary sources of financial support for BYD are research and development subsidies, industrial support funds, and promotional subsidies. In recent years, however, national subsidies for new energy vehicles have been progressively reduced or eliminated, creating a more challenging market environment for new energy vehicle manufacturers. The subsidy rate for new energy vehicles will be reduced by 30% from 2021 to 2022; the subsidy rate for urban buses and other vehicles that meet policy requirements will be reduced by 20% from 2021 to 2022 [15]. The subsidy policy for the procurement of new energy vehicles for 2022 will expire on December 31, 2022 [15].

BYD's 2022 current ratio is calculated to be 0.72, which is very low compared to the 2022 current ratio of 1.02 for the same industry [16-17]. BYD's corporate solvency and liquidity are weak, its long-term capital structure is extremely asset-heavy, and its short-term liquidity is insufficient to quickly realise liquid assets, further decrease as a result of government subsidy cuts.

As the government reduces subsidies, BYD's net profit will decrease [2, 12-13]. The reduction in subsidies will have an impact on BYD's innovation efficiency, R&D capacity, and marketing capacity. BYD's share of the domestic market will be impacted if policy subsidies for new energy vehicles continue to decline in the future. This will impact the company's ultimate profitability.

### 2.4.2. Domestic Technology Threat

China's industry chain for new energy vehicles is relatively comprehensive, and the barrier to entry for new energy vehicles is low. Thus, a number of prominent internet companies, including Huawei, Xiaomi, DJI, Baidu, etc., have announced their entrance into the new energy vehicle industry. It is anticipated that their entry will alter the playing field and elevate the technical level of new energy vehicles, particularly in autonomous driving.

The power battery is the fundamental technology of new energy vehicles, and the current automotive power battery unicorn is Ningde Time. Ningde Time has a market share of over 30 percent and has gained orders from Tesla, Azera, Peng, and other major manufacturers of new energy vehicles. The ternary lithium battery from Ningde Time has a high range capacity and is the preferred battery for automobiles. In terms of cost control, Ningde Times has a comprehensive industrial layout, with equity cooperation with third parties throughout the entire industry chain, and industry-leading profit margins; BYD primarily adopts the approach of self-production + equity participation, and there is still a gap between the two in terms of the number of equity enterprises and shareholding ratio. Under these conditions, if BYD does not continue to develop its battery technology, Ningde will take over the battery market share, resulting in a decline in BYD's overall profitability.

## 3. Recommendation

For the sake of global sustainability, new energy vehicles will eventually supplant fuel energy as the primary mode of transportation [18]. BYD should address its weaknesses and surmount its threats in order to expand its market share and consolidate its global leadership position.

First, BYD's inadequate after-sale management is a significant problem. In the process of the rapid development of the new energy vehicle industry, service is the most essential product component [7]. Consequently, a comprehensive and refined after-sales service system is a deficiency that should be promptly addressed by automotive companies. BYD should establish a perfect after-sales service system, expand regional openness, improve management standardization, improve service convenience, solve problems for consumers from a practical standpoint, and thereby increase consumer satisfaction, thereby increasing customer loyalty to new energy vehicles and laying the groundwork for the future occupation of the new energy market.

Government grants and subsidies are a double-edged sword for corporations producing new energy vehicles. From the development of their products to the construction of urban infrastructure to the marketing of their products, the development of China's new energy vehicle companies is aided by policy subsidies at every stage, from the construction of urban infrastructure to the marketing of their products. These stages are never undertaken without the financial support of the local government. This has caused many companies to rely excessively on government subsidies, reducing their autonomy and industrial excellence. As mentioned in the opportunities section, government grants can significantly assist BYD in reducing production costs and expanding its market presence. However, an excessive reliance on government grants and subsidies will diminish BYD's independence, thereby decreasing its risk tolerance. Under these conditions, BYD's net profit and production line will be susceptible to domestic policy shifts. Therefore, BYD should be aware of the company's degree of reliance on government grants and subsidies, as well as how this will impact the business. BYD could reduce its reliance on government subsidies by exploring the international market.

By increasing its global market share, BYD can operate its business with greater resilience and less reliance on government intervention. BYD is able to identify demand based on the new energy market in various countries and swiftly enter the market to capitalise on it. In the same way that you cannot place all of your eggs in one container, globalisation can reduce the impact of individual regions on the company's growth, thereby reducing dependence on policies and simultaneously increasing profitability.

#### 4. Conclusion

The paper conducts a SWOT analysis to evaluate BYD's external and internal environment, and then makes recommendations for the company's future strategy and objectives. According to an analysis of BYD's weaknesses and threats, inadequate ancillary facilities and after-sales management, as well as government overdependence, are the most significant obstacles to BYD's market expansion and global development. Nevertheless, based on an analysis of opportunities and strengths, BYD's technological status, comprehensive supply chain, extensive product portfolio, policy support, and global market serve as the firm foundation for its position as the global leader in the new vehicle market. BYD should address the issue of after-sales service by establishing a flawless service system and enhancing management standardisation for market expansion. BYD must be aware of the implications of its reliance on government subsidies for the company. Despite the difficulties, a business that grows with assistance cannot outperform a business that grows independently.

Due to the fact that the paper performed a SWOT analysis on the available information, this work identifies and discusses BYD's issues with a degree of brevity. It is nearly impossible to analyse all of BYD's problems using this internal and external analysis alone. In conjunction with SWOT analysis, it is necessary to employ additional analysis techniques, such as PEST analysis, to gain a more complete comprehension of BYD's current issues and future development trends.

The acquisition of data consists primarily of secondary data and web data, and primary data will unquestionably improve the effectiveness of the data in the paper. In the future, it will be possible to obtain more accurate and useful data through the employing of interviews.

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