

A STUDY ON THE COMPETITIVENESS OF BYD NEW ENERGY VEHICLES IN THE US MARKET

Gang Chen¹, Lulu Zhang²

Department of International Business, School of International business, Zhejiang Yuexiu University, Shaoxing, Zhejiang Province, 312000, China.

ABSTRACT : With the international market paying more and more attention to the development of green economy, the reform of traditional vehicles has become a foregone conclusion. In this case, new energy vehicles have made rapid progress. The United States, as one of the developed countries, in order to meet the requirements of technical barriers and improve the export and development of China's local new energy vehicle enterprises, it is also necessary to conduct research on the competitiveness of enterprises. In this regard, by taking BYD as a case study, this paper explores the competitiveness of the company in the American market. Firstly, the relevant theoretical knowledge is summarized, including the concept of new energy vehicles, the concept of competitiveness, the characteristics of the new energy vehicle industry and the basic theoretical knowledge of competitiveness. Secondly, understand the export status of BYD new energy vehicles in the American market, and analyze the situation of BYD in the American market; SWOT analysis was used again to study the strengths, weaknesses, opportunities and challenges of BYD's new energy vehicles in the development of the American market; Finally, relevant suggestions are put forward for the existing problems, hoping to provide a reasonable and accurate basis for inter-enterprise cooperation, mergers and acquisitions and investment through the evaluation of enterprise competitiveness, as well as optimize social resources and promote social progress.

KEY WORDS: BYD; New Energy Vehicles; Market Competitiveness; SWOT Analysis

I. INTRODUCTION

With the attention of the country to the waste of resources, it is planned to put forward the requirements for the industries with more carbon dioxide emissions, the purpose of which is to control the sustained growth of greenhouse effect, so as to effectively control the deterioration of global warming. In this case, we began to pay attention to the automobile industry with high carbon dioxide emissions, put forward the use of new energy to control carbon dioxide emissions, and put forward relevant policy support for new energy vehicles. Hope to use high-tech to change the problem of high-carbon emissions of traditional cars, better optimize the development of global warming. This policy has not only been attached importance to by the relevant government departments of our country, but also has been generally supported in the world. China's new energy vehicles have also begun to appear in international trade. This gives new energy vehicles a better market environment and competitive advantage. However, due to the change of international market trend, the development of new energy vehicles in China is hindered, and the difficulty of engaging in foreign trade activities makes it difficult to improve the competitiveness of new energy vehicles in China. By taking BYD as the research object, this paper explores the competition of new energy vehicles in the American market, and makes the new energy vehicles develop rapidly in the international market. It also provides a reference for the development of new energy automobile industry in China.

II. RELEVANT THEORETICAL KNOWLEDGE

2.1 Concepts of New Energy Vehicles

New energy vehicles, there are broad sense and narrow sense of two statements. Most of the new energy vehicles in a broad sense refer to those that do not use traditional types of energy as the main power source, including some using non-oil fuels and all using non-oil fuels. In addition, the narrow sense of new energy vehicles mostly refers to those who choose the fuel used in non-traditional models as the main power source, or new vehicle power devices and the use of traditional vehicle fuel vehicles.

2.2 Characteristics of The New Energy Vehicle Industry

In recent years, environmental problems have become more and more prominent, the concept of green management has gradually been popularized among the market public, while the state has vigorously implemented policies and regulations on green environmental protection, some consumer ecological behaviors of the public in daily life have gradually begun to be standardized. The characteristics of the industry consist of three parts: first, it can reduce all kinds of energy consumption to a certain extent, thus improving the dependence on non-renewable energy in transportation facilities, and reducing the problem of over-exploitation of non-renewable resources in China; secondly, it can effectively reduce a certain environmental pollution source. Nowadays, in the environment of global warming, in order to avoid the environmental re-pollution caused by human factors and to construct the industrial support of new energy vehicles, it is helpful to adjust the environmental changes reasonably and to standardize the overall living environment changes. Finally, it can promote the development of new energy vehicles.

III. ANALYSIS ON THE EXPORT STATUS OF BYD'S NEW ENERGY VEHICLES IN THE US MARKET

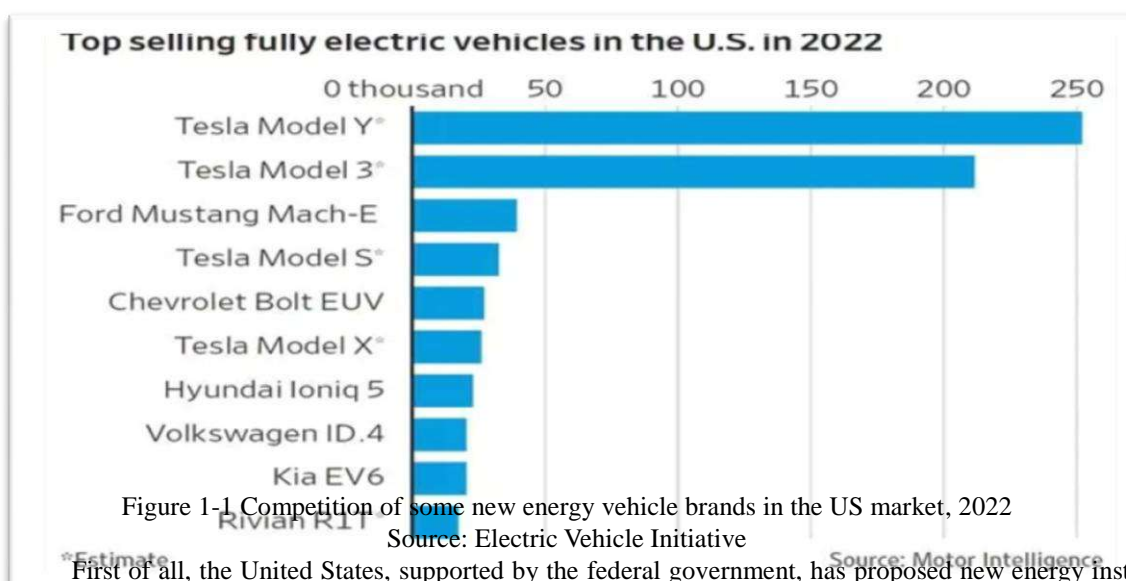
3.1 Introduction to BYD

BYD was founded in 1995, located in Shenzhen, Guangdong Province, the company focuses on IT, cars and new energy industries. With more than 200,000 employees, the company has established large production bases in Beijing, Shanghai and other first-tier cities, and has more than 20 production bases overseas. Under the demand of low carbonization economy, BYD began to develop in the form of combination of automobile and new energy. Since 2003, the company has entered the automobile industry across industries. Start to develop their own brands, and with the advantage of battery and automobile, to develop and sell new energy vehicles. Especially in recent years, BYD has surpassed Tesla, BMW and other manufacturing companies in new energy vehicle sales for several consecutive years. In this regard, this paper will explore BYD's competition in the United States market, so as to explore the factors that affect BYD's international market development in combination with domestic policy support for new energy vehicles. In order to better for BYD new energy vehicles in the international market competitiveness to provide advice.

3.2 The Competition for New Energy Vehicles in the United States Market

3.2.1 Market Conditions and Policy Environment

As one of the countries with strong support and promotion of new energy vehicles, new energy vehicles had been sold in the United States far more frequently than other countries in recent years. In 2022, the United States has sold 807,180 fully electric vehicles. According to the survey, the purchase of new energy vehicles in the United States market is mostly concentrated in pure electric vehicles and plug-in hybrid models. The highest sales in the market are concentrated in Tesla, Chevrolet, Ford and so on, as follows:



First of all, the United States, supported by the federal government, has proposed new energy instead of traditional energy policies as early as 1992, followed by continuous revision and enactment of new laws, especially in Obama's CAFE standard policy, which requires traditional cars to meet the 35.5 mile per gallon

standard and less than a third of emissions. However, the promulgation of this policy has greatly accelerated the development of the new energy automobile industry. Secondly, the new energy vehicles should be supported and encouraged, and the tax credit should be provided to consumers to encourage the purchase of new energy vehicles with higher energy efficiency. Third, the United States has optimized policies for new energy vehicle production and accessories enterprises, supported continuous innovation in the development and operation of new energy vehicles, and subsidized more than \$10 billion in financial support to related enterprises. This makes many new energy vehicle companies in the local market supported by government funds, mostly the top sales companies in the market, and provides low-interest loans or tax breaks to related new energy vehicle companies to better promote the development of pure electric vehicles.

3.2.2 Technical Status

In the development and utilization of new energy vehicles, the United States mainly relies on powerful automobile enterprises such as General Motors and Ford, and focuses on the development of local new energy vehicle enterprises. It also urges related enterprises to work together to develop some technology about electric vehicles.

3.3 Export Status of BYD New Energy Vehicles in the U.S. Market

After China had begun to pay attention to the energy consumption of the automobile industry, it also began to transform and support the related new energy vehicle enterprises, among which BYD is one of them. After years of development and innovation, BYD has become stronger and has gradually begun to rival new energy automotive companies in developed regions abroad, not only in technology research and development, but also in sales. But BYD's sales in the U.S. are still insufficient, and there is still a big gap between some U.S. auto companies, as follows:

Table 1-1 BYD new energy vehicles US sales table (units: vehicles) 2020-2022

Year	Electric vehicles	Hybrid vehicles	Plug-in hybrid
2020	4157	3580	1050
2021	6375	2416	2069
2022	6664	2520	2766

Source: BYD Annual Report 2022

The table 1 indicates electric vehicles of BYD's sales in the US rose from 4157 to 6664 from 2020 to 2022, hybrids were down from 3580 in 2020 years to 2520 in 2022 ;plug-in hybrids rose from 1050 in 2020 to 2766 in 2022. As a whole, compared with BYD's other types of new energy vehicles, BYD's electric vehicles accounted for a higher proportion of U.S. sales, but hybrid vehicles and plug-in hybrids accounted for a less proportion. Compared to the other new energy vehicles in the U.S. market, it can be concluded that BYD's own car technology is not competitive or it doesn't have inadequate export in the US market.

IV. SWOT ANALYSIS ON THE COMPETITIVENESS OF BYD'S NEW ENERGY VEHICLES IN US MARKET

4.1 Advantages

4.1.1 High-quality Products

In the course of BYD's operation in the American market and in the process of developing all kinds of new products, BYD pays great attention to the quality of automobile products. If we want to win in the long-term competition, we must fundamentally guarantee the quality. BYD has circumvented technical barriers to trade in response to various requirements for new energy vehicles in the United States market, and in order to ensure that its product quality is in line with local market demand, it has also built a number of local production bases. Directly in the local for enterprises to provide vehicle-related accessories. Compared with the quality of new energy vehicles such as Ford and BMW, BYD's car quality is only high or not, and when BYD enters the U.S. market, the quality of BYD's new energy vehicles is the first factor to consider when BYD enters the U.S. market. At the same time, our government attaches great importance to the research and development and innovation of new energy automobile technology, aiming at making achievements in this field. Therefore, in this respect, China provides a certain degree of policy support, can be said to be equal to Europe, America and Japan and other automotive powers, technology and quality are closely related. It can be seen that the quality of BYD's new energy vehicles is one of the key factors to gain market competitiveness in the future market, and will enter the eyes of consumers in the United States market with a new look.

4.1.2 After-sales Service

After-sales service is related to BYD's consumer satisfaction in the United States market. As a large

durable product, new energy vehicles need to invest great manpower and material resources to ensure quality and establish a perfect after-sales service network. Moreover, as far as new energy vehicles are concerned, after-sale tracking and service have become extremely critical, among which the construction of power stations and battery maintenance are very important. As a key factor affecting BYD's new energy vehicles' market competitiveness in the United States market, it is also very important to construct the after-sales service system of new energy vehicles. BYD is different from traditional automobile export enterprises, which set up specialty stores at home after sale to meet the needs of consumers in the United States market, and then form corresponding after-sales service to meet the needs of consumers. BYD's new energy vehicle has established a service consciousness in line with its own characteristics. At the same time, most of BYD's new energy vehicles are relatively cheap compared with Ford and BMW. In order to avoid the possibility of being compressed to a very low profit to affect after-sales service, it is dedicated to human resources training and after-sales service programs. This provides a good start and foundation for BYD's new energy vehicles to develop sustainably in the U.S. market, so as to ensure that BYD's new energy vehicles can get a good reputation in long-term sales. In addition, under the background of Internet development, BYD's new energy vehicles began to use online channels for marketing, and a special after-sales network model of BYD's new energy vehicles was constructed in combination with the Internet. To meet the American market consumers for after-sales service needs.

4.2 Disadvantages

4.2.1 Independent Brands Lack of International Competitiveness

From the current development of the new energy vehicle industry, it is not optimistic that although BYD has formed its own brand characteristics, the establishment of a particularly strong product brand effect is still slightly inadequate. Fully reflects BYD's new energy vehicle brand lack of international competitiveness. Compared with the focus on automobile production, BYD's new energy vehicles still have no breakthrough in independent intellectual property rights or brand of new energy vehicles, which has caused BYD to compare Ford, BMW and other brands. Even if its own product quality is comparable, but the brand's own publicity and lack of competitiveness has reduced the attention of many consumers to product quality, resulting in BYD's new energy vehicles in the United States market competition process has been hindered. Nowadays, although BYD's new energy vehicles have begun to highlight the competitive advantage of the brand in the domestic new energy vehicle market, compared with the international famous new energy vehicle brands, the products are still in the middle and low grade. BYD's new energy vehicles still need to improve their marketing network and achieve sustainable development in the United States.

4.2.2 The Construction of Local Industrial Chain in American Market Is Incomplete

BYD has established related stores in the U.S. market and upstream and downstream of the industrial chain, but still has more contact with domestic BYD enterprises, and often still needs the domestic market as the main upstream to support some resources downstream of the overseas market. To ensure BYD's new energy vehicle development is efficient and sustainable. The industry chain of BYD's new energy vehicle is not very complete. At present, there are many key factors restricting the market development of BYD's new energy vehicle, including the immature battery technology and the large cost. In addition, battery technology has the hidden trouble of high investment risk and long research and development cycle, which leads to the negative attitude of BYD's new energy vehicle in developing new technology, and the core raw materials and main equipment used in BYD's new energy vehicle battery production cannot be self-sufficient. Perhaps because of some competitors' obstacles directly with the upstream resource chain break, directly affect BYD's new energy vehicle competitiveness.

4.3 Opportunities

4.3.1 Governmental Supports on the Import and Export of New Energy Vehicles

In the past, in order to limit all kinds of export activities in other industries of our country, the United States has established corresponding technical barriers to trade and non-tariff barriers, the United States has relatively loose import and export policies on new energy vehicles to improve the waste of natural resources, and BYD has begun to encourage BYD to enter the U.S. market after obtaining the certification of vehicle chargers, new energy monitoring centers, etc., the most authoritative third-party safety certification body in the United States in 2012, and BYD has also obtained the U.S. Transportation Administration and European vehicle form certification, which has improved BYD's development opportunities in the U.S. market.

Table 1-2 Comparison of Parameters of Main Motor Performance

Comparative items	DC motor	AC asynchronous motor	Permanent magnet
-------------------	----------	-----------------------	------------------

			synchronous motor
Power density	Low	Middle East	High
Power factor (%)	/	82-85	90-93
Load efficiency (%)	80-87	90-92	85-97
Speed range (rpm)	4000-6000	12000-15000	4000-15000
Overload coefficient	2	3-5	3
Structural firmness	Low	High	Higher
Speed Control	Fine	Medium	OK
Performance			

Source: BYD Year-end Report in 2022

4.3.2 Lower Cost of Manpower and Raw materials

The main components of new energy vehicles are power batteries and motors, while most batteries use lithium batteries and motor raw materials are lithium ore and rare earth, which are abundant in China. And the raw materials needed in automobile production, such as steel and tires, are much lower than in the US market. In addition, China's labor costs have an absolute advantage. Although China's manufacturing labor costs have increased in recent years, they are much lower than those in the U.S. market. BYD's local factories or stores will still have a lot of Chinese, and a team relationship network has been established to align team work habits with communication. At the same time, BYD senior human resources performance appraisal is a global alliance, in order to meet the deployment of personnel or timely response to create a corresponding assessment system, so as to enhance the effectiveness of work, enhance profit efficiency.

4.4 Challenges

4.4.1 the U.S. Market Technology Development System Is Not Yet Standardized

With the support of the domestic market, BYD began to build a R & D model in line with its own development, which also provided support for BYD's new energy vehicle development in overseas markets. But after BYD's new energy vehicles established stores and production bases in the U.S. market, they did not constitute a R & D system for local policies or certain advantages provided by the government, which made BYD's new energy vehicles still concentrated in the domestic market and unable to make timely changes according to the changes in the U.S. market. There is still a big gap between the technology and the products produced by the international developed enterprises, not only in the product itself, but also in the profit gap. Local enterprises use the relevant policies to target R & D to obtain financial support, BYD can only quote foreign market production bases after domestic R & D, which wastes policy support in local operations. At the same time, by analyzing the nature of the cooperation between BYD's new energy vehicles and local related enterprises in the United States, it is found that BYD's new energy vehicles cannot be effectively supported by advanced technology in the development of new energy vehicles, which leads to excessive dependence on basic equipment, raw materials or semi-finished products provided by overseas related enterprises in the production process. BYD's new energy vehicle production base has become a "assembly" base, which limits BYD's independent innovation of new energy vehicles, The lagging development of core components technology is a fundamental problem restricting the development of BYD's new energy vehicles in the United States market.

4.4.2 China's Relevant Standards Have Not Been in Line with International Standards, Affecting the Process of Localization of Enterprises in the United States

As a major factor affecting the export of new energy vehicles in China, the purpose of the establishment of "theoretical" international trade barriers in developed countries, such as Europe and the United States, is to curb the rapid improvement of China's economy and restrict the development process of developing countries. Although BYD has gained the competitive advantage of the United States market with the help of domestic policies, the requirements of various spare parts for new energy vehicles in China are still far from those of the United States. Some parts cannot meet the demand of technical barriers to trade in the United States. In general, there is no unified planning system in the industry, which leads to the development of BYD's new energy vehicles, and there are still many shortcomings. The consequence is to hinder the development of key parts industrialization, lead to the scale of new energy vehicle industry cannot be guaranteed, and cannot guarantee the production and follow-up maintenance of enterprises in daily business activities.

V. PROPOSAL TO ENHANCE THE COMPETITIVENESS OF BYD'S NEW ENERGY VEHICLES IN THE US MARKET

As BYD's new energy vehicles enter the U.S. market, there are still several problems: first, BYD's

own car technology or export plan is insufficient, resulting in BYD's new energy car sales compared with some local auto companies still have a big gap. Second, BYD new energy vehicles relative to other international brands, its brand marketing is still insufficient. And BYD's negative attitude to new technology research and development and the U.S. local market technology research and development system has not yet been standardized, resulting in BYD's new energy vehicle international developed enterprises still have a big gap in the production of products.

5.1 Strategy for Building Competitiveness of Independent Brands

If BYD's new energy vehicles are to be competitive in the U.S. market, they need to form a strategic plan for the competitiveness of their own brands that meets the needs of the market, not only requiring BYD's new energy vehicles to focus on their product quality advantages. At the same time, give play to the role of banks and related financial institutions in the domestic market, expand the intensity of BYD's new energy vehicles to export credit, buyer credit and other financing, and increase BYD's new energy vehicles to compete for capital reserves in the United States market. In addition, the relevant government departments need to provide relevant policy support under the premise of ensuring the export tax rebate of independent brand automobile products. For example, the government has streamlined the process of customs clearance for import and export, and has introduced a certain tax reduction policy for enterprises to develop sample vehicles, samples and imported equipment dedicated to their own research and development, providing a more convenient market environment for BYD's new energy vehicles, and promoting BYD's new energy vehicles to meet their own brand competitiveness strategic plan through financial, technical and environmental support.

5.2 Promoting the Construction of New Energy Vehicle Industry Chain in Enterprises

The purpose of this paper is to promote the development process of BYD's new energy vehicle in the United States market, and to formulate the strategy and use of BYD's new energy vehicle type. At the same time, we should master the technical route related to the development of BYD's new energy vehicles, find out the breakthrough of market-oriented development accurately, consider various factors of technical level and cost, and determine the key models for development at this stage. From the macro point of view, as the technology of rechargeable hybrid vehicles has been improved, the current focus of promotion should be shifted to this model; at the same time, pure electric vehicles also have great potential for development. The advantage of this model is that its lithium battery performance is better. The formulation of product strategy, price strategy and marketing strategy should fully grasp the regional differences, income and consumption level and other factors. In addition, BYD's new energy vehicles still need to make overall plans for their basic construction, so as to form the chain of the new energy vehicle industry, rationally guide the related construction of BYD's new energy vehicle supporting facilities, effectively standardize the standards of charging stations, charging piles, maintenance facilities, etc. Improve the convenience of new energy vehicles.

5.3 Forming a Core View of Technology Research and Development InLine With the United States Market

In order to enable BYD's new energy vehicles to gain more stable market competitiveness in the local market of the United States, Build the corresponding core concept of technology research and development, directly from the local market situation in the United States to promote the independent development of new energy vehicles to enhance BYD's core competitiveness. In view of this, BYD's new energy vehicle should establish the scientific and technological innovation platform of the new energy vehicle, combine the existing scientific and technological resources on the new energy vehicle, and interact effectively with the related scientific and technological innovation platform. Implement diversified technological innovation strategy, and use local R & D institutions to drive BYD new energy vehicle R & D, learn from the advanced technology of the United States to form the corresponding R & D concept. Therefore, this also requires BYD new energy vehicle in the study of new energy vehicle stage can constitute a new car battery energy research and development, forming a new market trend standard. In addition, BYD should also improve the development and production of new energy vehicles and components to avoid excessive reliance on other related enterprises in the market.

5.4 To Make Suggestions for the Planning of Relevant Standards in China in Combination with the US Market

In order to realize the rapid development of the new energy vehicle industry, to make BYD's new energy vehicle develop better in the American market and to enhance the overall export volume of our country's new energy vehicle, it is necessary to construct a unified and reasonable industry standard. For example, in the

automotive industry, developed countries have been constantly involved in the formulation and revision of standards for the development of new energy vehicles, and have successively formulated a series of unified domestic standards. At the same time, developed countries have also jointly negotiated and unified international standards, starting with the proposal of international standards work projects, and finally forming new energy vehicle guidelines that meet international requirements. To this end, BYD's new energy vehicles can plan for China's relevant standards, combine with the development of the United States market to increase the research and transformation of foreign advanced standards of new energy vehicles, and fully improve China's technical standards, so as to improve the export qualification standards of independent brands, strengthen the construction standards of overseas marketing networks, reasonably and appropriately set the entry threshold to maximize the protection of export vitality, and provide convenience for China's new energy vehicles to enter the overseas market.

VI. CONCLUSION

By studying the competitiveness of BYD's new energy vehicles in the American market, this paper finds that the new energy vehicles are in a better macro environment in the process of development. The country vigorously develops new energy vehicles regardless of cost, which also requires BYD to seize the opportunity and make corresponding adjustments in the development of enterprises. BYD, as a prominent new energy vehicle enterprise in China, also occupies a place in the international market, so exploring the competitiveness of the United States market can better understand the problems existing in the development of BYD's new energy vehicles. This situation makes BYD's new energy vehicle competition incomplete. In order to improve the development potential of new energy automobile industry in China, this paper puts forward some suggestions to build independent brand competitiveness strategy, hoping to promote the construction of new energy vehicle industry chain and gradually form the core concept of technology research and development in the US market.

REFERENCES

- [1] Wang Rongbo, Analysis on Export Status and Marketing Strategy of BYD New Energy Automobile [J], Modern Economic Information,2022, (024):131-136
- [2] Guo Wen, Tao Kai, Analysis on the Formation of the Leading Market of New Energy Automobile [J], China Science and Technology for Development,2021,(032):81-88.
- [3] Zhang Yuanyuan, Constraints and Countermeasures on China's Export of New Energy Automobile [J], Northern Economy and Trade,2018, (010):18-19.
- [4] Zhao Junyu, Research on the SWOT Analysis and Promotion Strategy of the Market Competitiveness of Independent Brand, New Energy Automobile [J], Consumer Guide,2022, (043):82-90.
- [5] Ding Qian, TCO Competitiveness Analysis of New Energy Logistics Vehicle [J], Vehicles,2020,(03): 51-53.
- [6] Bai Mei, A Study on the Competition Pattern of Global New Energy Automobile Industry [J], Price Theory and Practice, 2020, (21):25-31.
- [7] Cui Dongshu, Analysis of New Energy Automobile Market in 2018 and Prospect [J], Shanghai Auto,2019,(42):1-5.
- [9] Liu Jianjun, Development and Trend of New Energy Automobile Technology [J], Study of Global Marketplace,2021,(034):36-39.
- [10] Zhang Jiaqi, Cao Yuan, International Competitiveness of Tesla Motors [J], Marketing,2022,(53):33-34.
- [11] Wang Zhihua, Zhou Limei. Analysis on the International Competitiveness of China's New Energy Automobile Industry under the New Normal [J], Inner Mongolia Science and Technology and Economy, 2019,(10):63-68