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Original Article

Research on the Development Strategy of the New Forces of New Energy Vehicles in China: Taking NIO Automobile as an Example

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Abstract - *Due to environmental pollution and national energy security, China, which has successively issued many policies on new energy vehicles, has entered a period of rapid development in the new energy automobile manufacturing field. There have been new energy automobile enterprises with good development prospects in the Chinese market. NIO is a representative of new energy vehicle companies. In this paper, the PEST model is employed to analyze the external environmental factors of NIO. Using the analysis of Porter's Five Forces Model, this paper studies the competitive environment of NIO's industry. Then the SWOT model is used to comprehensively analyze the current development situation of NIO, whose strategic direction of NIO is summarized, and the implementation and guarantee measures are put forward for the development strategy. Through the concrete case analysis of Shanghai NIO Automobile, the development strategy of NIO is explored, and the strategic direction that adapts to the development of the times is summarized through analysis, which is helpful for NIO to achieve better development.*

Keywords - *Shanghai NIO automobile, New energy vehicles, Enterprise development, Strategy.*

1. Introduction

By 2022, the number of cars in China will be 307 million, which has exceeded the number of cars in the United States. However, the energy crisis is constantly emerging with the increased number of vehicles. In 2022, China imported a total of 508 million tons of crude oil, making it the largest crude oil importer in the world, which cost 365.5 billion US dollars on this, increasing by 41.4%. Oil consumption on Chinese road traffic has accounted for 48%, but self-produced crude oil only accounts for 20% of all crude oil. Faced with such a huge number of cars, China began to promote the development of new energy vehicles in 2008 to follow the national energy strategy and environmental protection. By the end of 2022, the number of new energy vehicles in China has reached 13.1 million, accounting for 4.1% of the total number of cars, showing a rapid growth trend.

With the support of national policies, a large number of new automobile companies with innovative ideas of new energy and internet technology have emerged in the Chinese automobile market. Compared with traditional vehicle companies, these companies employing internet advantages and technology have more creativity and flexibility. Many new brands have emerged on the internet car-making track, such as NIO, Li, Weltmeister, XPeng, HOZON and so on (Liu, 2020). Among them, NIO Automobile, established in 2014, is undoubtedly a star player on this track. It is not only the second pure electric vehicle company listed in the United States after Tesla but also the company with one of the strongest cumulative delivery capacities among the new domestic car-making forces. Since its establishment, NIO Automobile Co., Ltd. has gone through 12 rounds of equity financing with a total amount of 44.3 billion yuan. However, behind the seemingly flourishing is the unsatisfactory financial report. From 2016 to 2022, the losses of NIO were RMB 2.573 billion, RMB 5.021 billion, RMB 9.639 billion, RMB 11.296 billion, RMB 5.304 billion, RMB 4.02 billion and RMB 14.4371 billion, respectively, totaling RMB 52.294 billion. Since NIO Automobile came into the market, its huge service system and good user experience have become its main core competitiveness (Wu et al., 2021; Yang et al., 2021). Regardless of the investment cost for user experience, operating income can not cover the input cost, which can not achieve the balance between surplus and loss. Tesla, its main competitor in the industry, has won the recognition of the product market and capital market with its unique business model (Ren, 2018). With OEM production, the production capacity is limited by people. How to change the above situations as soon as possible, break the monopoly of Western automobile brands on the automobile market, and achieve curve overtaking in the field of new energy vehicles on behalf of China's own brands has become an urgent issue

for NIO. Therefore, through the study of NIO's competitive tactics, constructive suggestions can be acquired for the research object as well as other independent brand automobile enterprises in China for reference.

2. Literature Review

As one of China's important strategic emerging industries, the new energy automobile industry has begun attracting more researchers to study. In terms of the development process of new energy vehicles, Tian Mei'e (2010) reviewed the development process of new energy vehicles, briefly described the core technologies of new energy vehicles, discussed the main factors restricting the development of new energy vehicles, and pointed out the development trend of new energy vehicles in the future. Zhu Jinsong (2012) believes that in order to improve the competitiveness of China's automobile industry, it is necessary to make strategic adjustments, continuously increase investment in technology research as well as talent cultivation of the automobile industry, and make the whole industry change from labor-intensive to knowledge-intensive as soon as possible. Xu Yongfei (2014) analyzed the advantages and disadvantages of developing new energy vehicles in China and conducted in-depth research on the industrial model of new energy vehicle enterprises to speed up the industrialization of new energy vehicles in China. Shi Juan and Zhang Jiumei (2017) studied the development paths of the new energy automobile industry in the United States, Japan and Germany, summarized their differences through systematic analysis, and put forward strategic suggestions on the upgrading path, policy support of route positioning, industrial structure adjustment, the competitive position of China's new energy automobile market, deficiency of government function system, network layout and driving role of leading enterprises.

In terms of policy support, Hu Shuhua and Yang Wei (2004) put forward that through analysis of the overall strategic environment, the strategic focus of China's electric vehicle industry is scientific and technological innovation, which should promote industrial innovation and facilitate Industry-University-Research to form an integrated scientific and technological system through national policies. Ouyang Minggao (2016) argues that developing new energy vehicles relies too much on government subsidies. Still, the policy support is unsustainable, so it is necessary to clear the thought and make the new energy vehicle industry transform from government guidance to market-driven. Guo Shixu (2018) believes that the new energy automobile industry has officially entered the "post-subsidy era", which makes the whole industry must be upgraded as soon as possible. Consumers' focus is also changing with the continuous improvement of new energy vehicle technology.

In terms of related technologies, Wang Xiangqin (2011) pointed out that power batteries and distribution networks are important factors restricting the industrialization of new energy vehicles. Xin Fengying and Wang Haibo (2010) believe that the main determinant of developing new energy vehicles is the breakthrough of battery technology. At the same time, the industrialization process is determined by the market rather than the plan. Technological progress must be made to achieve breakthrough development, and costs must be constantly reduced. Jing Xulong (2018), through the analysis of the development of power batteries for new energy vehicles, maintains that research and development should continue to be strengthened, and battery technology should be continuously optimized to provide a basic guarantee for the sustainable development industry.

On the whole, domestic scholars mainly focus on the overall layout at the national level but little on the development strategy of NIO's new energy vehicles. Moreover, the policy of new energy vehicles has changed rapidly in recent years, and the technology has been upgraded frequently. It is necessary to put forward targeted strategic planning according to the current policies and technologies. While planning the whole industry of new energy vehicles in China, enterprises need to fully analyze the internal and external environment and formulate strategic plans that meet their own development needs to find the correct market positioning in the complex market environment and then develop rapidly. Therefore, it is crucial to study the development strategy of specific automobile enterprises.

3. Research Methods and Instruments

3.1. Research Methods

Literature research method. By consulting the literature on the development of electric vehicles and the relevant literature on the development strategy of electric vehicle enterprises, referring to the contents of other domestic new energy vehicle enterprises in strategic formulation, and inquiring about the relevant policies of domestic new energy vehicles, the development direction of the electric vehicle industry is analyzed. It provides a theoretical basis for NIO's development strategy research.

Qualitative analysis. Through the PEST model and the Five Forces Model, the external environment of NIO is analyzed, and the development of NIO is analyzed in essence.

Comparative research method. The development strategies of new energy automobile enterprises at home and abroad are compared, to sum up their advantages and analyze the development direction of NIO in combination with its own characteristics.

Case analysis. The cases of NIO, Li, XPeng and BYD in the field of domestic new energy vehicles are analyzed to

summarize the basic situation of the domestic new energy vehicle market, laying a theoretical foundation for NIO's development strategy.

3.2. Research Instruments

PEST analysis. The macro factors that affect the new energy automobile industry and new energy automobile enterprises are analyzed, which can be divided into four categories, namely, political, economic, social and technological environmental factors.

Five Forces Model. The competition structure of the new energy automobile industry is analyzed from the perspective of five competitive forces that affect the fierce competition and the competitive strategies among enterprises in the new energy automobile industry. These five forces include competition among existing enterprises, the threat of potential new entrants, the threat of substitutes, the bargaining power of suppliers and the bargaining power of purchasers.

SWOT analysis. The external opportunities and threats, internal advantages and disadvantages of NIO Automobile Co., Ltd. obtained through PEST analysis and the Five Forces Model are listed in turn, and its internal and external conditions are compared with the two to obtain the analysis of the combination of competitive strategies that NIO may make in various external environments under different circumstances.

4. Results and Discussion

4.1. Problems in the Development of NIO

4.1.1. Continuous Losses of the NIO Automobile

In 2022, despite the subsidy boom and COVID-19 epidemic, NIO's delivery volume was still as high as 122,500. But by 2022, NIO's share price had dropped from the highest point of more than 60 dollars to 9 dollars. Even the financial report with a good development trend failed to stop the stock price from plummeting. According to the 2022 NIO Financial Report, NIO Automobile's total revenue was RMB49.2 billion, increasing by 36%, with an overall gross profit margin of 10.4% and a net loss of RMB14.4 billion. From 2017 to 2022, net income was in a state of negative growth for six consecutive years.

4.1.2. Constant Negative News

In 2019, NIO delivered more than 20,000 electric vehicles. The probability of spontaneous combustion of new energy vehicles in China is only one in ten thousand. Still, in the second quarter of 2019, three consecutive ES8 spontaneous combustion accidents were caused by battery module failure. At the end of June, the government urgently recalled 4803 vehicles. In November 2020, another ES6 broken shaft accident occurred in Shanghai, which pushed NIO to the forefront. From 2018 to 2020, NIO successively broke out problems such as "the system crashed while the vehicle was driving", "the vehicle's battery life was only 200 kilometers", and "the door failed, and the screen was black". These scandals have raised consumers' doubts about NIO's quality control (Zhu, 2020).

4.1.3. Improper Marketing Strategy

NIO's marketing strategy has serious problems. A huge amount of money has been invested in marketing, but the result is far from satisfactory. In terms of marketing channels, NIO's online marketing is limited to various activities on its APP, and offline marketing is also limited to store activities, whose purpose is to build its high-end image positioning. Such marketing means limiting the advertising audience to customers who own NIO APP, visit offline stores and are interested in NIO. Regarding marketing content, NIO's propaganda always fails to grasp the audience's pain points. For example, NIO advertised that its products used an all-aluminum body but did not advertise that it had mastered the mass production and processing of series 7 aluminum. It also promoted the electric drive system of its own products. The speed of NIO electric vehicles can reach 100 Km per hour within 4.7 seconds, but the durability of extreme speed is more worthy of publicity. Instead, NIO did not promote its excellent battery monitoring technology, body and chassis structure.

4.1.4. Unsolved Mileage Anxiety

The official cruising range of seven models of NIO is 400 to 700 kilometers. Still, the actual cruising range of electric vehicles will be reduced by about 20%-30% due to various reasons such as operational differences, road conditions and climate. In the case of winter, the battery life will be reduced even more, which may even be reduced by about 40%.

Another reason for "mileage anxiety" is the imperfect supporting facilities. The number of new energy vehicles and charging infrastructure in China is 13.1 million and 5.2 million. By 2022, a total of 1,315 NIO power stations had been built. The potential customers of new energy vehicles are usually not eager to buy them because of mileage anxiety. The advantage of the low driving cost of electric vehicles is completely concealed by the disadvantage of endurance anxiety.

Table 1. The cruising range of the models sold by NIO

Model	cruising range in comprehensive working condition
ec6	475km
ec7	590km
es6	610km
es7	575km
es8	580km
et5	560km
et7	675km

Table 2. National Subsidy Policy for New Energy Vehicles

Vehicle type	Pure electric driving range (working condition method, kilometers)		
Pure electric	300≤R＜400	R≥400	R≥50(NEDC working condition)/ R≥43(WLTC working condition)
	13000 RMB	18000 RMB	/
Plug-in hybrid power	/		6800RMB

The problems with charging facilities are that traditional fuel vehicles often occupy the parking spaces of charging piles. Besides, the damaged charging piles can not be repaired in time. Additionally, the charging speed of ordinary charging piles is too slow, and the number of supercharging stations is too small.

4.2. Analysis of External Environment

4.2.1. Analysis of Political Factors

The industrialization process of new energy vehicles in China is obviously driven by policies. The government plays a leading role in developing new energy vehicles, promoting the development of new energy vehicles through financial subsidies and R&D support policies. Developing the new energy automobile industry is inseparable from the government's promotion. In order to promote the development of the new energy vehicle industry, the government has put forward a series of incentive policies for new energy vehicles, promoting sales.

In addition, the government has provided a lot of infrastructure for new energy vehicles and promulgated many policies related to the construction of charging infrastructure. In 2022, there were more than 1.57 million public charging piles in China, and more than 50,000 were added every month.

To sum up, the successive introduction of a series of policies shows that the government attaches importance to developing new energy vehicles. A positive political environment is conducive to guiding the new energy automobile industry to focus on research and development. These encouraging policies paved the way for NIO's development.

4.2.2. Analysis of Economic Factors

The economic environment can affect the development of automobile manufacturing. Since the reform and opening up, China's economy has maintained a healthy and positive development trend. In 2022, China's GDP increased by 3%, with a total GDP of 120 trillion RMB. With the rapid development of China's economy, the demand for automobiles is increasing.

According to the statistics of China's automobile market in 2022, driven by policies such as steady growth and consumption promotion, cars achieved rapid growth. They contributed an important force to the small growth throughout the year. Commercial vehicles are running at a low level due to factors such as low infrastructure construction. New energy vehicles continued to grow explosively. In 2022, the sales volume exceeded 6.8 million, and the market share increased to 25.6%. It gradually entered a period of comprehensive market expansion and ushered in a new development and growth cycle. Automobile exports continued to maintain a high level, with monthly sales hitting a high record. The growth trend of new energy vehicles indicates that the domestic new energy vehicle market is full of potential.

4.2.3. Analysis of Social Factors

According to the calculation of relevant departments, China's urbanization rate will reach 65% in 2025, which has been China's main theme of population development in recent years. The process of urbanization has an important impact on the national economy. The urbanization rate in developed countries is around 80%, compared with China, which has great potential. The increase in the urbanization rate will also boost consumption and provide more demand for the market. According to the survey, the newly-increased population in China is a new consumer group in the automobile market. About half of the newly urbanized population bought private cars within three years.

At the same time, the new generation, characterized by highly educated young people, has higher purchasing power than the older generation. To get a foothold in the new city as soon as possible, the new generation has to buy a house and a car as their primary consideration. On the other hand, in recent years, society's awareness of the concept of green environmental protection has been deepening. Low-carbon travel has become a mode chosen by more and more people. For example, shared bicycles have mushroomed. In many large and medium-sized cities in China, buses powered by clean energy have replaced traditional fuel buses to serve the passengers. The popularization of the environmental protection concept will undoubtedly create more demand for new energy vehicles.

4.2.4. Analysis of Technical Factors

After the reform and opening up, China's automobile manufacturing industry has developed rapidly, which has a complete production system from parts manufacturing to vehicle research and development. Self-owned brand automobile companies such as BYD have certain advantages in the new energy automobile market. Domestic

car companies also cooperate with foreign parts suppliers to improve their product strength by absorbing advanced technology.

At the same time, domestic suppliers with advanced battery manufacturing technologies have emerged in China, such as BYD and CATL (Contemporary Amperex Technology Co., Limited). In recent years, supporting facilities for electric vehicles have also been developed. Consumers can choose to install household charging piles in parking spaces. Public charging piles can be used outside. Not only the charging piles in urban areas have been popularized, but even charging equipment has been installed in the service area of expressways.

4.3. Internal Environment Analysis

4.3.1. Fixed Assets

By 2022, NIO had opened 338 service outlets and built 876 power exchange stations as well as 718 overcharged stations. In 2022, the total number of NIO stores reached 350. In terms of charging network construction, NIO has released the second-generation power station. Compared with the first-generation power station, the service level of the new power station has been improved by three times.

4.3.2. Financial situation

According to the ranking of the market value of automobile enterprises in 2022, NIO ranked 21st with RMB 114.1 billion. Li ranks 18th, and Xpeng Motors ranks 24th, a new force of new energy vehicles similar to NIO. In 2022, NIO delivered 122,500 vehicles and held a total of RMB 45.5 billion in cash, cash equivalents, restricted cash, short-term investments and long-term time deposits. NIO's sales revenue in 2022 was RMB 49.2 billion. Although its operating profit margin was -29.77%, its gross profit margin was 13.7%. It can be seen that although NIO, a new car-making force, was able to attract a lot of capital for its continuous blood transfusion in the early days of its establishment or the period of policy support, it must realize self-blood transfusion through excellent delivery and cannot rely too much on capital if it wants to turn losses into profits as soon as possible.

4.3.3. Technology Research and Development

In terms of battery safety, NIO developed a battery monitoring system. After the battery recall, NIO increased the research and development of the battery monitoring system. In terms of the convenience of energy replenishment, NIO has established a core business model (BaaS) of "separation of vehicles and electricity, battery rent, recharge and replacement, as well as step-by-step utilization". NIO separated battery ownership from vehicle ownership and introduced the battery operator, which provides battery services for NIO users. In this mode, consumers can choose not to buy batteries when they purchase NIO cars and instead buy battery rental services from battery operators. This model reduces the cost of car purchase and increases the convenience of travel, facilitating NIO to become a car that can evolve continuously.

In terms of big data applications, NIO collects feedback from users in real time on the product side, meeting users' car demand through system upgrades. NIO has also built a powerful cloud platform on the server and used the charging and replacing network to meet the customer's "one-click power-on" demand. Regarding data security, NIO holds the independent research and development ability of data security technology, which has formed a data security guarantee system with a team of data security professionals and core independent intellectual property rights.

4.4. Development Strategy Choice

4.4.1. Analysis of Industry Competition Structure

Threats from Potential Entrants

In 2019, the head of the Mercedes-Benz development department publicly stated that Mercedes-Benz no longer plans to develop internal combustion engines. In 2021, Audi also explicitly announced that it would stop the research and development of gasoline engines and diesel engines. This implies that fuel luxury car brands plan to turn to research and development along with producing electric vehicles in a few years (Sun, 2019).

Suppose traditional car companies transform to build electric vehicles. In that case, they will become the strong rivals of the new electric vehicle forces headed by NIO because traditional automobile companies have many advantages over new companies in manufacturing electric vehicles. First, traditional companies have a history of more than ten years or even over a hundred years. The experience they have in manufacturing cars is not something that new companies can catch up on within a few years. Traditional automobile companies have a mature system in the supply chain, production line and sales channels. In these areas, they all occupy a comparative advantage. Besides, traditional automobile companies also have a certain lead in vehicle design and research and development. Compared with the new companies, the traditional companies are relatively mature in terms of chassis, power and interior and exterior decoration design. Additionally, traditional automobile companies, which are not limited to a single channel in sales channels, but employ diversified sales methods conducive to vehicle sales, strive to make use of existing resources and save development costs.

Threat of Substitutes

At present, the technology of new energy vehicles is not mature yet, and traditional fuel vehicles have many advantages. In terms of price, traditional cars have more detailed market segmentation, and each model has its

corresponding commodity matching each price. Consumers can choose their favorite car according to their preferences. On the other hand, the new energy automobile industry started late and developed for a shorter time, providing relatively few choices for consumers. When consumers are on the sidelines, they will choose traditional cars even at the same price.

In terms of cost performance, although the use cost of fuel vehicles is higher than that of electric vehicles, fuel vehicles still have many advantages; for instance, the refueling speed is much shorter than the charging speed, the number of gas stations far exceeds the number of charging stations, and the long endurance can be achieved by adding fuel once, which can surpass new energy vehicles on medium and long-distance journeys. Therefore, potential consumers with medium and long-distance needs are also more willing to buy traditional fuel vehicles.

In terms of switching costs, traditional cars have more complete supporting facilities in repair, maintenance and refueling. The related infrastructure of electric vehicles is still not perfect. In particular, daily charging affects the users' travel, which is not conducive to the sales of electric vehicles. Coupled with the gradual reduction of government subsidies, consumers' desire to buy electric vehicles has decreased accordingly.

The Purchasers' Bargaining Ability

NIO currently has seven models on sale, whose prices are different according to different configurations. Customers can choose their favorite on NIO APP when booking. The sales methods of new forces of automobile companies represented by NIO differ from those of traditional companies. NIO's electric vehicles have no middlemen and distributors at the sales stage. This also suggests that NIO's car prices are the same throughout the country, and the price will not change with different stores. Therefore, buyers have little room for bargaining. However, consumers can compare NIO with other new energy vehicles on the market. Nonetheless, NIO's market positioning differs from other new energy vehicle companies. NIO has a greater comparative advantage at the same price, which will undoubtedly reduce the bargaining power of buyers.

Suppliers' Bargaining Ability

Battery systems, drive systems, battery management and electric control system are the key components of electric vehicles. The supply price of these three components will directly affect the cost of the whole vehicle. The situation of NIO' core component suppliers is as follows.

Table 3. Suppliers of NIO Automobile Core Components

automobile components	Supplier
Battery module	Contemporary Amperex Technology Co., Limited
Battery pack	Suzhou ZENIO New Energy Technologies Co., Ltd
Battery management system	NIO United Electronics
electrical engine	XPT E-powertrain Technology Co., Ltd
Motor controller	XPT E-powertrain Technology Co., Ltd

Due to the increasing production capacity of the power battery industry, the market has gradually become oversupplied, and the price of NMP used by NIO has been declining. In recent years, a number of domestic battery manufacturers, such as Contemporary Amperex Technology Co., Limited and BYD, have appeared in China, whose production capacity is increasing year by year. Under the background of the slow capacity increase of new energy vehicles, the supply of power batteries has surpassed the demand.

At the same time, the motor electronic control industry has also developed. The installed capacity of motors and electronic controls is also increasing every year. The bargaining power of suppliers is gradually declining. Due to reduced subsidies and the buyer's bargaining power, new energy car companies must keep prices by reducing costs. Because of the competition among suppliers, suppliers can only choose to reduce the price to maintain the market scale, which results in the weakening of suppliers' bargaining power. Last year, due to the limited share ratio of foreign new energy brands without subsidies, foreign brands once grew slowly and mainly entered China's market in the form of joint ventures, such as Shanghai GM Wuling (Hongguang MINI), BMW and Brilliance-Auto (BMW 5 Series PHEV). Shanghai GM-Wuling is familiar with the consumer preferences of China's automobile market. With its sufficient production capacity, Hongguang MINI was favored by the market once it was launched. As one of the pure foreign brands, Tesla's price has dropped repeatedly since the delivery of the factory located in China at the end of 2019. And Model 3 has become the most popular model in the new energy vehicle market. The third category is the new internet-resorted car-making enterprises headed by NIO (ES6) and Li Auto (Li ONE), which are prominent in terms of user satisfaction with their internet thinking.

According to the above situation, the competitors of NIO Automobile have become powerful rivals of NIO with different competitive advantages. The advantage of traditional self-owned brands lies in the cost advantage and

marketing experience accumulated in the process of establishing an automobile supply chain. The biggest advantage of foreign brands lies in their brand influence, especially after the subsidy withdrawal in China is completed. In addition, due to the improvement of Tesla Giga Shanghai's production capacity, domestic Tesla's price advantage has swept other competitors in the industry, especially self-owned brands. Although there is only one model in Li at present, acquainting with the pain points of new energy vehicle owners, it uses extended-range hybrid power to increase the cruising range according to users' demands, which makes its single model sales surpass NIO ES6 and its market share increase steadily.

Competition of Existing Competitors

At present, NIO's types are all within the scope of passenger cars, so its direct competitors are the counterpart car enterprises in the field of new energy. After five years of policy adjustment and market regulation, new energy car enterprises nowadays are mainly divided into three kinds.

One is traditional Chinese car enterprises and self-owned brand-new energy car enterprises. Traditional car enterprises responded to the call of national policies to enter new energy vehicles, while self-owned brand-new energy enterprises entered the new energy market earlier. The self-owned brands in the top ten sales lists include BYD (brand new Qin and Han EV), Great Wall (Euler) and Guangzhou Automobile (Aion S). Chery eQ, etc., which have rich operating experience, mature technology, a wide range of models and price advantages. The second category is foreign-funded new energy automobile brands. Before 2018, due to the limited share ratio of foreign-funded new energy brands without subsidies, foreign-funded brands once grew slowly and entered the China market mainly in the form of joint ventures. The third category is the enterprises headed by NIO (ES6) and Li (Li ONE), which are outstanding in terms of user satisfaction with internet thinking (Gao, 2019; Liu, 2020; Li, 2020; Gu, 2020).

4.4.2. SWOT Analysis of NIO Automobile

Advantages

NIO has a certain competitive advantage in product positioning. Although many new energy vehicles have participated in the market competition in China, NIO has positioned its products in a distinctive mid-to high-end market. NIO's price range has staggered competitors' market positioning, which facilitates enjoying the high-end market exclusively at present. NIO promoted the brand through marketing means, such as appearing in the FIA Formula E Championship and showing NIO's EP9 racing car with high-quality labels. Meanwhile, the successful listing of NIO in the United States has enhanced consumer confidence.

Another competitive advantage of NIO lies in its all-around customer service system, including its mobile APP, NIO power station, mobile charging car and other services. Users also have after-sales services such as a lifetime free warranty, a lifetime free car networking traffic package, and free road rescue. NIO shortens the distance between users and manufacturers with its perfect service system. NIO's advanced technology and high-end configuration are also its advantages over its competitors. NIO adopts a liquid-cooled thermostatic battery pack provided by Contemporary Amperex Technology Co., Limited, which can support up to 2000 cycles. All-aluminum body with aviation-level has high torsional strength. It is equipped with an air suspension and braking system provided by top international suppliers, whose configurations make NIO's products top-notch in their price range.

Disadvantages

NIO doesn't have the production capacity as a good qualification for the whole vehicle, so Jianghuai Automobile is chosen as the OEM factory, whose products are at the low-end level in the eyes of consumers. This conflicts with NIO's high-end positioning. At the same time, very few car companies choose OEM production. Therefore, NIO, which has no production capacity to produce the whole vehicle, may not be favored by consumers. Besides, NIO's Internet marketing channel can't cover NIO's potential consumers. NIO is oriented towards middle-class customers. Still, the main body of high-end car consumers in China's automobile market is the post-70s or even the post-60s, whose acceptance of the internet and new things is far less than that of young people. Even if NIO can open the market with the new generation of middle-class consumers, the lack of mainstream consumer groups will lead to difficult follow-up sales, which is not conducive to the brand's long-term development.

NIO's current financial situation is difficult to support the customer service system. From 2017 to 2019, its quarterly operating profit was a net loss. The huge fund gap is solved by continuous external financing to alleviate the financial difficulties. The revenue situation makes it difficult for NIO to maintain the services provided at present, such as free power exchange stations, mobile charging cars, overcharged networks and valet power supply. Moreover, NIO House, located in the prosperous area of first-tier cities, also needs a lot of money.

Opportunities

The government has formulated many policies for new energy vehicles, which specify the development outline of plug-in hybrid electric vehicles and pure electric vehicles as the main body simultaneously. In terms of subsidy policy, the Chinese government has implemented large-scale financial subsidies for tax reduction and the exemption for related enterprises and important parts in the new energy automobile industry and has also given preferential policies for consumption tax. At the same time, the Chinese

government actively builds relevant supporting facilities for new energy vehicles and issues relevant policies to promote the construction of charging facilities (Wang, 2017). The National Development and Reform Commission also promotes the development of the new energy automobile industry through subsidies and price concessions.

The market development of new energy vehicles is very promising. Domestic brands dominate the direction of pure electric vehicles, while joint venture car companies prefer to plug in hybrid power. NIO, a new force in car manufacturing, is the first enterprise to be listed and realize mass production, which has occupied a favorable position in the market. With the gradual improvement of charging facilities, electric vehicles are increasingly becoming a new choice for ordinary consumers to travel.

Threats

NIO's limited production capacity is not only due to OEM production but also due to the tight supply of core components. At present, the supply of power batteries and IGBT chips in NIO is very tight, which indirectly affects the delivery of NIO automobile orders. After the subsidy retreat in China is completed, foreign brands will have more competitive advantages by virtue of their brand influence. The joint venture brand is equipped with sufficient production capacity with its understanding of consumption intention in China's market, whose strength cannot be underestimated. With the trend of networking, intelligence and sharing in the industry, companies of technology heads around the world are preparing to set foot in the field of new energy vehicles. Apple Inc. is preparing to build an Apple car, and Baidu announced the research and development of Jidu automobiles.

According to the SWOT analysis of Table 4, NIO Automobile can adopt the following four strategic combinations. (1) SO strategy, a kind of growth strategy, is a positive strategic choice made by the company when it has its own advantages and faces great opportunities from the outside world. Specifically, the strategy is employed to increase R&D investment and widen the technology gap, optimize the service system and reduce the cost, strengthen the brand building, and widen the gap with peers. (2) WO strategy is utilized to make up for the deficiency of the company's ability or resources with the help of opportunities, to take this opportunity to reverse the congenital deficiency, to plan and build a vehicle production plant, and to reduce operating costs and increase income to support the service system. (3) ST strategy is used to solve problems by using the company's own ability when facing unfavorable external factors, to optimize production input and reduce the production cost, to increase investment in core technology research and development, and to improve product cost performance. (4) WT strategy, a strategy for enterprises whose own conditions are not too hard to face difficulties, is used to cooperate with other excellent manufacturers and rely on core advantages to occupy more market share.

The above four strategic combinations provide possible solutions for NIO when it encounters actual situations, and the formulation of any strategy must be based on the resources and capabilities of the enterprise itself. Therefore, when choosing the strategy of the company's business, it is necessary to refer to its external macro environment and medium industry environment and then formulate a competitive strategy that meets the company's development needs.

4.5. Implementation and Guarantee of Development Strategy

4.5.1. Implementation of Development Strategy

To Strengthen Brand Building

NIO must strengthen the brand building, increase NIO's popularity and link NIO's brand with high quality. Combined with the characteristics of new energy vehicles, it focuses on the publicity of electricity safety, cruising range and intelligence.

To Optimize the Service System

NIO's service system is ahead of any car company in the new energy automobile industry. However, a high-quality service system means high investment. In the situation that NIO is not optimistic about its financial situation, it has to adjust the existing service system. The investment in services should be reduced, and the management mode should be optimized to reduce service costs.

To Promote Research and Development of Key Technologies

NIO should continue to increase investment in research and development because only technological leadership can occupy a larger market share in the new energy vehicle market (Yao, 2019). Also, it should strive to improve its technology in cruising range and charging efficiency. The technical barriers to new energy vehicles should be overcome through cooperative research and the development of core technologies for new energy vehicles. Additionally, it should establish a long-term R&D plan to bring forth new ideas in electric vehicle technology.

Win-win Cooperation

NIO can promote its own development by cooperating with other enterprises. Besides, it should strengthen its strategic cooperation with JAC. New modes of cooperation among new power enterprises and traditional car enterprises have to be explored to promote complementary advantages and achieve a win-win situation (Suo & Li, 2023).

Table 4. SWOT Analysis Matrix of NIO Automobile

	Opportunity(O)	Threat(T)
	• State policies and subsidies for new energy vehicles • Good development of the domestic new energy vehicle market	• Constraints of parts suppliers on improving production capacity • Fierce competition after subsidy reduction
Strength (S)	SO strategy	ST strategy
• Unique market positioning • Good brand image • High-quality service system • Advanced technology and high-end configuration	• To increase R&D investment and widen the technology gap • To optimize the service system and reduce the cost • To strengthen the brand building and widen the gap with peers	• To optimize production input and reduce the production cost • To Increase investment in core technology R&D and improve product cost performance
Weakness (W)	WO strategy	WT strategy
• Lack of whole-vehicle production capacity • Single marketing channel • Insufficient funds to support the existing service system	• To plan and build a vehicle production plant • To reduce operating costs and increase income to support the service system	• To cooperate with other excellent manufacturers • To rely on core advantages to occupy more market share

4.5.2. Guarantee of Development Strategy

To Implement Refined Management

A profit-oriented goal should be set, adhering to the principle of prioritising efficiency and benefit. Refined management has to be comprehensively promoted, quantifying it to all links such as R&D, design, production, sales and service to enhance profitability. In terms of budget management, the expenses of R&D, marketing and management should be strictly controlled to improve NIO's cash flow and prevent capital risks.

To Optimize the Organizational Structure

Organizational transformation should be vigorously promoted, and the enterprise structure has to be reshaped. Organizational transformation should be promoted, and talent management has to be upgraded by optimizing the organizational structure. In addition, it is also necessary to comprehensively upgrade the talent management system.

To Strengthen Personnel Training.

A strategic-oriented talent training model should be established. The utilization efficiency of training resources has to be improved, and a reasonable talent training mechanism should be formulated. The training cost must be reduced while achieving the training purpose. The cultivation of core talents should be strengthened as well. Besides, excellent talents in the new energy automobile industry should be introduced. Additionally, the internal incentive system of enterprises has to be improved, establishing a sound talent cultivation system.

Conclusion

In the new era, the development of a new energy automobile industry can not only reduce pollutant emissions, improve the ecological environment and reduce energy consumption but also strongly promote the transformation as well as upgrading of China's automobile industry and promote the development of related industries, which is of great significance in promoting economic development. This paper takes NIO as the research object, systematically analyzes the market environment of new energy vehicles, deeply analyzes the internal and external environment of NIO, explores the current opportunities and threats using the SWOT model, and summarizes its advantages and disadvantages.

Generally, the emergence of new energy vehicles is a major change in the history of automobile manufacturing, promoting the formation of a brand-new industrial chain. The related industries involve many fields, and the industrial driving effect is obvious, which has the characteristics of strategic emerging industries. With this development opportunity, NIO will occupy a favorable position in the domestic new energy vehicle market. Meanwhile, Chinese enterprises such as NIO need to apply complementary technology to the business fields that can generate the greatest value for market users and supply chain enterprises in different situations to catch up with and leapfrog the technology of western countries (Ma et al., 2022).

However, the development of new energy vehicles is relatively fast, and related research and development technologies are developing rapidly, so the policies provided by the government are gradually changing. In order to make the proposed strategy conform to the current environment and adapt to future market changes, more valuable suggestions will be put forward at the later stage of the development strategy in terms of cost control, marketing means, financial risks and policy risks.

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