

# Research on Consumer purchasing Preference and Marketing Strategy of Electric vehicle industry in China

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**Abstract.** Electric vehicles are the future. All countries around the world are promoting the construction of new energy vehicles. China is one of the big countries that even set a goal to achieve 100% electric car in 2050. Recently, China's new energy vehicles appear spurt growth phenomenon, and countless manufacturers frantically expand their turf into the electric vehicle competition. Among many manufacturers, BYD and Tesla, as the two major brands in China, are in fierce competition. In this paper, consumers' purchasing preferences are investigated through a questionnaire survey, and the current product characteristics of different new energy vehicle companies are also analyzed. Besides, the advantages and disadvantages of Tesla and BYD are mainly analyzed by comparing the marketing strategies. This paper aims to find the development direction and marketing strategies of future new energy vehicles.

**Keywords:** Electric Vehicle; Marketing Strategy; Consumer Preference; BYD.

## 1. Introduction

### 1.1 Research background

As a rising power, China's national economic level and average living quality are steadily improving. As a result, the sales volume of the automobile industry has increased significantly, and the national demand for automobiles has been increasing year by year. The automobile industry has become an important industry in China's national economy, accounting for about 2% of GDP [1] and contributing as much as 4.5% to economic growth. But while cars have made people's lives more convenient, they have also brought many severe problems. The first is the risk of oil scarcity and regional instability due to the over-exploitation of oil resources caused by the massive demand for automobiles. Second, with the enhance of people's purchasing power, car ownership is soaring; according to the Ministry of Public Security statistics, as of June 2021, the national motor vehicle has a total of 384 million cars [2], car emissions of hydrocarbons and nitrogen oxides, the irreversible environmental pollution caused by its emissions of carbon monoxide in the harm on people's health. In this era, new energy vehicles have become the primary research objectives of significant companies. Countries worldwide are involved in the development of new energy vehicles, hoping to step into the new energy market and occupy the leading position in the industry. To promote the purchase of new energy vehicles, China has launched a series of policies to benefit the people. Since 2010, the government has launched a policy [3] to provide one-off subsidies to all plug-in hybrid passenger cars and pure electric passenger cars purchased, registered, and used by private individuals. The subsidy for pure electric cars is up to 60,000 yuan per car. In addition, the construction of charging stations, the purchase and use of new energy vehicles, and the scrapping and recycling of batteries will be given help.

In 2020, the Sino-German Electric Vehicle Cooperation and Development Report was jointly compiled by the China Society of Automotive Engineering.

China Commercial Industry Research Institute points out that the promotion of new energy vehicles is the mainstream trend. While the purchase restriction urban groups and online taxi groups as the main consumers of new energy vehicles, there is still room for further demand release. China's new energy vehicle market has a promising prospect and huge development potential. However, the layout of the charging infrastructure is still insufficient compared with the holding of new energy vehicles. The growth will be accelerated in the future. Charging technology also needs to be further developed and improved, speeding up the promotion and application of electric switching facilities.[7]

## 1.2 Literature review

Xing Yu, a practitioner in the electric vehicle industry, analyzed and discussed the development prospects and technical ideas of new energy vehicles. He believed that China started late in the research and development of new energy vehicles compared with other automotive powers globally, and there are still many problems that need to be solved. First, we should develop independent innovation and form an industrial structure, rather than rely on government financial support. Second, solve existing research and development problems, especially electric vehicles' inherent issues of battery and mileage. Try to Breakthrough technical barriers. The current Chinese electric vehicle industry needs to pay attention to continuous reform and innovation management ideas, increase investment in technology research and development. After done so, China's electric vehicles will walk at the forefront of the industry development.[8]

Zhang Chi, another practitioner in the electric vehicle industry, analyzed that battery technology is one of the future development directions of electric vehicles. At present, the biggest problem of electric vehicles is range anxiety. The mainstream range of new energy vehicles is 300-500km, which can only meet the needs of most urban traffic but cannot support medium and long-distance travel. The most direct way to improve the vehicle range is to increase the energy capacity of the power battery. Under the condition that the battery volume remains unchanged, the energy density of the power battery cell needs to be improved. The methods include 1. Optimization of battery cathode material. 2, battery anode material optimization. 3. Optimize the structure design of the battery pack. The popularization of charging piles and other public facilities is also an important part of the development of electric vehicles.[9]

BBC News claims that China's climate policy matters to the world. Without big reductions in China's emissions, the world cannot win the war against climate change. According to what China's President Xi Jinping said, China will aim for its emissions to reach their highest point before 2030 and carbon neutrality to be achieved by 2060. Coal has been China's main source of energy for decades. China will require a radical shift to reduce the emission. The electric car is one of the achievable solutions. China ranks seventh in the world for its percentage of electric car sales. About one in 20 cars bought in china is electric-powered. Thus, it can be concluded that electric cars have greatly contributed to the world's climate change.[10]

As far as we know, the research direction of most scholars is mainly the environmental protection significance of electric vehicles to the earth, such as reducing greenhouse gas emissions and slowing down climate warming. Most researchers are more concerned about improving the driving range of electric vehicles and the popularity of charging piles. Their focus is mainly on the production and research of electric vehicles. Few researchers pay attention to the real purchasing preferences and demands of consumers in the current market. This is the main research direction of this paper. We will systematically study consumers' preferences and user's requests for electric vehicles to help BYD improve its marketing strategies. Design and develop electric vehicles closer to consumers' daily usage needs.

In an attempt to fill in this gap in the existing literature, this paper explores the consumer buying bias and the marketing strategy of the electric vehicle industry in China. The thesis documents several key contributions of consumer traits, the electric automobile market, electric vehicle development.

### 1.3 Research framework

Initially, our group made a form related to the consumer market to list the preference of buyers and sales status of the company such as sales volume, layout, construction of charging station, and so on. In addition, we analyzed the data of consumer bias and the current situation of the brand like BYD which dominated the electric vehicle industry in China to further estimated some problems. Moreover, our group would propose optimizing strategies which are beneficial to brand development and augmenting market expansion, respectively.

## 2. Method

### 2.1 The questionnaire survey

A questionnaire survey can greatly save time and enable us to obtain data more quickly. Besides, the data are primary data with timeliness, and the data can be more consistent with our research. The results of the questionnaire survey are easier to handle and analyze statistically. We can use analysis software for data analysis, which is very simple. We will use a questionnaire survey to investigate people's purchase intention of new energy vehicles and their specific choice of standard configuration. In addition, we will use the survey data to formulate better business marketing strategies to get ahead in the new energy market.

### 2.2 Case Study

This section summarizes three approaches to explore the consumer purchasing preference and marketing strategy of the electric vehicle industry in China. a. market research b. case study c. industrial report.

A case study is a well-efficient method, and it is closely relevant to the new power vehicle market. In this way, our group studied the design and marketing strategies of different brands to obtain data. By comparing and con-trusting data, consumer purchasing preferences and factors affecting the sales market can be precisely obtained as soon as possible. Comparing with other approaches, the case study is derived from practice without theoretical abstraction and simplification. It is a comprehensive and true response to objective facts, which can enhance the effectiveness of the empirical study. Meanwhile, the case study has a good effect on immature field research, especially include areas where a phenomenon is dynamic and not yet mature or settled, or where terminology and a common language and set of definitions are not yet clear or widely accepted.

### 2.3 Correlation method

This paper uses the case analysis method and literature research method to compare the marketing strategies of BYD, Tesla, and Xiaopeng. Summarize the marketing strategies of these three companies by collecting information. Obtain the proportion of marketing funds of the three companies from the company's financial statements. Pay special attention to marketing trends in emerging media. The different marketing methods of these three companies in short video platforms. By analyzing the differences between the marketing modes of traditional automobile companies and Internet automobile companies, we can provide a new direction for the marketing mode of electric vehicles in the future. Based on case studies, we can also collect the differences in marketing strategies of these three companies from a large number of kinds of literature. Get the mature marketing strategy conforming to the trend of market development. For example, in the point of advertising, how to accurately locate the target population and how to give play to the brand advantages are all very worthy of study.

### **3. Results**

#### **3.1 Analysis of the current situation of industry development**

##### **3.1.1 The quality of products**

Most customers pursue the appearance and comfort of cars. BYD can improve consumers' memory and product image by developing some auto parts and adding its characteristics in the process of r&d. While ensuring product quality, technology update speed is also very important. Whether we can walk in front of the new energy market will be an important part of the success of marketing. According to the survey, most consumers demand good after-sales and warranty services. Therefore, BYD should also provide good service in car maintenance and train professional after-sales staff.

##### **3.1.2 How to Promote effectively**

When consumers do not have enough information or purchase experience, they tend to refer to people's opinions with the purchase experience. When it comes to newer products like new energy vehicles, many people need credibility to guide them. BYD company can improve the influence of the product and let more people know about the product by seeking celebrity spokespersons or becoming sponsors of major film and television works and variety shows. BYD can also put forward relevant measures, such as recommending to relatives and friends, getting discounts and gifts, etc., to improve credibility and popularity.

##### **3.1.3 Environmental awareness**

By improving people's understanding of environmental protection, BYD can connect environmental protection and new energy vehicles. Pay attention to the dissemination of environmental protection knowledge when promoting so that the masses can more accept and buy the product.

#### **3.2 New energy vehicle product characteristics analysis**

New energy vehicles are significant in alleviating the energy crisis, coping with climate change, and saving energy and environmental protection. In the above questions, we analyze the purchasing preferences of people who buy new energy vehicles. Next, we will analyze the marketing features of different brands and different product features of vehicles with different positioning from the perspective of enterprise brands. We will mainly analyze BYD and Tesla, two brands with an enormous market in China.

##### **3.2.1 Tesla**

2020 Tesla X Tesla the Model X, known for its striking Falcon wing rear doors, has been in existence for six years now, and it hasn't changed much. Tesla is currently advertising two levels: long life and performance. Both have all-wheel drive and dual electric motors and have a range of more than 480km. An industry-leading infotainment system, the industry's largest touch screen, and incredible acceleration are also part of the Model X's appeal. Tesla says the long-range version can reach the 100-kilometer acceleration goal in 4.4 seconds, while the performance version can do so in 2.6 seconds. Only Porsche's Taycan and Tesla's own Model S sedan can keep up with the X. Base price: \$86,190, Endurance 527 kilometers. Tesla Model S Electric cars existed long before the Model S, but Tesla's sedan proved that efficient, fast, and attractive electric cars would not only sell but make much money. Introduced back in 2012, the Model S is appealing from its smooth styling to its minimalist interior. Its performance is still ahead of the lead it has shown in the electric vehicle business. Tesla has made some progress over the years, improving the acceleration and range of its hatchbacks. Base price: \$71990, Endurance 630 kilometers Model 3 is the brand's cheapest Model, launched a few years ago and one of the most anticipated cars of the decade, with a price tag of around \$40,000 for its huge EV family. It's easy to see their appeal, and the Model 3 is a fast and easy-to-use three-hatchback with attractive styling and plenty of interior space for your friends. It also offers maximum range and minimum acceleration time. Musk has worked hard at it. The standard rear-

wheel-drive model with a 400km range has proved very popular, while the all-wheel-drive long-range and performance model offers a 518km range and up to 3.2 seconds of 100km acceleration. Base price: \$41,190, Endurance 402km

All in all, different Tesla models perfectly adapt to different consumer groups while featuring autonomous driving, futuristic appearance, infotainment system, 100km acceleration, and other high-tech. To capture consumers' preferences, the buyers are mainly younger, the consumer group is larger, and the brand effect is good.

### 3.2.2 BYD

BYD's new energy vehicle series is more likely to be bought by everyone, and its price is affordable (about 190,000 RMB) and cost-effective. Although there is no obvious difference between models like Tesla, each model also has certain positioning, such as luxury and sport.

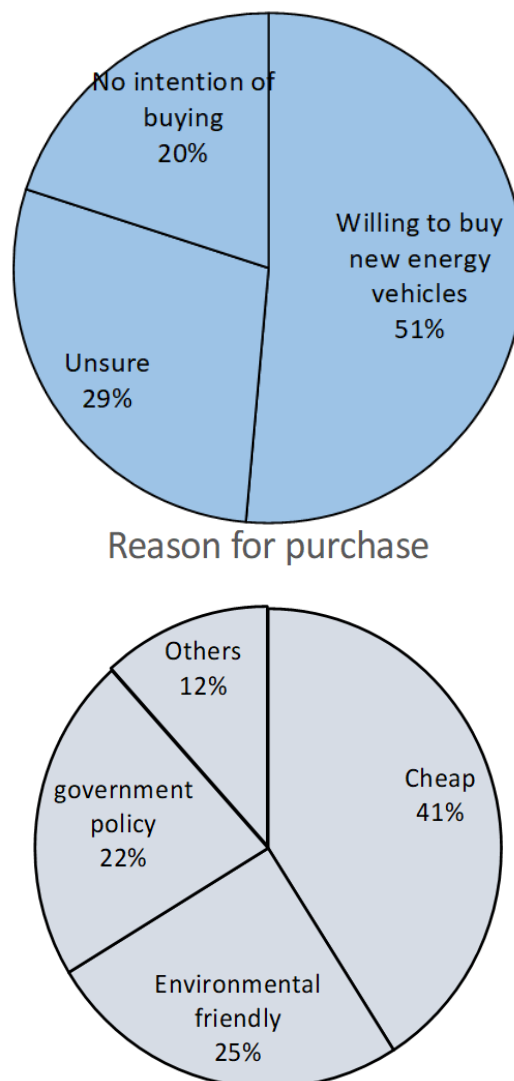


Figure 1. Why do people choose to buy new energy vehicles

BYD's lithium iron phosphate battery is more environmentally friendly than Tesla's Ternary lithium battery. BYD uses permanent magnet synchronous motors to speed up faster and consumes less energy in terms of speed and energy consumption. At the same time, because of the simple structure, so convenient maintenance.

Finally, thanks to BYD's bidirectional countercurrent charging and discharging technology, the drive motor can be combined with vehicle chargers and DC charging stations to better achieve the purpose of charging and discharging.

### 3.2.3 Analysis of consumer behavior characteristics of new energy vehicles

A questionnaire shows that the vast majority of people consider buying a car as a means of transport. More than 50 percent of them are willing to buy new energy vehicles. According to the data, it is not difficult to find that most people have noticed the market of new energy vehicles through commercial marketing and advertising, and some people have realized the market of new energy vehicles through personal channels (such as relatives and friends) and network channels (such as major social platforms), but not the majority. According to statistics, 67% of people are more willing to spend 250,000 to 400,000 yuan as the capital to buy new energy vehicles. Less than five percent are willing to pay more than 700 000 yuan on new energy vehicles. Most people still hope to buy their favorite goods at a relatively low price, which is also the main reason why they choose to buy new energy vehicles. More than 40 percent of people choose new energy vehicles because of their low price and late maintenance. The other part is due to the government’s policy [4], which requires that the motor vehicle license plate of the region be divided into five groups according to the last number of the license plate during peak hours of working days, and the driving restriction day is rotated every 13 weeks. This greatly restricted people’s travel, but also affected some people’s work or life. But since June 6, 2019, the National Development and Reform Commission (NDRC), ecological environment, the Ministry of Commerce issued three department policies [5], proposed may not apply restrictions, purchase of new energy vehicles, also proposed to encourage local no cars for a family to purchase the first home new energy car support, encourage conditional place new energy vehicles reductions in the parking fee.

According to statistics, the most important factors for people are their appearance, brand, and comfort. Most people believe that a brand’s credibility is high enough that there is no need to worry about the safety and performance of its products.

Most people choose to buy new energy vehicles by going to 4S shops; only 11% of people will choose the online direct sales Mo.

### 3.2.4 Analysis of Tesla’s marketing strategy

As a leader in new energy vehicles, Tesla recently released its sales data for the second quarter of 2021, producing 206,421 vehicles worldwide and delivering 201,250 vehicles, which doubled compared to last year. In the next five years, it is expected that the scale of China’s Tesla industry will continue to grow at a growth rate of 12.8% and reach a market size of 82.9 billion yuan in 2023.

**Table 1.** Tesla sales data

Type	Han EV 2020	Tesla Model 3 2020
Level	Large	Middle
Market price (RMB)	279,500	269,700
Length(mm)	4980	4694
Height(mm)	1495	1443
Wheelbase(mm)	2920	2875
Electromotor	Preposition and Postposition	Postposition
Total power(kW)	363	202
Total torque (Nm)	680	404
Battery	Lithium iron phosphate battery	Ternary lithium battery
Endurance(km)	550	468
Gearbox	Electric single-speed gearbox	Electric single-speed gearbox
Drive mode	4-wheel drive	Rear-wheel drive
0-100km/h speed up(s)	4.51	5.47
Rear longitudinal space(mm)	900	805
100km/h-0 braking(m)	36.06	36.71

### 3.3 Comparison of marketing strategies between BYD and Tesla

#### 3.3.1 Tesla

##### 1. Tesla adopts the direct sales model

Tesla penetrates from high end to low end. In the early stage of the development of electric vehicles, consumers are positioned in the high-end market. Tesla continues to expand overseas markets and expand its business through overseas expansion and self-built retail stores. Outlet stores are mainly located in malls and shopping centers with large traffic. Tesla adopts offline experience and online direct sales models. Sales staff do not receive sales commissions, so customers do not have to worry about being cheated. Eliminating the distributor process maximizes profit flow to Tesla and makes pricing more transparent.

##### 2. Tesla mainly uses founder Elon Musk for publicity

Musk has given consumers a good reputation by connecting SpaceX and Tesla technologically by telling his own story. Therefore, Tesla's propaganda expenditure on traditional media is 0. It is precise because of this unique publicity mode that Tesla has become synonymous with electric vehicles.

##### 3. Purchase mode of the order first and receive later

The pre-order model is the opposite of the traditional purchase model. Pre-order, pay cash or pay all cash, go to production, and pay the manufacturer. There are different deposits for different models, so through this model, a lot of cash flow is created.

##### 4. Technology as the no. 1 marketing strategy

Tesla has made a mark on people's minds by staying ahead of the industry in technology. The promotion of the company's core competitiveness is the foundation of marketing.

##### 5. Localization in China

On April 16, 2020, Tesla announced its official entry into Tmall, opening the first official flagship store of Tesla in the world. From the construction of the Shanghai Gigafactory, the launch of the domestic version of Model 3, to the cooperation with the "national application" Tmall, this is another breakthrough of Tesla's localization layout in China.

##### 1. Accurate market positioning

At first, it solved the endless cycle of low-cost performance through high-end positioning. Later, it further compressed production costs through localization and began to occupy the middle market.

##### 2. BYD

In the first half of 2020, BYD ranked first in China with 19% of sales. In the early years, BYD mainly focused on terminals and sales. With the rise of BYD's new energy vehicles, BYD is also shifting to a high-end brand-oriented marketing strategy. With the rise of domestic electric car companies, Chinese consumers have greatly reduced their bias against their brands rather than blindly pursuing joint ventures or imported brands.

##### 3. BYD adopts the traditional 4S shop sales model.

BYD still uses the traditional sales model and has established more than 6,000 4S stores nationwide, which has expanded the market size to some extent. However, due to the large scale, it is difficult to ensure the unity of prices, some preferential policies cannot be realized.

##### 4. Leading power battery business

BYD's competitive advantage mainly into the new energy field earlier, there is a perfect power battery manufacturing technology, BYD's scheme USES lithium iron phosphate power battery technology, and the current mainstream of ternary lithium there are some differences, the difference lies mainly in security and the price is better than that of the ternary lithium iron phosphate, but the energy density and low-temperature performance of the ternary lithium is poor. This year BYD introduced blade batteries that improve energy density and safety

##### 5. The product positioning is not yet mature

BYD launched a large number of new energy models, and the price range is relatively concentrated. The product is not very different, resulting in some models become popular, while others become cannon fodder.

6. The brand image needs to be improved

BYD's brand image is the biggest problem in the competition of many domestic new energy vehicle manufacturers. So new 4S stores are being built.

## 4. Discussion

### 4.1 Optimize Online marketing strategies

Brands can carry out online media marketing, with the Internet as the platform and users as the center. To market demand and cognition oriented, through advertising, customer service, and other means to promote sales.

According to the research, the advantages of online advertising.

- a. comprehensive coverage, large audience base, widespread.
- b. not limited by time, lasting advertising effect.
- c. flexible, interactive.
- d. can be classified search, advertising targeted.
- e. simple production, low advertising cost.
- f. can accurately count the number of audiences.

But now the domestic media such as WeChat, Weibo, and so on, use the network platform to publish articles about products every day. In addition, the popularity of online celebrity experts can be used for publicity while enhancing authority and effectiveness. You can also add links, direct purchases, and give certain subsidies. Both online and offline can increase sales and experience. In addition to domestic social media, it can also expand its global influence through foreign platforms such as INSTAGRAM.

Network marketing has many advantages, but at the same time, there are certain disadvantages, such as fake news, negative evaluation of enterprises and products. Therefore, it is necessary to carry out a comprehensive assessment, carefully choose whether to carry out network marketing, and make emergency strategies.

In the aspect of bottom-level construction, digital empowerment is carried out to establish a user data platform for brand owners, introduce data into the decision-making process of brands, establish a personalized crowd circle layer, and deeply stimulate the flow potential of the private domain. The three aspects of brand characteristic building, brand social interaction, user feedback, and co-creation help digital brand equity growth. Based on characters, stories, experiences, the brand will be created with charm, personalized consumer mentality, and brand memory, thus shaping brand characteristics. Engage consumers through brand communities and emerging media such as short videos, live streaming, social marketing, and private domain operations. It is also important to systematically gather users' thoughts on the product, using their opinions to develop the product and bring consumers into feedback and iterative loop. In the digital business growth, quality and efficiency integration, channel integration, experience integration. From brand effect to business growth, to achieve the integration of quality and efficiency evaluation system, and then open online and offline channels, to establish a consumer-centered operation system. BYD needs to focus on the consumer experience throughout the user's life cycle, not just the product itself.

BYD needs to move toward the high-end market, further change its product image by enhancing its brand value, give play to its scientific and technological advantages, and seize the market share of new energy. First, build a solid foundation with hard power to produce high-quality cars; Identify market segments and target groups, study consumer psychology, make products and demand fit; Reasonable use of price marketing strategy, dare to impact the high-end market, through accurate marketing to promote brand effect, improve the brand image, with a good reputation to attract more loyal users.

## 4.2 Optimize BYD marketing strategy

Most customers pursue the appearance and comfort of cars. BYD can improve consumers' memory and product image by developing some auto parts and adding its characteristics in the process of r&d. While ensuring product quality, technology update speed is also very important. Whether we can walk in front of the new energy market will be an important part of the success of marketing. According to the survey, most consumers demand good after-sales and warranty services. Therefore, BYD should also provide good service in car maintenance and train professional after-sales staff.

When consumers do not have enough information or purchase experience, they tend to refer to people's opinions with the purchase experience. When it comes to newer products like new energy vehicles, many people need credibility to guide them. BYD can improve the influence of the product and let more people know about the product by seeking celebrity spokespersons or becoming sponsors of significant film and television works and variety shows. BYD can also put forward relevant measures, such as recommending to relatives and friends, getting discounts and gifts, to improve credibility and popularity.

By improving people's awareness of environmental protection, BYD can connect environmental protection and new energy vehicles. Pay attention to disseminating environmental protection knowledge when promoting so that the masses can more accept and buy the product.

## 5. Conclusion

The paper demonstrates the preference of individuals who buy electric cars. Simultaneously, exploring the difference between Tesla and BYD via contrast. We analyzed the advantages and disadvantages of BYD's existing marketing methods. We combined them with our consumer preferences to improve the marketing strategy, network media, and other new means of marketing. According to our analysis, Chinese consumers pay more attention to the driving range of electric cars and pay more attention to the technological content of vehicles. Electric cars with a price range of 100,000 to 250,000 yuan are the most popular. BYD has a huge share of the low-end market, but Tesla still dominates the high-end market. Therefore, BYD should enter the high-end market with new technologies and high quality and drive the overall development through high-end models.

As for enterprises, this paper can help them better analyze how to increase sales volume and improve product strategy. In addition, due to the lack of research on new energy vehicles in the existing market, this paper can promote the development of this aspect. As for our case study, we can only obtain some public information because it involves the confidentiality of the brand, which may lead to a certain deviation between our conclusion and the real situation of the enterprise.

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