



The Analysis of Qualitative Risk Management Techniques for Investment in China's New Energy Automobile Industry.

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Abstract: In recent years, under the national policy support, the new energy automobile industry develops rapidly. This article chooses China's new energy automobile industry as the research object, aiming to study the public's views on new energy automobiles, the challenges faced by China's new energy automobile development, and the considerations of CIC when it makes venture investment in the new energy automobile industry. This article collects people's views on new energy vehicles through interviews and questionnaires, and uses qualitative analysis, descriptive analysis and texture analysis to explore the domestic and foreign challenges faced by the development of new energy vehicles. And this article analyzes the investment risk of new energy automobile industry from five aspects: finance, policy, technology, market and management. Finally, this paper analyzes the advantages and disadvantages of new energy vehicles, and puts forward some suggestions for its development.

Keywords: New Energy Vehicles; Qualitative Risk Management Technology; Investment Companies; Risk Assessment System

1. Introduction

1.1 Background and context

In recent years, the state has increased its support for the new energy industry, and the market share of China's new energy vehicles keeps rising^[1]. At the same time, the number and amount of investment and financing projects in China's new energy vehicle industry are also on the rise, with start-ups springing up. Many domestic investment companies have conducted in-depth research on the new energy vehicle industry and incorporated it into new projects invested by enterprises^[2].

1.2 Research questions

- (1) How does the public view new energy vehicles and traditional fuel cars in Chinese society?
- (2) What challenges will Tesla and other foreign new energy automobile companies and the domestic situation bring to the development of Chinese new energy automobile companies?
- (3) From what aspects do Chinese investment companies evaluate the risk management of new energy vehicles?

1.3 Key debates and controversies

Since the first modern electric vehicles took to the roads in the 2000s, critics have been quick to question the 'clean' label attached to them. From manufacturing concerns to battery power sources as well as overall autonomy, EVs have been under scrutiny from sceptics. An argument that is routinely put forward to contrast the clean image of electric cars is the pollution behind the manufacturing process of their batteries. There is indeed a range of rare earth metals that make up the composition of the battery, and their extraction and manipulation can contribute to carbon emissions. (Ellsmoor, 2019).

2. Methodology

2.1 Research design

(1) For question 1, the researcher will use mixed methods. Data will be collected through interviews and questionnaire. And then the researcher will present the content and proportion of data collected in the form of a graph by EXCEL.

(2) For question 2, the researcher will use descriptive and secondary data. The researcher will understand the development status of Chinese new energy automobile enterprises, and compare their advantages with those of foreign new energy automobile enterprises to analyze the challenges faced by Chinese new energy automobile enterprises.

(3) For question 3, the researcher will use qualitative methods. The researchers will look at the risk assessment criteria of Chinese investment companies, understand their risk assessment system, and then summarize it.

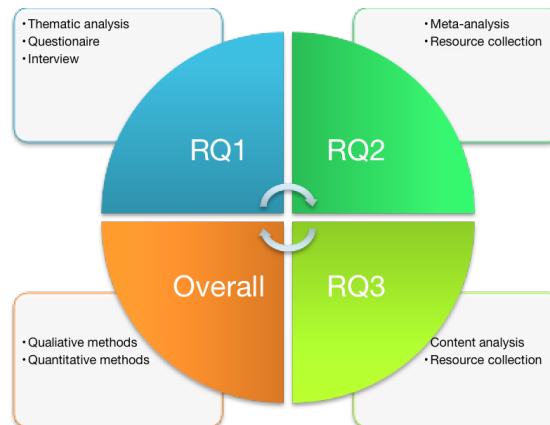


Figure 1. Overview of methods and research questions.

3. Results

There are 11 questions in the questionnaire, among which 3 are open questions and 8 are questions with fixed options.

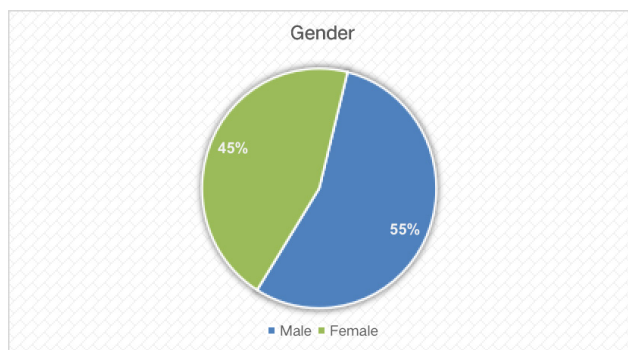


Figure 2. Gender.

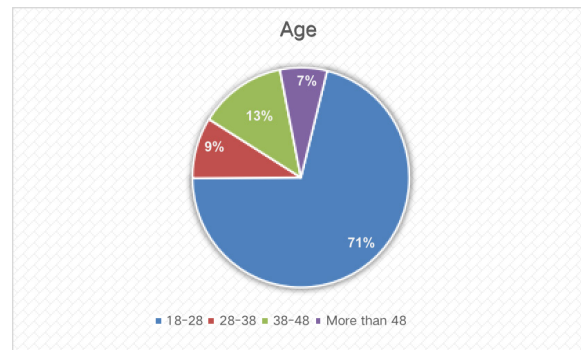


Figure 3. Age.

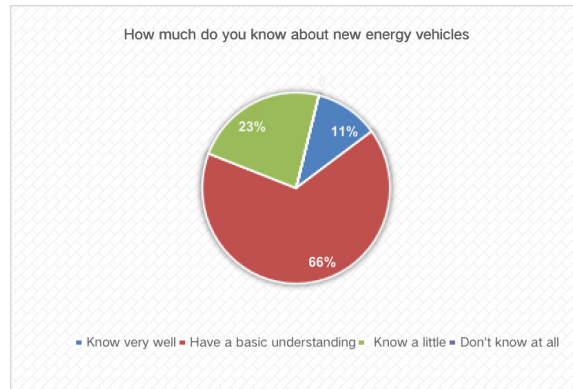


Figure 4 How much do you know about new energy vehicles.

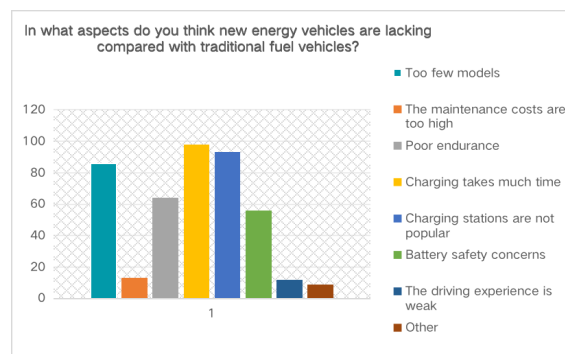


Figure 5. In what aspects do you think new energy vehicles are lacking compared with traditional fuel vehicles.

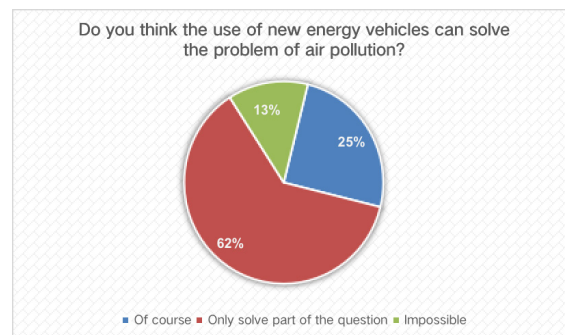


Figure 6. Do you think the use of new energy vehicles can solve the problem of air pollution.

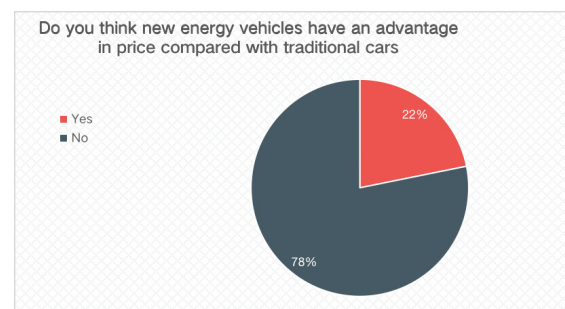


Figure 7. Do you think new energy vehicles have an advantage in price compared with traditional cars

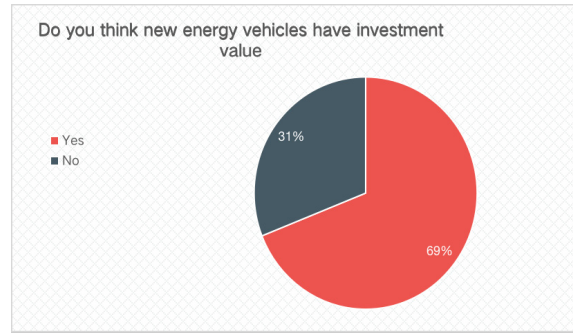


Figure 8. Do you think new energy vehicles have investment value.

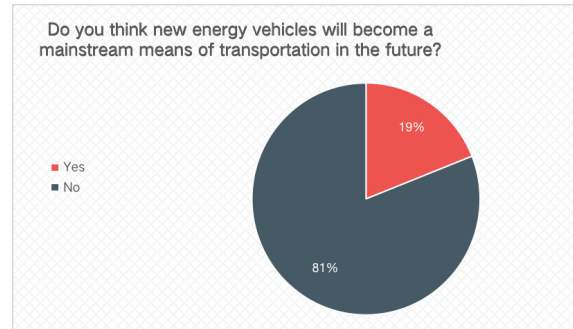


Figure 9. Do you think new energy vehicles will become a mainstream means of transportation in the future.

Enterprise	Scale	Investment	Place	Project progress
Shanghai Volkswagen	300,000 pure electric cars	17 billion yuan	Shanghai	Has been put into production
FAW-Volkswagen	300,000 pure electric cars		Guangdong	In 2020
Tesla	500,000 pure electric cars	3 billion yuan	Shanghai	Has been put into production
Guangqi Honda	120,000 pure electric cars	3 billion yuan	Guangdong	
Guangqi Toyota	400,000 new energy cars	11.33 billion yuan	Guangdong	
Toyota BYD			Guangdong	In 2023

Table 1. New energy vehicle projects built by foreign brands in China

For open questions, a total of 23 people filled out their opinions. As for the restrictions on traditional fuel cars, they all mentioned the problem of exhaust pollution, seven of them mentioned the high price of gasoline. However, as for the advantages of new energy vehicles, they all mentioned environmental protection, among which 6 mentioned price reduction and 3 thought it was more convenient. And in order to achieve better development of the new energy automobile industry, 12 of them think that the number of charging piles should be increased, and 14 of them think that the state should increase relevant policy subsidies.

4. Discussion

4.1 Discussion on the public's views on new energy vehicles and traditional cars in Chinese society.

Figure 3 shows that all the people surveyed have a certain understanding of new energy vehicles. People generally pay attention to the charging and endurance capacity of new energy vehicles.

Besides, a few people mentioned the driving experience and maintenance costs. The difference between an electric engine and a fuel engine largely determines the driver's driving experience. According to Figure 7, 78 percent of people believe that new energy vehicles have no price advantage over traditional cars. Although the purchase cost of new energy vehicles may be lower than that of some high-end fuel vehicles, the maintenance cost is higher.

For the advantages of new energy vehicles, Figure 6 show that from the public's point of view, environmental protection and convenience are the main advantages of new energy vehicles. 62 percent of people believe that the use of new energy vehicles can effectively reduce air pollution caused by exhaust emissions. And in order to reduce the environmental pressure, many cities have adopted the way of limiting the number of cars and restricting the travel of private cars. However, the new energy vehicles are not within the limit range and more convenient.

According to Figure 8, most people think that new energy vehicles have investment value. In addition to a better political and social environment, under the influence of smog, new-energy vehicles can effectively reduce exhaust emissions and meet the requirements of environmental governance. However, some people consider that compared with developed countries in Europe and the United States, China still has big barriers in terms of technology, and the safety and endurance of new energy vehicles need to be improved. Figure 9 shows that 81 percent think it is difficult for new energy vehicles to become mainstream. And Traditional fuel cars and famous brands have been deeply rooted in people's hearts. Some traditional cars are, to some extent, symbols of social status, and it will be a little difficult for new energy cars to break this situation. But considering the environment, energy issues and new energy vehicles are not only electric vehicles, but also natural gas vehicles, new energy vehicles can become the mainstream in the future^[3].

4.2 Discussion on the challenges faced by the development of new energy vehicles in China

(1) Foreign investment enters the Chinese market

The influx of foreign investment in 2019 has put a lot of pressure on the development of new energy vehicles in China. Tesla and SAIC Volkswagen put their pure electric vehicle production platforms into production in November 2019, marking the full force of foreign investment in the field of new energy vehicles. The new-energy vehicle market, which has been monopolized by their own brands for a long time, will compete head-on with foreign brands in 2020.

(2). In the short term, it faces both cost and technology challenges

In terms of cost, the delivery price of lithium batteries of domestic mainstream lithium battery manufacturers is still as high as 1.0 yuan/watt-hour until 2019. Compared with the fuel model with the same configuration, the power cost of new energy model is seriously higher. In addition to the pressure of cost, the slow improvement of lithium battery technology is also an important bottleneck hindering its widespread application^[4]. The most prominent problem is that charging technology and charging convenience still haven't been well solved^[5].

4.3 Discussion on risk management aspects of Chinese investment companies evaluating new energy vehicles

The China investment corporation to evaluate the risk management of new energy cars can consider from the following five aspects: financial risk, policy risk, technical risk, market risk and management risk.

Financial risk includes capital, costs and benefits.

The effectiveness of the policy and continuity of the new energy vehicle industry is to ensure the stable development.

The most critical problem in the development of new energy vehicles is technology. Since most Chinese enterprises need to import key parts and components, they do not have their own core technologies and are easily restrained by others.

Compared with developed countries, China's new energy vehicle market is relatively backward. Market risk is the main problem existing in the early stage of new energy vehicles.

The production of new energy vehicles involves capital, personnel, raw materials and other risk factors. Therefore, the rationality of management personnel and production personnel is also considered by Chinese Investment Corporation^{[6][7]}.

5. Conclusions & recommendations

This study affirms the environmental protection and convenience of new energy vehicles, and also points out the cost of new energy vehicles, charging safety and other issues. Due to the expansion of the global market, China's new

energy vehicle industry is facing the situation of foreign enterprises entering the Chinese market. A competition between Chinese brands and foreign brands has officially kicked off. In the face of external challenges, China's new energy vehicles in technology and cost still have a large space for breakthrough. When considering the investment risk analysis of new energy automobile industry by CIC, this paper mainly puts forward five aspects: financial risk, policy risk, technical risk, market risk and management risk.

In order to promote the development of the new energy automobile industry, the state should improve the level of science and technology and overcome technical difficulties under the active policy. We will expand opening-up and cooperation on the basis of increasing our independent production capacity, and accelerate the pace of opening up in the manufacturing of new energy vehicles. In terms of infrastructure, the construction of charging piles should be strengthened to make the number of piles match[8]. In terms of innovation, we should strengthen the construction of talent team of new energy vehicles and systematically train professional talents. At the same time, the new energy vehicle product service system should be improved to improve the vehicle insurance rate^{[9][10]}.

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