Path Analysis of the Impact of Industrial Policy on New Energy Vehicle Sales

Ting-ting Chang
Hong Kong Baptist University  School of Business

Abstract: This paper analyses the specific path of the influence of industrial policy on the sales of new energy vehicles. The paper finds that industrial policy mainly affects vehicle sales through three aspects: user experience, technology level and industry scale, and user experience being the core factor in the mechanism of action.

Keywords: New energy vehicles; Industrial policy; Sales; Porter’s Five Forces Model

DOI: 10.47297/wspciWSP2516-252714.20200411

1. Introduction

To alleviate the energy crisis and promote energy transformation and industrial upgrading, countries around the world are actively developing the new energy vehicle industry. Compared with the traditional fuel vehicle industry, the new energy vehicle industry has a higher economic and social return rate. In October 2010, the new energy vehicle industry was classified as a national strategic emerging industry, Since then, a series of central and local policies have been introduced to support the development of the new energy vehicle industry, which has greatly increased the production and sales of new energy vehicles. From 2016 to 2019, China’s new energy vehicle sales were 1,278,100 units, 1,425,700 units, 2,699,900 units, 2,873,500 units (CEE Industry Database), this shows that the industrial policy effectively promotes the sales of new energy vehicles.

In order to study the impact of industrial policies on the sales of new energy vehicles, this paper analyses the environment of the new energy vehicle industry using the Porter’s Five Forces model at first.

2. New Energy Vehicle Industry Environment Analysis

(1) Threat analysis of potential entrants

As a high-tech industry, the new energy vehicle industry is characterised by strong patentability, high capital requirements and long construction cycles, making the entry barrier naturally high. At the same time, the domestic new energy vehicle
industry has mostly formed a scale, coupled with industrial policies to promote the increase of industrial concentration, which will accelerate the formation of giant enterprises, it is difficult for domestic latecomers to threaten the existing enterprises. In addition, foreign new energy vehicles and power battery industry development level is higher, after the policy liberalization, will intensify the competition with new energy domestic vehicles.

(2) Substitute threat analysis

The substitutes for new energy vehicles are mainly traditional fuel vehicles and foreign imported new energy vehicles. The National Development and Reform Commission promulgated 《the Regulations on Investment Management in the Automotive Industry》, which came into effect on 10 January 2019. According to the new version of the Automotive Industry Investment Management Regulations, the construction of new stand-alone fuel-fired vehicle enterprises will be banned, while existing automobile enterprises expanding their fuel-fired vehicle production capacity must also meet four conditions, such as the utilization rate of automobile production capacity in the last two years being higher than the industry-wide average and the production ratio of new energy vehicles in the last two years being higher than the industry-wide average. In addition, the major car companies have also said that they will stop selling fuel cars as planned, and that traditional fuel cars will basically not be a threat to new energy vehicles. Looking at the sales figures of pure electric vehicles in recent years, Tesla’s market share has increased significantly and market competition is intensifying.

(3) Analysis of suppliers’ bargaining power

In recent years, with the support of financial subsidies, domestic power battery enterprises have expanded their production capacity, resulting in a situation where supply exceeds demand, resulting in a weak bargaining position with new energy vehicle enterprises. With the reduction of financial subsidies and the increase in the threshold of subsidies, the cost of new energy vehicle plants rise, in order to reduce costs, will further squeeze the living space of the power battery industry, suppliers bargaining power continues to rise.

(4) Analysis of the bargaining power of buyers

With the promulgation of the National Development and Reform Commission’s “Regulations on Investment Management in the Automobile Industry”, coupled with massive financial subsidies, major traditional automobile companies have launched new energy vehicles, with BYD, Geely Automobile, Tesla, Shangtong Wuling, Great Wall Motor, Jianghuai Automobile, Shanghai Automobile, Changan Automobile, Guangzhou Automobile, etc. There are a series of high-quality pure electric passenger car enterprises, such as Changan Automobile and Guangzhou Auto New Energy, etc. Consumers have more choices, the market is competitive and buyers have stronger bargaining power.
(5) Analysis of competition between companies
The new energy vehicle industry is in a period of expansion, and competition among vehicle companies is fierce. The ranking of new energy vehicle sales is changing year by year, the combined market share of the top five pure electric vehicles is decreasing year by year, Tesla’s market share has increased significantly, and it is difficult for domestic brands to surpass it, making the market competition fierce.

3. Literature Review

In order to make new energy vehicles more competitive in the market, in addition to a large number of financial subsidies, the state has adopted a series of policies such as government procurement, unlimited traffic, no purchase restrictions and so on. Many scholars have conducted studies on policies to promote the consumption of new energy vehicles. Cao Xianfei[1] argues that government subsidies can effectively promote R&D investment in local manufacturing firms in China, and the promotion effect of government subsidies on R&D investment in capital-intensive firms is more significant. Li Wanfu et al.[2] say that China’s tax incentives are generally effective, taking into account R&D adjustment costs. Lu Guoqing and others[3] show that the performance of government subsidies for innovation generated by strategic emerging is significant, and the spillover effect of innovation is also significant. Liu Guangqiang[4] found that the incentive effects of tax incentives and financial subsidies differed significantly between them, and the incentive effects of tax incentives and financial subsidies also differed for different industries and different policy objectives. Zhang Qi et al.[5], through a study of the “double credit” policy, concluded that the tightening of the “double credit” policy would have a negative impact on the production and profits of traditional car manufacturers, but as the passenger car market becomes more mature and the unit production cost decreases, the market and cost factors can offset the uncertainty caused by the policy factors.

Whether it is fiscal policy, subsidies or other promotional policies that will boost new energy vehicle sales, we cannot blindly assume that the policies will increase new energy vehicle sales, but more importantly how do the different types of policies affect vehicle sales and what is the specific path? This is the question that will be discussed next part in this paper.

4. Models and Assumptions

Industrial policies often do not directly affect the sales of new energy vehicles, so how do they affect sales? Through which factors? This paper analyses the impact of industrial policy on the sales of new energy vehicles in three ways: user
experience, technology level and industry scale.

(1) User Experience

Maslow categorised human needs into five levels, from the bottom up: physiological needs, security needs, social needs, respect needs and self-needs, and only after the basics of life are secured do people pursue higher-level needs. Cars are used as a means of transportation to improve the quality of life and are generally classified as a social needs. The better the user experience and the higher the utility, the stronger the consumer’s willingness to buy and the higher the sales.

Many policies have actually improved the user experience of new energy vehicle owners, such as unlimited traffic, no purchase restrictions and free licences, all of which have contributed to the growth of vehicle sales by improving the travel experience of new energy vehicle owners. Therefore, we propose the hypothesis that

H1: Industrial policies can promote the growth of new energy vehicle sales by improving user experience.

(2) Technology Level

Compared to traditional fuel vehicles, new energy vehicles have certain technical shortcomings, and the supporting facilities are also not yet mature. We know that only new energy vehicles are mature enough to compete with traditional fuel vehicles even after subsidies have been withdrawn from the market. Therefore, it is particularly important to improve the technology level of new energy vehicles.

The technical problems of new energy vehicles are mainly reflected in the four aspects: gravity, power, range and safety, which are also the main concerns of potential consumers in purchasing new energy vehicles. Only by improving the level of technology can consumer confidence in new energy vehicles be increased, thus promoting sales of new energy vehicles. Thus, the government has introduced R&D subsidies to improve the innovation capacity of enterprises and the technical level of new energy vehicles. Therefore, we propose the hypothesis that

H2a: Industrial policies can promote the growth of new energy vehicle sales by improving technology level.

The subsidy policy has gradually increased the range requirements for new energy vehicles, which has turned new energy vehicles from being able to meet only intra-city travel to short and medium distance travel, which has undoubtedly increased the convenience of travel for users and stimulated more potential consumers to purchase vehicles. Therefore, we propose the hypothesis that

H2b: Industrial policies can promote the growth of new energy vehicle sales by improving user experience, and user experience improved by technology level.
(3) Industry Scale

The development of the new energy vehicle industry is still immature, not only in terms of the level of technology, but also in terms of industry scale. The introduction of industrial policies has further strengthened industrial concentration and reduced corporate costs through the integration of upstream and downstream industrial chains, thereby promoting sales growth. In addition, with the formation of economies of scale, the market competitiveness of the industry and the consumer confidence index will further improve, which will also have a boosting effect on the sales of new energy vehicles. Therefore, we propose the hypothesis that

H3a: Industrial policies can promote the growth of new energy vehicle sales by improving industry scale.

The expansion of the industry scale is reflected in economies of scale on the one hand and in the adequacy of supporting facilities on the other hand. As the scale of the new energy vehicle industry continues to expand, the government has introduced a series of supporting policies that have not only popularised a wide range of charging piles, but also further improved the relevant laws and regulations to provide protection for new energy vehicle owners on their travels, which has further increased the sales of new energy vehicles. Therefore, we propose the hypothesis that

H3b: Industrial policies can promote the growth of new energy vehicle sales by improving user experience, and user experience improved by industry scale.

Based on the assumptions in this paper, we devise the following model

5. Conclusion

Industrial policy promotes new energy vehicle sales through three aspects: user experience, technology level and industry scale. Among them, user experience is the key factor for sales growth, while both technology level and industry scale will improve the user experience of potential consumers, thus promoting sales growth. The new energy vehicle industry is an emerging industry that responds to the
development of the times and is an inevitable result of productivity development. Only by fully satisfying the purchasing utility of potential consumers can the new energy vehicle industry develop healthily and create higher social welfare.

References


