Research on the Industrial Structure and Industrial Policy of Intelligent Networked Automobile

Yuancang Chen*

School of Economics and Management, Nanjing University of Science and Technology, Nanjing, China

*Corresponding author: 852018466@qq.com

Abstract. The intelligent networked automobile combines the Internet of vehicles and the intelligent car to realize the interaction and sharing of intelligent information such as cars and people, roads, and provide users with a safe, comfortable and energy-efficient driving experience. As a product of the integration and development of the automotive industry, electronics, information communication, and transportation, the intelligent networked automobile industry has become a strategic emerging industry that is highly valued at home and abroad. Subject to the weak automotive industry foundation, China's intelligent networked automobile industry faces the problem of unreasonable structure and industrial policy, and disconnection between industrial policy and the status quo of the industry. In order to improve the status quo, this article combines related theories to conduct an in-depth analysis of the industrial structure of the intelligent networked automobile. Based on the irrationality of the industrial structure and industrial policies, it is proposed that the top-level design needs to be improved in the future, and overall planning should be strengthened to ensure that the policies are suitable. We will adjust the allocation, further advance the leadership standards and increase the training efforts, and do a good job in the introduction of talents.

Keywords: Intelligent Networked Automobile Industry; Industrial Structure; Industrial Policy.

1. Introduction

As a product of the in-depth integration and development of the automotive industry, electronics, information communication, and road transportation in recent years, intelligent networked vehicles are a strategic emerging industry that is focused on at home and abroad. In recent years, China has attached great importance to the development of the intelligent and connected automobile industry. In "Made in China 2025", the intelligent and connected automobile is listed as one of the ten key development areas. In response to such current conditions and requirements, the government has issued corresponding industrial policies during the development of the intelligent networked automobile industry, and the industry has evolved a corresponding industrial structure. As the development of China's automobile industry is relatively backward compared with developed foreign automobile industry countries, in the field of intelligent networked automobile development, it is also faced with the unreasonable industrial structure, the mismatch between industrial policies and the development status, and the low degree of relevance between industrial structure and industrial policies. Problem. According to the development characteristics of the intelligent networked automobile industry, for scientific and effective policy formulation, healthy and reasonable industrial structure, industrial structure and industrial policy coordination and adaptation, conduct the intelligent networked automobile industry policy and industrial structure correlation research.

2. Literature

At present, literature research on intelligent and connected vehicles mainly focuses on the technical level, while in terms of industrial structure and industrial policy, it mainly focuses on the following aspects. In terms of industrial structure of intelligent connected vehicles, Li Xiaodong et al. (2019) analyzed the complete ecological industrial chain of intelligent connected vehicles from three levels of perception, decision making and execution, among which the perception layer includes environmental perception, precise positioning and extended perception respectively. The decision-

making layer makes judgments based on acquired information and makes corresponding control strategies by the control system to replace human beings in making driving decisions, while the executive layer performs the feedback content of the upper two layers to replace human operations. In terms of industrial policies, Lv Yichao (2017) believes that the government and the industry have basically reached a consensus on the development of intelligent connected vehicles, which is reflected in the increasingly frequent release of relevant industrial policies. Although the development is relatively rapid, in the face of huge market demand and changing industrial structure, China's policy support for intelligent connected vehicles is still relatively weak. These problems focus on the lack of encouraging policies and restrictive laws and regulations. Therefore, relevant plans can be formulated by referring to industrial policies issued by developed countries and combining with the actual situation of the development of intelligent and connected automobile industry structure in China.

3. Related theory

Based on the classical theory of industrial organization, this paper analyzes the industry of Intelligent connected vehicles in China. According to the theory of industrial organization, industry refers to the classification of certain industries in the national economy. There are usually several methods. The second is the standard industry classification, that is, the classification method issued by the authority according to a certain standard; third, according to the classification of intensification degree of production factors, it is usually divided into labor-intensive industry, capital-intensive industry and technology-intensive industry. This paper adopts the third method to define the intelligent and connected automobile industry as technology-intensive industry. This definition explains that for the intelligent and connected automobile industry, technology supports its main industrial content, that is, the reason why patent data is used to measure the industrial structure of intelligent and connected automobile in the following paper. According to the theory of industrial organization, generally speaking, industrial structure refers to the proportion relationship and the sum of internal connections between various industries within the economic system and between various parts within the same industry. According to the definition, there is no doubt that the industrial structure in this paper refers to the structure of various parts within the intelligent connected automobile industry. At the same time, in the market economy system, industrial policy is the sum of a series of policies that the government plans, intervenes and guides on the industrial structure, organization and layout according to the requirements of economic development and the current situation and changing trend of the industry in a certain period.

4. Problems

There are the following defects in the industrial policy of intelligent networked automobile: first, there is an obvious "path dependence" in the formulation of industrial policy. The "road dependence" of policy formulation will affect the implementation of China's internet intelligent vehicle industry development strategy. An important feature of China's industrial policy is to realize the "catch-up strategy". The successful practice of this strategy in some important economic fields may affect the choice of development strategy of China's intelligent connected automobile industry. China has many advantages in developing intelligent connected vehicles. We can fully consider choosing the "cutting-edge strategy". The mode and method of industrial policy are not clear. Due to the continuous improvement of autonomous driving technology, and the lack of strategic domestic.

As a result, laws and regulations cannot effectively support the rational road operation of intelligent connected vehicles, and relevant systems cannot effectively guarantee the reasonable passage of intelligent connected vehicles, and functional industrial policies have not been effectively utilized. The mechanism of making industrial policy is not perfect. In China, the departments that issue intelligent and connected automobile industry policies include The State Council, The National

Development and Reform Commission, and the Ministry of Industry and Information Technology, etc. The introduction of policies by multiple departments is likely to result in policy generalization and fragmentation, and policy convergence problems.

Table 1. Summary of China's Intelligent Connected Vehicle Policies.

Time	Policy
March 2021	"Guidelines for the Construction of National Vehicle Networking Industry Standard System (Intelligent Transportation Related)"
January 2021	"Guiding Opinions of the Ministry of Transport on Building a New Development Pattern of Services"
December 2020	"Guiding Opinions of the Ministry of Transport on Promoting the Development and Application of Road Traffic Autonomous Driving Technology"
November 2020	"Intelligent Connected Vehicle Technology Roadmap 2.0"
August 2020	"Guiding Opinions on Promoting the Construction of New Infrastructure in the Transportation Field"
April 2020	"Key Points for Standardization of Intelligent Connected Vehicles in 2020"
March 2020	"Notice on Promoting the Accelerated Development of 5G"
February 2020	"Smart Car Innovation Development Strategy"
December 2019	The Action Plan for Promoting the Development of Comprehensive Transportation Big Data (2020 to 2025)
September 2019	"Outline for Building a Powerful Transportation Country"

5. Advices

Improve top-level design and strengthen overall planning. Improve the industrial governance system. We will prepare for the establishment of coordinated development alliances and associations among regions, establish an intelligent networked automobile industry alliance with the platform as the carrier, promote the sharing of resources among different units, strengthen multi-faceted division of labor and cooperation, jointly promote the development of Regional Automobile networking industry from R & D, patent layout, technical support and other aspects, and optimize the industrial structure of intelligent networked automobile. At the same time, strengthen the main role of the association to serve intelligent networked automobile enterprises, so as to give play to its coordinated governance function in the industry

Strengthen the introduction and cultivation, and develop and strengthen the main body of enterprises. One is to intensify the cultivation of enterprises. Do a good job in the identification of Internet of Vehicles enterprises, identify a group of high-quality enterprises with core Internet of Vehicles technology and R&D capabilities in Internet of Vehicles technology, establish a key enterprise cultivation library, increase support for warehousing enterprises, and in terms of enterprise technology research and talent introduction, etc. Provide subsidies and strive to build a nationally well-known and influential innovation leader as soon as possible. The second is to increase the introduction of enterprises. Aiming at leading companies and well-known companies in the field of Internet of Vehicles at home and abroad, different subsidies and rewards will be given at the stage of financing loans and listings, and speed up the introduction of a group of Internet of Vehicles enterprises with strong innovation ability and great development potential, and further gather industrial resources through leading companies. The third is to strengthen the collaborative innovation of industry, university and research. Through the torch plan and the construction of high-value patent cultivation centers, they can promote the establishment of provincial and municipal-level vehicle networking industry technology innovation strategic alliances, encourage enterprises and universities

to carry out industry-university-research cooperation, and build Multi-party cooperation, mutual benefit and win-win industrial ecology.

Policy adaptation and adjustment, and promote the command standard. Build the industrial policy of intelligent networked vehicles to adapt to China's scheme. Intelligent networked automobile is a cross-border integrated industry, involving various industries. Industrial development policies are formulated according to local conditions. Relevant national industrial entities carry out standard level comparison, and issue national standards, industrial standards and appropriate policies formulated by the industry. Build a patent pool with China's independent intellectual property rights around the core technologies and key links of the Internet of vehicles industry chain, and provide necessary policy guidance and support in patent achievement sharing and patent achievement transformation, so as to improve the patent layout of domestic industries, escort the future development of domestic enterprises, and seize the commanding height of global Internet of vehicles technology competition, Enhance the international voice and rule making power.

Doing a good job in the field of talents and enrich the intellectual reserve of the industry. First, we will implement the Internet of Vehicles Talent Leadership Plan. At present, a number of core teams for key technologies of the Internet of vehicles have been formed. We should actively introduce or cooperate with the above-mentioned teams to jointly commit to the development and production of the Internet of vehicles technology and improve the competitiveness of China's Internet of vehicles industry. Second, the Establishment of the Internet of Vehicles innovation Academy. Personnel training and social training at undergraduate and postgraduate levels will be carried out, and key universities will form university alliances to jointly undertake the construction of the Internet of vehicles. Third, establish a talent cultivation base for the Internet of vehicles industry. A group of university-enterprise joint laboratories of Internet of vehicles will be selected to carry out high-level scientific research and practical application centering on major theoretical and practical issues of Internet of vehicles technology and application, and to cultivate high-quality R&D and application talents of Internet of vehicles

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References

- [1] Lu Yichao, Lu Yun. Analysis of my country's Intelligent Connected Automobile Industry Development Plan and Development Policy [J]. Times Auto, 2017(06):8-10+13. .
- [2] Li Xiaodong, Li Hongqing, Zhang Min. Research on Intelligent Networked Automobile Industry Chain [J]. Motorcycle Technology, 2019(9):37-40.
- [3] Peng Jian. The Policy and Enlightenment of Intelligent Connected Automobile Industry [J]. Shanghai Information Technology, 2021, No. 205(11):17-20.