Exploring the Development of Automobile Service System in the New Energy Era

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Abstract: In the context of the increasing proportion of new energy vehicles, the construction and development of a new automotive service system has become a key issue. This paper explores the development of the auto service system in the new energy era from the perspective of consumers and from the pre-sale, sale, and after-sale aspects of electric vehicles based on existing literature and data. The direction and strategy for the conversion of the traditional fuel car service system to the new energy era automobile service system are proposed. Through the study of domestic and foreign automobile service systems, it is believed that the automobile service system in the new energy era will become more and more intelligent, personalized, digitalized and sustainable, while paying more attention to the improvement of service system in the new energy era is proposed, including reference suggestions on service content, technical support, marketing channels and means, brand construction, etc.

Keywords: new energy vehicles, auto service system, marketing channels, charging and switching stations

1. Introduction

The study of automobile service systems in the new energy era has received extensive attention at home and abroad. The current academic field mainly takes the path of conversion as the perspective to study the transformation of the auto service system in the fuel car era to the auto service system in the new energy era. For example, in "Reinventing the Automotive Service Concept", Accenture proposes some ideas around digital technology and new models, aiming to provide some new ideas and innovative solutions for automotive after-sales service companies to adapt to the changing market environment and consumer needs [1]. The research on the strategy of comprehensively constructing the auto service system in the new energy era is relatively limited. This paper adopts the comparative analysis of traditional fuel car service systems and new energy car service system, imports the concept of car service in a broad sense to build the structure of the new energy car service system. In conclusion, with the increasing demand for automobile consumption, the automobile industry is undergoing the transformation from traditional manufacturing to service industry. The study of the development of the auto service system in the new energy era can not only provide strategic guidance for the transformation and upgrading of the auto industry but also promote the optimization and

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improvement of the auto service system in the new energy era, improve the quality and efficiency of auto services, meet people's increasing demand for auto consumption, establish a scientific service system, effectively avoid waste, enhance social stability, improve the efficiency of the whole society, and promote the auto industry sustainable and healthy development.

2. Fuel Era Auto Service System

There are some key elements and characteristics of the automotive service system in the fuel car era as follows: Manufacturer-led service system: The sales and after-sales service systems of auto manufacturers play an important role in the whole auto service system, and the sales and service networks of manufacturers can provide consumers with uniform and standardized services; Dealer network: the car brand dealer network is more developed; consumers can buy cars through dealers, while dealers also provide repair, maintenance, and other services; Wide range of services: The auto service system of the fuel car era includes many aspects, such as pre-sale, sale and after-sale services, such as sales, repair, maintenance, refueling, insurance, etc [2]; Traditional service model: The car service model is more traditional, mainly after-sales service, consumers need to go to the repair site for maintenance after the purchase of the car; Relatively low consumer participation: The participation of consumers is relatively low, mainly through the services provide by manufacturers and dealers for car use.

3. New Energy Era Car Service System

New energy vehicles refer to automobiles with advanced technical principles, new technologies, and new structures that use unconventional vehicle fuels as power sources or conventional vehicle fuels combined with new types of on-board power devices, integrated with advanced technology in power control and driving aspects. The main features of the automotive service system in the new energy era are intelligence, electrification, networking, environmental protection and so on. The details are as follows:

Intelligence: With the continuous development of artificial intelligence, the Internet of Things and other technologies, intelligence will become an important trend in the development of automotive service systems in the new energy era. The popularization of automotive intelligence and the promotion of intelligent transportation systems will further improve the safety and reliability of vehicles [3].

Electrification: Electric vehicles will become the main trend of future automobile development, and the automobile service system will be electrified with it in the new energy era. The construction of more electric vehicle charging stations and battery exchange stations will improve charging efficiency and convenience [4].

Networking: The auto service system in the new energy era will also become increasingly networked. Through the Internet and smart phones and other technologies, it will realize the functions of online reservation, vehicle positioning and remote control for car owners to improve the convenience and efficiency of car services [5]; Environmental Protection: With the increasing awareness of environmental protection, the environmental protection of the automotive service system in the new energy era will become an important development trend. It'll strengthen the recycling and utilization of used cars, promote green energy vehicles, etc., to promote the sustainable development of the automobile industry [6].

4. The Similarities and Differences Between New Energy Vehicles and Fuel Vehicles Automotive Service System

The main differences between the automotive service system in the fuel car era and the new energy era are as follows. They have different service models. New energy vehicles are different in terms of usage and maintenance, so the auto service model also needs to be more innovative, for example, to provide mobile repair and maintenance services, intelligent diagnosis, online services, etc. to better meet the needs of consumers. While in the fuel car era, the service model is more in the repair and maintenance store for service. They have different service content. The car service industry in the fuel car era mainly covers pre-sales, in-sales, and after-sales services, including repair and maintenance, parts supply, vehicle troubleshooting, etc. The service of new energy vehicles, in addition to the traditional pre-sale, sale, and after-sale services, also includes the construction of charging facilities, battery repair and replacement, car networking service, etc [7].

The next is different technical support. The technology of new energy vehicles is relatively new and requires more professional technical support, such as charging facility construction, battery maintenance and replacement, intelligent driving technology, etc. While the fuel car era is more focused on the engine, transmission system, and other mechanical aspects of technical support. The last is different consumer involvement. The use of new energy vehicles requires more consumer involvement, such as charging and using the car network. Therefore, the auto service system also needs to pay more attention to consumers' needs and experience, and provide more humanized and intelligent services. In the fuel car era, consumers use the car more mechanically, and the service system focuses more on technical repair and maintenance.

The corresponding automotive service system will certainly face the following changes:

The core component of new energy vehicles is the battery pack, which requires more professional technical support for repair and replacement. Therefore, the automotive service system needs to provide more specialized battery repair and replacement services. The charging demand of new energy vehicles is more complicated than that of fuel vehicles, and a large number of charging facilities are needed to meet the needs of consumers. Therefore, the auto service system needs to pay more attention to the construction and maintenance of charging facilities and provide more convenient charging services [8].

New energy vehicles have a higher degree of intelligence and need more telematics services to provide more personalized services and a better user experience. Therefore, the auto service system needs to strengthen the construction and application of Telematics services and provide more intelligent services. What's more, new energy vehicles have a higher degree of data, can achieve remote monitoring and intelligent diagnosis, therefore, the automotive service system needs to provide more convenient mobile services, such as mobile repair and maintenance services, online services, etc., to improve service efficiency and consumer satisfaction. For example, a new energy vehicle after-sales service enterprise has developed a fault diagnosis and remote assistance platform that transmits vehicle fault information to the maintenance expert end through remote monitoring, data analysis and other technical means to achieve remote assistance in diagnosing and solving fault problems, reducing the maintenance cost and time of users [9].

The technology of new energy vehicles is relatively new and requires more professional technical support, while additional electrical-related knowledge is needed for service personnel compared to fuel vehicles. Therefore, the automotive service system needs to strengthen the training and technical upgrading of service personnel and improve their professionalism to better meet the needs of consumers [10].

5. Analysis of the Development of Automotive Service System in the New Energy Era

5.1. Policy Environment Impact

Government subsidies can directly influence consumers' willingness to buy new energy vehicles. If the government gives high subsidies to new energy vehicles, it will stimulate market demand. At the same time, government subsidies can also encourage companies to develop and produce new energy vehicles. Energy policies also have a significant impact on the new energy vehicle service system. The government can develop policies to support the development of clean energy to ensure that new energy vehicles have adequate energy supply. The government can develop environmental policies that require businesses and consumers to use more clean energy to reduce pollution of the environment. This will directly promote the development of new energy vehicles [11].

5.2. Technology Development Impact

The power system of new energy vehicles includes electric motor, battery, control system, etc. With the continuous development of technology, the performance of these components is improving, and the energy efficiency of the power system is also gradually improving, which will have an important impact on the performance, range and charging speed of new energy vehicles.

The development of intelligent technology provides more services and functions for new energy vehicles, such as vehicle networking, automatic driving, remote control, etc. The application of these technologies can improve consumers' experiences and enhance the service quality of new energy vehicles. Charging technology is an important part of the new energy vehicle service system. With the development of technology, charging speed, safety, and charging efficiency have been greatly improved, and charging methods have been diversified, which has an important impact on the convenience of consumers when using new energy vehicles. New energy vehicles can realize data collection and analysis through vehicle networking technology to provide more services and functions. Data analysis can realize vehicle status monitoring, fault warning, remote diagnosis and other functions, which will improve the service quality of new energy vehicles and consumers' experiences [12].

5.3. Consumer Demand Impact

The influence of consumer demand on the service system of new energy vehicles is very important. The changing needs of consumers have put forward higher requirements for the design of new energy vehicle models. Consumers have higher requirements for the appearance design, functional configuration, and power performance of new energy vehicles, and manufacturers need to continuously improve the design and iterate and upgrade to meet consumer demand. There is a great demand from consumers for convenient and fast charging services. Manufacturers need to continuously improve the coverage of charging facilities and charging speed to meet consumer demand. Consumers also demand higher professionalism and quality after-sales service. Manufacturers need to provide high quality after-sales service to meet consumers' needs. Consumers are highly sensitive to price. The price of new energy cars is still relatively high compared to traditional cars, so manufacturers need to control costs and improve production efficiency in order to lower the selling price and attract more consumers [13].

5.4. Industry Chain Cooperation Impact

Industry chain cooperation refers to the synergistic cooperation between various links of the new energy vehicle-related industries, including collaboration between various links of new energy

vehicle manufacturers, charging facility suppliers, battery suppliers, parts suppliers, service providers, etc. Industry chain cooperation can optimize the service process of new energy vehicles, improve service efficiency and quality, reduce the cost of new energy vehicle production and services, and improve the competitiveness of enterprises. It can promote the innovative development of new energy vehicle-related technologies and services and will play a positive role in the improvement and development of the new energy vehicle service system [14].

6. Development Strategy of Auto Service System in the New Energy Era

6.1. Improving Service Content

Compared with the auto service system for fuel vehicles, the new energy vehicle service system should increase and improve the service content according to the new technology and new environment. First, it's necessary to create a digital service platform. The Intelligent service platform is the core of the new auto service system, mainly including data analysis, remote diagnosis, predictive maintenance, online consultation and other functions. It can realize comprehensive monitoring and management of car usage, improve service efficiency and quality, and reduce service costs. Second, build a comprehensive service network. A comprehensive service network covers all aspects of consumers. Including pre-sales consultation, after-sales service, insurance, finance and other services, the implementation of online and offline interaction and mutual transfer to improve service efficiency. Third, promote the sharing economy service model, which is useful to realize the shared use of cars and resource sharing, reduce the idle rate of vehicles, increase the utilization rate, and reduce the cost of use for consumers. Then, pay attention to the development of customized services. Automotive companies can provide home repair, maintenance, insurance and other personalized services according to the needs of different consumers, to improve consumer satisfaction and loyalty. At last, set up value-added services. Auto companies can also provide some value-added services such as in-car entertainment, travel guidance, vehicle safety and driving training to improve consumers' experience and sense of value [15].

6.2. Strengthened in-sales Service

Since new energy vehicles involve many relatively new electrical, electronic, and network technologies, they require enhanced and improved internal services.

Provide education and training. The technology of new energy vehicles is relatively new compared to traditional fuel vehicles, so consumers need to learn how to use and maintain new energy vehicles after purchasing them. Sellers need to provide appropriate training and education so that consumers can better use new energy vehicles.

Build charging facilities. New energy vehicles need to be charged in order to drive, so sellers need to provide charging facility construction services to help consumers solve charging problems. They can cooperate with charging facilities providers or build their own charging facilities so that consumers can charge more conveniently.

Promote the services of repair and maintenance. Establish repair and maintenance team or cooperate with third-party repair and maintenance service providers to provide professional repair and maintenance services to ensure that the new energy vehicles can operate normally [16].

Provide vehicle remote monitoring service. The vehicle remote monitoring service can be used to help consumers understand the status of the vehicle in real time and provide corresponding maintenance suggestions. This service can improve the safety and reliability of the vehicle, but also provide consumers with a better experience.

6.3. Strengthening Brand Building

Strengthen brand building and continuously improve brand awareness and influence. Achieve market differentiation and competition through differentiated product design and innovative sales models. Establish direct and authorized stores to better control sales channels and provide more specialized sales and services, while providing more personalized car buying solutions and services to promote brand building. To better attract consumers' attention and trust through various marketing activities and brand promotion, thereby increasing sales and market share [17].

7. Conclusion

With the popularity of new energy vehicles, the auto service system will also face new prospects and challenges. The diversification and intelligence of the auto sales model will lead to a new and more intelligent service system to go with it. Auto sales and services will pay more attention to user experience and customer service. The establishment of auto service system in the new energy era will certainly drive the development of electricity, charging facilities and other related industries. While promoting new energy vehicles, the construction of a highly, intelligent, electric, networked and environmentally friendly new energy era automobile service system is the only way to promote the sustainable development of the automobile industry. This paper thinks that the new energy vehicle service system will be influenced by the policy in addition to the technological development will also have a greater impact on it. Besides, market and trade aspects, such as consumer demand and industry chain changes, will also affect it to some extent. To cope with these influencing factors, this paper suggests that, firstly, the service content should be improved so that the new energy era vehicle service system has its own characteristics instead of being dependent on the traditional fuel car service system. Subsequently, internal services should be strengthened, i.e., enriching the new service content of the new energy era car service system. Finally, we should strengthen brand building to achieve market differentiation and competition. Due to the relatively small number of specific measures and the fact that it involves the establishment of a sound system, the article lacks specific cases to cite, and future research will be analyzed and explored in conjunction with specific cases.

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