

Study on the influence mechanism of low-carbon logistics on energy consumption structure in the Yangtze River Delta region

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ABSTRACT

Low-carbon logistics refers to the use of low energy consumption, low pollution, low emission technology and methods in the logistics process, in order to reduce the environmental impact and improve the transportation efficiency. Under the background of the new period, the low-carbon strategy has become a hot topic in the modern logistics industry. This paper will discuss the factors and countermeasures affecting the development of low-carbon logistics, in order to provide some reference and inspiration for the realization of low-carbon logistics.

KEYWORDS

Low-carbon Logistics; Influencing factors; Countermeasure analysis

1. INTRODUCTION

With the rapid development of the global economy and the logistics industry, environmental pollution and climate change have become worldwide problems. According to the International Energy Agency (IEA) report, the global transport industry accounts for a large proportion of energy consumption and carbon dioxide emissions, with a negative impact on global climate change. As a new type of logistics management mode, low-carbon logistics has significant environmental benefits and economic benefits, and has gradually been widely concerned and recognized by the industry. Therefore, it is of great significance to deeply study the influencing factors and countermeasures for promoting the development and promotion of low-carbon logistics.

2. THE CONCEPT OF LOW-CARBON LOGISTICS

Low-carbon logistics refers to a logistics management mode that adopts the technologies and methods of low energy consumption, low pollution and low emission in the process of logistics to reduce the environmental impact and improve the transportation efficiency. This logistics management mode is committed to reducing the carbon emissions and environmental impact of the logistics system by optimizing the logistics mode, improving the transportation efficiency, adopting green energy and other ways, so as to achieve the goal of sustainable development.

3. FACTORS AFFECTING THE DEVELOPMENT OF LOW-CARBON LOGISTICS

3.1. Technical Factors

First, it is expensive. The cost of new energy vehicles is relatively high, and the input cost of green energy is also relatively high, which leads to the cost pressure of logistics enterprises when implementing low-carbon logistics. Second, the technology is very difficult. The application of new energy vehicle technology and green energy technology is difficult, which requires enterprises to have a high technical level and professional knowledge, which increases the difficulty of logistics enterprises to implement low-carbon logistics. Third, the application is limited. The range of new energy vehicles, charging facilities and other problems limit their application scope and transportation capacity. Meanwhile, the application of green energy also faces some regional and technical restrictions. These negative effects may make logistics enterprises have some resistance and difficulties when promoting low-carbon logistics.

3.2. Market Factors

First, the lack of customer demand. Consumers often only pay attention to price and quality when choosing goods, and rarely consider the environmental protection in logistics, which leads to the problem of lack of customer demand when promoting low-carbon logistics. Second, the lack of regulations and policies. Lack of clear regulations and policy support, it is difficult to form the market demand and norms of low-carbon logistics. Third, the competitive environment is fierce. With fierce competition in the logistics market, logistics enterprises face problems such as high cost and low benefit when promoting low-carbon logistics, which makes enterprises lack of enthusiasm in low-carbon logistics.

3.3 Social Factors

First, the lack of public awareness of environmental protection and the lack of support and recognition of low-carbon logistics lead to the difficult promotion of low-carbon logistics in the consumption level. Second, some logistics enterprises lack a sense of social responsibility in low-carbon logistics, and it is difficult to form a conscious promotion and practice, and get effective social support. Third, the culture and habits of some regions are not conducive to the development of low-carbon logistics. For example, the traditional culture and consumption habits such as "giving gifts must drive luxury cars" in some regions, leading to the promotion of low-carbon logistics to be recognized by the local society. These negative effects are important factors restricting the development of low-carbon logistics, which need to be addressed by all sectors of society.

4. LOW-CARBON LOGISTICS DEVELOPMENT COUNTERMEASURES

4.1. Optimize The Technology

First, strengthen the research and development and application of new energy vehicles and green energy technologies to reduce the cost and difficulty of related technologies. The government can introduce corresponding policies to encourage enterprises to increase their investment in the research and development of new energy vehicles and green energy technologies, and provide corresponding funds and tax incentives and other supporting measures. We will strengthen cooperation between industry, universities and research institutes, establish a joint research and development platform, integrate superior resources of all parties, and improve the efficiency of technology research and development and reduce costs. Enterprises are encouraged to adopt advanced new energy vehicles and green energy technologies to improve their competitiveness in low-carbon logistics fields.

Second, promote and apply logistics information technology to improve the efficiency of logistics transportation and reduce carbon emissions. Establish a logistics information platform to realize the comprehensive sharing and collaborative management of logistics information. Promote the intelligent logistics distribution system to realize the fine management and optimization of logistics distribution. Application of the Internet of Things, cloud computing, big data and other new technologies to improve the ability of logistics information processing and analysis, to provide more accurate, efficient and reliable support for logistics and transportation.

Third, strengthen the standardization construction of green energy technology and promote the standardized application of green energy technology. We will strengthen the standardization of green energy technologies, formulate standards for green energy technologies, and standardize the application and popularization of green energy technologies. Promote the deep integration of green energy technology and logistics and transportation, establish a green energy logistics standard system, and promote the standardized application of green energy technology in the field of logistics and transportation. Guide logistics enterprises to adopt green energy technologies in line with green energy technology standards, and accelerate the promotion and application of green energy technologies.

4.2. Optimize From The Market Perspective

First, improve the public's awareness and recognition of low-carbon logistics, strengthen the publicity and education of low-carbon logistics, and encourage consumers to choose low-carbon logistics services. Promote low-carbon logistics services, adopt pricing strategies conducive to low-carbon logistics, offer preferential prices for low-carbon logistics services, and increase the market share of low-carbon logistics services.

Second, support the formulation and implementation of low-carbon logistics laws and policies, and strengthen the support and management of low-carbon logistics. Strengthen the formulation and implementation of low-carbon logistics policies, such as the introduction of low-carbon logistics standards, the formulation of low-carbon logistics related laws and regulations, to promote the development of low-carbon logistics. Strengthen the support and management of low-carbon logistics enterprises, provide the policy, capital and technical support related to low-carbon logistics, and strengthen the management and service capacity of low-carbon logistics enterprises.

Third, enhance the market competitiveness of logistics enterprises, and promote the development of low-carbon logistics by improving the efficiency of low-carbon logistics and reducing costs. Strengthen the research and development and innovation of low-carbon logistics technology, and improve the efficiency and quality of low-carbon logistics services. Establish a low-carbon logistics brand, improve the visibility and brand influence of low-carbon logistics enterprises, and enhance the market competitiveness.

4.3. Optimize From A Social Perspective

First, logistics enterprises are encouraged to assume social responsibilities and actively promote low-carbon logistics services. Strengthen the sense of social responsibility of logistics enterprises, and guide logistics enterprises to transform to low-carbon logistics. Logistics enterprises are encouraged to actively promote low-carbon logistics services and provide logistics services that meet environmental protection requirements. Strengthen the cooperation between logistics enterprises and social organizations and environmental protection organizations to jointly promote the development of low-carbon logistics.

Second, strengthen the research and analysis of cultural and habitual factors, explore a low-carbon logistics service model in line with local culture and consumption habits, and meet the needs of local consumers.

At the same time, strengthen cooperation with local governments and enterprises to jointly promote the promotion and application of low-carbon logistics services in China.

5. LOW-CARBON LOGISTICS DEVELOPMENT TREND

5.1. Application of New Energy Technologies

First, electric cars. Electric vehicle is a kind of transportation tool with electric energy as the main energy source, which can effectively reduce the emission of pollutants and reduce the carbon emission of logistics transportation. In the future, electric trucks will become the main trend of logistics transportation, and more and more logistics enterprises begin to introduce electric trucks for low-carbon logistics transportation. Second, hydrogen fuel cell vehicles. Hydrogen fuel cell vehicle is a kind of electric vehicle with hydrogen as fuel and battery as energy storage. It has no pollution, high efficiency and low noise. It is an important direction for the development of low-carbon logistics. Third, solar energy and wind energy applications. Solar and wind power are the most common renewable energy sources that can be used to power logistics companies. For example, the roof of the logistics center can be equipped with solar photovoltaic panels to use solar power to meet the demand of the logistics center, or install wind power equipment to power the vehicle through the wind generated by the vehicle. Fourth, the application of biomass energy. Biomass energy refers to the energy with biomass as raw material, including biomass fuel, biomass gas, etc. In the future, the application of biomass energy in the field of logistics will be more and more extensive, such as the use of biomass fuel vehicles. Fifth, the application of intelligent charging technology. With the popularity of electric vehicles, intelligent charging technology has gradually become an important direction of low-carbon logistics. In the future, there will be more intelligent, fast, efficient and low-cost charging technologies, which make the use of electric vehicles more convenient, reliable and economical.

5.2. Application of Intelligent Technology

First, the logistics information system. Logistics information system can collect, integrate and analyze the data and information in the process of logistics to improve the efficiency of logistics and transportation. For example, logistics enterprises can conduct real-time monitoring and management through the logistics information system to optimize the route of logistics vehicles and reduce congestion. Second, the intelligent distribution system. Intelligent distribution system is a system that uses big data and artificial intelligence technology to manage logistics distribution intelligently. For example, the intelligent distribution system can use algorithms to predict distribution demand, optimize distribution routes, reduce empty vehicle driving, improve logistics efficiency and reduce logistics carbon emissions. Third, robot delivery. Robot distribution is a way of using robot technology to conduct logistics distribution. The robot can independently complete the transportation, loading and unloading, and distribution of goods, reducing labor costs and carbon emissions. Fourth, drone delivery. Uav distribution is a way of using uav technology for logistics distribution, which can realize the automation and intelligent management in the distribution process. For example, drones can deliver goods quickly in a short period of time, reducing logistics transportation time and carbon emissions. Fifth, the application of artificial intelligence technology. Artificial intelligence technology can analyze and process the data in the logistics process through machine learning, natural language processing and other technologies, so as to improve logistics efficiency and reduce logistics carbon emissions. For example, artificial intelligence technology can predict the demand and distribution routes of goods, reducing empty vehicles and unnecessary carbon emissions.

5.3. The Development of Green Logistics

First, the application of green packaging materials. Green packaging materials refer to environmentally friendly, degradable and recyclable packaging materials, which can reduce the generation of packaging waste and reduce the carbon emissions of logistics. For example, biodegradable plastic bags, recyclable cartons, and so on. Second, the application of green logistics vehicles. Green logistics vehicles refer to logistics transport vehicles powered by new energy, such as electric vehicles, hydrogen fuel cell vehicles, etc. The application of green logistics vehicles can reduce logistics carbon emissions and noise pollution. Third, the construction of green logistics buildings. Green logistics building refers to the logistics centers and warehouses with the principles of energy conservation and emission reduction, resource conservation and environmental protection. For example, buildings adopt environmentally friendly materials, prefabricated buildings, energy-saving equipment and other measures to reduce building energy consumption and logistics carbon emissions. Fourth, the implementation of green logistics management. Green logistics management refers to taking a series of management measures to reduce logistics carbon emissions, reduce energy consumption and resource waste in the process of logistics. For example, through the optimization of logistics distribution routes, the improvement of loading rate and other measures to reduce logistics carbon emissions. Fifth, the provision of green logistics services. Green logistics service refers to the logistics services with the theme of environmental protection, including carbon-neutral logistics, zero-carbon logistics, etc. For example, logistics companies can provide customers with solutions to reduce carbon emissions by developing carbon-neutral businesses.

6. CONCLUSION

With the increasingly prominent problem of global climate change, low-carbon logistics has become an important direction of the future development of the logistics industry. On the premise of realizing logistics efficiency and service quality, reducing logistics carbon emission and resource waste has become an unavoidable responsibility and mission of logistics enterprises. In order to realize the sustainable development of low-carbon logistics, it is necessary to strengthen the research and development and application of new energy technology, promote the intelligent technology, improve the public recognition and recognition, strengthen the environmental publicity and education, to jointly promote the development of low-carbon logistics.

ACKNOWLEDGEMENTS

Funded by the Innovation and Entrepreneurship Training Program for College Students of Anhui University of Finance and Economics (S202310378023).

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