

Research on the Development Status and Countermeasures of Green Logistics in China

-- Taking SF Logistics as an Example

Yiyuan Wang*, Wenting Huo

School Of Economics and Management, Taishan University, Taian, China

*Corresponding Author

Abstract

The logistics industry is a basic, strategic and pioneering industry supporting the development of the national economy, and with green logistics as the mainstream development direction, which has become an important means to optimize the industrial structure, transform the mode of economic development, and promote the sustainable development of the region. At present, China's logistics industry has developed significantly, and produced a number of well-known logistics enterprises characterized by green logistics development, such as SF Logistics and JDL Logistics, etc. However, there are still many challenges in the development of green logistics, such as weak hardware infrastructure, a lack of awareness of green logistics, inadequate government policies and regulations, insufficient green technology support capacity, and contradictory conflicts between the industry and the regional structure. Based on this, this paper, on the basis of tracing the theory of green logistics in China, selects the current situation of green logistics development of SF Logistics as a specific case, discusses the current situation and development constraints of green logistics in China, and then puts forward the development strategy of green logistics in China in a targeted and systematic manner, with a view to effectively promoting the healthy development of China's green logistics industry, assisting the formulation of China's green logistics development strategy, and stimulating the development strategy of green logistics for the sustainable economic and social development.

Keywords

Green Logistics; SF Logistics; China's Logistics; Logistics Development Strategy.

1. Introduction

The logistics industry is an important support for the national economy, a key hub connecting production and consumption, and has become a basic, strategic and pioneering industry supporting the development of the national economy [1]. Green logistics, as the mainstream direction of the development of modern logistics industry, is an important means to realize the optimization of industrial structure, transform the mode of economic development, and promote the green development of the region [2]. In recent years, the rapid development of China's economy has generated a large amount of logistics demand, created a large number of logistics activities, and promoted the significant development of China's logistics industry. According to the statistics of China's logistics industry, the total amount of logistics in China has reached 15.5 trillion yuan in 2022, accounting for more than 14% of the gross domestic product (GDP). The rapid development of China's logistics industry inevitably promotes the use of a large number of logistics facilities and equipment, packaging materials, etc., which also makes China's logistics industry's carbon emissions and the use of packaging materials increase year

by year, posing a serious challenge to China's environmental protection. With the enhancement of environmental protection awareness and the transformation of economic development mode, China's logistics industry is developing in the direction of "green logistics", such as adopting more environmentally friendly transportation methods [3], promoting the recycling of packaging materials [4], etc., and a number of logistics enterprises with the characteristics of "green logistics" development have emerged. A number of logistics enterprises with the characteristics of "green logistics" have emerged, such as SF, Jingdong, etc. [5-6].

Green logistics, as a sustainable development of an economic mode of operation, in terms of energy saving and emission reduction, cost reduction and efficiency, and promoting regional sustainable development [7-8] shows a huge empowering effect, and has been gradually upgraded to the regional development strategy and the national development strategy, but there are still challenges in many aspects. At present, the development of green logistics in China is characterized by weak hardware infrastructure, lack of awareness of green logistics, unsound government policies and regulations, insufficient green technology support capacity, and prominent contradictions between industrial structure and regional structure, etc. [9-10], which restricts the self-development of green logistics and its empowering effect on economic and social development. SF, as a global famous logistics company and China's leading integrated logistics service provider, is committed to become a global independent solution of high-tech logistics, green logistics service provider, its green logistics development status and the problems it faces are very representative of the development of green logistics in China [11]. Based on this, this study explores the development status and constraints of China's green logistics on the basis of theoretical traceability, taking the development status of SF Logistics as an example, and then proposes the future development strategy of China's green logistics, with a view to effectively promoting the healthy and sustainable development of China's green logistics industry.

2. Theoretical Traceability

Since the 1990s, environmental protection in the field of logistics has gradually been emphasized, and the concept of "green logistics" has been put forward and widely used [2], and has gradually become the focus of research in industry and academia.

2.1. Conceptual Definition of Green Logistics

Regarding the definition of the connotation of green logistics, different scholars and organizations have given their different points of view. H. J. Wu & S. Dunn (1995) interpreted the concept of green logistics earlier, which refers to the green management of the process from the production of raw materials to the warehousing, transportation and packaging, and even to the hands of the user, and the reverse disposal management of the waste recycling, and it is an environmentally responsible transportation system [12]. J. P. Rodrigue, B. Slack & C. Comtois (2001) believe that green logistics is a kind of environmentally responsible transport system [13]. Wang Changqiong (2004) considered green logistics as a sustainable logistics model that harmonizes economic, social and environmental aspects of the whole supply chain process [14]. Liu Chunyu (2005) believes that green logistics is a kind of logistics model with economy, circularity and symbiosis, including the regulation and control of green logistics activities of enterprises and society [15]. A. M. J. Ayham, B. Chris (2016) believe that green logistics is the green ecological management of forward and reverse logistics [16]. S. X. Xie & W. F. Wang (2010) believe that green logistics refers to the implementation of advanced green technologies and concepts in the logistics process to realize the reduction of energy consumption, pollution, and the formation of a logistics system that harmonizes the economy and nature [17]. B. Zhang (2015) believes that the core point of green logistics is to focus on ecological balance, low consumption of resources, environmental protection, and the ability to

process waste so that it can be recycled, thus making such a logistics operation mode is sustainable [18]. Lanlan (2018) believes that green logistics (Environmental logistics) refers to the process of logistics activities, suppressing the harm caused to the natural environment, realizing the purification of the logistics environment, so that the logistics resources can be most fully utilized [19]. Yan Shuli (2022) believes that green logistics is a class of services in the commerce and distribution industry that reduces the negative impact on the environment caused by the process of commodity transportation with the help of various types of resources and the application of emerging technologies to rationally plan each logistics link [20]. Bao Mingjie (2023) believes that green logistics is a logistics model that promotes the sustainable development of the logistics industry through the implementation of sustainable logistics technology to achieve the optimization of resources in transportation and distribution, packaging and the final link to reduce environmental pollution and achieve sustainable ecological, social and economic benefits [21].

2.2. Development Status of Green Logistics at Home and Abroad

The United States is an early country to pay attention to and promote the development of green logistics. The U.S. first used legislation to intervene in the development of logistics logistics, and has made remarkable achievements in reducing carbon emissions and mitigating environmental impacts associated with transportation, handling and reverse logistics [22]. In addition, the United States has paid particular attention to the development of reverse logistics and has shown remarkable determination in establishing and strengthening internal systems, demonstrating a strong sense of corporate social responsibility and greater competitiveness [23]. Europe has been at the forefront of the development of green logistics. In 2006, it launched the Green Logistics and Transportation Plan, and then in 2020, it launched the Horizon Plan, which emphasizes the importance of the development of green and smart transportation and development strategies [24-25]. China entered the field of green logistics later, and in 2014, it released the Medium and Long-term Development Plan of Logistics Industry, which put forward the vision of building a modern logistics system driven by science and technology, high efficiency and environmental protection by 2020 [26]. Based on the importance of green logistics standardization, the China Logistics Technology Committee constructed the "Green Logistics Indicator Accounting and Composition Method" in 2018, which not only fills an important gap in the construction of green logistics standards in China and even in the world, but also provides a basic framework for evaluating the development of green logistics in China [27]. China's logistics industry is currently undergoing a transition period for green logistics development, and in order to cope with the changing situation, China has made a clear commitment to strengthen the development of green logistics to adapt to the changing dynamics and external factors [28].

2.3. Causes and Effects of Green Logistics Development

The development of green logistics has been going on for thirty years since the concept of "green logistics" was proposed. Although the interpretation of the connotation of the concept and the significance of the development is constantly changing, the original intention of the development of green logistics has always been based on the premise of environmental protection, resource conservation, to create as much economic benefit as possible, in order to promote the realization of synergistic development of the economy and the environment, and to promote the sustainable development of society [29].

Different scholars have given different views on the causes and effects of green logistics development. Hu Angang (2009) and other scholars believe that green logistics can increase the economic value of the region, reduce the operating costs of the regional economy, and improve economic efficiency; it can increase the social value of the region, and protect the ecological environment; it can promote the protection of the regional ecology, and it is a kind

of green production mode that maximizes the comprehensive benefits [30]. Wang Changqiong (2011) believes that "green logistics" aims to utilize advanced logistics technology and the concept of environmental management to carry out scientific planning, control, and management of the logistics system, and ultimately achieve the purpose of reducing resource consumption and environmental pollution [31]. Zheng Defeng et al. (2016) argued that the green economy can reduce the excessive dependence of economic development on resource consumption, achieve the sustainable utilization of production factors by investing in natural capital, and build an economic structure and economic growth mode with ecological agriculture, recycling industry, and sustained service industry as the basic content with the goal of efficiency, harmony, and sustainability as the goal of development [32]. Zhou Qiuqin et al. (2016) found that green logistics can effectively guide green production, promote green consumption, reduce social logistics costs, improve circulation efficiency, optimize the regional industrial structure and promote the healthy development of the regional economy through the analysis of green logistics in the Ningzhen-Yangyang region [33]. Yan Shuli (2022) empirically examined the performance of green logistics on circulation enterprises with the help of annual data of 203 retail and wholesale listed enterprises from 2011 to 2020; the study found that green logistics can enhance the return on total assets of circulation enterprises, reduce the rate of cost receivable, and is conducive to the improvement of enterprise performance [20]. Ma Zhuang, Lin Dong (2023) found that the development effect of the green transformation of the logistics industry in line with the "U" curve law; when the residents' income is lower than the first threshold, the green transformation of the logistics industry is not conducive to the high-quality development of the economic circulation of trade and commerce, and when the residents' income is greater than the first threshold, the economic momentum of the green transformation of the logistics industry gradually appeared, and as the residents' income is greater than the first threshold, the green transformation of the logistics industry is more and more important, and the economic momentum of the green transformation of the logistics industry will gradually appear. When residents' income is greater than the first threshold, the economic momentum of the green transformation of the logistics industry is gradually revealed, and with the increase in the level of residents' income there is a clear trend of enhancement [34].

2.4. Development Constraints of Green Logistics

Currently, studies have confirmed that green logistics has a significant development effect, however, the healthy and sustainable development of green logistics often depends on the influence of multiple factors.

Based on the serious regional structural contradiction in the development of green logistics industry, Xue Nan (2014) argues that the imbalance of development between urban and rural areas restricts the process of integrated development of logistics, and hinders the potential effect of green logistics on urban and rural logistics [35]. For the development status quo of green logistics of agricultural products, Huang Youwen (2015) believes that the current green logistics of agricultural products exists the constraints of backward green logistics concepts, unscientific logistics process of agricultural products, low application of advanced logistics technology, imperfect standards, and weak infrastructure of green logistics [36]. Dai Dongfang, Yu Huixin (2016) believe that the development of green logistics in China still exists in the transportation efficiency is not high, pollution is serious, the storage facilities are simple, low management level, the processing process resource waste is serious, the waste disposal is not proper, and the packaging is excessive, the packaging materials are not environmentally friendly enough and so on [37]. Based on the inadequacy of green logistics laws and regulations, Wang Wenju, He Mingke (2017) argued that the development of green logistics industry relies on the support of policies and regulations, but most of the current government policies and regulations are still pointing to the traditional logistics industry, and there are fewer specific

measures or implementation rules about the development of green logistics[38]. Based on the analysis of the current development status of green logistics, Liu Zhanyu et al. (2018) concluded that the current green logistics exists in green logistics related policies and regulations are not sound, the hardware infrastructure is backward and the power of advanced technology support is insufficient, the structural problems of the transformation and upgrading of the traditional logistics industry are prominent, and the government, enterprises and consumers lack of awareness of green logistics and other aspects[39].

2.5. Development Strategy of Green Logistics

Based on the development causes and development effects of green logistics, scholars in various countries have also studied and constructed the development strategies of green logistics.

American scholar Poist (1989) earlier emphasized the necessity and significance of developing green logistics, and advocated the establishment of a safe, efficient and internationalized green logistics system by means of legislation[40].Sbihi A. & Eglese R.W. (2007) believed that green logistics should be based on the scientific concept of development, combining modern science and technology with logistics and transportation, and Building a modern logistics platform[41].Luthra S. & Mangla S. K. (2018) argued that digital smart technologies help to implement environmental protection strategies for industrial sustainability [42]. Mastos T. D., et al. (2020) argued that the use of the Internet of Things (IoT) can facilitate green supply chain management (GSCM) by significantly reducing harmful emissions and improving response time optimization and resource availability [43].Milita et al. (2021) conducted a quantitative questionnaire survey on the determinants of green logistics practices in Lithuanian transport and logistics service companies. The study found that the factors that have a direct impact on green logistics practices and applications are laws, regulations and policies, requirements of business partners, service users, customers and society, awareness of the company's top management, and corporate culture that focuses on environmental protection and sustainable development [44]. Wang, Chunjuan, and Guo, Kaige (2024) combined with the panel data of Chinese prefecture-level cities from 2011 to 2020, showed that the digital economy is an important driving force to empower the high-quality development of green logistics, and significantly promotes the high-quality development of green logistics through technological innovation and the enhancement of the residents' income, and that it should be enriched with digital technology-enabled scenarios, supported by the digital eco-orientation, and enhanced by the "dual-carbon" corporate culture [45]. We should enrich digital technology-enabled scenarios, support digital ecological orientation, enhance the level of "dual-carbon" digital governance, and strengthen the digital foundation guarantee and other measures to enable the high-quality development of green logistics.

3. Introduction to SF Logistics

SF Logistics, as a famous express logistics service provider in China, was founded in 1993. After more than 30 years of development, SF Logistics has the initial ability to provide customers with integrated logistics solutions, not only to provide logistics services at the distribution end, but also to extend the logistics services to the whole supply chain, such as production, supply, marketing, distribution and so on. In addition, SF Logistics can provide intelligent logistics services. After years of dedicated operation and forward-looking strategic layout, it has initially possessed an integrated logistics service network with "sky network + ground network + information network", which can cover both domestic and international markets, and it can provide customers with warehousing, management, sales forecast, big data analysis, and cloud computing technology from the perspective of consumers' needs. It can utilize big data analysis and cloud computing technology from the perspective of consumer demand to provide

customers with a package of solutions for warehousing management, sales forecasting, big data analysis, financial management and so on. From the date of establishment, SF Logistics has adopted a direct operation mode, with the headquarters implementing unified operation and management of branches, which guarantees the overall operation quality of the network, and is the first express delivery company adopting the direct operation mode in the A-share market. In 2019, SF Express was selected as the Exemplary 100 Brands in the 2019 China Brand Strength Ceremony and ranked 61st, and it was identified by the Ministry of Education and other four departments as the first batch of National Vocational Education. In 2020, it won the "Sustainable Development Innovation Award" of Caijing Evergreen Award.

Green logistics represents a development model of the logistics industry, a conscious approach to linking environmentally sustainable supply and demand, and highlights the importance that the state and enterprises attach to green development, a new form of expression in the field of logistics. Logistics logistics can be realized by promoting efficient and fast green products and green mobile services to meet customer needs and overcome time and space constraints. In addition, green logistics, as a logistics decision-making model, integrates the concept of environmental protection and is an intermediary between green supply and green demand, which can help enterprises to reduce the waste of resources and energy, minimize the environmental impact, and consolidate the strategic need for competitive advantage.

As a well-known enterprise in China's logistics industry, SF Logistics, based on the low-carbon concept of "carbon neutrality" and adhering to the concept of low-carbon logistics, has been committed to promoting the development of green logistics, taking the low-carbon and environmentally friendly logistics route, and identifying green logistics as the core business of the enterprise [46]. SF Logistics has now established a number of green logistics parks across the country, adopting cutting-edge green technology to effectively optimize the use of resources. SF Logistics has also launched a variety of green logistics services, including green packaging and green distribution, thus providing customers with environmentally sustainable logistics solutions. SF Logistics actively responds to the national sustainable development strategy, advocates low-carbon life, and works around the theme of "green logistics, low-carbon development". This commitment is reflected in three core aspects: operational efficiency, service delivery and social responsibility. The company continuously strives to improve resource utilization efficiency and reduce carbon emissions and resource consumption, thereby contributing to the broader social goal of sustainable development. With the growing global awareness of environmental protection, SF Logistics recognizes its social role and actively participates in activities to uphold environmental standards. This includes participation in the Green Indicator System for the express delivery industry established by the relevant national authorities, which aims to improve carbon emission standards within the industry. Notably, SF participated in the development of the Carbon Emission Detection Standard for the Express Industry, which was announced in May 2022 by the State Post Bureau. In addition, SF has launched an internal energy-saving program to incorporate energy-saving and environmental protection principles into its business operations. Through these joint efforts, SF is taking the lead in establishing a green logistics system within the organization.

4. Development Status and Challenges of SF Green Logistics

At present, SF Logistics has formulated and practiced a variety of green logistics development plans and achieved initial results, but there are also serious development challenges.

4.1. Development Status of SF Green Logistics

4.1.1. Implementing the "Box" Companion Program and Promoting Recycling

Since 2022, SF Logistics has formulated and implemented the famous "Box" companion program, which also marks a pioneering step towards a green logistics model. SF Logistics designed a logistics box for retrofitting to improve the recyclability of express cartons, and took measures to stimulate public participation in the reuse of old express cartons in order to cultivate consumers' environmental protection concept of turning waste into treasure. By the end of 2022, the "Box" program had transitioned from a simple case study to active urban implementation, with hundreds of thousands of environmentally friendly boxes distributed in Changsha, Hangzhou and Zhuhai in mid-November. Citizens are encouraged to unpack the packaging they receive, unfold and cut the discarded boxes along designated lines, and then creatively stitch them together to reuse the packaging. This method not only promotes resource conservation, but also integrates discarded packaging into daily life for a variety of uses such as shoeboxes, coat hangers and pen holders.

4.1.2. Promoting Technology Empowerment and Practicing Green Packaging

SF Logistics actively plays the role of technological empowerment of high technology to develop and promote green packaging. In the field of green packaging, SF Logistics innovatively launched recyclable express containers, including standard packaging recycling bins and containers; and took active measures to establish partnerships with various stakeholders to actively realize green packaging and establish a comprehensive and interconnected green packaging recycling ecology. In 2022, SF Logistics put 31 million green packages designed for urban utilization, with a recycling potential of about 430 million times. In addition, SF's packaging recycling bins, named "SF Packaging Recycling Bins", were reused up to 46.27 million times. To expand the impact of these initiatives, SF Logistics launched the "Fengjing Campaign", a comprehensive program aimed at enhancing express packaging recycling and researching environmentally friendly express recycling packaging. Since the implementation of the "Fengjing Campaign", SF Logistics has saved about 78,000 tons of paper, 48,000 tons of water and 187,100 tons of carbon emissions. These tangible results highlight SF Logistics' commitment to combining technological advancement with environmental responsibility, making a substantial contribution to the realization of broader sustainable development goals.

4.1.3. Implementing Green Transportation to Reduce Carbon Emissions

In the field of green transportation, SF Logistics has been committed to expanding the scale of new energy transportation vehicles in urban environments and currently has 23,000 new energy transportation vehicles. Meanwhile, the company has also carried out the pilot application of solar-powered vehicles. SF Logistics complies with the national logistics development requirement of "bus and rail", and actively reduces its reliance on road transportation vehicles while increasing the logistics business volume of rail trains. In addition, SF Logistics also strives to develop low-efficiency and low-consumption "green planes", utilizing 747/787 and other transport freighters to improve transportation efficiency and reduce time consumption in specific environments. In addition, technologies such as re-release are used to continuously reduce aircraft consumption. In the field of green transit, SF Logistics insists on building green logistics parks, aiming to reduce the environmental impact of logistics transit stations and optimize the scientific use of warehouse space layout. Together, these measures promote the improvement of logistics transit efficiency. At the same time, SF Logistics is also committed to research on improving the utilization efficiency of renewable resources and implementing programs focusing on renewable resources in order to achieve carbon reduction targets. Notably, SF strategically selects suitable locations for distributed photovoltaic (PV) power generation, thereby introducing more PV power generation within its operations.

4.1.4. Strengthening Collaboration and Building a Zero Carbon Network

SF Logistics is not only committed to controlling its own carbon emissions, but also plays a leading role in building a network of "zero-carbon partners" by promoting cooperation with industry peers and users throughout the supply chain. In July 2012, SF Logistics launched an innovative online green energy software experiment, which enables users to accumulate "green energy" by participating in low-carbon environmental activities, such as the use of green packaging. In July 2022, SF Logistics launched an innovative online green energy software experiment that enables users to accumulate "green energy" by participating in low-carbon environmental activities, such as using green packaging. Accumulated green energy can be exchanged for environmentally friendly gifts, promoting cooperation with users and contributing to the establishment of a low-carbon society. In addition, SF Logistics has launched a small program called "SF Forest" in an effort to raise employees' awareness of environmental protection. Under the program, SF employees can calculate the amount of CO₂ emissions generated during a specific period and subsequently offset their emissions by planting trees, thus achieving a personal "zero-emission" status. As of September 2022, approximately 48,000 people have actively participated in the "SF Forest" initiative, with more than 5,000 of them receiving saplings online.

4.2. Development Challenges for SF Green Logistics

4.2.1. Relative Lack of Green Logistics Development Concept

At present, although SF has formulated and practiced all kinds of green logistics development policies, measures and program activities, the concept of green logistics development is still insufficient. This insufficiency is reflected in the serious shortage of green logistics development concepts of grassroots employees on the one hand. In addition, some managers at the middle and senior levels still have some misunderstandings about the development of green logistics, and regard it as a cost-boosting endeavor rather than a transformative catalyst that can enhance the company's competitiveness. Relevant studies show that some middle and senior managers of SF still focus on the short-term economic effects of logistics as the development of the enterprise, and lack the potential long-term benefits associated with green logistics, such as cost savings, environmental management and fulfillment of social responsibility, and the long-term solidification of profit-oriented management concepts without due consideration of green and sustainable development, which has brought obstacles to the development of green logistics in SF.

4.2.2. Inadequate Green Transportation Allocation

SF Logistics' lack of a systematic approach used for vehicle scheduling in planning transportation vehicle routes for its rapid delivery operations can lead to sub-optimal resource utilization, resulting instead in increased costs associated with loading, unloading, and transporting during operations. Practice has shown that SF Logistics lacks a comprehensive system for vehicle scheduling and internal planning, and still relies primarily on ad hoc scheduling by grassroots employees, and that this ad hoc scheduling method leads to unscientific vehicle allocation resources between regions in certain areas, which in turn increases transportation costs and fails to efficiently optimize distribution resources.

4.2.3. High-cost, Low-cycle Packaging Recycling

In the recycling packaging cost restaurant, SF Logistics although launched a green logistics packaging solution Fengdaobao (π -Box) to simplify and innovate plastic bags, tapes, stickers and sealing parts through environmentally friendly packaging. However, after the implementation of the program there is a problem that the cost of green packaging exceeds the cost of traditional packaging, while the cost of green packaging is twice as much as the traditional alternatives, which poses a spacing challenge to the promotion of the full adoption

of green packaging and recycled packaging. In terms of ground recycling, SF Logistics introduced 6,000 eco-friendly recycling bins at its service locations in more than 100 cities in China starting in 2019, but user participation is still limited. Consumers lack awareness of the potential environmental impact of express packaging and may not fully understand the associated logistical costs. This highlights a lack of wider public understanding of green logistics and environmental packaging protection.

4.2.4. Deficiencies in Green Logistics Information Technology

In the contemporary environment of rapid technological development, many industries have adopted a large number of information technology tools. However, within SF Logistics, the application of information technology in the field of green logistics is still relatively small, and there is an obvious gap compared to the standards required for green logistics operations. The development of information technology within SF Express varies, with different technical standards across regions, which has led to the slow development of information technology in green logistics. This decentralized approach hinders effective coordination between regions, which in turn hinders the healthy development of green logistics within the organization.

In addition, compared with logistics companies in western developed countries, SF Express has lagged behind in the technological advancement of green logistics. Although SF Express has made great strides in the development of fully automated handling robots, the widespread application of this technology remains a challenge. There is a noticeable lack of automation and smart technology equipment throughout the logistics activities, resulting in a lack of green services. This deficiency extends to the lack of a comprehensive green logistics information platform. Addressing these limitations will require a concerted effort to improve the informatization of green logistics and create a more cohesive and technologically proficient framework for advancing sustainable logistics practices.

4.2.5. Lack of Green Logistics Professionals

The frontline staff of SF Logistics lacks basic knowledge of green logistics and lacks knowledge in the field of green logistics. However, the company's management has a relatively shallow understanding of green logistics, which basically stays in the ideological stage. They believe that it is very difficult to carry out green logistics in the company and take measures. In addition, Chinese universities have not opened special green logistics majors, and SF Logistics has invested relatively little money in research and training in the field of green logistics, making it difficult to train green logistics talents. The way of training talents is still based on short-time intensive training after induction, which restricts the development of green logistics of SF Logistics. By the end of 2022, the information shows that the talent scale of SF Logistics relative to other enterprises in the same industry has reached more than 7,000 people, of which undergraduate, postgraduate and above accounted for 62%, 19% respectively, nevertheless, SF professionals in the green logistics is still relatively short of the proportion, especially both mastery of logistics and understanding of the development of green comprehensive talent is relatively small.

5. Countermeasures for the Development of Green Logistics in China

Based on the theoretical traceability of the development of green logistics in China and the case analysis of the development of green logistics in SF, this study specially constructs countermeasures for the development of green logistics in China in the following aspects.

5.1. Playing the Role of Government Macro-guidance

The government plays a leading role in promoting the development of green logistics in China, and its guiding role in the development of green logistics is mainly reflected in the support of government policies [47]. The government, on the one hand, can formulate and improve green

logistics laws and regulations, build green logistics development standards, macro-guide the healthy and sustainable development of green logistics; on the one hand, through the introduction of relevant tax reductions, subsidies and incentives and other policies to guide and support the development of green logistics logistics enterprises, take the initiative to use green packaging, build a green logistics and transportation system, innovation of green logistics technology, etc.; and then on the other hand, you can support relevant institutions to train green logistics professionals to make up for the lack of green logistics technology. On the other hand, we can support relevant organizations to cultivate green logistics specialists to make up for the shortage of green logistics talents.

5.2. Establishing Green Logistics Development Concept

Green logistics development concept is the guiding ideology and values that guide the development of green logistics. China's green logistics development should establish the development concept of green logistics, adhere to and cultivate the concept of green logistics development and sustainable development ideas [21]. The establishment of the green logistics development concept needs to be implemented in the front-line personnel of logistics enterprises. Therefore, the sorting of green logistics development concepts needs to support and promote the logistics enterprises to carry out regular training of green logistics development concepts for the front-line grass-roots personnel to enhance the understanding of green logistics development of the front-line personnel of the logistics enterprises. The establishment of green logistics development concept needs to change the development concept of the senior staff of logistics enterprises, guide the senior staff of logistics enterprises to establish the idea of economic development and green development, change the "development of green logistics is to increase the cost of the enterprise" misconception, and promote the formulation of long-term development strategy of logistics enterprises, to add resource conservation, environmental protection, etc. to the company's concept of operation. In the company's business concepts to increase resource conservation, environmental protection and other thinking. Only logistics enterprise personnel aware of the interrelationship between green environmental protection and the development of logistics, understanding of green logistics for the long-term development of enterprises to bring the advantages, in order to mobilize the enthusiasm of the majority of employees, prompting them to actively participate in the development of green logistics business.

5.3. Building Green Logistics Transportation System

The promotion of green logistics in China, first of all, we need to build a green logistics transportation system from the macro level of the supply chain perspective, establish a green logistics transportation management structure, integrate the reverse logistics resource recovery link into the green logistics transportation machine distribution process, arrange for professionals to carry out unified scheduling and distribution of vehicle transportation, apply big data, artificial intelligence, the Internet and other related technologies to formulate a reasonable use of all the vehicles and realize the visualization of vehicle use; promote logistics enterprises to actively adopt new energy vehicles [46], and gradually introduce electric vehicles to replace traditional fuel vehicles to effectively reduce the logistics transportation. and realize the visualization of vehicle usage; promote logistics enterprises to actively adopt new energy vehicles [47], and gradually introduce electric vehicles to replace traditional fuel vehicles, in order to effectively reduce the carbon emissions of logistics transportation; actively use renewable energy to meet the energy needs of logistics enterprises, such as solar energy, wind energy, and geothermal energy, etc.; and actively adopt energy-saving equipments and technologies to reduce energy consumption of logistics enterprises, such as installation of Energy efficient lighting systems, refrigeration equipment and air conditioning systems, the use of intelligent control technology for energy management and optimization, by improving the

equipment; specializing in setting up a professional logistics and transportation cost accounting department, statistics and accounting for the costs incurred by the vehicle transportation, to achieve cost uniformity, to prevent the cost reports of various regions to produce the phenomenon of inconsistency between the book data and the actual situation, and only in this way can we achieve the purpose of cost savings. For the transportation vehicle parking problem, each region can set up a special transportation vehicle parking area, unified parking transportation vehicles, parking should strictly abide by the parking rules, prohibit arbitrary parking and placed in the private parking area, which is conducive to better management of the region's vehicles, at any time to monitor the parking situation of the vehicle. Regions need to transport vehicles from time to time for the vehicle physical examination, to ensure that the transport vehicle safety indicators, reduce the maintenance costs of transport vehicles.

5.4. Developing Green Logistics Packaging Technology and Building Packaging Recycling System

Developing green logistics packaging and building a green logistics packaging recycling system is a key link in the development of green logistics in China [48]. The development of green logistics technology can not only promote the development of green logistics, but also create new economic growth points. Through the development of green logistics technology, the development of green logistics packaging can effectively reduce the waste of resources in logistics packaging and save the cost of enterprise packaging, and at the same time, it can build up a green logistics packaging industry, which can promote economic growth[49]. For example, enterprises can be encouraged to develop a green logistics technology innovation strategy, incentives for technicians to innovate green logistics packaging technology, in order to mobilize the enthusiasm of technicians to innovate. It is also possible to establish a common green logistics information platform within the enterprise, so that the branches of each region can jointly exchange information, breaking down the barriers between regions, so that each region can be highly coordinated, which is conducive to the development of new green logistics information technology. In addition, it can also learn and absorb foreign advanced green logistics development technology, improve the absorption of green logistics technology learning and independent development capabilities, and actively seek new economic growth points. In the innovation of green logistics technology and the development of green logistics packaging at the same time, should also establish and improve the green packaging recycling system, can be placed in different areas of the special courier packaging recycling box, guide the residents in the courier unpacking, you can directly put the courier packaging into the courier recycling box, the network packaging recycling personnel to encourage residents to take the initiative to recycle the courier packaging, can be based on the specifications of the packaging to give the residents of the small gifts or to return a small amount of cash. A small amount of cash. This express packaging recycling can effectively reduce packaging waste pollution of the environment, but also can be recycled with a batch of express packaging to further reduce the cost of SF in the express packaging expenses.

5.5. Introducing Digital Intelligence Technology

The development and application of digital technology is one of the important strategies for the green development of logistics enterprises. Internet of Things technology can be used to realize the intelligent management of logistics network and full-process monitoring, real-time access to data information of logistics transportation vehicles, warehouses and equipment, etc., to realize the comprehensive monitoring and management of the logistics process, and also to realize the tracking of goods and location management, to improve the transportation efficiency and reduce energy consumption. Big data technology can be used to carry out in-depth mining and scientific analysis of a large amount of transportation data, to find out the problems in the logistics and transportation process, and solve the problems in an intelligent way. For example,

through the analysis of data on transport routes, transport volumes and transport modes, it is possible to formulate optimal transport solutions, reduce transport distances and transport times, lower carbon emissions and energy consumption, and realize intelligent transport scheduling and resource allocation.

5.6. Emphasizing the Cultivation of Logistics Talents

Logistics talent is the root of the development of green logistics, the development of green logistics in China depends on the cultivation of green logistics talent, and actively cultivate the specialized talents required for the development of green logistics. We can promote logistics enterprises and colleges and vocational schools to strengthen school-enterprise cooperation, set up green logistics majors, train students to learn professional knowledge of green logistics, enhance green logistics development literacy, and cultivate composite talents suitable for the needs of green logistics development. Promote logistics enterprises to cooperate with highly efficient, vocational schools, guide physical enterprises to train their personnel in green logistics, cultivate the professional knowledge of enterprise employees in green logistics development, carry out in-house training of green logistics talents, and make employees of logistics enterprises to become composite talents with knowledge in the field of logistics as well as excellent knowledge in the field of environmental protection. Logistics enterprises can also be encouraged to vigorously attract external talents in the direction of green logistics, and encourage their own staff to go abroad, exchange and communicate with external logistics enterprises, and learn advanced theories and practical experience from abroad.

6. Conclusion

The logistics industry, as an important support of the national economy, has become a basic, strategic and pioneering industry supporting the development of the national economy. The rapid development of China's economy has promoted the development of China's logistics industry, but it has also made the carbon emissions and the utilization of packaging materials in China's logistics industry increase year by year, which has brought serious challenges to China's environmental protection. Therefore, green logistics has become the mainstream direction of the current development of China's modern logistics industry, and is also an important means to realize the optimization of industrial structure, transform the mode of economic development, and promote regional green development. However, the current development of green logistics in China is characterized by problems such as weak hardware infrastructure, lack of awareness of green logistics, inadequate government policies and regulations, insufficient green technology support capacity, and prominent contradictions between industrial and regional structures, which constrain the empowering effect of green logistics.

SF Logistics, as a global famous logistics company and China's leading integrated logistics service provider, its green logistics development status and the problems it faces are very representative of the development of green logistics in China. At present, SF Logistics has already made efforts in implementing the "box" companion plan, practicing green packaging, implementing green transportation, and building a zero-carbon network, etc. However, there are challenges such as relative lack of the concept of green logistics development, insufficient allocation of green transportation, high-cost, low-cycling packaging recycling, insufficient informationization of green logistics, and lack of green logistics professionals. logistics professionals and other challenges. Based on the current situation of green logistics development of SF Logistics, this study proposes development strategies such as playing a macro-guiding role of the government, establishing the concept of green logistics development, constructing a green logistics transportation system, developing green logistics packaging technology, constructing a packaging recycling system, actively introducing digital intelligence

technology, and attaching importance to the cultivation of logistics talents, etc., with regard to the current situation of the development of green logistics and the characteristics of the development of green logistics in China.

However, this study also has certain research deficiencies. This study only conducted a case study on the current status of green logistics development of SF Logistics, and did not collect case studies on the current status of green logistics development of other logistics companies from a wider scope. Although the green logistics development status of SF Logistics is representative, the scope of the case study is slightly insufficient, resulting in the proposed and constructed countermeasures for the development of green logistics in China is slightly inadequate. This also brings the research direction for this study, which will expand the scope of the object of case analysis in the future, collect the green logistics development information of Chinese logistics enterprises from a wider range, and look for the basis from the common information to enhance the pertinence and scientificity of the development countermeasures construction.

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