Supply Chain Enhancement Strategies in the Era of Green Development: A Case Study on SF Express

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Abstract. Green development is an approach to economic growth and social development that aims at efficiency, harmony, and sustainability. Going green helps improve an enterprise's social image and reputation and creates a long-term competitive advantage. Adopting sustainable logistics practices, such as optimizing transport routes, reducing waste and energy consumption, and adopting cleaner energy sources, can reduce an enterprise's operating costs and mitigate the risks associated with environmental pollution and resource wastage. With the rapid development of China's logistics industry, the relationship between sustainability and company performance has become stronger and stronger, and green development has become a trend in the logistics industry. This essay takes SF as the research object through collecting, collating and analyzing relevant data, adopting empirical research methods, analyzing the aspects of warehouse management, item packaging, item transportation and item reverse logistics, and proposing optimization solutions, thus helping to provide a reference for logistics companies to upgrade their supply chains, to make them better adapt to the situation of green development, and to promote the harmonious development of the economy, the society and the environment.

Keywords: Green Development, SF Supply Chain, Green Packaging Recycling, New Energy Transport.

1. Introduction

With the global economy's and society's rapid development, the natural environment has had a huge impact. Environmental problems such as the greenhouse effect and extreme weather have become increasingly prominent in recent years, and countries have been exploring green development models. Green development is an approach to economic growth and social development that aims at efficiency, harmony, and sustainability. During the Outline of the Thirteenth Five-Year Plan for the National Economic and Social Development of the People's Republic of China, green development was written for the first time in the country's five-year plan. General Secretary Xi Jinping proposed in the twentieth National Congress of the Communist Party of China that green development be promoted to foster harmonious coexistence between human beings and nature. In addition, China's logistics industry is developing rapidly. Data released by the National Development and Reform Commission on "National Logistics Operation in 2020" show that the total cost of social logistics in 2020 will be 14.9 trillion yuan, an increase of 2.0 percent year-on-year, and the total income of the logistics industry in 2020 will be 10.5 trillion yuan, an increase of 2.2 percent over the previous year. Over the years, the relationship between sustainability and company performance has become stronger, confirming the need for companies to invest in sustainability practices more than ever before [1]. Therefore, more and more managers are noticing the need for green development, which has become a trend in the logistics industry. Currently, most scholars analyze firms' green development strategy and performance in the context of green and low carbon. Still, there needs to be more research on supply chain upgrading ideas for logistics companies. This paper takes SF company as the research object through collecting, collating and analyzing relevant data, adopting empirical research methods, analyzing the aspects of warehouse management, item packaging, item transportation and item reverse logistics, and proposing optimization solutions.

The research in this essay helps to provide ideas for logistics companies to upgrade their supply chains and better adapt to the green development situation.

2. SF Supply Chain in the Context of Green Development

Currently, the SF company reduces carbon emissions through power generation projects in industrial parks and by establishing outlets and warehouses worldwide. According to the "2022 SF Company Holdings Sustainable Development Report," SF company develops photovoltaic power generation projects in 9 industrial parks in Yiwu, Hefei, Hong Kong, etc., with a renewable energy generation capacity of 9,843,000 kWh, and a reduction of 6,792 tonnes of greenhouse gas emissions in the year 2022. Meanwhile, SF company has more than 29,000 domestic self-operated and agency outlets and face-to-face customer points, more than 20,000 overseas and agency outlets, 379 express terminal operation transfer yards, 39 hub-level transfer yards, and 2,071 operation and management warehouses.

In addition, SF company is actively conforming to the development trend of green packaging, continuously promoting the implementation of the green packaging plan, refining the essentials of packaging operation for different types of consignments, and newly developing packaging containers to meet the full range of scenarios and multi-functional applications, realizing the unitary adaptation between the containers and carriers, and implementing the requirements of green packaging, and at the same time, carrying out the innovative research and development for the reduction, standardization and scenarios for the 8 major categories of materials, such as adhesive bags, adhesive paper, stickers, seals, and so on. According to the SF Company 2023 Semi-Annual Report, the cumulative reduction in the use of raw paper in the first half of 2023 was approximately 21,000 tonnes, and the reduction in the use of plastics was approximately 77,500 tonnes.

Besides, SF is actively exploring practical application research and promoting new energy tram transport scenarios. According to the 2022 SF company Sustainability Report, SF has accumulated more than 26,000 new energy vehicles, covering 232 cities. For long-distance transport and transport scenarios in cold northern regions, the company conducts pilot introduction of hydrogen-fuelled and LNG natural gas vehicles. At the same time, SF reduces process energy consumption through intelligent map transport route optimization and uses intelligent algorithms to provide the optimal solution by combining the timeliness requirements of item transport, distance and other factors.

In the case of reverse logistics, the main focus is reducing resource consumption and carbon emissions during the reverse logistics of goods. At present, SF is a one-stop after-sales service solution of "warehousing + distribution + after-sales service" and a more reasonable arrangement of resource allocation through the appointment of door-to-door pickup and other ways.

3. Analysis of SF Supply Chain Problems

3.1. Warehouse Management

There are regional differences in SF warehousing. Firstly, the difference in geographical location will affect the layout and operation of SF logistics warehouses. Factors such as terrain, climate and transport conditions in different regions will impact the selection and management of logistics warehousing. For example, due to the complex terrain in mountainous areas, the construction of warehousing facilities and the transport of goods will need more support, thus creating more complex requirements for warehousing equipment and means of transport.

Secondly, the differences in market demand will also lead to local differences in SF logistics warehousing. There are differences in consumption levels, consumption habits and product demand in different regions, which requires selecting appropriate warehousing strategies based on the characteristics of market demand. For example, the eastern region of China has a high level of economy, good infrastructure construction, and advantages in talent and technology; the central and western regions have a low level of economy and lack of efficiency in the use of resources, so the efficiency of the logistics supply chain is low in the context of green development [2]. In addition, differences in policies and regulations will also have an impact on SF logistics warehousing. Different regional governments may have differences in regulating and managing the logistics and warehousing

industry. Some regions may have certain restrictions on the construction and use of warehousing facilities. Hence, SF Logistics adjusts the warehousing operation mode according to local policies and regulations. To sum up, geographic location, market demand, policies and regulations and other factors have an impact on the distribution of warehouses in SF, which also results in dense distribution of warehouses in the east and sparse distribution of warehouses in the west and other phenomena, leading to a waste of transport resources and other issues.

3.2. Logistics Issues

3.2.1 Difficulty in recycling green packaging

According to "China's express packaging waste generation characteristics and management of the current situation", the research institute of Sealand Securities research data show that, at this stage, the overall recovery rate of express packaging is less than 1/5. Among them, plastic bags accounted for 34%, and its recycling rate is infinitely close to zero [3]. Although SF launched the "shared cycle express box - Feng-BOX", pioneered zip instead of sealing tape, easy to open and close, foldable, anti-theft, internal binding and other product structure innovations [4]. However, the sheer packaging volume and limited recycling facilities and resources make green packaging recycling easier. SF's "2022 Annual Report" shows that SF's annual logistics and express delivery volume in 2020-2022 will grow by 35.2% cumulatively, and the annual logistics and express delivery volume in 2022 will reach 11.14 billion votes. Secondly, the recycling channels and mechanisms could be better. For example, green recycling packaging has been developed, and very few communities, colleges and universities have green recycling packaging supporting recycling points. These will affect the recycling efficiency of green express packaging [5]. The green packaging recycling of SF Logistics needs to cooperate with environmental protection departments and waste recycling enterprises, but the current recycling channels and mechanisms still need to be perfect. On the one hand, the scale and distribution of waste recycling enterprises are not balanced, unable to meet the recycling needs of SF Logistics in various regions; on the other hand, the recycling funds and policy support are not enough, and there is a lack of guidance and support for the green packaging recycling industry, which leads to difficulties in the promotion of recycling work. The large number of packages, limited resources of recycling facilities, uneven scale and distribution of recycling enterprises, and insufficient financial and policy support have led to difficulties in recycling green packages for SF Company.

3.2.2 Low share of new energy vehicle capacity

At present, SF Logistics has a wealth of resources in transport modes to provide domestic and cross-border multimodal transport services. The "2022 SF Holdings Sustainable Development Report" shows that 4,911 new energy vehicles were added to the capacity this year. By the end of 2022, more than 26,000 new energy vehicles had been placed in the fleet. In addition, according to the "Ministry of Finance, Ministry of Industry and Information Technology, Ministry of Science and Technology, Ministry of Development and Reform Commission on the Improvement of Financial Subsidy Policies for the Popularisation and Application of New Energy Vehicles" (Caijian [2020] No. 86), the subsidy standard for new energy vehicles will be sloped back by 30% in 2022 based on the 2021. The subsidy standard for the vehicles that meet the requirements in urban logistics and distribution, postal courier, civil aviation airports, etc., will be sloped back by 20% based on 2021. Although the government has given certain subsidies and support policies, it still can't fully compensate for the high cost of new energy vehicles and the large total amount of traditional means of transport in SF. This has led to the economic pressure faced by SF Logistics in updating its capacity, giving preference to traditional fuel vehicles to reduce costs, which has led to a situation where the capacity of new energy vehicles accounts for a low percentage.

Furthermore, technical constraints such as the range and charging time of new energy vehicles have also affected the increase in the capacity share. Although the technology of new energy vehicles is gradually improving, range and charging time are still limiting factors. The relatively short range

and charging time of new energy vehicles cannot meet the conditions of long-distance transport, high-frequency use, high and low-temperature weather, traffic jams, etc. [6], which makes SF company more inclined to choose traditional fuel vehicles. In summary, due to the total number of traditional means of transport of SF company, new energy transport efficiency could be higher, resulting in a low proportion of new energy vehicle capacity.

3.2.3 Reverse logistics management confusion

Firstly, SF Logistics needs more unified standards and norms in reverse logistics management. At present, SF provides one-stop services covering parts storage, logistics, maintenance, testing, replacement and recycling, environmental health services, installation, etc., for corporate customers through warehousing + logistics + after-sales service, and different links are often taken care of by different departments or teams, resulting in the lack of overall co-ordination and unified management standards. This management confusion may lead to inaccurate logistics information and poor flow, thus bringing difficulties and delays to reverse logistics and wasting transport resources.

Secondly, SF Logistics has repeated operations and used more resources in reverse logistics handling. As reverse logistics involves multiple links and multi-party cooperation, such as return inspection, warehouse management, product repair, etc., it results in repeated operations, which increases the cost and time. In addition, the different types and varying quality of goods in the market make it difficult to judge the value and make the work more difficult, increasing the amount of resources consumed. In summary, the lack of standards and norms, the emergence of repeated operations and resource wastage, and the discrepancy of items have led to the chaotic management of reverse logistics in SF.

4. Supply Chain Upgrade Ideas of SF in the Context of Green Development

At present, due to the existence of enterprises in warehousing, there are local differences, packaging recycling difficulties, and new energy vehicle capacity accounted for a low proportion of the reverse logistics management chaos and other issues, resulting in the green development of the context of the supply chain efficiency of SF company is low, this puts forward the following recommendations.

4.1. Reasonable Planning of Storage Layout According to the Actual Situation

Firstly, the distribution of SF's warehouses in different regions must consider factors such as local transport, population density and market size. For example, SF can set up more warehouses in densely populated cities to improve logistics efficiency and distribution speed. At the same time, warehouses should be located in convenient hub locations, shorten the transport distance between warehouses and circulation nodes, reduce vehicle emissions and reduce environmental pollution [7]. Secondly, market demand is also important in SF company's warehousing distribution. SF company needs to adjust the warehousing distribution strategy according to the changes in market demand. For example, with the rise of e-commerce today, SF company can improve the speed and efficiency of express delivery by establishing more front warehouses. Finally, government departments' policies will also impact the warehouse layout of SF company, such as land use policy, tax policy and so on. In summary, geographic location, market demand policies and regulations and other factors will impact the distribution of SF company warehousing. SF company needs to reasonably plan the warehousing layout according to the actual situation to improve operational efficiency and service quality.

4.2. Increase the Use and Recycling Rate of Green Packaging

First, strengthen cooperation with the Government and other enterprises. SF can cooperate with the government and relevant enterprises to establish recycling networks and facilities to improve recycling efficiency and capacity. For example, SF can set up special recycling points, cooperate with supermarkets and shopping malls to establish centralized recycling points or cooperate with downstream logistics companies to establish reverse logistics channels to recycle packaging materials

effectively. Secondly, improves its own recycling capacity and technology level. SF can improve its recycling capacity and technology level by investing in research and development of new technologies, introducing new equipment, etc., and adopting simplified packaging to achieve proper packaging. Packaging reduction can reduce packaging waste from the source [8] to better meet the challenges in green packaging recycling.

In addition, SF can also expand its scale and influence by acquiring or merging with other recycling companies to improve its recycling capacity and reduce resource waste. At the same time, SF can obtain more financial support through loans from the government or applying for subsidies or listing financing to carry out green packaging recycling work better. Finally, strengthen the publicity and education for consumers. Consumers can be guided to make environmentally friendly choices by, for example, adding environmental tips and suggestions to express services. By popularising environmental protection knowledge among consumers, they can be guided to choose green packaging products, thus reducing unnecessary packaging waste generation. At the same time, a can also be constructed with consumers regularly fixed-point recycling mechanism in a certain way to incentivize consumers to discard the green packaging classification and sorting, such as giving a certain amount of economic compensation and discounts and other ways [9]. In summary, recycling needs to take multi-faceted measures to solve the difficulties faced by SF Company in green packaging. Only through the joint efforts of the government, enterprises and consumers can we achieve the goal of green packaging recycling and contribute to the cause of environmental protection.

4.3. Promoting the Use of New Sources of Energy for Transport

First, strengthen the procurement and use of new energy vehicles. SF can increase the use of new energy vehicles by increasing the procurement of new energy vehicles and increasing the proportion of their use in the transport network. Secondly, expand the scale of new energy vehicles, increase the configuration of new energy equipment to reduce costs and increase efficiency, focus on new energy technology upgrading, and further optimize the structure of energy consumption so that low-carbon and energy-saving new energy equipment can become the backbone of green transport to meet market demand [2] better. Finally, more policy support and financial support. The government can encourage enterprises to use new energy vehicles by introducing relevant policies and providing corresponding financial support. SF can also obtain financial support by applying for relevant loans or subsidies to promote and apply for new energy vehicles.

4.4. Optimising Reverse Logistics Systems

First, SF should establish a reverse logistics network, including recycling, returns processing, remanufacturing centers, etc., with reasonable planning and layout to ensure efficient operation. In addition, it is also necessary to establish a recycling and return management system, including product recycling, return acceptance, sorting and reuse. The monitoring and tracking of the reverse logistics process are realized through information technology, and timely and accurate data support is provided. At the same time, it develops a perfect return handling process, including return acceptance, testing, classification and disposal. Resource waste and energy consumption are reduced by optimizing the process and improving product reuse [10].

5. Conclusion

In recent years, as environmental issues continue to be highlighted, green development has become the development trend in the logistics industry. This essay analyses the problems faced by the supply chain in the context of the green development of SF and puts forward ideas for supply chain upgrading. SF needs to rationally plan the warehouse layout according to the actual situation, improve the use of green packaging and recycling rate, promote new energy means of transport and optimize the reverse logistics system. Regarding warehouse layout, consider factors such as geographical location, market demand and policies and regulations. In terms of green packaging recycling, we will strengthen

cooperation with the government and other enterprises, improve our recycling capacity and technology, and enhance publicity and education for consumers, Enhancing the procurement and use of new energy vehicles, scaling up new energy vehicles and obtaining a policy and financial support for the use of new energy means of transport; In terms of the reverse logistics system, it establishes a perfect reverse logistics network, formulates a perfect return handling process, and realizes the monitoring and tracking of the reverse logistics process through information technology. Through these measures, SF can better adapt to the green development situation, improve operational efficiency and service quality, and further promote the development of green logistics.

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