Research and practice of express transportation service based on ecological thinking

Di Liu¹*, Kaining Meng² and Fuxi Ouyang³

¹School of Art and Design, Xihua University, Chengdu, Sichuan, 610039, China
²School of Art and Design, Xihua University, Chengdu, Sichuan, 610039, China
³School of Art and Design, Xihua University, Chengdu, Sichuan, 610039, China
*Corresponding author’s e-mail: 541066550@qq.com

Abstract. This paper attempts to apply the ecological thinking mode to the service of express transportation industry, and puts forward the corresponding solutions to many pollution problems existing in the current express transportation industry. This paper analyzes and summarizes the existing problems of express transportation industry, through the methods of field investigation, data collection and data analysis, probes into the present situation and pollution problems of express transportation cost at present, and looks for the opportunities and related strategies in which ecological thinking mode can be involved. Improve the transportation quality, control the logistics cost, and use the ecological thinking mode to establish the ecological express transportation service process of saving resources, protecting the environment and promoting the sustainable development of economy and society.

1. Introduction

In recent years, air pollution has become more and more seriously. "Haze" weather has been playing out in many places across the country, and PM2.5 values in many cities have been continuously setting new records. People are particularly sensitive and worried about the environment, especially the air pollution. However, among many environmental pollution factors, logistics industry plays an important "contributor" role. Most logistics enterprises in China still follow the traditional operation and management mode, taking their own economic profit as the guidance, lacking a certain sense of environmental protection, existing some non-environmental protection phenomena in the operation process such as waste of resources, environmental pollution, which is particularly prominent in the transport link. In order to alleviate the environmental pollution pressure caused by express transportation, meet people's environmental protection needs, and save the occupation of environmental resources by express transportation, this paper uses the ecological thinking mode to control and optimize the express delivery service, improve the utilization efficiency of logistics energy, which can not only reduce the cost of express delivery, but also reduce the environmental pollution caused by express delivery activities, and promote the ecological and sustainable development of express delivery.

2. The present situation and problems of express transportation industry in China

Developed countries have implemented the sustainable development strategy earlier, with higher environmental standards and stronger environmental awareness of consumers. In the field of express delivery, they pay more attention to "ecological" and have been well implemented and applied. However, China started relatively late in this respect and lacks the inherent power to build ecological transport.
Transportation, as one of the most important logistics functional elements, is also the biggest environmental pollution source. The pollution caused by express delivery mainly exists in three aspects: the pollution caused by the running of cars, the pollution caused by the goods themselves in the process of freight transport, and the noise pollution. The existing express delivery system is not a healthy ecosystem, but more oriented to economic interests. According to the state post bureau (Figure 1), in 2018, the number of "double 11" parcels will exceed 1.87 billion, an increase of 25% over the same period last year. Behind these huge volume of express data, there is a large number of express delivery, the waste of resources and environmental pollution caused in the transport is immeasurable.

2.1. High cost of express delivery
The main reasons for the high cost of express transportation are improper cooperation of transportation mode, backward organization and means of transportation, and unreasonable distribution of transportation means. First of all, Chinese enterprises’ logistics system function is not strong, their coordination between the transport and warehousing functions are lack of coordination, and various modes of transport do not cooperate properly. Moreover, China's phenomenon of express roundabout transport mode is serious, the phenomenon of unsmooth transport information flow caused by empty vehicles and vehicles overload transport is serious. Finally, the freight structure of China's logistics industry is unreasonable, and the goods that should be transported by rail for medium and long distances are borne by road transportation, thus driving up logistics costs.

2.2. Enterprise independent transport, lack of cooperation
China's express delivery enterprises are mostly independent operation, lacking of cooperative operation enterprises. Many express delivery enterprises have some scattered transportation business, which can't fit a whole car. They can't wait because of the time requirement of transportation, even if other enterprises have similar transportation tasks, they can only send vehicles without a full load due to lack of information or lack of cooperation, resulting in the waste of resources and the increase of transportation costs. At the same time, most urban distribution enterprises operate independently, which makes it difficult to form a win-win community.
2.3. Less sufficient attention to reverse logistics
Reverse logistics refers to the process of reverse flow from the downstream to the upstream along the supply chain starting from the end client in order to regain the use value of returned goods, recycled or abandoned products. Reverse logistics is a special link in the supply chain. It is more difficult for people to control and plan reverse logistics than forward logistics. Therefore, reverse logistics in China is limited to the recycling and utilization of waste materials, household garbage classification and other primary behavior, as the enterprise's own behavior of reverse logistics activities is not common.

3. Ecological thinking and express delivery service
In the face of many environmental pollution problems in the transportation of express delivery industry, a change in thinking mode must take place: that is, to jump out of the current prevailing economic thinking mode and transform into ecological thinking mode. Ecological thinking is to regard the ecological environment of human survival and development as a whole with orderly operation, and regard human beings as the constituent part of the organic connection of nature. Generally speaking, the mode of ecological thinking mainly lies in thinking about people's economic and social activities due to their ecological survival relationship with nature. However, this kind of thinking should be realized on the premise of thinking about the social survival relationship between people and solving the ecological problems between man and nature through the solution of social ecological problems. Therefore, the mode of ecological thinking is not only based on the relationship between human beings and nature, but also the social and ecological relationship between human beings.

Express transportation service is an industry that seriously pollutes the environment with waste gas and noise, and at the same time consumes a lot of fuel and energy (Table 1). China's modern logistics enterprises pay attention to the economic value they create, without considering the consequences of non-sustainable development on the environment and resources. Our daily living environment has been threatened by the express delivery activities, so we must use ecological thinking to improve the problems existing in the modern express delivery system, and build an ecological express delivery system from the relationship between human and nature and the ecological survival of people.

| Table 1: Main pollution in express transportation. |
|-----------------------------------------------|
| **Direct consequences** | **Indirect consequences** |
| Pollution from cars themselves | Automobile exhaust, solid particulate matter, inhalable dust, dust, etc | Carbon monoxide, Sulfur dioxide, photochemical smog and acid rain |
| Pollution in the transport of goods itself | Chemicals, harmful substances, cement, sand, etc |

4. Ecological approach of express transportation service in China based on ecological thinking
The main reason for the above environmental pollution problems lies in a series of unreasonable problems in the express delivery service process. Based on the mode of ecological thinking, starting from the social survival relationship between people and the ecological survival relationship between people and nature, we should think about people's economic and social activities, optimize the express delivery process, and make it more ecological in the transport service process (Figure 2).
4.1. Development of new energy and new energy transportation

In a comprehensive comparison of the advantages and disadvantages of railway, highway and air transportation (Table 2), highway transportation is the first choice for many enterprises due to its advantages of punctuality, low cost, safety and flexibility. Therefore, in the express logistics system, multi-modal transportation is adopted to realize the cooperative transportation of multiple means of transportation. Most of the energy used for transportation in China is coal and oil whose exhausting gas also does a lot of damage to the environment. The existing new energy has solar energy, wind energy, and so on, now the country is also fully research and development of new energy vehicles, for this reason, if the express transport industry is to achieve the goal of energy saving and emission reduction, they needs to introduce a large number of environmentally friendly new energy vehicles, using new energy vehicles in the short-distance transport.

| Advantages Disadvantages |
|--------------------------|
| **Air freight** | Speed is fast, Lower breakage, Good safety | Small capacity, High cost, Unable to transport heavy and explosive items |
| **The railway** | Large cargo capacity, Low energy consumption, The cost is low | Large construction investment, Time consuming. Not good for short haul, Flexibility is poor |
| **Highway** | Suitable for short distance transportation, flexible and easy loading | Long distance transportation is expensive, Easy to pollute the environment and consume much energy |

4.2. Enterprises reasonable layout of the transport network, and active joint distribution

Enterprises should formulate reasonable transportation routes, that is, through the optimization of transportation routes and networks, reducing roundabout transportation and repeated transportation, so as to reduce transportation costs and save resources. For many distribution tasks is for customers less
demand, less than the vehicle transport, usually in the case of not full load of transport, so that the vehicle utilization rate cannot be fully used. In order to avoid the occurrence of this kind of situation, the information of multiple express enterprises should be shared to implement joint scheduling. In this scheduling mode, the scattered transport tasks of different enterprises are "carpool", and then the appropriate driving route is selected according to the location of each demand point, and the goods are sent to each demand point in turn to realize joint distribution, which can maximize the efficiency of resource utilization and thus maximize the economic benefits.

Figure 3: Flow chart of cooperative carpooling transportation of express enterprises based on ecological thinking.

4.3. Express package design improvement
In countries with sound environmental protection laws and regulations, the transportation and recycling of packaging materials have become an important responsibility and obligation of enterprises. Redesigning packaging for transport-friendly purposes has multiple benefits for virtually all businesses in the supply chain. Innovative packaging design can help reduce the number of vehicle use, so as to save physical transport costs, to achieve environmental protection, to achieve the ecological logistics transport.

4.4. Large-scale implementation of reverse transport
Reverse logistics transportation plays an important role in ecological transportation, so enterprises should pay more attention to it. Reverse logistics is divided into recycling and waste logistics. For the repaired defective products, returns and other renewable resources, express delivery enterprises can cooperate with other stakeholders in the supply chain, following the recycling and recycling principles of circular economy, and establishing the recycling and recycling system, so as to constitute an ecological recycling and reusable logistics system. For wastes, actual needs are selected for classification, processing, packaging and storage, and assigned to special sites for disposal. Through the recycling and reuse of wastes, material resources can be recycled, thus saving resources, greatly reducing the cost of enterprises, reducing environmental pollution, adhering to the concept of "ecological thinking".

5. Conclusion
The essence of express delivery is service, and the process of express delivery service needs to be paid attention to improve service quality. This paper has carried on the optimization design to the existing express delivery service flow, using the ecological thinking of unreasonable part in transportation service process improvement. Then the development of new energy transportation has been proposed, laying out of transportation network reasonably, carrying out a joint distribution, improving the express package design and implementing the retrograde transport and process optimization approaches, so as
to alleviate the express transportation pollution to the environment, to use of limited resources to maximize utility. The optimization of express transportation service process is to curb the harm to the environment in the process of transportation and form an ecological express transportation cycle system.

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