

Research on Reverse Logistics Network of Express Packaging Materials

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Abstract

In recent years, with the rise of e-commerce, China's express delivery industry has achieved rapid development. However, while the explosive growth of express delivery business, a large number of express packaging brought about by environmental pollution, waste of resources and other issues have become increasingly prominent. Courier packaging recycling has become the government, express delivery companies, consumers consensus, but the express delivery of packaging recycling process there is still a lack of recycling channels, there is no uniform packaging standards, reusable cardboard boxes and other issues easily damaged.

Keywords

Express packaging materials, DEA, reverse logistics, recycling.

1. Introduction

As a new industry, express delivery industry in our country has only a short period of development for more than 30 years, but it has grown into the fastest growing and huge potential for the development of a strategic emerging service industries, especially in recent years The rise of e-commerce and online shopping, courier industry's development is even more alarming. A large number of express packaging brought about by environmental pollution, waste of resources and other issues have become increasingly prominent.

Courier companies in the express delivery process requires extensive use of cartons, plastic bags, internal packing materials to protect the express mail. For express delivery companies, these packaging materials are indispensable, it is an important part of the cost of delivery, but also directly affect the economic efficiency of enterprises; for consumers, these packaging materials and not much use value, After receiving the shipment, most consumers choose to discard their packages as household waste, and only a small percentage of them will keep the package for reuse. In other words, a large amount of discarded courier packages will eventually be disposed of together with domestic waste, however, most packaging materials are difficult to degrade naturally after being packed.

In recent years, express packaging environmental problems and waste of resources has gradually been widespread concern in the community. The government has promulgated a series of relevant regulations to encourage courier companies to recycle courier packages; many consumers express their willingness to cooperate with courier companies to implement courier packages for recycling; some express delivery companies and e-commerce providers have also begun to try to recycle packages, However, the implementation process still faces many difficulties, the reason lies in the fact that there is no perfect recovery package delivery system at present.

2. Related theories

China's academic circles did not give a clear definition of reverse logistics. Only in the national standard "Logistics Terminology" formulated in 2001, the reverse logistics is divided into two major categories: recycling logistics and waste logistics, and the definitions are respectively given. The so-called recycling logistics refers to those because of the quality of the product repair, return, the need to return the product from consumer to the physical flow of the formation of the process; and waste logistics refers to the loss of value or economic value of those products According to the actual needs of the collection, testing and classification, and then processing, transportation and the resulting entity flow process.

Reverse logistics network refers to the reverse logistics system, the layout of the various logistics facilities and transport facilities between the arrangements, including reverse logistics network nodes mainly refers to the recovery point, demand points, recycling stations, processing centers and so on. Depending on the type of product being recycled and the way it is handled, the reverse logistics network structure can be divided into reuse, recycling, remanufacturing and commercial return.

3. Existing problems

Express packaging is the courier industry to consider the shipment in the circulation process of security and convenience of a transport package used. General express packaging is from the packaging, packaging and the waybill three parts posed. Among them, the outer packaging is the most important part, including plastic bags, cartons, envelopes, wooden boxes, etc.; inner packaging is usually some filling materials, such as plastic foam, bubble film, which mainly play a shock and buffer role; Will indicate the shipment of relevant information, including the recipient's address and contact information, tracking number and other information.

①Overpacked

According to "express service" standard provides: "Express package in the form of express service staff is responsible for packaging and sender self-packaging two [41]? Most of the sender and no professional packaging experience, they are worried about Whether the packaging can protect the goods, so they use a layer of packaging to protect the goods, resulting in over-packaging problems.

"Over-packaging" in the express delivery package ubiquitous to online shopping, for example, as the buyer to the express packaging well as an important indicator of shopping satisfaction, sellers in the delivery of goods will be heavily protected, in addition to the original packaging of goods, But also add a layer of carton packaging and courier bags, and finally wrapped in a thick layer of transparent tape on the surface, to prevent the bag or carton damage occurred during transit.

②Low packaging recycling rate

In our country, the recycling problem of waste packaging has not drawn the attention of all parties. Due to the low awareness of low-carbon logistics and green packaging, after they receive courier services, they are more concerned with the contents of the packaging and often discard the packaging. Few people take the initiative to recycle the packaging products. However, The vast majority of express delivery companies lack social responsibility, few companies are willing to take the initiative to take responsibility for recycling. Another reason for the low recycling rate of packaging is that most of the courier bags are damaged during unpacking and have no reused value except for some of the cartons that can be recycled. Moreover, the manufacturing materials of these bags Most of them are processed by domestic garbage or chemical raw materials, and the packaging bag may have a large amount of toxic and harmful components left behind. If the human body contacts with it for a long time, it will inevitably cause serious harm.

③Environmental pollution and waste of resources is a serious problem

According to incomplete statistics by the environmental protection department, there are about 16 million tons of packaging waste produced each year in our country, and one third of the fixed waste in the city is also included in the packaging waste. Moreover, this problem is also intensified with the rise of online shopping. Courier delivery process needs cartons, fillers, plastic bags and other packaging materials, many of these packaging materials can not be naturally degraded, to the bag, for example, the raw material for polyethylene, is not natural degradation. In addition to the bags, there is a greater impact on the environment there is a transparent tape used for packaging, the main component is polyvinyl chloride (PVC), the degradation of this material in the natural environment can take decades. At present, these express packaging are not effective recycling, mostly directly as rubbish discarded, causing serious pollution to the environment.

4. Conclusion

The explosive growth of China's express delivery industry has brought many problems to express packaging. To solve the above problems, the joint efforts of consumers, e-commerce providers, express delivery companies, packaging suppliers and management departments are required. Consumers should improve their awareness of environmental protection, and actively cooperate with the express packaging and recycling: express delivery companies should make use of biodegradable materials to avoid over-packaging; packaging suppliers should increase non-environmentally friendly alternative materials R & D efforts; management should establish Improve the packaging recycling system, strict supervision.

References

- [1] Vidovic M, Dimitrijevic B, Ratkovic B. A novel covering approach to positioning ELV collection points. *Resources, Conservation and Recycling*.2011, 57:1-9.
- [2] Kris Lieckens,Nico Vandaele.Reverse logistics network design with stochastic Lead times. *ComPuters& Operations Research*. 2007, 34:395-416.
- [3] SaurabhAgrawal,Rajesh K. Singh,QasimMurtaza. Disposition decisions in reverse logistics: Graph theory and matrix approach[J]. *Journal of Cleaner Production*,2016
- [4] ZhengWei-Yan, MENG Yan-Ping.The Linear Programming Model of Green Reverse Logistics Network under the Guidance of Government --A Case Study of Courier Packaging [J] .*Zhonghua Normal University (Natural Science Edition)*, 2017,51 (04): 518-525.
- [5] Research on efficient operation of reverse logistics network for packaging waste [J]. *Packaging Engineering*, 2015,36 (13): 146-150.
- [6] Wang Jun-jie.An Optimization Model of Packaging Waste Recycling and Transportation [J]. *China Science and Technology Wealth*, 2011 (22).