

An Essay on Sharing Express Box under Sharing Logistics*

Ling Jin** · Byung Cho Kim***

《目 次》

Abstract	IV. Discussion
I. Introduction	V. Green logistics
II. Literature Review	VI. Conclusion
III. Express package type and its status	

Abstract

Sharing economy has emerged as a viable business model in various industries. Successful examples include Uber and Airbnb. In the logistics context, sharing trend has captivated attention from practitioners. “Everything sharing” is by no means a slogan, sharing the express box also successfully entered the consumer’s life by the “Double 11” trend (Double 11: Double Eleven Shopping Carnival refers to the online promotion day of November 11th every year, which is originated from the online promotion held by Taobao Mall). In fact, the sharing express box is not a simple derivative of the sharing economy, but a self-adjustment made by related industries under the protection of the environment. Undoubtedly, sharing express boxes provide

* This research was financially supported by the Institute of Information and Operations Management, Seoul National University.

** M.S. Student, Department of Logistics, Service and Operations Management, Korea University Business School, Korea University (jinling01130@gmail.com)

*** Professor, Department of Logistics, Service and Operations Management, Korea University Business School, Korea University (bkim@korea.ac.kr), Corresponding Author

a new idea for solving the problems of over-packaging and express garbage. It creates a new opportunity for green logistics which aims to protect environment. This paper examines the types of express package and the problems surrounding the business model of sharing express boxes. Design analysis was carried out for the emergence and the operation model of sharing express boxes. In addition, the case analysis of the rental mode of the "sharing express box" and the case analysis of the self-operating mode were introduced, and the comparison of the two modes and the enlightenment obtained were carried out. Finally, through the green sharing, the prospect of the sharing box is introduced.

Keywords: sharing economy, sharing logistics, sharing express box, green logistics

I. Introduction

With the development of the economy, a new model has emerged - the sharing economy. People can share their idle items with others to make a profit. Nowadays, with the different needs of consumers, shared products are also diverse, for example, bicycles (Bicycle-sharing), cars (Uber), short-term rental (Airbnb, Xiaozhu), clothing (YCLOSET), and furniture supplies (Woaijia). From the perspective of consumers, they can earn profits by letting others share the items. The platform that offers a playground and connects consumers earns profit by charging membership and/or transaction fees. They do not need a large investment and have their own property. From the perspective of the service recipient, it is possible to share the demand with a more favorable price. In addition, the reuse of product can be socially beneficial by reducing garbage, which plays a big role in protecting the environment.

The sharing economy has brought new opportunities and challenges to various sectors of the industry, and the logistics industry is no exception. Logistics plays an increasingly important role in the modern economy and is a network system that connects producers, sellers, and consumers. With the comprehensive promotion of China's "Internet Plus" strategy, with the help of modern information technology such

as the Internet, Internet of Things, big data, cloud computing, and artificial intelligence, the logistics industry is undergoing profound changes, and the new format of sharing logistics presents great potential for development.

In 2013, the total cost of social logistics in China accounted for about 18% of GDP, nearly twice that of developed countries. Since then, it has been decreasing year by year. By the first quarter of 2017, this proportion has fallen to 14.6%, but it is still significantly higher than that of developed countries. The vacant driving of more than 20 million trucks nationwide has aggravated environmental pollution, the quality of logistics and express service is not balanced, the logistics enterprise equipment has not realized data interconnection, and the problem of information isolation is outstanding. At present, China's economic development has entered a critical period of improving quality and efficiency. Under the background of rising factor cost rigidity and difficulty in reducing operating costs, the upward pressure on logistics costs is still large, and the structural reform of the supply side of the logistics industry is an arduous task.

The sharing model is expected to become a new breakthrough in the logistics industry to reduce costs and increase efficiency. In August 2017, the General Office of the State Council issued the "Opinions on Further Promoting Logistics Cost Reduction and Efficiency Improvement to Promote the Development of the Real Economy." It is clearly proposed to rely on the Internet, big data, cloud computing, and other advanced information technologies to increase policy support, foster a group of leading enterprises, and further promote the pilot work of car-free carriers. Through the establishment of the internet platform, a variety of systems are enabled, including innovative logistics resource allocation methods that expand the scope of resource allocation, real-time sharing, and intelligent matching of freight supply and demand information, and reducing idle transportation and idle logistics resources. The development of these new systems for sharing logistics creates new business opportunities.

From a practical perspective, there have been multiple models of sharing logistics. The first is the sharing of logistics resources. The sharing platform that realizes

efficient matching of freight vehicles and freight resources enables “cars to find goods, goods to find cars” and reduces the return rate of trucks back to the city. Yunmanman is a freight dispatching platform based on cloud computing, big data, mobile internet, and artificial intelligence technology that founded in 2013. Its business model is simple and efficient, which provides real-time information matching for cargo owners and drivers. It can quickly find goods and cars on the same platform, which greatly reduces the freight no-load ratio and improves the operational efficiency of logistics. At present, the number of real-name registered heavy-duty truck is more than 390 million, the number of cargo owner is more than 850,000, the daily transaction bill is 240,000, and the daily trading volume is about 1.5 billion yuan. The business covers 315 cities nationwide. The platform has gathered nearly 80% of the country’s trunk heavy-duty truck capacity. The monthly mileage of bicycles on the platform has increased from 9,000 kilometers to 12,000 kilometers, and the average time for finding goods has been reduced from 2.27 days to 0.38 days. The “National Mainline Logistics Dispatching System” based on artificial intelligence realizes smart car cargo matching, intelligent real-time scheduling, intelligent standard quotation, and intelligent map tracing.

Second, the crowdsourcing logistics model improves distribution efficiency. The Everyone Express Platform is a crowdsourcing platform that provides the same city errands service that founded in 2011. The platform has accumulated millions of free users, providing help for tens of millions of users in nearly 70 cities across the country. The service is directly delivered to the city and is used by the nearby personnel to carry out the distribution service. Compared with the traditional model, the time for picking up the parts is greatly reduced, and the efficiency is improved. On the US group platform, the number of registered riders is about 2 million, and the number of active riders is about 600,000. The application of the “smart O2O real-time dispatching system” shortens the single-average delivery time to 28 minutes, and the punctuality rate exceeds 98%. Compared with the past, the per capita day volume of delivery orders increased by 46%, and the cost per delivery was reduced by 20%.

The third is the sharing of logistics infrastructure, such as the sharing of terminal

outlet facilities in the same city. In order to improve the terminal distribution efficiency, improve the satisfaction of logistics services, and solve the problem of the last mile of urban and rural distribution, the various resource sharing models of terminal logistics outlets have gradually become a hot spot of innovation. Sharing logistics infrastructure can reduce the redundant construction of express delivery companies, third-party logistics, and e-commerce companies, as well as reduce secondary delivery during the distribution process, facilitate consumers to pick up their own goods, improve customer satisfaction, and reduce logistics resource waste. In addition, in some logistics parks, resources such as shippers, logistics companies, supporting service enterprises, and individual laborers can be integrated through the network platform to build a new ecosystem.

The development of new business models for sharing logistics will also encounter some new challenges. First, the existing economic and social management focuses on top-down hierarchical management, territory management, and industry management, while the sharing economy has the characteristics of cross-border integration across regions, departments and industries, and some traditional management systems. Second, the sharing business economic model in the field of logistics is still in the process of exploration. There are also differences in product, service and standardization, security, and quality assurance. The new format of sharing logistics needs to mature in continuous innovation, even through trial and error. The third is whether the informatization and standardization level of enterprises can meet the development needs of sharing logistics and the information security problems brought by logistics data sharing.

II. Literature Review

Jin Shui (2017) puts forward that under the leadership of huge online shopping, the number of express packaging has gradually increased, leading to more and more serious environmental pollution problems and tries to solve the problem of express garbage. Through the analysis of the existing problems in China's delivery packaging,

Jiang Yuyang (2017) indicates that green packaging is the concept that advocates to address the rationalization and recycling of packaging as the core content. Chen Yan (2017) proposed a solution to the problem of express packaging for the sustainable development of modern logistics. Qin Xiujuan, Xu Bingbing, and Pan Pengpeng (2017) analyzed the current development trend of packaging in terms of environmental protection in China and put forward requirements for green packaging. At the same time, they also raised the problems of green packaging and green packaging countermeasures based on green logistics. Chen Wei (2017) reported that this year's "Double 11" express will use the "sharing express box" and interviewed many netizens about this. Wu Wenzhi (2017) interviewed the express expert Zhao Xiaomin, the Doctor of logistics, and other experts that work on the feasibility analysis of the environmental protection express box and considered it from the perspective of cost and safety, pointing out some acute problems. Deng Chunsong (2017) analyzed the development status of express packaging in China and proposed that the problems brought by express packaging should be solved from the aspects of packaging materials, packaging design, recycling system, and government supervision. Daqing Yang (2018), a special researcher at the China Institute of Logistics, said that on the one hand, consumers lack environmental awareness; on the other hand, courier recycling is not a mandatory task, and couriers often lack motivation. In recent years, although companies such as Zhongtong have tried some recycling initiatives and had little effect. Daqing Yang (2018) believes that the most direct change that can be brought about by "sharing express boxes" is the reduction of the waste of cartons and packaging produced by express parcels, which lead to the reduction of packaging waste. Benxin Xu (2017), an associate professor at the Department of Law of Kunming University of Science and Technology, also believes that the sharing express box is a good practice innovation in the context of emphasizing environmental protection, resource conservation, and building an ecological civilization. Its highlight is to provide environmental protection and resource conservation for the express delivery industry as an alternative. In addition, the "sharing express box" also plays the role of a standardized tray, which is conducive to improving the efficiency of

express delivery.

In summary, foreign countries have long been paying attention to the development of green packaging. The company has also developed corresponding management. At the same time, the government has also strongly supported and introduced a complete set of relevant policies. The company has explored a new recycling system, which has helped foreign express delivery. However, the concept of “sharing express box” has not been mentioned abroad. Serious environmental problems caused by excessive waste of packaging materials, the attention of China on environmental pollution caused by express packaging is relatively late. When Suning combined the sharing economy with green packaging to propose a new concept – sharing the express box, people began to pay close attention to this magic box, which is China’s innovation on green packaging that is not explored abroad. The sharing express box has been an emerging business model, but it is still in its infancy while having a good prospect.

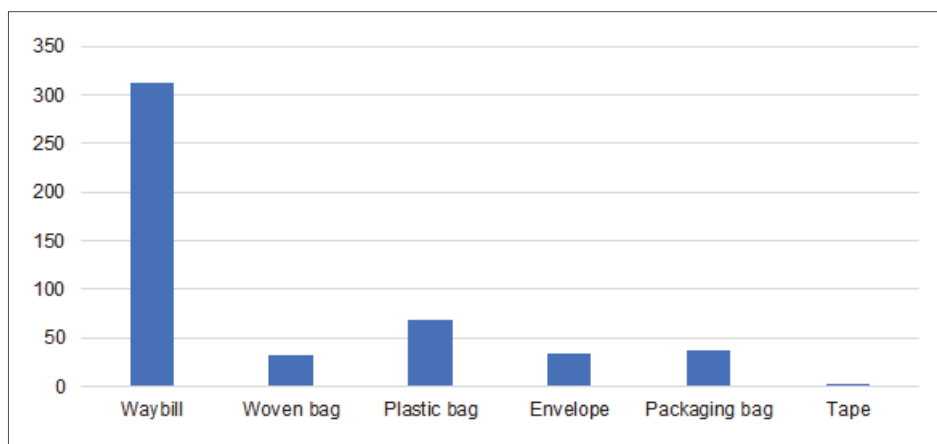
III. Express package type and its status

3.1 Express package type

According to the data provided by express delivery companies and suppliers, the proportion of various types of packaging materials in the cost of express delivery enterprises is about 12%-15% (“2017 China Express Industry Green Packaging Development Status and Trend Report”). Table 1 shows the packaging status of China’s express delivery industry in 2016. In 2016, carton recycling has also become a means of reducing costs for certain e-commerce platforms and courier companies.

There are examples of some companies that use the sharing express box in China. No. 1 shop advocates users to participate in “carton recycling” in the form of redemption of reward points. The user signs the self-operating order parcel of No. 1 shop and delivers the empty carton to the courier and collects 20 points for recycling a carton. Beijing Post EMS÷ Tongcheng Express launched a reusable and recyclable environmentally friendly packaging container. Shunfeng Delivery mandatorily requires the courier to return the logo attached package to outlet after delivery.

〈Table 1〉 2016 China Express Industry Packaging (100million)



Jingdong's carton recycling plan was upgraded in 2017. From March 20th, when the Jingdong courier comes to the door, the users of Beishangguangshen (Beijing, Shanghai, Guangdong, Shenzhen) could hand over their empty cardboard boxes to the courier. According to the number of cartons, Beijing customers can obtain points, which is called beans. Rookie Logistics plans to use the "Double 11" in 2017 as the first centralized action of rookie green logistics. In Beijing, Hangzhou, Shanghai, Shenzhen, Guangzhou, as well as the rookie stations in colleges and universities, carton recycling will be fully started. Consumers can unpack the goods and leave the carton at the station.

The performance of the "sharing express box" still needs to be observed, but it represents a direction of green packaging and is worthy of recognition. How to solve the problem of express garbage in a fundamental way is still a difficult problem. This is a systemic issue involving a wide range of issues. Jianguo Liu (2017), a professor at the Environmental College of Tsinghua University, believes that people need fast, safe, and cheap courier services. The large amount of courier packaging waste is an inevitable consequence. It is important to clarify the responsibilities and define the respective responsibilities of each responsible entity associated with the express delivery.

So, what is the next step to solve the problem of express garbage? First of all, at the legislative level, it is necessary to introduce a packaging waste management regulation to regulate the design, production, circulation, use, and disposal of various types of packaging waste, including express packaging waste. Germany, Japan, and other countries have done so. The second is to promote cleaner production at the industry level. Express industry associations should formulate relevant industry norms, advocate industry-approved packaging through industry self-discipline, reduce over-packaging, and implement green and environmental-friendly packaging. The third is to implement the producer responsibility extension system in the express delivery industry at the institutional level. This should be considered as a cure. That is, the express delivery company will pay a fee according to the nature and scale of the order as a fund for the processing of express packaging waste.

3.2 China Express Packaging Status

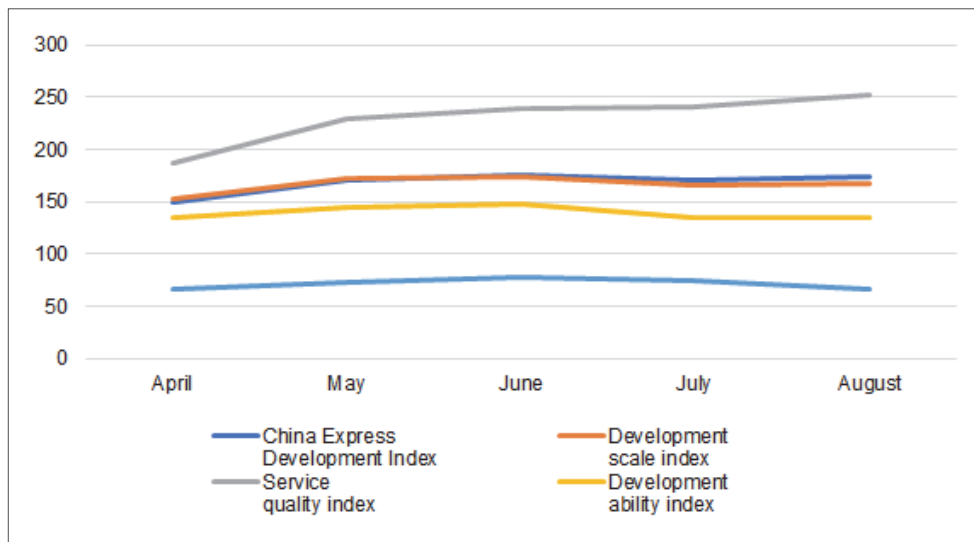
Courier packaging materials used by express delivery companies usually include cartons, plastic bags, tape, and cushioning materials. Most of the carton materials are made of wood, and corrugated paper is the outermost package for express delivery, including shredded paper, paper pad, fiberboard, and corrugated cardboard. Plastic bags are mostly made of polyethylene materials, which are also widely used in express packaging. For example, in terms of sealing, shock absorption, and packaging, it is mainly used as an inner package. It also has the disadvantage of being heat-resistant, not resistant to abrasion and airtight. The main material used for the auxiliary materials used in express packaging is polyvinyl chloride. These materials are also very difficult to degrade and are often used in packaging. The cushioning materials commonly used in express packaging are plastic foam and shock-proof foam. In order to ensure that the goods are not damaged during transportation, express packaging uses these cushioning materials extensively in express packaging.

According to the forecast of the China Express Association, during the "Double 11" period in 2017, the whole industry's express processing volume is expected to exceed 1 billion. Some of these items will be replaced with green packaging, and customers

may receive items that are kept in a sharing express box. However, due to the imperfect recycling mechanism, unclear responsibilities, lack of incentives, the idea of recycling the carton many times is very beautiful, but the reality is difficult to get through. Compared to cartons, sharing express boxes explore a solution for green logistics. This is a new model driven by environmental responsibility and corporate interests through market-based approaches. It relies on the original logistics system built by the e-commerce platform to ensure that the express box is effectively recycled and put into use again and can solve the problem that the packaging is difficult to recycle. The multiple-use ultimately reduces both the cost and resources, resulting in a win-win situation.

Table 2 estimates that the China Express Development Index in August 2018 was 173.3, increased by 37.2%. Development scale indicators, service quality indicators, and development capability indicators were 168, 252.5, and 135, respectively, which were 23.9%, 82%, and 14.6% higher than the same period last year. The trend of development index was 66 that decreased 9%.

〈Table 2〉 China Express Development Index



In August, the express development scale index was 168, increased by 23.9%. From the perspective of sub-indicators, the national express delivery service business completed 4.1 billion pieces, increased by 25.7%: the completion of express business income was 48.86 billion yuan, increased by 20.9%. The growth rate of agricultural express delivery business is more than 10% higher than that of urban growth. The industry's service precision and poverty alleviation have achieved obvious sales. The express business volume in the central and western regions has increased by more than 5%, and the regional equalization has been gradually improved. Overseas and in Hong Kong and Macao, the volume of express delivery business increased by 41.5%, which was 15.8% higher than the overall industry. The new business of listed express delivery companies, such as cold chain and express delivery, has developed rapidly, and the business structure has been continuously optimized. From January to August, the express package service brand concentration index CR8 was about 81.4, increased by 3.4, and the market share is ahead of the leading express brand.

In August, the express service quality index was 252.5, increased by 82%. From the perspective of sub-indicators, the public satisfaction rate of express delivery service was 78.1 points, increased by 0.9 points. The 72-hour on-time rate was 77.7%, increased by 5.6%: the effective representation rate of express delivery services was about 1%, which was basically the same as that in July. The simultaneous improvement in satisfaction, punctuality, and effective grievances reflects the fact that after the network infrastructure investment is gradually put in place, strengthening the user experience has become an endogenous demand for enterprise development. The five-month growth rate of the service quality index is higher than the growth rate of the development scale index. The contribution rate for the development index has exceeded 50% for three consecutive months, which has become an important reason for the increase in the express development index.

Also, in August, the express development capability index was 135, increased by 14.6%. From the perspective of sharing indicators, monthly sales of online express support network exceeded 540 billion yuan, increased by 112 billion yuan: urban and rural express outlet density increased by 1%: first-line employees increased labor

productivity by 5.8%. Express delivery income accounted for 6.3% of GDP, increased by 0.6 thousand points. Major express delivery companies need to improve their comprehensive service capabilities continuously. First, focus on strengthening the transportation capacity of the “ground network.” The establishment of a joint venture between the express delivery enterprise and the railway enterprise marks the “fast-speed cooperation” from the purchase of transportation capacity to the integration of research products. The second is to find a service gap in the modern supply chain. The express delivery enterprise analyzes the data, provides ideas for the customized solution, and realizes the information interconnection between the links and the collaborative sharing of resources in each link. The third is to strengthen the capacity building of the end service, the enterprise to increase cooperation with the chain management institutions, superimpose the common functions of the network services, and gradually promote the common push model.

IV. Discussion

The essence of the sharing economy is to integrate the economic surplus under the line, such as idle resources, labor, and other social resources. The public will share these resources with others through social platforms to gain benefits. The sharing economy is becoming more and more comprehensive in terms of industry coverage and is accelerating into various fields of our lives.

The problems brought by the packaging in the development of the express delivery industry have become more and more prominent and become one of the biggest problems in development. Environmental pollution and waste of resources have become a problem in the express delivery industry, but the utilization rate of resources can be improved under the sharing economy model. Therefore, “sharing economy” + “green express box” = “sharing express box” came into being. The sharing express box is a plastic express box designed to realize the recycling and energy saving of the packaging, replacing the common corrugated box. Its appearance makes the use of recycled express packaging a reality, and it also corresponds to the role of research and development –

saving resources and protecting the environment. The introduction of Suning Logistics indicates that the sharing express box can be used to recover its production cost on average, and in theory, it can be recycled more than a thousand times.

The “sharing express box” is a useful attempt of logistics companies in the “sharing” field and is an innovative practice of the green development concept. With the development of online shopping, the volume of the logistics industry has gradually expanded, and the packaging problem of express delivery has increasingly attracted people’s attention. Whether it is a waste of resources caused by over-packaging, or an environmental burden caused by the lack of recycling, it is important to say that the “Express Box Revolution” is very important. During the “Double 11” period this year, some companies invested a large number of the sharing express box to replace the traditional corrugated boxes. For consumers, the sharing express box means that it is no longer necessary to deal with the garbage, carton box, and other garbage generated by the courier as in the past, saving the cost and effort of processing. The concepts of “green packaging,” “sharing,” and “circulation” embodied in the “sharing express box” also show the social responsibility and temperature of related companies, help the company to shape its good image and win further for the company. Of course, because it can be delivered in the hands of many customers, the “sharing express box” increases the number of times, the express package is used, and also reduces the logistics cost and benefits, creating a multi-win situation. From the perspective of the state and society, the emergence of “sharing express box” has improved the recycling rate of express box, reduced the environmental impact brought by carton box, and implemented the “green” concept in five development concepts for sustainable development.

In the previous references, there have been many ways to prove that the use of sharing express boxes is of interest to both consumers and businesses, but there is no article that explicitly calculates the best usage times. Whether it is a express box or other products, there will be an optimal number of uses. Exceeding this number may have a counterproductive effect, causing consumers or businesses to lose interest and cause losses. Calculating the best use of a sharing express box may require consideration

of many factors, such as the quality of the box, the price, the consumer's purchase decision, and so on.

The sharing express box is indeed an innovation of the design concept. On the one hand, a box can be used many times, and the average cost is very low; on the other hand, recycling of express box reflects the transformation and upgrading of the express industry, in line with the current concept of environmental development. First, the express box wants to recycle and may need the recipient to open the package in person. This undoubtedly adds a lot of time cost to users who are used to collecting by people and will reduce the flexibility and convenience of the recipient. Second, the lack of assessment incentives for express delivery companies, and the use of the "sharing express box" does not meet the customary process of consumers.

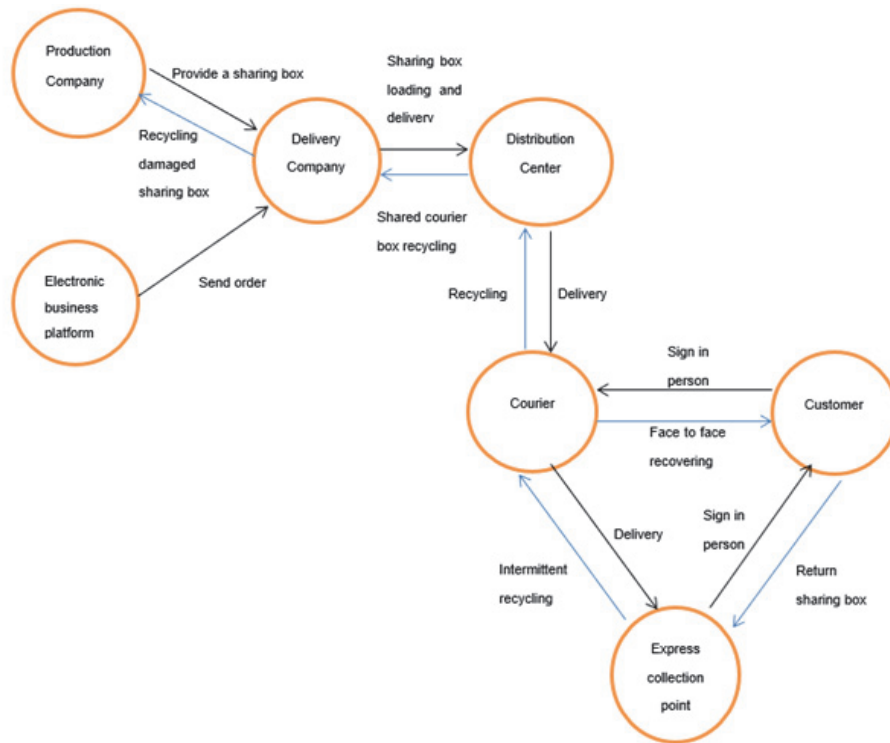
In order to make the "sharing express box" really put into use, on the one hand, the courier company should increase research and development efforts, improve the quality of the box and adapt to different transportation environments, and the designed box should adapt to various commodities. On the other hand, it can also complement the express packaging method, such as the introduction of environmentally friendly degradable bags, and so on. The launch of the "sharing express box" is an improvement, and it is only the beginning. If it wants to truly transform and upgrade the express industry, it still has a long way to go.

4.1 Sharing Express Box and Operation Model Design

(1) Leasing model

The sharing express box comes from a company that specializes in making sharing express boxes. Courier companies need to cooperate with these companies to rent a sharing express box. With the help of graphical description concepts, see Figure 1.

In Figure 1, the production company provides a sharing express box for the courier company. After receiving the order, the courier company will use the sharing express box to package the goods and send them to the distribution center, which will distribute them. Courier companies can recycle face-to-face during recycling or need to work

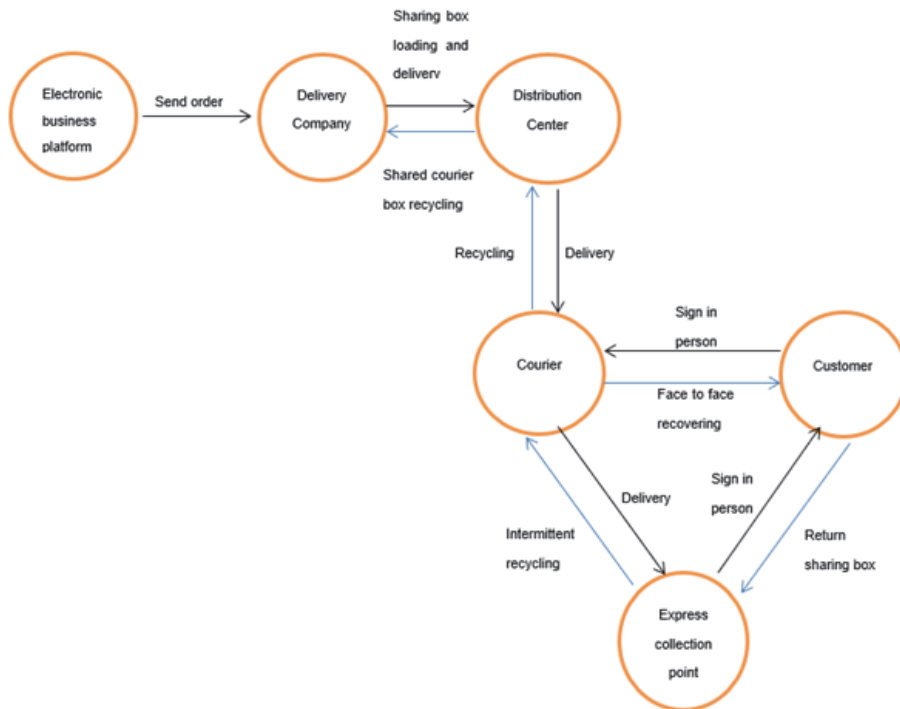


〈Figure 1〉 Schematic diagram of sharing express box rental model

with collection points in various locations. When delivering the goods to the door, the courier can wait for the consumer to sign and collect the sharing express box directly. After the sharing express box arrives at the collection point, check whether the sharing express box is damaged and let the person in charge of the collection point register when signing. The courier company should also have a record. After a certain time, the courier company will send people to recycle all sharing express boxes at all collection points. After recycling, it is necessary to check whether the sharing express box is damaged. It is also necessary to return the damaged sharing express boxes to the production company for repair or remake.

(2) Self-made model

The sharing express box is purchased by the courier company and then produced using technology, as shown in Figure 2.



〈Figure 2〉 Schematic diagram of the “sharing express box” self-operating model

In Figure 2, the courier company makes the sharing express box and puts it into the warehouse. After accepting the order, the courier company uses the sharing express box to package the goods. The courier company can recycle it face-to-face, or cooperate with the express boxes collection station, or build the express box collection point by own. When delivering the goods to the door, the courier can wait for the consumer to sign and collect the sharing express box directly. After the sharing express box arrives at the collection point, check whether the sharing express box is damaged and let the person in charge of the collection point register when signing.

The courier company should also have a record. After a certain time, the courier company will send people to recycle all sharing express boxes at all collection points. Otherwise, the delivery company and the production company will replace the receiving point to establish a courier bin recycling station. The courier will deliver the goods to each recycling station, and the consumer will take the sharing express box back and

fold it up to the original place. At the same time, the recycling station is equipped with a monitoring system. When the system monitors that all the express boxes have been signed, the nearby couriers will be dispatched to recycle sharing express boxes. After recycling, the damaged sharing express box can be repaired or remade directly by the courier company.

4.2 Comparison of Operation Models of Sharing Express Boxes

(1) Case Study

SF Express is a courier company in China that provides the best courier service for domestic and foreign customers. SF Express adopts self-built model and has its own exclusive network, the most comprehensive network of SF with the fastest speed provides the best service to customers and ultimately build its core competitive advantage. Shenzhen Fenghe Compound Technology is a company dedicated to the development of recyclable "sharing express boxes." In 2018, the company invested in 3 million sharing boxes and will adopt a series of business models such as "rental for sale," "recycling and sharing," "sharing the using" the express box. The rent will be calculated according to the number of uses, which is 20% to 30% lower than the purchase price of the carton on average. However, when the sharing express box is put into use, the use of 365 million cartons can be reduced in one year, which is equivalent to reducing the felling of 3 million trees. At the same time, it can save 200-300 million e-commerce packaging costs, creating 360 million service revenue for first-line recyclers and recycling network companies. At present, Shenzhen Fenghe Compound Technology is in deep cooperation with SF Express.

(2) Analysis

As the largest express delivery company in China, SF Express has a very good daily turnover. There is a huge waste of resources and environmental pollution behind this huge express volume. SF must also consider the issue of express packaging, but SF has always outsourced other businesses and taken express business as its core

business. Then for green packaging, if it is developed by SF itself, it will affect the core business. At this time, the emergence of the sharing express box opened a new path for green packaging. The company seized this opportunity and provided green courier service for the courier company. At the same time, the sharing model adopted by Fenghe not only saves the packaging cost of the e-commerce, but also allows the courier and the consumer to get some compensation, which ensures the recycling rate of the recycling express box.

For SF, it is a great boon for the company to outsource the vast project of making a sharing express box. SF Express's operation model based on express delivery business has not been destroyed. It is still the main ability to put all its resources into the express delivery industry as the main market share and continue to provide customers with better core service concept of better express delivery service.

4.3 Self-made model case analysis

(1) Case

In 2017, Suning Logistics began to publicize the innovative products of the green express box and launched the first-generation sharing express box during the "Double 11" period. The "sharing express box" is essentially a recyclable express package with a new material that is lightweight, eco-friendly, resistant to falling, and reusable. Compared with the traditional express package, there is a recycling link in the operation process. Its shape is a square plastic box. The surface of the box has a fixed position for pasting the express waybill. There is a plastic film inside the box to protect the goods. After signing, the courier will fold it up and turn it into a plastic sheet and bring it back to the warehouse for reuse. China's "sharing express box" began to be put into use in 2017. Currently, it is initiated by a small number of e-commerce logistics companies. The scope of applicable goods is relatively limited and has not been widely promoted and applied.

During the "618" period in the first half of 2017, Suning Logistics first introduced a reusable sharing express box. During the "Double 11" period, a total of approximately

200,000 such express boxes were used for maternal, child, and FMCG (Fast-moving consumer goods). It is put into use in 13 cities across the country. In December 2017, Suning Logistics announced that it will upgrade the “sharing express box.” The new “sharing express box” version 2.0 is divided into two sizes whose length, width, and height are 230*125*110mm and 175*110*110mm, respectively. In 2018, Suning planned to launch 200,000 “sharing express boxes” nationwide. The 2.0 version of the “sharing express box” is made of environmentally friendly materials which are lightweight, non-toxic, and durable. It can be recycled 100%, no toxic gases and sewage are emitted during the production process, and it is more environmentally friendly. The new version of “sharing express box” can play a better role in logistics and transportation and also facilitate the stacking of products in the warehouse and transportation, which can effectively improve the efficiency of logistics and transportation.

With Suning Logistics owns constant exploration, on 11th December, another upgraded version of the “sharing express box” 2.0 was released. Compared to the first generation, the 2.0 version weighs only 50 grams in a single box, enabling a lighter folding design. This sharing express box also uses Eco-friendly high-tech materials, and it does not require auxiliary materials such as glue or tape. Instead, it uses a sealed buckle made of disposable straw fiber that can be naturally degraded to share the express box seal. The “sharing express box” has achieved zero pollution and zero damage to the natural environment. Compared with traditional carton, it is more durable and has the characteristics of anti-shock and anti-drop, so that it can better protect goods in logistics transportation. In February 2018, communities, office buildings, and business districts in 13 cities, including Beijing, Shanghai, Nanjing, and Shenzhen, already establish a “sharing express box” recycling station to facilitate consumers in recycling “sharing express boxes.”

(2) Analysis

Suning Logistics manufactures a “sharing express box” by purchasing or using all of its own materials and then distributes the express box to the underlying logistics company. The logistics company manages the “sharing express box” and then sends

each express box to a fixed recycle bin. Since the manufacturing of “sharing express box” is also a core technology, Suning Logistics’ self-operating model has an advantage in sharing the quality of the express box itself. This core technology will also become a major feature of Suning’s propaganda. In terms of recycling, although it is not possible to provide high-quality face-to-face services like logistics companies as SF Express, but Suning has set up a sharing express box recycling station. This approach not only allows people to choose their free time to take their goods, but also saves a lot of time for the courier.

Because of the real-time monitoring of the “sharing express box” in the recycling station, the courier company can arrange the nearby courier to take the sharing express box of the recycling station and bring it back to the warehouse or distribution center after all the sharing express boxes are signed. If there is not much damage, arrange it to continue to recycle; if the damage can be repaired, then bring it back to the headquarters for repair. For the most damaged boxes, the waste will be recycled to the headquarters, and the damaged express box will be repaired by Suning. This kind of recycling model has great advantages in big cities, but it cannot be popularized in small cities or even rural areas. It takes financial resources to establish a “sharing express box” recycling station, and also needs timely management of monitoring, which will increase the difficulty for enterprise management.

4.4 Model Comparison and Insights

(1) Model comparison

In order to more clearly distinguish the application differences between the two models, Table 3 can be used for comparison.

From Table 3 we can see that the self-operating model is produced by the courier company itself, and the quality of the sharing express box is better than the rental model. However, because the production company specializes in producing “sharing express box”, the rental model is higher than the self-operating model in terms of technical specialization. In terms of recycling and maintenance, the rental model

requires the sharing express box to be transported to the production company for delivery, while the self-operating model only needs to recycle by the courier company. The self-operating model is easier to recycle, and the cost is lower than the leasing model. However, in the self-operating model, the courier company added a special business due to the sharing express box, which added difficulties to the management.

〈Table 3〉

Model	Rental model	Self-operating model
Quality of sharing boxes	Quality cannot be controlled	Quality is controlled by the company
Specialization of sharing boxes	Produced by a professional company with a high degree of specialization	Made by the company itself, not as diverse and specialized as a production company
Transportation cost	High	Low
Management cost	Low	High
Production costs (including repairs)	High	Low
Recycling model	Difficult	Easy

(2) Insights

The adoption of the rental model and the self-operating model is also of great relevance to the express delivery company itself. At the same time, making a sharing express box is still technology. If the courier enterprise has the ability to split part of the power and would like actively to develop the sharing express box and will not adversely affect its own business, it can choose to adopt the self-operating model. If the express delivery company does not want to distract itself from making research and development “sharing express box”, the rental model is the most appropriate. Both models have their own advantages and are actively being carried out. However, there are still many shortcomings in the “sharing express box.” There is still a lot of difficulty in sharing the express box.

Business costs: Although the sharing express box needs a lot of recycling times, the average production cost and the use cost are very low, so that the sharing express

box sounds low, but in fact, there are hidden huge costs for the enterprise to share the express box. The plastic express box is heavier than the traditional corrugated box, and the courier company generally calculates the shipping cost by weight. After using the sharing express box, the weight of the goods will increase, and the freight problem will be increased. At the same time, the use and recycling process of the sharing express box requires a lot of resources to build the corresponding facilities, management personnel, and work. For example, companies need to establish new departments to manage sharing express boxes, organize personnel to clean up the sharing express boxes, and may need to establish a recycling site. It also needs to arrange personnel and vehicles when recycling.

Security issues: For consumers, if the box is used repeatedly and is not cleaned up and disinfected in time, customers will worry about hygiene and safety of the sharing express box. For example, if the customer buys fruit, he will worry about whether the last item of the box will be pesticide, such as chemical drugs. Then issue that how to ensure that this box has not been contaminated increases the safety risks, which is also a major headache for express delivery companies.

Government responsibility and awareness issues: For consumers, they are used to throwing away the packaging after disassembling the express. For resource waste and environmental problems, although they are discussed every day, there are not many people who can do active practice. Most people have not taken the initiative to recycle the awareness of express packaging. There is no mandatory requirement for government departments in terms of green packaging. The formulation of relevant laws is not complete enough. Some laws and regulations have loopholes. It is difficult to form effective constraints on various market entities. The mandatory is not high, and there are shortcomings in supervision.

V. Green logistics

Green and low carbon has become an important theme in the development of the current era. As a large country in population and consumption, Chinese people should

respond positively. At present, green logistics is in the early stage of development, and the concept of green logistics has not yet been fully popularized. For the express delivery industry, due to the government's promotion in recent years, the concept has been recognized and implemented to a certain extent. For example, the emergence of a sharing express box is a good interpretation of the green logistics, which can effectively reuse resources and reduce environmental pollution. However, the application range of the "sharing express box" is currently relatively small. It only appears in some areas and has not been widely used. This shows that it still has certain drawbacks and cannot be effectively promoted.

Policies and laws related to green logistics are still not perfect. For example, China's sustainable development strategy is in the stage of exploration and gradual implementation. This is a relatively long process. In the express delivery industry, the relevant regulations and laws for green logistics have not been perfected. The state has not explicitly emphasized how the company should implement it. The enterprise is also only cares about its own interests. Therefore, it must develop well. Green logistics, the government needs to work with enterprises to develop some regulations on green logistics in the industry. Green logistics technology is rarely used in the express delivery industry. Technology is a pioneering condition for development. At present, many of our technical research in green logistics focuses on warehousing or distribution, but the research about green technology in packaging is relatively few. Operators of the express delivery industry will not invest more money in research. They will only choose packaging materials with lower cost. Therefore, the state should encourage and reward green logistics technology in packaging.

For the express delivery industry, its aim is to deliver online shopping products to consumers in good condition, so that they are well received, then businesses and consumers can better cooperate with them. Originally, before the goods were shipped, the merchants already had a simple package for the goods. After transportation, to ensure that the product is not damaged during delivery, the courier operator repackages the goods. Such a product through three productions and consumption, it is conceivable that the cost of packaging materials is huge. Besides, behind it is the environmental

pollution and waste of resources.

The number of goods purchased online in China every year is in the hundreds of millions, and these goods must be delivered by express delivery. After several times of packaging, the goods are presented in front of us. As consumers, most of are dismantling the express delivery, just throw away the bag or box directly. Sometimes it will be picked up by the sanitation staff, sold as waste, and some will be discarded in the environment and left to go its own way. The express delivery industry has no responsibility or obligation to collect the dismantled packaging materials. Therefore, there is no progress in packaging materials, and it cannot be recycled, which leads to a lot of waste of packaging materials and environmental pollution.

For how to better develop the “sharing express box,” Zhao Jianbo of the Institute of Industrial Economics of the Chinese Academy of Social Sciences suggested that the sharing express box market has little profit potential, and its sharing behavior is better driven by green environmental protection elements. First, focusing on improving the enthusiasm of enterprises to use “sharing express boxes.” Second, promoting the standardization of green logistics packaging. At present, the sizes of express delivery packages are different, and there is a lack of standardization for sorting and transportation. It is necessary to use the pilot to promote the sharing of express boxes as an opportunity to promote the standardization of all links of logistics express delivery.

Zhao Jianbo (2017, Xinhua) said that unlike the current “ready-to-use” model, the future “sharing express boxes” can be scattered in e-commerce warehouses, express bicycles, collection of properties and consumers, forming a state of “being usable.” From an ownership perspective, e-commerce and courier companies do not have to be owners of sharing express boxes. The role of owners can be borne by different third-party enterprises, and one or more Internet platforms that support the rapid circulation of “sharing express boxes” are needed to reduce the cost of use. Of course, we must also avoid undesirable phenomena such as damage and waste in environment. Only in this way, the business model of sharing express boxes can promote the green logistics.

VI. Conclusion

Once the “sharing express box” was released, many people praised it. Some people say that the green and circular economy has finally been valued and implemented in the express delivery industry. This is the future of the sharing economy and the way out and the ultimate choice for sustainable development. In addition to the “sharing express box,” some e-commerce companies have launched recycling packaging bags which are sealed with drawstring. The packaging bag is recycled by the delivery person and returned to the warehouse for packaging. Some e-commerce companies have adopted a green warehouse which uses a non-adhesive tape express box and 100% biodegradable express bag fully demonstrating the environmental protection function. Some e-commerce companies will also start recycling cartons at pick-up points in key cities during the “Double 11.”

Obviously, environmental protection is not limited to the large-scale action on “Double 11,” and it is not limited to the e-commerce platform. Sustainable green development has always been an important topic of ecological protection and green and sustainable development in China. The cost of environmental pollution is beyond everyone’s reach. E-commerce, logistics, and consumers should join hands to contribute to the “green environment.”

On the road to environmental protection, the emergence of “sharing express box” is just a starting point. “Green logistics” should not only cover some cities in a short time, but also cover every corner of the country. In the future, enterprises should create greener models of operation and development while creating value and wealth for the society and make greater contributions to environmental protection. From the essence of sharing economy, sharing express boxes can save social resources and is an area worth trying. At present, the sharp rise in carton prices has forced e-commerce, express delivery, and consumers to actively reduce the quantity of packaging, use biodegradable packaging, recycling packaging, and other aspects to promote the “greening” of express delivery.

Green environmental protection is the general trend, the government, enterprises,

and the general public pay more and more attention to environmental protection in life. Suning proposed the concept of “sharing express box.” Although there are still many problems to be solved, the concept itself reflects the importance that enterprises attach to environmental protection and has been widely recognized by media and Internet users. “Sharing express box” is an attempt to make up for the defects in the industry. The concern raised by the media and Internet users is mainly because the new attempt has not established corresponding perfect procedures and norms. The government, enterprises, and consumers should think positively and do not let “sharing express box” become a “selling point.”

In addition, enterprises should actively consider and respond to questions raised by the media and Internet users to strengthen the effect of secondary communication. The constant discussion among enterprises, media, and netizens also show people’s enthusiasm for environmental protection. Although there are many problems, there are more ways to solve them. Through the joint efforts of various parties, we will surely make greater progress in environmental protection.

Finally, to eliminate packaging waste pollution, it is not enough to rely on only one idea and one tool. Express delivery enterprises, e-commerce platforms, sellers, and consumers need to work together to form a normalized system guarantee.

References

1. Chen W. (2017). Governance of “communication pollution” must be taken in parallel [N]. *China United Daily News*, 2017-11-06 (B02).
2. Chen Y. (2017). Green packaging of logistics—Taking SF Logistics as an example [J]. *Modernization of Shopping Malls*, 2017(14), 66-67.
3. Deng C.S. (2017). Research on the Status Quo and Countermeasures of China’s Express Packaging Problem in the Age of Online Shopping[J]. *Economic Research Guide*, 2017(28), 40-43.
4. Dobos I, Richter K (2004). An extended production/recycling model with Stationary demand and return rates. *International Journal of Production Economics*, 90(3),

- 311-323.
5. Fu J.Z. (2018). Express box fights for “green” new clothes [N]. *Zhejiang Daily*, 2018-03-20 (010).
 6. Hao Y.; Wei D. (2016). Reusable plastic crate or recyclable cardboard box? A comparison of two delivery” systems. *New Engineer*, 2693-2711.
 7. He W. (2018). Problems and Countermeasures of Express Packaging under Low Carbon Economy [J]. *Logistics Engineering and Management*, 2018, 40(01), 130-131.
 8. Jiang B.J.; Lin T. (2016). Collaborative Consumption: Strategic and Economic Implications of Product Sharing. *Journal Menu*, 983-1476.
 9. Jiang Y.Y. (2017). Analysis of China’s express delivery industry packaging and its green strategy [J]. *Logistics Technology*, 2017, 36(04), 59-62.
 10. Jin S. (2017). Calling Green Logistics [J]. *Modern Corporate Culture (early)*, 2017 (01), 16-17.
 11. Li, T. (2016). Exploration of problems and solutions in express packaging. *China Packaging Industry*.
 12. Liu, A.; Ji, X.H.; Tsai, S-B.; Lu, H.; Du, G.; Li, F.; Li GD and Wang, JT. An Empirical Study on the Innovation Sharing Express Box: Collaborative Consumption and the Overlay Network Design Sustainability 2018,10, 2201.
 13. Maity AK, Maity K, Maiti M (2007). A production-recycling-inventory system with imprecise holding cost. *Applied Mathematical Modelling*, 32(11), 2241-2253.
 14. Qiu L.H. (2016). Status and Trend Report of Green Packaging Development in China’s Express Delivery Industry. *Journal of Beijing Institute of Graphic Communication*.
 15. Ren Y.Y. (2012). Talking about Over-packaging and Solution Strategy in Logistics. *Jiannan Literature (Classical Education Center)*.
 16. Sirkka K.; Helena D.; Jachym J.; Marja-Riitta K.; Mervi N. (2014). Reusable plastic crate or recyclable cardboard box? A comparison of two delivery” system. *ScienceDirect*, 83-90.

17. Su J. (2018). Shared Economy: Motivation, Problems and Prospects [J]. *Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition)*, 2018, 39(02), 126-131+2.
18. Wang R.F. (2018). Analysis of Government Responsibility in the Background of "Internet +" Era—Taking the Reduction of Express Garbage Pollution as an Example[J]. *Journal of Shaanxi Administration Institute*, 2018, 32(01), 49-56.
19. Wu W.Z. (2017). Increased cost of carton. Can the sharing express box be decompressed [N]. *Beijing Business Daily*, 2017-10-18(005).
20. Wu W.Z. (2017). Save millions of dollars to share the environmental protection account of the express box [N]. *Beijing Business Daily*, 2017-10-30 (005).
21. Zhang T. (2017). Sharing express box requires policy incentives [N]. *Jiaxing Daily*, 2017-10-27 (002).
22. Zhang X.R, Yu D. (2018). Research on the Trend of Sharing Economy in China[J]. *Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition)*, 2018, 39(02), 132-146.
23. Zhang Y.C. (2016). Development Status and Trend of Green Packaging in China's Express Delivery Industry. *Logistics Technology and Application*.
24. Zhang Y.C. (2017). Difficulties and Countermeasures in Promoting Green Packaging in E-commerce. *Fujian Textile*.
25. Zhou W.W. (2017). Sharing express box: opportunities and challenges coexist [N]. *China Economic Herald*, 2017-11-17 (B02).