

Review and Prospect of Research on Willingness to Participate in Express Packaging Recycling

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Abstract

The demand for express packaging is increasing year by year as consumers form the habit of online shopping. A large number of express packaging wastes that have not been properly disposed of have caused serious economic burden, resource waste and environmental pollution. Recycling and recycling of express packaging is the most effective way to solve the problem. Consumers are the starting point of express packaging recycling, whose willingness to participate directly determines the results of express packaging recycling. Previous studies on consumers' willingness to participate in express packaging recycling are mostly based on planned behavior theory, normative activation theory and social exchange theory which focus on two aspects social factors and individual factors discussing the influence of situational factors, social capital and personal values on consumers' willingness to participate in recycling. Existing studies have not fully explored the preconditions of consumers' willingness to participate in recycling, and ignored the problems that express packaging recycling is a process co-created by the government, enterprises and consumers. In this process, consumers play the role of "temporary employees" of recycling enterprises. In the future, based on the perspective of value creating researchers can make an in-depth exploration and research on the preconditions and psychological mechanism of consumers' intention to participate in recycling from the three stages of cognition, emotion and will, to help the government and enterprises to understand the formation of psychological mechanism of the willingness of consumers to participate in packaging recycling, and enhance consumers' willingness to participate in express packaging recycling.

Keywords

Express Packaging Recycling; Participation Willingness; Social Factors; Pro-environmental Behavior.

1. Introduction

With the development of the Internet and e-commerce, online shopping has become the first choice for most people. According to the public data of the Ministry of Commerce, the number of online shopping users in China has reached 812 million in 2021, accounting for 80.3% of the total netizens and the national online retail sales have reached 13.1 trillion yuan, a year-on-year increase of 14.1%. The vigorous development of e-commerce is inseparable from the support of the express industry. According to statistics, the total express delivery business in China has reached 108.5 billion in 2021, a year-on-year increase of 30%, and the cumulative business income has reached 1.04 trillion yuan, an increase of 18% year-on-year. While the huge volume of express delivery business brings economic benefits, it also brings a series of serious negative problems such as waste of resources and environmental pollution. The consumption of various express packaging materials has increased sharply from 20,600 tons in 2000 to 9,412,300 tons in 2018. If effective measures are not implemented to control and let it develop freely, the consumption of express packaging materials in my country will reach 41,270,

500 tons in 2025. In addition, the growth of express packaging waste in Chinese megacities has accounted for 93% of the increase in domestic waste, while the overall recycling rate of express packaging in my country is less than 20%, and the recycling rate of cardboard and plastic is even less than 10%. The surge in social management costs and environmental protection costs caused by discarding and processing as general household waste is far greater than the economic effect of incinerating express packaging materials.

In order to solve the problem of express packaging recycling, the General Office of the State Council issued the "Opinions on Accelerating the Green Transformation of Express Packaging" in November 2020, implementing the decisions and deployments of the CPC Central Committee and the State Council on further accelerating packaging governance, and promoting the green transformation of express packaging. The "Opinions" encourage the centralized recycling of express packaging cartons at express outlets in campuses, communities and other places, the green design of express packaging materials and products, the use of packaging materials and packaging designs that are easy to sort and recycle, the development of "Internet plus Recycling" new business format, and the standardized and clean recycling of recyclables in express packaging waste. At the same time, major e-commerce companies and logistics companies have responded to call to join in the green recyclable and standardized actions of express packaging, such as the "Qingliu Box" and the "Qingliu Plan" by JD.com, the "Container Return Plan" and "Green Logistics 2020 Plan" by Cainiao, etc. Although some achievements have been made. Due to the limitations such as limited coverage, funds, infrastructure, consumers' green awareness, etc., express packaging recycling problem is difficult to fundamentally solve the economic, social and environmental problems brought by express packaging.

In the process of express packaging recycling, consumers are at the starting point of recycling. It is very important for policy makers to explore which factors will affect consumers' recycling willingness and behavior. This paper investigates and systematically sorts out the participation of consumers in express packaging recycling and the research status. Firstly, the concept of consumers' express packaging recycling behavior is expounded. And the willingness of consumers to participate in express packaging recycling is sampled. Secondly, the influencing factors of consumers' willingness to participate in express packaging recycling are analyzed and sorted out from social factors and personal factors. Finally, the shortcomings of existing research and the focus of future research on consumers' willingness to participate in express packaging recycling are reviewed.

2. Research Status of Consumers' Willingness to Participate in Express Packaging Recycling

Express packaging recycling is a kind of recycling behavior, so it has the commonality of recycling behaviors. At present, there is no unified definition of recycling behavior. Scholars have defined recycling behavior according to their own research and understanding. Lanfang Chen defined recycling behavior as the behavior of reuse and recycling of renewable resources[1]; Morgan and Hughes, based on the perspective of recycling participants and behavior benefits, proposed that recycling behavior is the active participation of individuals or organizations, which can bring economic, social and economic benefits[2]. While Jianming Wang believed that recycling behavior is a general term for reducing resource waste and environmental pollution, and focusing on product lightweight, reusable, and recyclable environmental awareness behaviors in the process of consumption[3]. He extended the recycling behavior forward to the consumption stage and emphasized that the recycling behavior is an environmentally conscious behavior. Based on the above definition of recycling behavior and the characteristics of express packaging recycling This paper holds that express packaging recycling is the behavior of reusing or reprocessing abandoned or idle waste express

packages by centralized recycling, transportation and processing, which aim is to achieve the purpose of resource recycling and sharing and reduce environmental pollution.

In the process of express packaging recycling, consumers are at the starting point of recycling, which directly affects the efficiency and effect of express packaging recycling. At present, the research on the willingness to participate in express packaging recycling is mostly based on planned behavior, norm activation theory from individual internal factors and external factors to explore the influence of individual attitudes, subjective norms, perceived behavioral control, social norms, perceived relevance and situational factors, on express packaging recycling willingness and behavior [3].

2.1. The Influence of Social Factors on Willingness to Participate in Express Packaging Recycling

(1) The influence of contextual factors on consumers' willingness to participate in recycling.

Situational factors refer to the objective environment that consumers are in when they recycle express packaging, including the number and distribution of express packaging recycling outlets, economic incentives to participate in express packaging recycling, and policy publicity for express packaging recycling activities. The number and distribution of express packaging recycling outlets directly can affect consumers' perception of the convenience of express packaging recycling. More recycling outlets can also reduce the cost of time and energy for consumers to participate in express packaging recycling activities, and promote consumers' willingness to participate in express packaging recycling. In addition, convenient recycling equipment will also affect consumers' willingness to participate in express packaging recycling. Jing Wang et al have proved through research that smart express cabinets with packaging recycling functions can simplify consumers' participation in recycling and improve the convenience of recycling [4].

The social exchange theory holds that the essence of individual behavior is the exchange activity on the basis of obtaining rewards or reducing punishment. The value evaluation obtained from exchange behavior is the basis for maintaining and developing the relationship between the two parties, which can directly promote the individual's identification, attachment and relationship[5]. Consumers will measure the benefits and costs when recycling express packaging. If the value of economic benefits and spiritual encouragement obtained by consumers is higher than the cost, consumers will tend to have a willingness to participate in express packaging recycling and then adopt the behavior. Xing Cao has proved through research that consumers' perception of the economic and spiritual benefits of express packaging recycling will have a positive impact on consumers' attitudes towards express packaging recycling and their willingness to recycle. Among them, the spiritual benefits include pleasure, achievement, and self-improvement, etc[6].

Policy publicity refers to the popularization, dissemination and guidance of relevant policies for express packaging recycling through various online and offline channels. The communication of policies will help to enhance consumers' perception and understanding of express packaging recycling, and indirectly urge enterprises to promote express packaging. The role of recycling efforts. Through research, Qiyue Dong et al. found that consumers' knowledge of express packaging classification and recycling has a positive impact on consumers' willingness to participate in express packaging recycling[7]. At the same time, studies have pointed out that choosing appropriate policy publicity themes and methods according to consumers' psychological preferences can greatly improve the communication effect between the government and consumers, and maximize the effect of policy publicity[8]. In addition, policy systems are an important form of government restraint on individual behavior. The state can use persuasion or coercion mechanisms to increase the enthusiasm of the public to participate. DONG et al. used neural network models to predict the intention of express

packaging recycling behavior, proving that policy publicity and policy effectiveness perception social norms and economic incentives are highly sensitive to consumers' intention of recycling express packaging waste[9].

(2) The influence of social capital on consumers' willingness to participate in recycling.

Social capital refers to the social "soft capital" accumulated in the social network relationship and can be used by individuals or organizations to achieve their goals, including emotional or substantive support and rich information resources, which is mainly composed of the elements of trust, social network and social norms[10]. Trust refers to the subjective perception of the reliability of communication objects established by individuals or organizations in the process of communication. When consumers have a high degree of trust in express packaging recycling enterprises, the perceived risk will be reduced. At this time, consumers are prone to emotional bias towards enterprises, which is conducive to increasing their willingness and behavior of recycling participation.

Social network refers to the relationship and link formed by social members based on long-term interaction and connection, which plays an important role in connecting individuals and information transmission [10]. When consumers face express packaging recycling, if their relatives, friends and neighbors know or advocate recycling activities, consumers can easily access relevant information, which will produce the willingness and behavior of recycling participation under the influence of their own social network. Taking the community as the background, Hua et al. proved that social capital such as community trust, relationship, sense of belonging and evaluation positively affect the generation of community express packaging recycling willingness and behavior, among which the correlation between social relationship and express packaging recycling behavior is the highest[11].

Social norms are the behavior recognized by most people in society, which represent the values and attitudes of most people that individuals need to abide by when engaging in social activities[12]. Consumers are restricted and influenced by social norms. The attention of government, enterprises, communities and other institutions to express packaging recycling is conducive to the establishment of social norms for express packaging recycling and affects consumers' sense of result, responsibility and moral obligation. Based on normative activation theory and planned behavior theory, Yuehui Wang et al proved that social norms positively affect consumers' willingness to recycle express packaging through responsibility attribution and individual norms[13].

At present, my country's society attaches little importance to express packaging recycling, the division of recycling responsibilities is vague, and the relevant knowledge and recycling value of express packaging recycling are not in place. Consumers are under a social norm that is not conducive to express packaging recycling, and it is difficult for consumers to generate or maintain a sense of responsibility for express packaging recycling, and realize the urgency and importance of recycling to society, others and themselves. Express recycling companies have insufficient arrangements for recycling outlets, and in some areas, recycling points cannot be found, making it difficult for consumers to perceive the convenience of recycling. In addition, the perceived benefits of consumers participating in express packaging recycling activities are mainly come from the economic aspect, lack of spiritual benefit perception, which is not conducive to the formation of consumers' willingness and behavior to participate.

2.2. The Influence of Individual Factors on the Willingness to Participate in Express Packaging Recycling

(1) The influence of values on consumers' willingness to participate in recycling.

Values are the cognition and value judgment system deep in the individual's heart. It is the individual's fundamental attitude towards the value of things, and the sum of the positions, viewpoints in dealing with value relations[12][14]. In the study of Pro-environmental behavior,

it was found that consumers with ecological values and altruistic values are more likely to produce Pro-environmental behaviors[15]. Pro-environmental behaviors refer to behaviors that individuals consciously make that are beneficial to the environment based on certain values, worldviews, and sense of responsibility[16]. Consumers' participation in express packaging recycling is conducive to the recycling of resources and the protection of the ecological environment. When consumers hold ecological values and altruistic values, it is easier to stimulate their sense of responsibility for express packaging recycling. Through research, Qiyue Dong et al. found that the cognition of the environmental impact of express packaging significantly affects the willingness of consumers to classify and recycle express packaging, and consumers believe that the more serious the environmental harm of express packaging, the higher the probability of being willing to classify and recycle[7].

(2) The influence of perceived relevance on consumers' willingness to participate in recycling. In the process of receiving external information, on the one hand, individuals will evaluate the relevance of the information to themselves, and on the other hand, they will judge whether it can meet personal needs and realize their own value[12]. When consumers accept external information about express packaging recycling, they will evaluate the relevance of participating in express packaging recycling to their own values, lifestyle and self-image. When consumers perceive that express packaging recycling behavior is less relevant to themselves, even if they pay attention to express packaging recycling and understand the various benefits of express packaging recycling, they may not be willing to participate in express packaging recycling activities. Yuehui Wang et al research and analysis on the influencing factors of urban residents' participation in express packaging recycling behavior. They found that awareness and responsibility consciousness can indirectly promote the emergence of consumers' express packaging recycling behavior, which make consumers have a positive attitude towards it, and enhance the correlation between express packaging recycling behavior and consumers' daily life [13].

At present, when most consumers face express packaging recycling, they only measure the value from the perspective of self-interested values, ignoring the ecological value and altruistic value brought by express packaging recycling. Consumers do not associate express packaging recycling with their own lifestyle and self-image. The perceived correlation is weak, which makes it difficult for consumers to participate in express packaging recycling even if they understand the benefits and importance of express packaging recycling.

2.3. The Influence of Other Factors on Willingness to Participate in Express Packaging Recycling

(1) The influence of express packaging itself on consumers' willingness to participate in recycling. The inconvenience of express packaging means that after consumers receive the express packaging, the packaging itself causes obstacles to consumers' express packaging recycling, For example, the packaging is not easy to remove, the appearance wear resistance is poor, and the packaging specifications are different. Qiyue Dong et al. analyzed the reasons why consumers are reluctant to participate in the sorting and recycling of express packaging and concluded that the lack of facilities for sorting and recycling express packaging and the inconvenience of express packaging are the two most important factors that affect consumers' willingness to participate in sorting and recycling express packaging[7]. The innovation of express packaging technology and the lag of packaging technology also restrict the development and promotion of express packaging recycling[17].

(2) The influence of express packaging recycling mode on willingness to participate in consumer recycling. Express packaging recycling requires the participation of multiple parties. Consumers, recycling companies, government, schools, communities and other organizations will all have an impact on it. In the current express packaging recycling mode, the self-operated

e-commerce recycling mode has a unique competitive advantage in recycling due to its own operation mode. However, this mode has problems such as just having a single recycling leader and poor coverage of recycling activities which make it fail to use its own strengths. Guoqing Liu took college students' express packaging recycling willingness and behavior as the research object in the campus situation, and proved that improving the level of school-enterprise cooperation is conducive to the generation of students' express packaging recycling willingness and behavior, significantly improving the recycling effect of express packaging and efficiency. In addition, reducing the average weight of packaging can effectively reduce the accumulation rate and landfill volume of campus waste[18].

At present, express packaging has deficiencies in many aspects such as materials, design, and transportation. There are excessive packages including a lot of dirty or damaged packages and packages that is not easy to remove, which affects consumers' willingness to recycle after receiving express packaging. Recycling companies build a relatively simple recycling model for express packaging and fail to effectively integrate all forces in the face of different recycling scenarios with insufficient coverage of recycling activities.

3. Ways to Improve Consumers' Willingness to Participate in Express Packaging Recycling

3.1. Social Factors

Regarding situational factors, the government needs to strengthen the publicity of express packaging recycling, so that consumers can understand the importance of express packaging recycling in alleviating the resource pressure, economic pressure and environmental hazards brought by express packaging waste. And it is also necessary to strengthen the popularization of express packaging recycling knowledge to help consumers understand the nature of various packaging and handle them properly. The government needs to introduce relevant policies for express packaging recycling such as express packaging size and specification standardization guidelines, express packaging recycling responsibility division system, express packaging recycling and processing standard specifications, etc. At the same time, recycling companies need to strengthen the rationality of the coverage and distribution of express packaging recycling outlets, which help consumers to reduce the threshold and cost to participate in express packaging recycling. And it is necessary to establish a variety of recycling reward mechanisms to strengthen the spiritual and emotional incentives for consumers to participate in express packaging recycling.

Regarding social capital, the government needs to strengthen the establishment of social norms for express packaging recycling, and affirm and standardize consumer express packaging recycling behavior to help change consumers' attitudes towards express packaging recycling. The community needs to create a loving, mutually helpful and harmonious community environment, which can strengthen the connection between community members. At the same time, the community should encourage community members to participate in express packaging recycling activities to build a social network that is conducive to express packaging recycling. Recycling companies need to strengthen the interaction with consumers by providing high-quality services. And they also should establish a good corporate image and reputation to enhance consumers' favorability towards express packaging recycling and their trust in recycling companies.

3.2. Individual Factors

The government and recycling enterprises need to consciously cultivate the ecological values of consumers by carrying out environmental protection education on express packaging recycling, setting an excellent example or demonstration area to help stimulate consumers'

awareness of results and responsibility for express packaging recycling. And they need to strengthen the establishment of awareness of the relationship between resource issues, economic issues, environmental issues caused by express packaging waste and consumers' own life, work to improve consumers' perception of express packaging recycling.

3.3. Other Factors

The government and recycling enterprises need to strengthen the promotion of standardization, reduction, greening, and recyclability of express packaging. In order to reduce damage to express packaging, they should strengthen the standardization of logistics operations such as loading, unloading, handling, and transportation. The convenience of express packaging can be improved by strengthening the research and innovation of express packaging design and packaging materials recycling. When a recycling enterprise builds a recycling model, it should combine the environment where the recycling object is located, and unite all parties to design different recycling modes. For example, in the school, recycling companies can cooperate with the school, in the community, recycling companies can cooperate with the society organize cooperation to explore different recycling party-led or multi-party recycling joint models, which enhance the coverage of recycling activities, and increase the enthusiasm of consumers to participate in express packaging recycling.

4. Summary and Prospect

4.1. Shortcomings of Existing Research

There are few research literatures on the willingness to participate in express packaging recycling. Based on the planned behavior theory, normative activation theory and social exchange theory, the existing research mainly studies the influencing factors and paths of consumers' willingness to participate in express packaging recycling from two aspects: external factors and internal factors. The discussion on the pre-factors of consumers' willingness to participate in express packaging recycling is not deep enough. There is a lack of systematic research on the psychological factors and psychological mechanisms of consumers' willingness to recycle. And there is a lack of discussion on the boundary of the variable. Then, express packaging recycling is a value co-creation process that the government, enterprises and consumers all need to participate in. In this process, consumers play the role of "temporary employees" of enterprises. But existing researches ignore this point.

4.2. Research Outlook

In view of the insufficiency of existing research, future research can start to fill the gap of research from the following aspects. First of all, from the perspective of value co-creation, consumers are regarded as "temporary employees" of enterprises in express packaging recycling activities, and with the help of authorization theory and psychology-related theories, we will discuss what factors may affect "temporary employees" willingness to participate and its psychological mechanisms. Secondly, the formation of consumers' willingness and behavior to participate in express packaging recycling requires the completion of the psychological linkage of their cognition, emotion, and will. In the cognitive stage, consumers collect information related to express packaging recycling, which is the premise of consumers' willingness and behavior of recycling. In the emotional stage, consumers have positive or negative emotions about express packaging recycling under the combined action of the external environment and their own values. In the will stage, consumers need to overcome some difficulties in express packaging recycling [8]. In the future, we can explore the pre-factors of consumer express packaging recycling in depth from these three stages, and how the three interact and influence each other. Based on the theories of values and psychological locus of

control, it can be explored and discussed the function boundary of pre variables on consumers' willingness to participate in express packaging recycling.

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