

Research on the Application of Green Packaging in Agricultural Products E-commerce Logistics

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Abstract: With the rapid development of Internet technology, e-commerce that emerges as the times require has many advantages, such as low cost, cross-regional, and strong interactivity. It can help integrate resources in various links in the process of agricultural product production and sales, thereby reducing cost, improving the quality and efficiency of the agricultural product supply chain, and increasing the income of farmers and agricultural enterprises. However, with the sharp increase in the usage of packaging, environmental protection issues have become increasingly prominent. The "Action Plan for Deeply Promoting the Green Transformation of Express Packaging" issued by eight departments including the National Development and Reform Commission proposes to increase efforts to solidly promote the reduction of express packaging, accelerate the cultivation of new models of recyclable express packaging, and enhance the standardization, recycling, reduction, and harmlessness of express packaging. This paper aims at the application status of agricultural product e-commerce logistics packaging, proposes the advantages of promoting green packaging in the use process of agricultural product e-commerce logistics, and simultaneously analyzes the problems existing in the promotion and use of green packaging in agricultural product e-commerce logistics, and then proposes solutions.

Keywords: Agricultural Product E-commerce; Green and Environmental Protection; Recycling Mechanism

1. Introduction

With the development of information network technology, consumers are increasingly regarding online shopping as their first choice

in shopping methods. As a result, consumers' demand for a high-quality shopping experience is increasing day by day. Agricultural products, due to their unique product characteristics, have made e-commerce begin to develop in their direction. The biggest difference between agricultural products and other products is that they are greatly affected by the environment and have the characteristics of easy corrosion and short freshness period. Agricultural product e-commerce has changed the traditional difficult sales model of offline farmers. Through the e-commerce platform, consumers will find it very convenient to buy vegetables, and the circulation of agricultural products is no longer limited by geographical differences, facilitating the rapid circulation of agricultural products. At the same time, agricultural product e-commerce can fully meet the needs of consumers and effectively solve the problem of poor information communication between buyers and sellers. In the current agricultural product e-commerce logistics link, most of the packaging uses non-degradable materials such as plastic film or foam boxes, and the inferior glue and tape used contain chemical substances such as formaldehyde and benzene. On the one hand, these traditional packages affect the taste and quality of agricultural products, and on the other hand, the gases emitted by these chemical substances are harmful to human health. Therefore, the packaging of agricultural products is more stringent and requires more health and environmental protection than the packaging of other products [1].

2. Application Status of Agricultural Product E-commerce Logistics Packaging

2.1 Serious Packaging Waste and Lack of Environmental Awareness

Some merchants, in order to better promote the sales of their products, design their product

packaging with bright colors and wrap several layers of packaging paper, so that the content of the packaging cannot be observed from the outside. This kind of excessive packaging is contrary to the current pursuit of environmental awareness. When excessive packaging is carried out, a large amount of packaging products will be wasted, and the excessive packaging does not cater to the current aesthetic preferences of most people. Moreover, as people's awareness of environmental protection increases, they tend to prefer simpler packaging in product packaging [2].

2.2 Lack of Design Cognition and Unsafe Materials

In the current packaging design of agricultural products, there are various types of packaging designs, and many materials are used for packaging. Some use strong colors to render the design, some are relatively monotonous in color, and some packaging designs make it impossible for consumers to identify what kind of product it is just from the outside. In the current packaging design of agricultural products, many only pursue the gorgeous surface design without considering the actual situation of the product for corresponding design, so some problems are prone to occur during the sales process.

2.3 Insufficient Variety of Logistics Packaging Forms Used

At present, there are several common forms of agricultural product e-commerce logistics packaging in China: First, express bags. Express bags are bag-shaped packaging filled with products and sealed with materials such as paper and plastic. This method takes up less space during transportation and protects the products well during transportation. However, this packaging material is not pressure-resistant and is prone to damage to the products when collided; second, woven bags. Woven bags are bag-shaped packaging made by sewing cloth or rope-like fabrics made of cloth or fibers. This material is light in weight and fragile; third, cartons. Cartons, as one of the common logistics packaging methods in China, are box-shaped packaging made of materials such as paper and cardboard after processing. This packaging will soften and deform when encountering water, and its

shortcomings such as poor compression resistance have also become its weaknesses [3].

3. Application Advantages of Green Packaging in Agricultural Products E-commerce Logistics

3.1 Reduce Environmental Pollution

Traditional packaging materials such as plastic and paper are not easy to degrade, putting a huge pressure on the environment. With the gradual enhancement of people's awareness of environmental protection, green packaging materials have emerged. These new types of packaging materials, such as recyclable paper and biodegradable plastics, have excellent environmental protection performance. They can naturally degrade in a short period of time, reducing the burden on the environment. This transformation not only reflects the commitment of enterprises to sustainable development, but also meets the needs of consumers for environmentally friendly products [4].

3.2 Reduce Costs

Using recyclable packaging materials is an inevitable choice for today's green environmental protection. It not only reduces resource consumption in the production process and the impact on the environment, but also realizes the recycling and reuse of resources after the items are used up. The recycling of packaging materials significantly reduces the cost of waste disposal, saving enterprises a lot of expenses.

3.3 Enhance the Image and Reputation of the Enterprise

Using environmentally friendly packaging is a wise choice for enterprises, which not only demonstrates the social responsibility of the enterprise, but also conveys the firm belief in green development. This positive image can deepen consumers' awareness and trust in the enterprise, thereby enhancing the brand value and market competitiveness of the enterprise, and winning a good social reputation for the sustainable development of the enterprise. In addition, the promotion of environmentally friendly packaging can also lead consumers to form green consumption habits, prompting the whole society to pay attention to environmental protection and contribute to the

sustainable development of the earth.

4. Problems in the Promotion and Use of Green Packaging in Agricultural Products E-commerce Logistics

4.1 The lack of Laws, Regulations, and Standards

The lack of laws, regulations, and standards has brought significant challenges to the development of agricultural product green packaging. Currently, although China has introduced some laws, regulations, and standards related to green packaging, there are still many loopholes and deficiencies. This provides opportunities for unscrupulous enterprises to engage in unregulated behavior, ignoring environmental protection requirements in pursuit of short-term interests. At the same time, this also creates chaos in the green packaging market, with uneven product quality, causing great confusion for consumers [5].

4.2 Insufficient Environmental Awareness and Behavior

Although the world is concerned about environmental protection issues, many consumers and enterprises have not fully realized the importance of environmentally friendly packaging. Some consumers, when choosing products, focus too much on price and performance, while ignoring the environmental performance of the products. This consumption concept to some extent affects the market demand for environmentally friendly packaging. At the same time, some enterprises may choose not to use or use non-compliant environmentally friendly packaging materials in order to reduce costs. This behavior not only causes certain pollution to the environment, but also hinders the healthy development of the entire industry.

4.3 Constraints of Technology and Cost

Technology and cost constraints are another important issue faced by the development of agricultural product green packaging. Achieving green packaging requires advanced technology and equipment support, which means that enterprises need to invest a lot of capital and human resources for research and development and upgrades. Some enterprises may be unable to adopt environmentally

friendly packaging due to technological or financial limitations. At the same time, although green packaging materials are environmentally friendly, their costs are often higher than traditional materials, which makes some enterprises choose traditional materials when balance costs and environmental benefits.

4.4 Consumers' Doubts and Misunderstandings about Green Packaging

Consumers' doubts and misunderstandings about green packaging are also a problem faced by the development of green packaging. Many consumers do not understand the concept and standards of green packaging, resulting in doubts about their effectiveness. Some consumers may think that green packaging is just a marketing strategy of enterprises, not really beneficial to the environment. At the same time, some consumers may choose traditional packaging because of the higher price of green packaging, believing that traditional packaging is already sufficient to meet their needs without additional expense. These factors limit the market promotion and popularization of green packaging [6].

5. Strategies to Promote the Use of Green Packaging in Agricultural Products E-commerce Logistics

In the context of the rapid development of e-commerce, the application of green packaging for agricultural products is particularly important. However, the lack of regulations and standards, weak environmental awareness, high technology and cost, and consumers' lack of awareness all restrict the wide implementation of green packaging. Therefore, the following will discuss solutions and suggestions to promote the application of green packaging for agricultural products in e-commerce, in order to achieve a harmonious coexistence between e-commerce and environmental protection.

5.1 Establish a Socialized Recycling Mechanism

Through the establishment of a socialized recycling mechanism, centralized and large-scale recycling can be achieved, thereby improving efficiency and reducing costs, forming a virtuous circle. For example, the government or a third-party platform can take

the lead in establishing a relatively complete socialized recycling system, integrating community recycling with recycling enterprises and e-commerce logistics enterprises; or implementing a deposit system for recycled packaging, encouraging consumers to actively participate, and automatically returning the deposit after recycling is completed, thereby increasing the turnover rate of recycled packaging and reducing operating costs for enterprises [7].

5.2 Strengthen the Concept of Green Logistics for Agricultural Products

Deepening and strengthening farmers' concept of green logistics can improve their awareness and enthusiasm for low-carbon environmental protection to a certain extent. Strengthen the publicity and education of green logistics for agricultural products, and provide farmers and agricultural enterprises with regular environmental ethics education to enhance their sense of participation in sustainable social development, so that the concept of green logistics is deeply rooted in people's hearts and they consciously participate in the development of green logistics for agricultural products. Promote the knowledge of green logistics in various ways among farmers and agricultural enterprises to guide them to explore low-carbon and environmentally friendly development paths for agricultural products, and thereby consciously maintain the ecological environment and follow the concept of green logistics in the subsequent development process. In the entire process of the development of agricultural product e-commerce, the concept of green logistics is introduced, and green storage, green packaging, green loading and unloading, green processing, and green transportation are implemented in all aspects of capital flow, information flow, and logistics, emphasizing the concept of green logistics in an all-round way [8].

5.3 Establish and Improve the Low-Carbon and Environmental Protection Logistics System for Agricultural Products

Formulating relevant policies, systems, and regulations can promote the development of agricultural products e-commerce on a low-carbon and environmental protection path to a certain extent. First, establish and improve relevant policies and systems for low-carbon

and environmental protection in agricultural product e-commerce logistics, implement policy preferences, tax subsidies, and financial subsidies for the development of agricultural product e-commerce, guide farmers and agricultural enterprises to implement green logistics for agricultural products through the system, and strengthen real-time supervision by strengthening law enforcement, and randomly check individual agricultural product e-commerce merchants from time to time to infiltrate the concept of low-carbon and environmental protection into all aspects of agricultural product e-commerce; second, establish a green logistics development system for agricultural products e-commerce, improve the corresponding market access mechanism, and accelerate and strengthen the establishment of links such as green storage, green packaging, green circulation, and green transportation, so that agricultural product e-commerce is always under the constraint of low-carbon and environmental protection; finally, give full play to the role of the government, strengthen the comprehensive management and coordination capabilities of farmers and agricultural enterprises, and coordinate various departments such as environmental protection, finance, taxation, food processing, and finance to provide broad social development space for agricultural products green logistics, and accelerate the development of agricultural product e-commerce to a low-carbon and environmental protection green logistics process [9].

5.4 Strengthen the Formulation of Laws, Regulations, and Standards to Standardize the Application and Development of Green Packaging for Agricultural Products

In order to promote the application and development of green packaging, the government needs to play a key role. In addition to strengthening the formulation and implementation of laws and regulations and standards, the government also needs to take a series of measures to encourage and guide enterprises and the public to actively participate in the promotion and application of green packaging. For example, the government can increase support for the green packaging industry by providing policy measures such as tax incentives and financial support to help enterprises reduce costs and improve

competitiveness. At the same time, the government can also raise public awareness and acceptance of green packaging by conducting publicity and education campaigns, and guide consumers to choose environmentally friendly packaging products to promote the popularization and development of green consumption.

5.5 Enhance Environmental Awareness and Promote Green Lifestyles and Consumption Concepts

Enhancing environmental awareness and promoting green lifestyles and consumption concepts are the keys to promoting the development of green packaging, which requires the joint efforts of the government, media, enterprises, and consumers to strengthen the cultivation and education of environmental awareness and behavior. The government can introduce relevant policies to encourage consumers to purchase environmentally friendly products, such as providing certain subsidies or tax breaks for consumers who purchase environmentally friendly products. The media can strengthen the publicity and education of environmentally friendly packaging through advertisements, promotional films, etc., to increase consumers' awareness and trust in environmentally friendly packaging. Enterprises can increase research and development and production of environmentally friendly packaging to launch more types of environmentally friendly packaging products to meet the diverse needs of consumers. Consumers should also consciously choose environmentally friendly packaging products to reduce environmental pollution. Only with the joint efforts of all sectors of society can the wide application and sustainable development of green packaging be achieved.

5.6 Strengthen Technological Innovation and Research and Development to Reduce the Cost and Price of Green Packaging for Agricultural Products

Reducing the cost and price of green packaging is a core element in promoting the development of the green packaging market. The government should increase its support for technological research and development, including not only financial support, but also policy guidance and technology promotion. By

setting up special funds, providing tax incentives, and other measures, enterprises' enthusiasm for technological innovation in green packaging is stimulated. At the same time, the government should guide financial institutions to provide loan and financing support to the green packaging industry to help enterprises solve financial problems and accelerate the industrialization process of green packaging technology. Enterprises should also actively introduce advanced technologies and equipment, optimize production processes, improve production efficiency and quality, thereby reducing production costs. These measures will help reduce the cost and price of green packaging, enhance consumers' purchasing intentions, and further promote the development of the green packaging market [10].

5.7 Optimize the Logistics Distribution System to Reduce the Use of Packaging Materials

The rapid development of e-commerce has brought about the prosperity of logistics and distribution, but at the same time, a large amount of packaging waste has been generated in the logistics process. In order to reduce the use of packaging materials, e-commerce platforms and logistics enterprises can optimize the logistics distribution system and adopt more efficient and environmentally friendly distribution methods. For example, by centralizing distribution to consolidate multiple orders at a distribution center for unified processing, thereby reducing the packaging used for individual orders, and consolidating multiple packages can reduce the use of packaging materials and improve distribution efficiency. Recyclable logistics packaging boxes and bags can also be used, which not only reduces the use of disposable packaging materials, but also helps to build a green logistics system and achieve sustainable development. After being used, recyclable packaging materials can be properly treated and reused in the logistics cycle, greatly reducing the environmental burden. In addition, the use of big data and artificial intelligence technology can also be used to precisely manage the logistics distribution process, optimize distribution routes, and reduce unnecessary packaging and transportation costs [11].

5.8 Strengthen International Cooperation to Promote the Unification of Global Green Packaging Standards

In view of the cross-border nature of e-commerce, the application scope of green packaging extends far beyond the domestic market to international logistics and global trade. Therefore, promoting the unification of global green packaging standards is particularly crucial. To achieve this goal, the government should vigorously promote close cooperation between enterprises and international organizations to jointly carry out the research and formulation of international standards and norms for green packaging. The government should actively participate in international environmental protection exchanges and cooperation projects, introduce advanced foreign green packaging technologies and management concepts, thereby enhancing the international competitiveness of China's green packaging industry. At the same time, cross-border e-commerce enterprises should actively fulfill their social responsibilities and be committed to promoting the process of unifying global green packaging standards. Take Amazon as an example, its "Green Fulfillment" program not only requires logistics partners to use environmentally friendly packaging materials, but also advocates reducing the generation of packaging waste, setting a good example for the industry. In China, e-commerce giants such as Alibaba and JD.com should also actively cooperate with international enterprises to jointly promote the formulation and implementation of global green packaging standards and contribute Chinese strength to the global environmental protection cause.

6. Conclusion

To sum up, the application prospect of green packaging in the field of e-commerce is very broad. Green packaging not only helps to reduce pollution, but also helps enterprises establish a green and environmentally friendly image, and increase consumers' favorability towards enterprises. In order to better promote green packaging, the joint efforts of the government, enterprises, and consumers are needed. The government should strengthen the formulation and implementation of laws and regulations and standards, and encourage

enterprises to adopt environmentally friendly packaging; enterprises should enhance environmental awareness and actively develop and adopt more environmentally friendly packaging materials and technologies; consumers should also continuously enhance their own environmental awareness and support and choose products using green packaging. Looking forward to the future, it is believed that green packaging will definitely play a greater role in the field of e-commerce and make greater contributions to sustainable development.

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