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A New Entrepreneurial Opportunity

- The Commercial Viability of Recycling and Processing Wasted Food

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Abstract: Food waste is a serious problem faced by today's society, leading not only to wasted resources but also to negative environmental and economic impacts. In order to solve this problem, a business model that uses wasted food resources to produce animal feed and agricultural fertilisers has attracted much attention. The aim of this paper is to overview the feasibility of this business model and discuss it in depth. Firstly, this paper analyses the global and Chinese food waste situation. It is estimated that about 13 billion tonnes of food are wasted globally every year, and the problem of food waste is also growing in China. Rapid urbanisation and changes in dietary structure are among the main reasons for the increase in food waste in China. The paper then analyses the impact of market demand and policy support on the business model. With the emphasis on environmental protection and sustainable development, the demand for environmentally friendly products is increasing, providing favourable conditions for the development of this business model. Meanwhile, government policy support is also an important factor in promoting the development of the business model. Finally, this paper assesses the feasibility and sustainability of the business model. Although there are some challenges associated with this model, such as technological innovation and marketing, it is expected to be successful and contribute to solving the food waste problem through the joint efforts of the government, enterprises and the community.

Keywords: Food waste, resource utilisation, business models, sustainable development.

1. Introduction

Food waste is a worldwide problem with serious implications for global food supply, economic development and environmental sustainability. According to the Food and Agriculture Organization of the United Nations (FAO), about 1.3 billion tonnes of food is wasted or lost globally each year, which is equivalent to about one-third of global food production[1]. Food waste not only wastes valuable resources, but also has negative impacts on climate change, land and water use, and biodiversity[2]. Especially in a populous country like China, the problem of food waste is more prominent. With the rapid development of the economy and the improvement of living standards, the dietary structure has changed dramatically, and people's consumption habits have also been transformed, leading to the increasingly serious problem of food waste[3].

In the face of this serious challenge, people have begun to look for innovative solutions to reduce food waste and improve resource utilisation efficiency. Business models that recycle and process

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wasted food resources into animal feed and agricultural fertilisers have attracted much attention. This business model not only reduces food waste, but also provides raw materials for agricultural production, contributing to the development of a circular economy. In addition, this model can create jobs, improve resource efficiency, and reduce environmental pollution and greenhouse gas emissions[2].

However, there are a number of challenges to realising the success of this business model and promoting its application at scale. Firstly, the recycling and processing of food resources requires complex technologies and equipment, which are costly and require significant investment in capital and manpower. Second, market demand and policy support are also key factors in driving the development of the business model. If there is a lack of market demand and government policy support, it may be difficult for this business model to achieve large-scale application[4]. In addition, consumer acceptance of products processed from recycled food resources is an issue that cannot be ignored. If consumers have negative perceptions or misgivings about these products, the development of this business model may be limited.

Therefore, the aim of this paper is to provide an overview of the business model of using wasted food resources to produce animal feed and agricultural fertilisers, and to assess its feasibility and potential impact. By analysing the global and Chinese food waste situation, the current status of and challenges to the development of the business model, as well as assessing the impact of market demand and policy support on the business model, it aims to provide references and recommendations to address the food waste problem and promote sustainable development.

2. Overview of the food waste problem

2.1. Global Food Waste Status

The global food waste problem is becoming increasingly serious, according to the Food and Agriculture Organization of the United Nations (FAO), about 1.3 billion tonnes of food are wasted every year[5]. This waste is not only a huge waste of resources, but also causes serious pollution to the environment and poses a serious challenge to global food security[1]. Food waste does not only occur in developed countries, but also prevails in developing countries, and China, as one of the most populous countries in the world, also faces a serious food waste problem.

2.2. Analysis of food waste in China

The issue of food waste in China is becoming increasingly significant, according to the research from China Agricultural University, the food waste in China is about 40 million tonnes per year, which represents one-fifth of the total amount of food waste in the world[3]. Food waste is predominately concentrated in urban areas in China, and with the rapid development of China's economy and the improvement of consumption levels, the food waste problem shows a rising trend year by year.

3. Classification and assessment of food waste

3.1. Classification methods of food waste

Food waste can be classified according to different characteristics, and common classification methods include classification according to the source, cause and nature of food. According to the source of food, it can be classified into food waste at the production end, distribution end and consumption end; according to the causes of food, it can be classified into different types such as overproduction, distribution loss and overconsumption; according to the nature of food, it can be classified into waste of edible part and waste of inedible part, etc[2].

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3.2. Indicators and methods of food waste assessment

There are various indicators and methods for assessing food waste, with commonly used assessment indicators including food waste volume, food waste rate, food waste index, etc.; assessment methods mainly include statistical surveys, sample surveys, model simulation, etc. By making comprehensive use of these indicators and methods, the severity of the food waste problem and the factors affecting it can be assessed in a more comprehensive manner.

4. Causes and impacts of food waste

4.1. Causes of food waste in the production chain

The main causes of food waste in the production chain include surplus agricultural products, substandard quality of agricultural products, and processing losses of agricultural products[6]. Agricultural product surplus is one of the main causes of food waste, mainly due to overproduction by producers to ensure market supply, resulting in some agricultural products can not being sold in time, and ultimately forced to be discarded[7].

4.2. Impact of food waste in the distribution and consumption chain

The main impacts of food waste in the circulation and consumption links include resource waste, environmental pollution, and economic losses. Food waste in the distribution chain is mainly due to improper management and loss in transport and storage, while food waste in the consumption chain is mainly due to excessive purchase and improper use by consumers[8].

5. Recycling of food waste resources

5.1. Business models for recycling food resources

The business model of recycling food resources includes recycling and processing wasted food into reusable products such as animal feed and agricultural fertiliser[9]. This business model not only reduces the environmental impact of food waste, but also provides additional resources to support livestock and agriculture.

5.2. Analysis of the production process of animal feed and agricultural fertiliser

The production process of animal feed and agricultural fertiliser mainly includes raw material collection, processing and production, and quality inspection[10]. In these stages, it is necessary to make full use of the wasted food resources and adopt scientific and reasonable production processes and management measures to ensure the quality and safety of the products.

6. Technological and cost considerations for recycling food resources

6.1. Technical Means and Their Application

The technical means of recycling food resources mainly include biotechnology, chemical technology, physical technology and other technical means[11]. These technical means can effectively improve the recycling rate of food resources, reduce production costs and improve economic efficiency.

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6.2. Cost-benefit analysis and risk assessment

In the process of recycling food resources, cost-benefit analysis and risk assessment are needed to comprehensively consider factors such as technology cost, market demand, and policy support to ensure the feasibility and sustainability of recycling food resources[12].

In summary, the food waste problem not only causes great waste and damage to resources and the environment, but also has a serious impact on the economy and society. The business model of recycling food resources is one of the important ways to solve the food waste problem, and through the scientific and rational use of wasted food resources, the maximum use of resources and the maximum economic benefits can be achieved. However, to achieve the feasibility and sustainability of recycling food resources, it is necessary for governments, enterprises and all sectors of society to work together, increase investment and research efforts, and promote the innovation and application of relevant technologies and policies.

7. Market demand and policy support

7.1. Analysis of animal feed and agricultural fertiliser market prospects

Animal feed and agricultural fertilisers produced from recycled food resources have a promising future in the market. With the growing concern for sustainable development and resource efficiency, the demand for such environmentally friendly products is also growing[4]. Especially in the Chinese market, where animal husbandry and agriculture are developing rapidly, this resource recycling product has greater market potential. Meanwhile, the government's supportive policies for the environmental protection industry also provide a favourable policy environment for the development of such products[13].

7.2. Degree of support for recycling from policies and regulations

Government policies and regulations on environmental protection and resource utilisation play a crucial role in the development of business models for recycling food resources. On the one hand, the government can encourage enterprises to invest in the resource recycling industry by introducing tax incentives, financial subsidy policies, etc., to reduce their production costs and improve the competitiveness of their products[14]. On the other hand, the government can also formulate relevant environmental protection regulations and standards to regulate the development of the industry, improve the quality and safety level of products, and enhance consumer trust in products[15].

8. Feasibility assessment of the business model

8.1. Strengths and challenges

The business model of recycling food resources has a number of advantages, including environmental protection, resource conservation, and economic benefits. By reusing wasted food resources, it not only reduces environmental pollution, but also provides more resource support for livestock and agriculture and improves resource utilisation efficiency[16]. However, the development of business models also faces many challenges, including uncertainties in technology costs, market demand, policies and regulations[11].

8.2. Strategies for sustainable development

In order to ensure the sustainable development of the business model for recycling food resources, enterprises need to formulate corresponding sustainable development strategies, including

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technological innovation, market expansion, policy advocacy and other measures. The sustainable development of the business model and the maximisation of social value can be achieved by continuously improving the quality and safety of products, reducing production costs, expanding market channels, and strengthening cooperation with the government and the community[17] .

9. Discussion and outlook

9.1. Analysis of the development prospects of business models

With the increasing concern for environmental protection and resource efficiency, the business model of recycling food resources has a broad development prospect. Especially in a populous and agricultural country like China, the development potential of this environmentally friendly business model is huge and is expected to become an important development direction for the food industry in the future[6].

9.2. Future research directions and challenges

Although the business model of recycling food resources has a broad development prospect, it also faces many challenges and uncertainties. Future research can focus on technological innovation, market demand, policies and regulations, and explore effective ways and strategies to solve these problems and promote the continuous development and improvement of the business model[18].

10. Conclusion

Food waste is a worldwide problem with serious implications for global food supply, economic development and environmental sustainability. This paper reviews and evaluates business models for the production of animal feed and agricultural fertilisers from wasted food resources with the aim of exploring their feasibility and potential impact.

Firstly, by analysing the food waste situation globally and in China, it is found that the problem of food waste is becoming increasingly serious, with negative impacts on resource use, the environment and the economy. Then, a business model for the production of animal feed and agricultural fertilisers from wasted food resources is presented, exploring its current state of development, market demand and policy support. Subsequently, the feasibility of the business model is assessed and the challenges and opportunities it faces are analysed. Finally, the future development of the business model is envisioned, and relevant suggestions and reflections are provided.

Overall, the business model of using wasted food resources to produce animal feed and agricultural fertilisers has great potential and room for development. Through the joint efforts of the government, enterprises and all sectors of society, Entrepreneurs can overcome the challenges in technology, market and policy to promote the development of the business model and achieve the maximum use of resources and sustainable development.

In the future, we need to further strengthen the research and promotion of this business model, promote technological innovation and industrial upgrading, improve resource utilisation efficiency, and reduce environmental pollution and greenhouse gas emissions. At the same time, Entrepreneurs also need to strengthen education and raise awareness for consumers, raise their awareness of and support for environmental protection and sustainable development, and promote the joint participation of all sectors of society in solving the problem of food waste.

In summary, the business model of using wasted food resources to produce animal feed and agricultural fertilisers can not only solve the problem of food waste, but also provide crucial support for agricultural production and economic development, and make a positive contribution to achieving the goal of sustainable development.

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