Research on Intelligent Management of Municipal Solid Waste Emergency Supply Chain Based on Computer EPC Internet of Things System Environment

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Abstract. After the Internet of Things was proposed and implemented in the network, the application of this technique has created a lot of fresh techniques and conveniences for various aspects of our life and work. In terms of life, the application skills of EPC Internet of Things have also received attention from all aspects of urban life[1]. It is also honored to be the source of the forces that can promote the economic development of the new generation. In recent years, the continuous implementation of the planned urbanization process in our country has led to an extremely rapid increase in the amount of urban household garbage related to daily necessities produced by residents in the city. The accumulation of various garbage will not only pose a very serious threat to the ecological environment of our lives, it will also have a negative impact on the health of the residents living in the city. Experts believe that the EPC Internet of Things combined with supply chain management is the best and most cost-effective solution to deal with domestic waste.

Keywords: EPC, Internet Of Things, System Environment, Domestic Waste

1. Introduction
The long-term and stable development process of all aspects of our society has made the living standards of the residents in the city unprecedentedly improved. This has also accelerated the urbanization process originally planned in our country. However, all things in life have two sides. The accelerated urbanization process people have a very strong interest in big cities. In recent years, the rapid increase in the number of people in large cities has resulted in more and more domestic garbage generated by urban residents. The insufficiency of the processing capacity and processing speed of domestic garbage in my country is also manifested as soon as possible. In this despicable situation, the accumulated domestic garbage has a very serious impact on all aspects of people's lives and work. The management and clean-up of urban waste has gradually become a common topic among environmentalists and people from all walks of life (see Fig 1).

Some experts proposed to use EPC Internet of Things and supply chain techniques to manage municipal solid waste. Theoretically, this way of disposing of garbage is possible. The Internet of Things we often say refers to a product formed by the combination of product coding and computer
networks. Based on the skills of EPC's Internet of Things, people have proposed supply chain management as a new management model. Indeed, to a certain extent, supply chain management is more practical than general management skills. After its appearance, it has gradually been widely concerned and recognized by people from all walks of life in academia, business and environmental research. Scholars believe that if the EPC Internet of Things and supply chain management are combined to manage municipal domestic waste, the process of waste cleaning will be more optimized.

2. Look at the analysis of the structure of the Internet of Things from various perspectives

2.1. Analysis of the basic structure of the Internet of Things system

In fact, the Internet of Things is a virtualized network composed of three basic functions. According to the Internet of Things in the professional courses of logistics management, we can understand that the first part it contains is the coding technology of electronic products. The second part refers to radio frequency identification techniques. The third part refers to the network-based information system. Of course, we can also understand the third part as a support system for IoT software.

![Figure 1: Large accumulation of municipal solid waste.](image)

2.2. The structure of the Internet of Things viewed from the information network

If we look at the Internet of Things from the perspective of computers, the order of its functions should be diverse\(^2\). However, if we restrict it to logistics management, the order of its functions should be divided into five parts. These parts refer to label coding, radio frequency identification, middleware services, name resolution and information services. From the perspective of logistics management, the sorting of these functions can be used for the logistics delivery of storage.

2.3. Looking at the structure of the Internet of Things from a cognitive system

From our own cognitive domain, the structure of the Internet of Things should belong to three levels of analysis: perception layer, network layer and application layer. The perception layer can also be considered as the organ of perception of the Internet of Things. It can perform various perceptual information operations such as information collection. In the same way, the network layer can be recognized as the nervous system of the Internet of Things. The application layer is the system that controls its capabilities.

2.4. The basic structure of the Internet of Things from the perspective of logistics
If we look at the Internet of Things from common sense logistics, we can divide it into three parts. They are the supervision of product output, the supervision of product logistics delivery and the follow-up operations of completing logistics. The supervision of product output refers to operations such as product coding. The supervision of product logistics delivery should refer to the service of logistics information. The follow-up operation of product logistics should refer to the follow-up of product logistics.

3. Analysis of the management thinking of the treatment of urban domestic garbage today

3.1. Waste management using reverse logistics
From the relevant literature of the logistics profession, we can find that the so-called reverse logistics refers to the ability to return raw materials or semi-finished products for general work to the original factory at low cost. This is from the perspective of the circulation of the company’s products. From the perspective of urban garbage, we can completely understand it as a low-cost or free recycling operation of source garbage.

3.2. Waste management and control using bioengineering methods
This high-level treatment mode is also known as waste treatment called life cycle research. To put it simply, scholars believe that garbage can be divided into three treatment methods. They are classified garbage, incineration garbage and bio-recycling garbage. The first two are relatively easy to understand operations. The use of bio-recycling waste generally uses the chemical reaction of the available waste to produce renewable energy.

3.3. Waste management and control using environmental system dynamics
In the early years, based on this method of trash management and control, an Indian scholar constructed the earliest and simplest dynamic model. The relevant parameters of this kinetic model are mentioned. For example, the output of garbage, the landfill capacity that the environment can give, and the capital problem of garbage management. After research by scholars of different eras, this dynamic model of waste management and control has concluded that increasing the capital for waste management will not improve the overall quality of the environment.

3.4. Looking at waste management and control from the perspective of the supply chain of the Internet of Things
Regarding the way of waste management in the supply chain, many scholars at home and abroad have put forward their own ideas\(^3\). Some researchers in my country have also proposed that under the conditions of daily domestic waste management, only the use of supply chain management can solve the problem of waste disposal from the source. Unfortunately, Chinese scholars have not thought of a method that can be resolutely implemented. Therefore, the control of waste in the supply chain has always been regarded as a theoretical basis.

4. Insufficient management of urban domestic waste today

4.1. Insufficiency in the collection and transportation of domestic garbage
As a big country of garbage production, the total amount of garbage produced by our citizens is very large. Moreover, unfortunately, the regulations on the basic classification of garbage in our country are not perfect. This will adversely affect garbage collection. There are also uneven garbage collection devices. This will have a negative effect on garbage collection. In addition, the process of comprehensive garbage disposal needs to be improved.

4.2. Insufficiency in the treatment of domestic garbage
Generally speaking, my country's Environmental Protection Agency generally divides into three
methods for garbage disposal. They are landfill, compost and incineration. In terms of environmental protection, these three methods will have a relatively bad impact on the environment. Although their processing capacity is relatively large and the cost is relatively low, they can not ignore the land occupation and environmental pollution. It is possible that the method of composting can reduce the pollution of the environment, however, the excess compost will eventually be landfilled.

4.3. Insufficiency of people's concept of garbage collection
It has always been a bad behavior of some low-quality residents in our country to throw garbage at will. This also shows from the side that our country is not enough to educate the masses on the concept of garbage control. In the long run, although we can dispose of the existing garbage, there will be more and more difficult garbage in the future. Therefore, the author believes that the biggest way to control waste is to strengthen quality education for people.

4.4. Unsmooth marketing of products with waste recycling
From the theory of environmental science, we can understand that the products of waste recycling include combustion rods, thermal power and compost[4]. At present, many garbage disposal sites in our country still use compost to produce garbage resource products. This has caused excessive storage of products. Currently, the market sales of these resource-based products are not smooth. This is also an indirect cause of poor waste management.

5. The establishment of a system model for the intelligent management of urban domestic waste emergency supply chain based on computer EPC Internet of Things

5.1. Analysis of the system's garbage disposal process
According to the above description, we know that the main resource product of current domestic waste is biological compost. At present, our garbage disposal methods are only three traditional forms. Due to the insufficiency of processing technology, we can only use composting as much as possible to process garbage in a way that will not damage the natural environment. For the process, we must first carry out garbage classification, transportation and production of garbage recycling products (see Table 1).

| Sequence structure | Element                        |
|--------------------|--------------------------------|
| Starting point     | Garbage placement point        |
| Second point       | Transfer station and collection station |
| Third point        | Garbage treatment plant        |
| fourth point       | Compost distribution           |
| End                | Consumer                       |

5.2. Supply chain model of systematic waste management
As the primary endpoint of the supply chain, the garbage disposal point must be placed at the forefront of the model. The garbage is transported to the transfer station after being piled up at the placement point. After detailed garbage classification in the transfer station, they will be allocated to the disposal site of domestic garbage. Here, a lot of garbage will be incinerated, composted and landfilled. Based on the comprehensive consideration of the environment, the compost distributors will sell the compost to consumers to complete the supply chain cycle.

5.3. Supply chain model with EPC Internet of Things
Although the Internet of Things is a basic way and measure to monitor logistics, it will also play a very important role in the process of garbage recycling. Designers can pass waste from the point of delivery to the various paths of the supply chain of the compost consumer in order, plus the EPC control system. In this way, people can also see the status of garbage transportation and disposal in
certain areas through the Internet of Things. This is also a technological innovation.

5.4. Some issues to be paid attention to in the supply chain model
For the processing of domestic waste, the supply chain model is indeed a simple and fast processing solution. However, in the process of implementing the supply chain model, the relevant companies have to connect their own work to ensure that there will be no problems with the circulation of the supply chain[5]. According to the characteristics of the operation of the supply chain model, whether the demand for compost is insufficient or the accumulation has been saturated, which of the two will have a great negative impact on the supply chain.

6. The feasibility of intelligent management of urban domestic waste emergency supply chain based on computer EPC Internet of Things

6.1. It can fully deal with the comprehensive treatment of garbage in complex situations
From a cognitive perspective, we can completely regard every piece of garbage as a logistics transportation product. The operation process of the supply chain model is essentially the process of logistics transportation. It's just that its specific meaning will change accordingly. Although waste disposal is a more complex form of integrated logistics, the supply chain management of EPC's logistics network can still be used.

6.2. It can alleviate the accumulation of large amounts of garbage in our country as soon as possible
My country is the most populous country in the world. My country is also the country that can produce the most garbage in the world. Although our environment has not been severely hit yet, for now, the rapid accumulation of garbage will also have a severe impact on our health and ecological environment. The adoption of the Internet of Things can absolutely and quickly help alleviate the phenomenon of garbage accumulation, which is also a tool we need.

6.3. The cost of IoT supply chain management is relatively low
In fact, in the early years, we have come up with many ways to dispose of garbage according to our ideas. However, some of these methods will pollute the environment, and some will waste costs. In recent years, the emergence of the Internet of Things has also found a solution to the problem of garbage disposal[6]. The cost of managing the supply chain of the Internet of Things is much lower than that of garbage disposal in the early years. There is no doubt that this will be a very mature way of garbage disposal in the future.

7. Conclusion
Based on the analysis of the above article, we can see that the management and control of urban domestic waste combined with the supply chain and EPC Internet of Things is of more practical significance. Although it is only a theoretical method at present, the author believes that it will become the most effective way of garbage disposal in our country someday in the future.

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