

Analysis on the Application of Reverse Logistics in Housing Construction Project Management

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Abstract

The Housing construction project management is apply to the content and method of management to the construction the projects, To guide the all aspects, each phase, planning, organizing, monitoring and control in order to achieve the expected objectives of housing construction project management. The paper incorporating the concept of "reverse logistics" and provides a simple explanation of material utilization in housing construction projects. It in order to reduce construction costs and minimize environmental pollution and strive to achieve achieve environmentally friendly and resource-efficient "green housing construction projects".

Keywords

Housing Construction Project Management; Characteristic; Reverse Logistics; Application.

1. Introduction

The housing construction project has the following characteristics, such as "large project amount", "large investment", "longer project duration", "large consumption of materials and consumables", and "large dependence on the outside world". In order to reduce the construction cost of the house construction project, this paper introduces the "reverse logistics idea" into the construction of the house construction project, so as to reduce the construction cost and increase profits; Reduce the environmental pollution caused by construction, improve the environmental quality of construction personnel's production and life, and create strong conditions for civilized construction and green construction.

2. Research Status

In 1981, American scholars Douglas Lambert[1] proposed the concept of reverse logistics for the first time. They defined reverse logistics as: reverse logistics flows in the opposite direction of normal logistics, that is, contrary to the normal flow direction of most goods. In 1989, Murphy and Poist[1] defined reverse logistics as "the flow of goods from consumers to producers". In 1992, CLM[2]gave the definition of reverse logistic: it is a kind of logistics activities including product return, material replacement, item reuse, waste disposal, reprocessing, maintenance and remanufacturing. In 2001, Xiang Shengbin[3] published an article "Reverse Logistics and Environmental Protection" . In this paper, it briefly discussed the concept of reverse logistics and the construction principles of reverse logistics, combined with the cost of reverse logistics, discussed and analyzed the possibility of establishing reverse logistics for enterprises, and proposed that from the perspective of environmental protection, government regulation and supervision play a decisive role in the establishment and implementation of reverse logistics for enterprises. In 2002, Zhu Daoli [4] published Enterprise Logistics Management and Environmental Protection, the starting point of which was to elaborate the positive significance of reverse logistics to environmental protection from the perspective of business ethics. In

2003, Revlon [5] (European Working Group on Reverse Logistics) defined reverse logistics as: the process of planning, implementing and controlling raw materials, intermediate stocks, end products from the point of manufacture, distribution or use to the point of recovery or appropriate disposal. In the narrow sense, reverse logistics refers to the process of remanufacturing, reuse or recycling of products that have been discarded. The broad meaning of reverse logistics also includes reducing the use of resources and effective return management. In 2007, Peng Yuxiang [6] published Research on Reverse Logistics in Road Engineering. According to the actual situation of waste generation and treatment in road engineering construction, this paper established a double-layer linear programming model and found the optimal solution, and finally applied the optimal solution to guide the construction of reverse logistics network in road engineering. In 2009, He Bo [7] published Research on the Design of reverse logistics Network Considering Customer Choice Behavior. In this paper, the design of reverse logistics network is described by double-layer programming modeling from the perspective of the interests of enterprises and customers respectively. Finally, a mathematical model is designed to solve the problem, the logistics network structure of the enterprise is determined, and the effectiveness of the model and algorithm is verified by an example. In 2010, starting with the connotation of reverse logistics, Xie Xia [8] analyzed the significance and necessity of implementing reverse logistics: reverse logistics is an important means for the development of social circular economy, and an important way for enterprises to reduce production costs and increase enterprise benefits. According to the characteristics and current situation of our country, the author puts forward some measures to implement reverse logistics: government legislation, encouraging technological innovation of enterprises, vigorously developing third party logistics and so on. In 2010, Su Jian [9] analyzed various obstacles to the development of reverse logistics in China by referring to the experience of foreign countries in developing reverse logistics, and put forward corresponding countermeasures and suggestions. In 2013, Hu Yunpeng [10] published "Research on the Optimization of Reverse Logistics Network Results in Highway Renovation Projects". In this paper, based on the characteristics of waste in road engineering, the corresponding reverse logistics network was established, and the two-layer programming model was used to guide the location of logistics facilities, so as to achieve the minimum total system cost. At last, the effectiveness of reverse logistics network design is verified according to the concrete case of highway reconstruction project.

At present, the research on reverse logistics mainly focuses on road engineering construction, engineering machinery manufacturing, urban garbage recycling and other aspects, while the "reverse logistics thought" has not been applied to the construction of housing engineering. This paper introduces the "reverse logistics thought" into the housing construction project, considers the specific characteristics of the housing construction project, and puts forward two principles of "reverse logistics thought of housing construction project". Combined with concrete examples, the application of "reverse logistics idea of housing construction engineering" is briefly summarized.

3. The Necessity of Implementing Reverse Logistics

3.1. The Definition of Reverse Logistics and the Characteristics of Housing Construction Projects

In our country, Logistics as a new industry, development time is relatively short, according to the 2001 "China national standard · Logistics terms", reverse logistics is divided into two major categories: one is Returned Logistics: The physical flow of goods formed by the return of unqualified products to the factory for repair, return of goods and the return of packaging containers used in turnover from the demander to the supplier; The other is Waste Material

Logistics: the items that have lost their original use value in production and life are collected, classified, processed, packaged, transported and stored according to actual needs, and the discarded products are remanufactured, reused or recycled.

In short, reverse logistics refers to the process of returning useful waste in the hands of customers to the seller in a paid or free way, and then the manufacturer processes the waste into new goods. The seller here may be any node in the supply chain, such as waste from customers may be returned to upstream suppliers, manufacturers, or downstream distributors and retailers.

3.2. Omissions in Current Housing Construction Project Management

The current technical routes and measures of housing project management involve many aspects such as construction safety control, construction quality control, construction schedule control and construction cost control. Among them, the most important is to control the construction cost under the premise of paying attention to safety and quality, which is mainly manifested as the following points: the use of advanced technical means and construction methods to speed up the construction progress and reduce the construction cost; Develop an effective incentive mechanism to improve the work efficiency of staff and construction personnel under the premise of ensuring quality, so as to reduce project costs; Prepare the construction organization design according to the actual situation of the project, do a good job in the organization and planning before the construction, determine the construction process, make the construction process not chaotic, narrow the construction gap, so as to improve efficiency and reduce the project cost; Formulate various management regulations, so that various behaviors during the construction project are subject to certain constraints; Eliminate unnecessary institutions in the project department, achieve the purpose of reducing personnel wage costs by "streamlining troops", and thus reduce project operating costs.

The current housing construction project management has taken many effective measures to reduce the project cost, but the housing construction project management regulations have not formulated any use of "reverse logistics idea" to recover "waste", in order to achieve "waste into treasure" to reduce the project operating cost measures.

3.3. Necessity of Introducing Reverse Logistics Idea

The vice president of Sears, a retail giant, once commented on "reverse logistics" : "Reverse logistics may be the last virgin territory for enterprises to reduce costs".

Compared with the developed countries, China's reverse logistics management and research are still in the initial stage, but the Chinese enterprises really taste the sweetness of reverse logistics is extremely rare. In this case, how to apply the "reverse logistics transport idea" to the housing construction project management, reduce construction costs, increase profits; Reduce the environmental pollution caused by construction, improve the environmental quality of construction personnel's production and life, and create strong conditions for civilized construction and green construction.

From the perspective of the factors affecting the comprehensive benefit of housing construction enterprises, the project management occupies an important position. Strengthening the management of housing construction projects is not only conducive to ensuring the safe construction of housing construction projects, but also to ensuring the timely and high-quality completion of housing construction projects. Strengthening the management of housing construction projects helps to improve the enthusiasm of all staff, fully improve the efficiency of manpower and material resources, and help to improve the technical level and overall literacy of industry personnel.

Because the housing construction project has the characteristics of "large engineering quantity", "large investment", "long project duration", "large consumption of materials and consumables"

and "large dependence on the outside world", in order to reduce the construction cost of the housing construction project, this paper puts forward some new methods for the housing construction project management based on the "reverse logistics idea" and on the basis of ensuring the quality and safety of the project. In this paper, it is summarized into the following two principles: the principle of material circulation; Principle of energy utilization.

4. Specific Application of Reverse Logistics

4.1. Establish Reverse Logistics Management Department

In order to reduce project operation costs, reduce environmental pollution, better realize civilized construction and ecological construction, and increase waste recycling and utilization, the reverse logistics management department is established according to the three characteristics of housing construction project construction: "long project duration", "large consumption of materials and consumables", and "large dependence on the outside world". The main responsibility of the department is to carry out unified recycling and treatment of waste produced during the implementation of the project.

The main functions of the reverse logistics Management Department also include the following aspects: Planning the waste material classification of the project: strictly classifying the waste according to the existing national classification standards combined with the actual situation of the waste generation of the project; Waste recycling: Waste recycling refers to the collection of waste generated in the process of project implementation for unified treatment, which will be introduced in detail in the subsequent part of this paper; Supervision and management functions: supervise and record the material recovery process of the project, and finally incorporate it into the departmental evaluation and assessment; Waste reprocessing and treatment functions: according to the characteristics of the recycled waste you want to determine the feasible treatment plan, including but not limited to direct sales to waste treatment plants, splitting into parts for reuse.

4.2. Specific Application of Reverse Logistics Thought

4.2.1. Reverse Logistics of Plastic Waste in Living Areas

Waste recycling in the dormitory area of the project mainly refers to the disposal of waste mineral water bottles, glass bottles, engineering plastic films, etc. generated from the life of employees during the project implementation, see Figure 1.

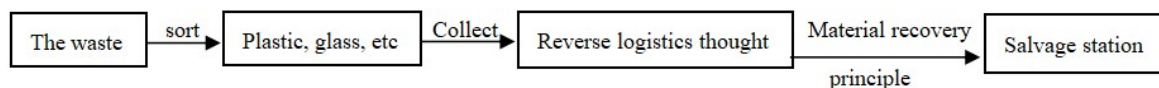


Figure 1. The chart of bottle and cable recycling processing technology roadmap

The recycling technical route of the above plastic bottles and glass bottles is planned, supervised and implemented by the "reverse Logistics Management Department", and the technical roadmap process is explained as follows: Recycling of plastic bottles and glass bottles: for example, recycling of the material circulation principle of the reverse logistics idea of drinking mineral water bottles, beer bottles and wine bottles. The "reverse logistics Management Department" must make mandatory provisions for the recycling of this kind of waste generated during the project implementation process, and set up recycling points at all levels of construction units, departments and offices; After the collection of such waste, it is classified according to the nature of the waste (glass bottles, plastic bottles are separated), classified and packaged for storage; The disposal of such waste: directly sell to the waste recycling station.

This mode of treating wine bottles and mineral water bottles with reverse logistics thought protects the local ecological environment and can also increase additional small income for the project, and also increases the recycling rate of resources to another extent, creating favorable conditions for "green construction" and "civilized construction".

4.2.2. Reverse Logistics Treatment of Kitchen Waste in Living Areas

Kitchen waste in living areas: This kind of waste belongs to recyclable energy waste, which mainly includes kitchen waste, dead leaves, melon peel and other garbage that can be decomposed and utilized by microorganisms. The treatment process of this kind of waste see Figure 2.

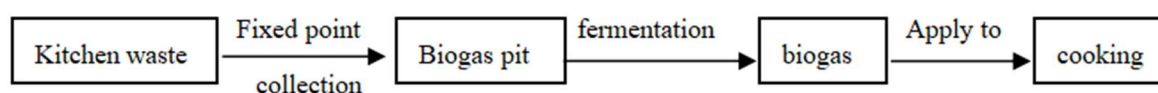


Figure 2. The chart of Kitchen garbage technology roadmap

The "Reverse Logistics Management Department" is responsible for the planning, supervision and implementation of the technical roadmap for the disposal of kitchen waste. The process of the technical roadmap is explained as follows: Recycling of kitchen waste: This kind of waste is recycled according to the energy utilization principle of reverse logistics. Establishment of biogas digester: the biogas digester is established under the leadership of the "reverse logistics Management Department" and is used as the septic tank of the house in the later stage; The "Reverse Logistics Management Department" is responsible for recycling this kind of waste and sending it to the biogas digester of the project department. This mode of "energy utilization principle" treatment of kitchen waste not only reduces the possibility of kitchen waste rotting and producing odor, but also reduces the possibility of mosquitoes and flies breeding, thus improving the production and living environment of the project Department. On the other hand, it also reduces the dependence of the project on external gas and electricity energy, and also increases the recycling and utilization rate of resources, creating favorable conditions for "green construction" and "civilized construction".

4.2.3. Reverse Logistics Treatment of Discarded Steel During Construction

Discarded steel in construction: This kind of waste belongs to recyclable material waste, which mainly refers to the steel that appear in the process of production and construction. The treatment process of this kind of waste, see Figure 3.

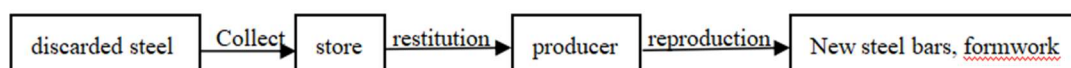


Figure 3. The chart of Scrap steel and template recycling technology roadmap

The "Reverse Logistics Management Department" is responsible for the planning, supervision and implementation of the above technical roadmap for the disposal of scrap steel. The process of the technical roadmap is explained as follows: The recycling of scrap steel in short segments: The recycling of such scrap steel is carried out according to the material circulation principle of reverse logistics thought, and the implementation is led by the "reverse logistics Management Department"; Signing a recycling contract with the material supplier: the contract is aimed at providing that the material supplier recycles these discarded steel joints at a reasonable price; Signing the reverse transport requirements contract: the contract is designed to provide that when the material supplier transports the materials to the project department, the vehicle responsible for transportation will transport the discarded steel joints back by the way.

This kind of waste short steel section uses the "material circulation principle" mode for processing, which reduces the waste of materials, increases the additional income of the project, reduces the cost of the project to the greatest extent, saves the project cost, and also increases the recycling rate of steel to another extent.

5. Conclusion

Based on the research background of housing project management, this paper applies "reverse logistics thought" to project management by consulting relevant literature. According to the characteristics of building engineering, the principle of material circulation and the principle of energy utilization are put forward, and their application is simply explained. Finally, this paper analyzes the impact of reverse logistics management on project costs and the benefits to ecological environment. Although reverse logistics cannot bring huge direct economic benefits to enterprises, it is of great significance to environmental protection and sustainable utilization of resources and has great development potential. The "reverse logistics thought" of housing construction project management not only promotes the application of reverse logistics theory, but also promotes the development of housing construction project management theory.

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