

Study on the Building of Performance Evaluation Index System for the Third Party Reverse Logistics Enterprise under Circular Economy

Guangqian Xin

Management School, Shandong University of Technology, Zibo, China

EMAIL: xgqsj@sdut.edu.cn

Abstract: Firstly, the paper introduces the basic theories of circular economy and third party reverse logistics, then analyses the role of the performance evaluation for the third party reverse logistics enterprises under circular economy. Finally, according to the principles of circular economy and the features of third party reverse logistics enterprise, the paper presents the performance evaluation index system for third party reverse logistics enterprise, which includes five aspects: economic benefit, customer service, environment, business operation and innovation.

Keywords : Circular Economy, Third Party Reverse Logistics Enterprise, Performance evaluation.

I. Introduction

With the contradiction between development and the environment, shortage of resource supply and environmental deterioration has become a bottleneck restricting the development of society. Circular economy is the ideal economic model to realize the sustainable development in the 21st century, the foundation of circular economy is simply the most effective use of resources and environmental protection. Reverse logistics is an important link of realizing circular economy, developing reverse logistics can save resources, improve customer satisfaction, reduce environmental pollution. The third party logistics enterprise is an important carrier to achieve reverse logistics, thereby establishing performance evaluation index system for third party reverse logistics enterprise is conducive to promoting effective operation of circular economy.

II. Circular Economy and Third Party reverse Logistics

Circular Economy

The word of circular economy was first put forward by American economists K.Boulding in the mid 1960s, he thought that circular economy was ecological economy based on ecology law, which made clean production, resource recycling, efficient use of waste and sustainable development organic integration. The 1972 Stockholm Conference on Human Environment and the 1992 United Nations Conference on Environment and Development signed a declaration on Sustainable Development, marking

the official birth of circular economy. Circular economy is relative to traditional economic.

The traditional economy is "Resources → Products → Waste → Pollutants," one-way flowing linear open-loop economy, such a model of economic development is extensive and one-time use of resources, resource consumption and environmental pollution is serious. Circular economy is "Resources → Products → Renewable Resources → Product", closed loop of circular economy, so that it can make resources used reasonably and efficiently in the economic cycle, and fundamentally solve the contradiction between economic development and environmental protection to achieve harmonious cycle of economic system, ecological systems and social systems^[1]. Circular economy has efficient and recycling use of resources as the core, and it is the economic growth mode in line with the concept of sustainable development. Circular economy is based on the "Reduction, Reuse, Reclamation" as the principle, low consumption, low emission, high efficiency as the basic feature, and it is a fundamental change in the traditional growth model of mass production, mass consumption, a large number of abandonment.^[2]

Third Party Reverse Logistics

Logistics Management Institute of American gave the following definition of reverse logistics: Reverse logistics is the process of planning, implementing and controlling to the flow and storage of raw materials, work in process, finished products and related information from consumption to production in order to recover the resources or the proper disposal of waste in the efficient and appropriate costs.^[3] Third party reverse logistics refers to the services provided by the middlemen in the reverse logistics channel, middle men provide all or part reverse logistics services that businesses need in the form of the contract within a certain period of time, the services include returned goods, transport of scrap materials, re-packaging, storage, maintenance, re-distribution and other business in accordance the requirements of business^[4].

Third party logistics in China's logistics terms is defined as logistics business model to provide reverse logistics services outside the enterprises of supply-side and demand-side. Reverse Logistics is a highly efficient distribution process of moving products from the sources of consumer to the sources of production (including producers and customers of supply chain) in order to recover the value and correctly

handle waste material, and it includes returned logistics and waste material logistics.

Reverse Logistics Achieving Circular Economy

Circular economy is a kind of ecological economic model, in this mode, the substance is circulating, and in constant flow process to create value. Circular economy will change resources from no value into valuable resources. The substance is circular flow process of resources→ products →renewable resources, renewable resources are the key link of circular economy, so the circular economy of enterprises need achieve the recovery of waste and resource waste.

"Recycling→ decomposition→ Regeneration → re-use" is concrete process of resource recycling in circular economy, reverse logistics activities of business recycle products of losing their use value, then dispose through resource treatment, recycle useful material and become raw materials for production. Both have a common goal to become waste into recycling resources. The implementation of circular economy has reduction, reuse and recycle as the criterion, the implementation process of reverse logistics follows the criterion of circular economy.

III. Significance of performance evaluation for the third party reverse logistics enterprise under circular economy

It is imperative for third party reverse logistics enterprises to develop circular economy and green logistics. Building performance evaluation index system for the third party reverse logistics enterprises under circular economy has great significance.

The need of realizing sustainable development for China

In the 21st century, China faces major crisis of resources shortage, environmental degradation, population explosion and others. Therefore, China must follow the development model of circular economy, and implement green manufacturing and green consumption. Third party reverse logistics is the channel of green producing and green consumption, if there is no development of third party reverse logistics, green revolution would become an empty word. Therefore, China will achieve sustainable development, we must develop third party reverse logistics. Performance evaluation of the third party reverse logistics enterprises based on circular economy is conducive to learning about the development of the region circular economy for governments at all levels so as to formulate relevant macro-control policies.

The Need of Developing for Third Party Reverse Logistics Enterprise

If the third party logistics enterprise has high level in performance evaluation of development and application, it will bring outstanding performance. In order to effectively utilize resources, energy and reduce environmental pollution,

we must constantly evaluate the performance of enterprise. Use of resources and the effect of reverse logistics are compared with the true goal of logistics enterprise, and it can reflect operating results and development level of circular economy and find out their advantages and disadvantages, so as to provide data for enterprise drawing up development planning and strategy, make enterprise change from pursuing short-term interests to pursuing long-term stable development, from internal economic benefit to coordinated development of economic benefit, social benefit, environmental benefit, and better implement development mode of circular economy.

IV. Building performance evaluation index system for the third party reverse logistics enterprises under circular economy

It is vital important for logistics companies to build an effective and objective evaluation system, which can judge the level of their actual operations and development level of circular economy, improve management level, develop green logistics, improve the overall efficiency and sustainable development ability.

Principles of constructing performance evaluation index system for the third party reverse logistics enterprises under circular economy

Building performance evaluation system according to the basic principles of circular economy and own characteristics of logistics enterprises should follow the following principles:

Systematic principle: Enterprise performance should be concentrated expression of production and operations, cutting down the strength of any aspect is likely to affect the overall performance. Therefore, the performance evaluation index should be integrated and reflect the performance of the whole logistics enterprises.

Scientific principle^[5]: Performance evaluation index system of the third party reverse logistics enterprises based on circular economy should be based on fully understanding and scientific research. The concept of specific indexes must be clear, has certain scientific connotation, thus it can objectively reflect the development characteristics of enterprise, and better measure level of the main goals of circular economy.

Representative principle: The characteristic of indexes is almost equivalent, the indexes exist certain alternatives. Therefore, establishing index system should choose those, which have strong representative and can comprehensively reflect the performance of logistics business, thereby logistics enterprises can reduce the workload, reduce errors and improve efficiency.

Operational principle: Evaluation index system should be operational, index selection should conform to the actual

situation of logistics enterprises to improve practical value of the evaluation results.

Dynamic principle^[5] : In view of the development of circular economy to go through the time course, we should fully consider dynamic characteristic, these indexes can better describe, measure the future development trend so as to forecast and make a strategic decision.

Building performance evaluation Index System for the Third Party reverse logistics enterprise under circular economy

Due to the particularity of the third party reverse logistics and the circular economy, enterprises must establish a set of financial and non-financial indicators , thus we can systematically and comprehensively evaluate business performance, and improve the level of long-term performance. The balanced score card is a kind of new thinking in performance management. It reflects the balance of the financial and non-financial measure method, the long-term goal and short-term goal, external and internal, result and process, management performance and operating performance and many other aspects, thus they are able to reflect comprehensive management of organization, make performance evaluation perfect, be good for long-term development of the organization. Performance evaluation for the third party reverse logistics enterprise under circular economy can use the idea of the balanced score card, from the point of the enterprise financial, customer, internal business process and learn and grow, we can establish five indicators, economic benefit, environment, customer service, business operation, and innovation, specific indexes such as table 1.

Table1. Performance Evaluation Index System for the Third Party Reverse Logistics Enterprises under Circular Economy

Economic Benefit Indexes	Return on Total Assets = (Total profit + Interest) / Average total assets ×100%
	Turnover Rate of Total Assets = Net Operating Revenues / Average Total Assets ×100%
	Rate of Assets to Liabilities = Total Liabilities / Total Assets ×100%
	Growth Rate of Operating Revenues = Total Growing Amount of Operating Revenues for Current Year / Total Operating Revenues for Last Year ×100%
	Rate of Accumulation = Total Growing Amount Owner’s Equity for Current Year / Total Owner’s Equity at the Beginning of Year × 100%
Customer Service Indexes	Market share
	Customer retention
	Customers gain rate

	Customer satisfaction
	Profit contribution rate of customer
Environment Indexes	Rate of Energy Consumption = Total Energy Consumption/total Revenues ×100% Rate of Resource Consumption = Total Resource Consumption / Total Revenues ×100%
	Rate of Clean Fuel Use = Clean Fuel Use / Total Fuel Use ×100%
	Rate of Waste Disposal = Amount of Waste Disposa / Total Waste Disposal ×100%
	Rate of Environmenta Investment = Amount of Environmental Investment / Total Operating Revenues × 100%
	Waste emissions
Business Operation Indexes	Rate of Service Network Coverage = Services Coverage Area of Logistics Enterprise / Product Sales Area of Manufacturing Enterprise × 100%
	Information level
	Utilization efficiency
	Stock Accuracy = Accurate Number of Stored items / Total Number of stock × 100%
	Rate of Accurate Delivery = Accurate Number of Delivery for Current Year / Total Number of Delivery × 100%
Innovation Indexes	Recycling cycle
	Rate of Intellectual Capital = (Intangible Assets of Enterprise + Human Assets of Enterprise) / Total Assets of Enterprise ×100%
	Rate of New Service Revenues = New Service Revenues of Enterprise / Total Revenues of Enterprise × 100%
	Total man-hours Growth Rate of Employee Training = (Total man-hours of Employee Training for Current Year — Total man-hours of Employee Training for Last Year) / Total man-hours of Employee Training for Last Year ×100%
	Input intensity of green technological innovation

The five indicators have causal chain relationships, third party reverse logistics enterprises want to achieve good financial performance and satisfy investors, they must first satisfy customers because customers are the providers of corporate profits and also demanders of circular economy. To customers satisfaction, enterprises must provide superior products and services and better implement circular

economy. These depend on the improvement of internal business process and technical innovation. Technological innovation is a vital link of business process. While these must depend on high-quality staff in good business environment to actively complete. So the indicators closely link together through the relationship of cause and effect.

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Background of Authors

Xin Guangqian, Master Degree from Tianjin University of Finance & Economics, Associate Professor, Research Field: Logistics and Production Operation Management.