

Research on Strategies of Developing Green Logistics

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Abstract—The characters of Chinese logistics show that there are many inadequacies in the development of green logistics. This paper analyzes the factors which impact the application of green concepts in logistics industry, and advocates some new strategies for accelerating the development of green logistics with the following aspects: technology, management system, government support, and environmental measures. The purpose of the paper is to develop the green logistics steadily in china from the practical measurement perspective, and provide a new vision for other developing countries in the world.

Keywords-green logistics; development strategies; Developing countrie

1. Introduction

With the modernization of Chinese society and the public awareness of environmental protection, logistics industry in China has changed the environment in all perspectives. Green logistics is concerned the production and distributing goods in a sustainable way, and takes account of environmental and social factors. Green Logistics activities include measuring the environmental impact of different distribution strategies, reducing the energy usage in logistics activities, reducing waste and managing its treatment (Abdelkader Sbihi, Richard W. Eglese, 2010). Modern green logistics management as a kind of new logistics management mode, accords with the developmental requirement of the times and the benefit of human survival and development, and represents the developmental direction and trend of future logistics management (Da Chen, 2001). More and more people concern green logistics because traditional logistics can not meet the requirements of modern society and has huge impact to the environment. Therefore, the interest in developing green logistics from companies, government, and public is increasing dramatically. However, green logistics is a pretty new concept in China, and is limited by the knowledge, policies and regulations, infrastructure, information technology, and personnel training. Therefore, there are still many barriers for developing green logistics in China and need to remove those barriers for better performance.

2. The necessity of developing green logistics

2.1. The development of green logistics is an important issue to implement the sustainable development strategy.

Sustainable development strategy means the social economic development must associate with the natural environment, social environment, and coordinate with the resource to ensure the society development has a benign circulation. At present, the economic and social development faces many social problems in China, and the environmental pollution is a serious problem. Green logistics emphasizes the development concept of resource conservation and environmental protection. Implementing green logistics is an essentially way to promote the social and economic sustainable development.

2.2. Developing green logistics can encourage enterprises to obtain new competitive advantages

Along with the development of economic globalization, foreign logistics enterprises have been tackling Chinese market, which will bring huge pressure and shocks to domestic logistics enterprises. Meanwhile, the serious environmental problems and the restriction of laws and regulations, compels enterprises to resolve the problem in economic activities. For the sustainable development, the enterprise should establish the green logistics system and pursue higher competitive advantages through the green logistics strategy. Obviously, developing green logistics is not only the need of society, but also the need of enterprise. Furthermore, green logistics can reduce the operating cost sharply. The statistics indicates that only 10% of time is for manufacturing, and almost 90% of time is for the transportation, loading and unloading, package or secondary processing and information processing during the processes of products from manufacturers to consumers. Therefore, logistics specialization undoubtedly is a key method to reduce the cost. Green logistics is not only significant to reduce the general logistics cost, but also more important to environment, energy-saving and high efficiency. Enterprises should speed up the development of green logistics, so as to obtain new competition advantages and deal with future challenges. (Guochuan Yang, 2010)

2.3. Developing green logistics can increase people's living standards

Developing green logistics can efficiently reduce the traffic pollution and optimize the people's living environment. Meanwhile, the green logistics develops quickly and meets exactly the need of life improvement especially the growing of green consumption. To realize the green consumption, green products must be manufactured with environment friendly and be delivered to consumers by green logistics. It can be seen that green logistics has a very important status in people daily lives.

3. Technical measures to develop green logistics

3.1. Environmental transport

Transportation is one of the most important factors in logistics functions, and also is one of the biggest pollution makers to environment. Environmental transport should base on reducing energy consumption and cutting down exhaust emissions. To attain the environmental transportation, several main aspects should be considered as follows:

Making freight network plan and distribution centre layout systematically. Optimizes various transportation dispatching, and selects transport routes rationally, to avoid idle travelling, convection transport, circuitous transport, and repetitive transport; to improve vehicles' actual load rate and round-trip carrying rate effectively.

Improve the internal-combustion engine technology of the transport vehicle and priority to use clean fuel. Reduce fuel consumption and emissions during the transportation process, and realizes the targets of energy saving and emission reduction.

Prevent transportation vehicles from oil spilling and avoid to harming the environment severely (Xie si Xin and Wenfeng Wang, 2010). Nowadays, oil pollution is becoming more and more serious especially in Maritime transport. Oil pollution will be very difficult to control in the event of marine accidents and affects the marine environment in a long period of time.

Advocate more logistics companies to load freight by "carpooling transportation". For many sporadic freight transportations, logistics enterprise always only considers his or her transportation vehicles and freight sources. However, some vehicles are not fully loaded but cannot wait for other goods because of the arrival time restriction, which results in the waste of loading resources and high cost of transportation. Consequently, logistics enterprises should share the information and resource, and implement the cooperative dispatching strategy. In the cooperative dispatching mode, various enterprises transport their freights by sharing a vehicle, and split the cost based on their respective quantity of goods and transportation distances. As the result, the resource utilization rate can be increased as high as possible. This mode is especially suitable for several logistics enterprises in the same logistics circles. The dispatching mode is shown in figure 1.

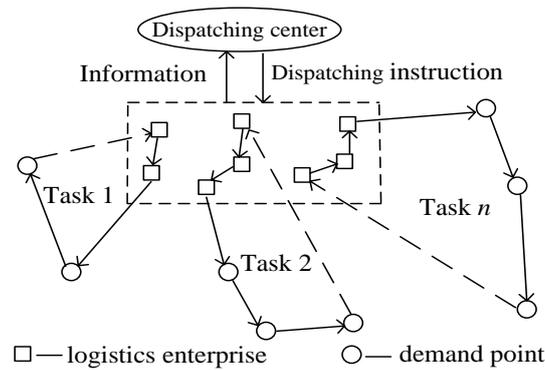


Figure 1. Cooperative dispatching mode

3.2. Green storage

The purpose of green storage is to optimize the warehouse layout and inventory strategy, to reduce the logistics cost and the pollution to the environment. Green storage requires reasonable warehouse layout, whether dense or loose layout, it will produce the waste of resources. Green storage needs to optimize the inventory strategy. On one hand, it will occupy too much fund and lead torpidity of turnover fund especially increasing storage costs if the materials storage is too large. On the other hand, it will produce shortage cost if the materials storage is too small. The enterprise must trades off two options and finds out an optimized alternative. For those reasons, it is necessary to analyse and research on the quantity of supply and demand, and calculate the inventory cost rate in order to adopt the appropriate inventory strategy and reduce inventory cost.

3.3. Green packaging

As one of logistics functions elements, packaging is an important measure in logistics and marketing sales. Green packaging requires the logistics enterprise to use an appropriate packaging material which can recycle, and no harmfulness and pollution to human being and the environment. The green packaging goes through the entire logistics process and requires companies to prevent the environment from being polluted by the packaging in manufacturing process, logistics, marketing activities, and consumption area. Logistics enterprise which provides packaging service should reform packaging with environmental means, such as using environmental materials, improving material utilization, designing foldable pack to raise vehicle volume utilization rate, establishing a packaging recycling system and so on (Sixin Xie and Wenfeng Wang, 2010) .

4. Organizational Management

For the development of environmental management, the organizational support is essential because the resources which are required for adopting green practices will be more easily to available and the employees will be motivated to implement green plan. Above all, the top management plays an important role in organizational support. Many green practices require the collaboration and coordination of different departments and divisions in practice. In order to ensure successful implementation, green initiatives are usually endorsed and advocated from the top management. The central task of top management is to acquire resources and allocate them efficiently so that the company is able to adopt green practices to achieve environmental competitive advantage (Gonzalez Benito, 2006).

Furthermore, the organization should strengthen the construction of logistics information system to share logistics information fully and raise the utilization of logistics resources. Moreover, the enterprise should apply the standardized management system, establish perfect organization structure and management standard, coordinate all sorts of relevant standard, and provide the development platform for green logistics. Therefore, we expect that organizational support will positively affect the adoption of green practices for Chinese logistics companies (Chiehyu Lin and Yihui Ho, 2010).

5. Government Support and Relevant Legal System

Government should motivate and guide logistics enterprise business behaviours. On one hand, the government gives “green taxation”, “green subsidies” to the enterprise which has the positive external effects. Otherwise, the government makes the limitation to those who have uneconomical logistics activities and damage to the environment. Finally, the government encourages the public to pay constantly attention to develop green logistics. On the other hand, develop technical index system of green logistics, quantitatively manage the whole social logistics activities by electronic means, and make it operationally and comparatively to implement the management by relevant departments (Sixin Xie and Wenfeng Wang, 2010). All in all, government plays a key role in developing green logistics in modern society. Government as the community manager, not only regulates the public behaviour, but also more concerns the sustainable development of society. Therefore, the government not only focus on economic development, but also pay attention to the environmental which impacted by the economic development, and green logistics can ensure the sustainable development for the economy development. Green logistics will be unable to perform without the government participation.

6. The Environmental Measures

From the environment measures perspective, there are some tactics for developing green logistics in China:

Improve the public consciousness of environmental protection and. Although the environmental awareness is increasing dramatically by more and more enterprises and consumers, it still could not keep up with the need of economic development. It is necessary to propagandize environmental awareness by public service announcement and controlling economic lever measures and public service. From the public consciousness perspective, promote the development of green logistics in modern society.

Strengthen theoretical study and talent cultivation about green logistics. Firstly, colleges and universities should offer more modern logistics courses including environmental science which related with green logistics, offer multi-stratification education with undergraduate and graduate with green conceptions, train the senior manager and professional talents for modern green logistics. Secondly, accelerate the vocational qualification certification and training, strengthen the supervision and control to the certification and training (Guochuan Yang, 2010).

7. Conclusions

In order to pursue sustainable development in modern society, environmental issues have become serious concerns all over the world. There are some strategies to accelerate the development of green logistics in practice. However, green logistics is not only the logistics enterprise’s business, but also the future of the whole community. Green logistics needs the participation of the whole society. Although there are some alternatives have been found out, the cooperative dispatching mode still need to have further research.

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