(E)ISSN: 2181-1784
5(26), Nov., 2025
www.oriens.uz

REVIEW ON THE LOGISTICS EFFICIENCY OF THE BELT AND ROAD INITIATIVE

https://doi.org/10.24412/2181-1784-2025-26-582-586

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Abstract*: With the continuous development of global trade, the connections between countries have become increasingly close. The "Belt and Road Initiative" is a trade route. Commodity trade cannot be separated from goods transportation, and the efficiency of logistics directly affects the level of logistics costs in commodity trade. How to improve logistics efficiency and reduce logistics costs is a current hot issue in research. This article, by reviewing the literature on logistics efficiency in China and internationally, provides assistance for subsequent research.*

Key words*: global trade; connections; the Belt and Road; logistics; efficiency; logistics costs; transportation; China*

1 Introduction

In order to jointly improve the construction of the "Silk Road Economic Belt" and promote the construction of the 21st Century "Maritime Silk Road", the international community has given it high attention.

The significance of the "Belt and Road" construction lies in enhancing China's foreign trade level, developing economic partnership relations based on bilateral and multilateral mechanisms, adhering to the principles of consultation, sharing and cooperation, conducting economic cooperation with countries along the route, increasing economic development speed, solving the problem of overcapacity, and continuously improving international status. With the construction of the "Belt and Road", foreign trade has developed rapidly. Correspondingly, the requirements for the development of the logistics industry have become increasingly higher. Logistics is an indispensable link in the entire foreign trade chain and a bond connecting the nodes of the foreign trade chain. Improving the efficiency of logistics transportation undoubtedly enhances the speed of the flow of goods in the foreign trade chain, which is of vital importance to the development of the entire foreign trade industry. With efficient logistics transportation efficiency, it can largely reduce foreign trade costs and thereby enhance the competitiveness and influence in international trade.

2 International research on logistics efficiency

Schinnar (1980) first chose logistics enterprises as his research object, then used DEA to calculate the logistics efficiency of the research object, and finally used his research results as an important reference for evaluating and screening logistics enterprises [1]. Weber (1996) conducted research on logistics companies and chose the company's goods pricing, the ratio of the number of delayed arrivals to the total number of transported goods, and the company's return rate as input variables, which made up for the shortcomings of Schinnar's research, and thus made the DEA method more widely used in the logistics industry [2]. Martinez - Budria E (2001) evaluated the logistics efficiency of Spanish ports based on the development of logistics efficiency in Spanish ports, and selected the commonly used DEA model - BCC model for evaluation [3]. Valentine V.F, Gary R conducted a study on 32 large container ports among the top 100 in the world in 1998, using the CCR model of DEA, and evaluated the logistics efficiency among ports [4]. Borenstein (2004) in the empirical research on Brazilian postal outlets, mainly used the DEA two-stage method to calculate the logistics efficiency of the research object and analyze the influencing factors, and proposed suggestions for improving the logistics efficiency of the three types of outlets [5]. Hamdan and Rogers (2008) in their own research mainly selected 19 logistics enterprises in the United States as the evaluation object, chose the DEA method, and finally made a horizontal comparison of the calculation results [6]. Jimmy Ng (2004) studied the development of logistics efficiency from the perspective of logistics cost, using the total logistics cost as a reference in the United States' GDP, and compared and analyzed the logistics cost ratios of China and India in 2000. The study found that the logistics efficiency of India was higher than that of China, indicating that the development of China's logistics industry needs to be strengthened and there are many areas that need to be improved [7]. Newton de Castro (2004) also analyzed from the perspective of logistics costs, comparing and analyzing the proportion of logistics costs in GDP of Brazil and three developed countries (the United States and Japan). The analysis results showed that the logistics cost in Brazil was twice that of the United States and Japan. The significant gap among developed countries indicates that if enterprises want to improve logistics efficiency, they should start by reducing their logistics costs [8].

3 Research on Logistics Efficiency in China

Li Cong (2016) used the SBM-DEA model to measure the logistics efficiency of 17 provinces and cities in China for "Belt and Road Initiative". He found that the overall level of regional logistics efficiency was low, and there was a significant regional disparity [9]. Zhang Hao (2018) used the super-efficiency DEA and Tobit

regression to study the logistics efficiency and influencing factors of western provinces in China. The results showed that the overall efficiency of the logistics industry in the western region was not high, mainly due to the low pure technical efficiency [10]. Meng Xin (2015) believed that two models should be used to ensure the accuracy of the calculated logistics industry efficiency. He used the DEA-BCC model and DEA-CCR model to study the logistics industry efficiency of the Yangtze River Economic Belt, and then proposed unique improvement suggestions based on the actual logistics situation of the Yangtze River Economic Belt [11].

Gong Xue (2019) used the fixed asset investment, employment, transportation line network mileage, operating vehicle ownership and postal outlets number of the transportation, warehousing and postal industry as input indicators, and the added value of the transportation, warehousing and postal industry, and freight volume as output indicators to analyze and evaluate the logistics efficiency of the six central provinces from 2007 to 2016 using the DEA-Malmquist index model. The research results showed that there was a significant difference in logistics efficiency among the provinces, and technological progress largely affected the changes in the total factor productivity of the logistics industry [12].

Fan Lu, Wang Ai hu (2016) when evaluating the technical efficiency of 48 listed logistics enterprises from 2006 to 2013, adopted the Cost Malmquist index and used the model to analyze the changes in technological progress, configuration efficiency changes and price factor changes. It was found that the productivity decline of the CM index in these listed logistics enterprises was more obvious than that of the IM index, and price fluctuations were the main influencing factor causing the decline of the CM index [13].Huang Ning ning, Wu Wei (2019) using the data envelopment analysis method (DEA) with fixed assets, operating costs and employee compensation as input indicators, and operating income and net profit as output indicators to construct an evaluation index system, analyzed and evaluated the operating efficiency of 28 listed logistics enterprises from 2016 to 2018. The results showed that these enterprises generally had good operating efficiency, but there were still problems of insufficient resource utilization and redundant investment [14].

4 Conclusion

International research on the "Belt and Road Initiative" mainly focuses on trade and policies. In the field of logistics, studies on the efficiency of enterprise logistics and regional logistics are more comprehensive, and there are many valuable documents that can be used as references for China's logistics research and learning. Chinese scholars' research on the logistics efficiency of the "Belt and Road Initiative" is divided into regional logistics efficiency and enterprise logistics

efficiency. The main research methods include parametric analysis, non-parametric analysis, grey correlation degree, and regression analysis. So far, both China and the international community have conducted in-depth and extensive research on logistics efficiency, possessing multi-faceted and multi-angled research experience, which provides mature methods and experiences for subsequent research. However, there are also some shortcomings. From the perspective of the "Belt and Road" initiative, most studies have focused on trade and policy aspects, and the research on logistics efficiency has been conducted at the provincial regional level. So far, key node cities have not yet been taken as the research objects. Through research, efforts are made to enhance the development of growth poles to drive the logistics development of surrounding areas.

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