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EXPLORING THE DEVELOPMENT OF CHINA-MONGOLIA INTERNATIONAL RAILWAY CONTAINER TRANSPORTATION COOPERATION

ZhiHong Shi[1, 2*], Otgonbold Dorjderem[1], HaiYan Liu[3]
[1]*Graduate School, University of Finance and Economics, Ulaanbaatar, 13381, Mongolia.*
[2]*School of Business Administration, Inner Mongolia University of Finance and Economics, Hohhot 010000, Inner Mongolia, China.*
[3]*Inner Mongolia Weixintong Power Communication Engineering Design Co., Hohhot 010000, Inner Mongolia, China.*
Corresponding author: ZhiHong Shi, Email: nmgcjdx_szh@163.com

Abstract: China-Mongolia international railway container transportation cooperation plays a crucial role in promoting the economic connectivity between the two countries, especially in the framework of the "Belt and Road" initiative and the "China-Mongolia-Russia Economic Corridor" which has made significant progress. This paper analyzes the current cooperation status and challenges of China-Mongolia railway container transport and discusses the potential direction of future cooperation. Although China and Mongolia have achieved certain results in infrastructure construction, logistics management and policy coordination, the problems of insufficient railway capacity, high cost of empty container transfer, differences in technical standards for cross-border railway switching, and extreme climate impact still exist. Future cooperation should focus on infrastructure connectivity, development of multimodal transport modes, railway capacity enhancement and promotion of green transportation. By deepening China-Mongolia-Russia trilateral cooperation, optimizing transport corridors and improving service levels, both sides will play a more important strategic role in the global supply chain.
Keywords: China-Mongolia Railway; Container transportation; Infrastructure connectivity; Multimodal transport

1 INTRODUCTION

Sino-Mongolian international railway container transportation cooperation plays a key role in promoting economic connectivity between the two countries. Mongolia, as an important hub in Asia and Europe, occupies an important position in China-Russia trade and the Belt and Road Initiative by virtue of its geographic location. Since its establishment in 1938, Mongolia's railway system has been the most important mode of transportation in the country, transporting more than 23 million tons of goods and 2.5 million passengers annually [1]. However, with the rapid economic and population growth, Mongolia's existing railway transportation capacity has made it difficult to meet the increasing demand. Therefore, how to improve the efficiency of railway transportation, especially the container transportation capacity, through Sino-Mongolian cooperation has become an urgent issue at present.

In recent years, China and Mongolia have made some progress in railway transportation, especially in the field of container transportation. Through the framework of the "Belt and Road" initiative and the "China-Mongolia-Russia Economic Corridor", China and Mongolia have continuously strengthened the interconnection of transportation infrastructure. The Joint Declaration of the Government of the People's Republic of China and the Government of Mongolia, signed in 2022, further defined the priorities of transportation and logistics cooperation, especially in containerized transit transport [2]. At the same time, Mongolia is actively opening up new sea routes, such as a new railway channel through Jinzhou Port in China, to further shorten the transportation distance and improve the efficiency of transportation [3].

Nevertheless, container transportation cooperation still faces challenges such as insufficient infrastructure, coordination of policies and regulations, and cross-border logistics management. The purpose of this paper is to analyze the current situation of China-Mongolia international railway container transport cooperation, the main problems and put forward the future development direction and cooperation proposals. By analyzing and summarizing the existing literature, this paper will provide strong theoretical support for how to deepen China-Mongolia railway container transport cooperation.

2 STATUS OF COOPERATION IN INTERNATIONAL RAILWAY CONTAINER TRANSPORTATION BETWEEN CHINA AND MONGOLIA

In recent years, China and Mongolia have made remarkable progress in international rail container transportation cooperation, especially under the "Belt and Road" Initiative and the China-Mongolia-Russia Economic Corridor, which have accelerated infrastructure construction and the docking of logistics networks. As China's land bridge to Europe, Mongolia's geographical advantage and strategic position have contributed to the increasingly important role of China-Mongolia international railway container transportation in regional trade and global supply chain.

First, the most important corridor for China-Mongolia rail container transportation is through the Erenhot-Zamyn-Uud

port. This corridor connects China's northern railway and Mongolia's mainline railway, and has become an important link for bilateral trade. In recent years, the freight volume of Erlianhot port has been rising, especially the growth in container transportation has been remarkable.2023 Erlianhot port Chinese-European trains 3,294, an increase of 30.8%; the total amount of import and export freight 4,079,000 tons, a year-on-year increase of 34.5%; entry and exit containers 375,000 boxes, a year-on-year increase of 39.4% [4]. The annual container transportation volume of Erlianhot railway port has been steadily increasing in recent years, showing the high dependence of both sides on this transportation line [5].2023 Sino-Mongolian trade showed a strong growth momentum, the total value of import and export of Erlianhot port was 42.31 billion yuan, an increase of 59.9% compared with the same period of last year, which is a new record high since this port has been in operation, and the value of Erlianhot port's trade with Mongolia accounted for about 30% of the national trade volume The trade volume of Erlianhot port to Mongolia accounts for about 30% of the country's trade volume, and 50% of Mongolia's means of production and 70% of its means of living are imported from the port [6]. In the same year, Mongolia's coal exports increased dramatically to 66.7 million tons, a significant increase of 110.5% over the previous year. According to Mongolian Customs, a staggering 99.5% of these exports, or 66.38 metric tons, were shipped to China [7].

In addition to the Erenhot-Zamyn-Uud port, the two sides are also working to develop new transportation corridors. Through Jinzhou Port, Mongolia has opened up a “multimodal” mode of transportation from sea to rail, which adds a new option to the China-Mongolia rail transportation network. Through Jinzhou Port, Mongolian goods can arrive at Chinese ports by sea and then be transported to many important nodes in Mongolia by rail [3]. This not only reduces the pressure on traditional transportation channels, but also provides a more flexible logistics path for economic and trade cooperation between the two countries.

The role of China Railway Express (CRE) in China-Mongolia railway container transportation cannot be ignored, and the regular operation of CRE has significantly improved the efficiency and speed of container transportation. For example, the transportation time from Erlianhot to Ulan Bator has been shortened from seven days in the past to about four days, which greatly reduces the transportation cost and improves the timeliness of logistics. The efficient operation of CRE not only improves the reliability of bilateral trade, but also reduces the overall cost of cross-border transportation, which makes import and export business between China and Mongolia smoother.

Nevertheless, China-Mongolia rail container transportation cooperation still faces some challenges. Compared with China, Mongolia's railway network is lagging behind in terms of infrastructure development, especially in terms of modern equipment and transportation efficiency. Most of the facilities of Mongolia's railway system were built in the mid-20th century, and some routes are often disrupted in winter due to extreme weather, for example, transportation from Zamyn-Uud to Ulaanbaatar was disrupted for two weeks in the winter of 2023 due to extremely cold weather. In addition, the emergence of transportation bottlenecks during winter and peak periods further limits transportation capacity and overall efficiency [1].

Taken together, the cooperation between China and Mongolia in the field of international railway container transportation has entered a new stage. Despite the remarkable progress, there is still a vast space for cooperation in the future. To further promote this cooperation, the two countries need to make more efforts in infrastructure investment and transportation corridor expansion. This will help to realize more efficient and mutually beneficial logistics cooperation, contributing to the economic growth and regional integration of the two countries.

3 CHALLENGES TO CHINA-MONGOLIA RAILWAY CONTAINER TRANSPORTATION

China-Mongolia railway container transportation has made remarkable progress in recent years, but still faces multiple challenges, mainly including lagging infrastructure construction, high transportation cost, imperfect international coordination mechanism, and unbalanced trade structure.

(1) Inadequate infrastructure and port capacity constraints

Lagging infrastructure and capacity bottlenecks are the main challenges. Mongolia's railway infrastructure is relatively outdated, making it difficult to adapt to the growing demand for transportation. Especially in the context of the rapid development of trade between China and Mongolia, the carrying capacity of Mongolia's railways is severely limited. This not only affects Mongolia's export capacity, but also limits Chinese companies' access to the Russian and European markets through Mongolia. Mongolia plans to upgrade its railway network on a large scale, but progress has been slow due to financial and technical problems. For example, parts of the railway and road infrastructure from the Bikhigtu border crossing to the interior of Mongolia still require large-scale investment and renovation. In addition, parts of the road in Mongolia, such as the road from the Bikhigatu border crossing to the city of Choibalsan, remain unpaved and gravel, and the transportation of containers by road faces safety and efficiency issues, which further slows down the timeliness of transportation.

(2) High transportation cost and empty container mobilization problem

Transportation cost is one of the major challenges faced by China-Mongolia railway container transportation, especially in the transfer of empty containers. There is an imbalance in the trade structure between China and Mongolia, with Mongolia importing relatively little, while its exports are mainly concentrated in minerals and livestock products, which leads to a large number of containers being empty on the return trip. The cost of transferring empty containers is passed on to the railway operator, reducing profitability and raising transportation costs. 2021 The backlog of containers due to the epidemic has exacerbated this problem, causing further increases in transportation costs, in particular container leasing fees and rising operating costs for logistics companies. This unbalanced transportation situation is one of the key

issues that China and Mongolia need to address together [8].

(3) Non-harmonization of transnational standards and the problem of changing tracks

Differences in technical standards for railway transportation between China and Mongolia are also one of the challenges. Mongolia uses wide rails, while China uses standard rails, which means that when containers are transported across borders, a rail change operation needs to be performed at the border. This process is complex and time-consuming, increasing transportation costs and time. At present, despite the corresponding measures taken by the two countries in terms of cooperation, the inconsistency of technical standards still poses a challenge to the efficiency of container transportation.

(4) Seasonal and climatic impacts

Extreme winter weather in Mongolia poses a serious challenge to China-Mongolia railway transportation. Every winter, temperatures in some parts of Mongolia drop to minus 30 degrees Celsius or lower, and this extremely low-temperature environment puts great pressure on railway lines and equipment. During the winter of 2022, a number of railway lines within Mongolia were disrupted due to the effects of snow and low temperatures, resulting in a nearly 20% decrease in rail transportation efficiency. Not only that, the harsh weather conditions also significantly increase the maintenance costs of the railway system, especially at border crossings, where extreme weather can lead to the closure of crossings and even multi-day transportation disruptions during outbreak prevention and control.

(5) Complexity of policy and cross-border coordination

Although China and Mongolia have signed a number of cooperation agreements on infrastructure development and logistics corridor construction, the inconsistency of policies at the concrete implementation level still poses a challenge to rail container transportation. Policy changes and regulatory uncertainties in Mongolia have often hindered the actual operation of Sino-Mongolian cooperation. 2022's new environmental transportation regulations in Mongolia have led to operational adjustments on some routes, a change that has directly impacted the normalization of Sino-Mongolian rail transportation plans. In addition, global economic uncertainty has exacerbated the problem, especially rising transportation costs and increased cross-border risks, making the two countries face a higher demand for policy coordination.

Overall, China-Mongolia railway container transportation cooperation faces not only the problem of insufficient infrastructure, but also the challenges of transportation costs, differences in technical standards and policy coordination. If both countries want to effectively solve these problems, they need to further promote the sustainable development of railway transportation by upgrading railway capacity, improving customs clearance efficiency and strengthening the consistency of technical standards.

4 FUTURE DIRECTION OF DEVELOPMENT AND SUGGESTIONS FOR COOPERATION

(1) Strengthening Infrastructure Connectivity

In the future, China-Mongolia railway container transportation cooperation should continue to deepen infrastructure connectivity, especially to promote the expansion and upgrading of railway network. According to Mongolia's Vision 2050, the construction of a railway from Choibalsan to Biqigtu is on the agenda [3]. The completion of this railway will significantly increase the container transportation capacity between China and Mongolia, laying a solid foundation for future regional economic and trade cooperation. In addition, we should continue to optimize the infrastructure of existing Sino-Mongolian ports, such as the Erlianhot and Zhoungha Dabqi ports. At the same time, strengthen cooperation with the node cities along the “Northeast Land and Sea New Corridor” to further improve logistics efficiency.

(2) Deepening the multimodal transportation model

Under the framework of the “Belt and Road” initiative, multimodal transportation has become an important development direction for cross-border logistics. By optimizing the seamless connection between railways, sea transport and land transport, the efficiency of cargo transportation between China and Mongolia can be improved. Future cooperation can reduce congestion at Tianjin Port and Erlianhot Port (Figure 1) by exploring a new corridor from Jinzhou Port to Zhungha Dabqi Border Crossing, where freight between China and Europe will transit through Mongolia. In addition, strengthening the application of information technology in multimodal transportation and building an intelligent logistics management platform will bring a more efficient and transparent operation mode for China-Mongolia logistics cooperation.

Figure 1 Erlianhot Port. Photo by Na Guo

(3) Enhancement of railway capacity and service level
In order to cope with the future growth of China-Mongolia railway transportation demand, it is particularly important to improve railway capacity and service level. By expanding the capacity of the railway and improving the frequency and speed of freight trains, the backlog of containers at the ports can be reduced. According to relevant studies, the capacity saturation problem faced by China-Mongolia railway transport can be optimized in the future through the introduction of advanced scheduling and transport management technologies to optimize the operational efficiency of trains. In addition, both sides of the cooperation should strengthen transportation safety measures, especially for the transportation environment of cross-border railways, to ensure the stability and safety of railway transportation.
(4) Promote the development of green transportation
In the context of economic development and environmental protection of China and Mongolia, future cooperation in railway container transportation should focus on green development. China and Mongolia can jointly promote clean energy trains to reduce the environmental pollution caused by traditional railway transportation. Introducing energy-saving and environmental protection technologies to reduce carbon emissions during container transportation will help enhance the green competitiveness of the two countries in the international market. In addition, promoting the greening of industrial parks and logistics parks along the routes will lay the foundation for the sustainable development of railway transportation between China and Mongolia.
(5) Deepening trilateral cooperation between China, Mongolia and Russia
As part of the China-Mongolia-Russia Economic Corridor, the future development of railway transportation between China and Mongolia should further strengthen cooperation among the three countries. Mongolia is located between China and Russia and plays an important role as a transit transportation hub. In the future, a closer cross-border transportation network can be formed by promoting policy coordination and infrastructure docking among China, Mongolia and Russia. For example, in the planning and construction of railway transportation routes, China and Mongolia should give full consideration to how to connect with Russia's railway network to promote more convenient transportation of goods between China and Europe [9].

5 CONCLUSION

The current status of cooperation in international railway container transportation between China and Mongolia shows that the two countries have made some progress in the construction of transportation infrastructure and logistics management. However, problems such as insufficient transportation capacity, low efficiency of ports and aging infrastructure still restrict the in-depth development of cooperation. In the future, the key to China-Mongolia railway container transport cooperation lies in optimizing infrastructure interconnection, promoting the development of multimodal transport, upgrading railway capacity and service level, and implementing green transport solutions. At the same time, by deepening the tripartite cooperation between China, Mongolia and Russia, China-Mongolia railway container transportation will be able to play a greater economic benefit and strategic significance under the framework of the “Belt and Road”.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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