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Belt and Road Initiative (BRI) as a Turning Point on China's Infrastructure Interconnection and Talent Exchange: Case of High-Speed Railway

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Abstract

The introduction of the Belt and Road Initiative (BRI) has provided new opportunities for the development of China's manufacturing export trade. By strengthening policy communication and economic cooperation with the countries along the road, it helps to exert the potential of trade between the "One Belt and One Road" countries, promote the output of traditional Chinese industries and lead the development of new manufacturing industries. Trade frictions between the United States and China are frequent and growing, and trade protectionism may pose a threat worldwide. Based on the perspective of BRI, this paper taking the development of international trade as the background expounds on the importance of the BRI to the high-speed railway (HSR) talent exchange between China and the countries along the silk road. In view of how to carry out talent exchange with other countries along the road, this article puts forward relevant suggestions, so as to expand the exchange and cultivation of international talents in China so as to meet the new challenges and demands of the construction of talents along the way and enhance the international cooperation and cultural exchange with the countries along the road.

Keywords: BRI, HSR, Infrastructure Interconnection, International Trade, Silk Road, Talent Exchange

1. Introduction and Review of Literature

"One Belt and One Road" is the abbreviation of the "Silk Road Economic Belt" and the "maritime Silk Road twenty-first Century." In September 2013 and October, Chinese President Xi Jinping put forward the strategic conception of building the new Silk Road Economic Belt and the twenty-first Century Maritime Silk Road. The Silk Road was a land trade channel opened by Zhang Qian in the Western Han Dynasty when he was sent to central and Western Asia. It started in Chang'an and connected Asia, Africa, and Europe. It can be divided into

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land Silk Road and sea Silk Road. "One Belt and One Road" is not an entity, but a cooperative development initiative. It aims to borrow the historical symbols of the ancient Silk Road, hold high the banner of peaceful development, actively develop economic partnerships with countries along the Silk Road, and jointly build a community of interests, destiny, and responsibility with political mutual trust, economic integration, and cultural inclusion. The "One Belt and One Road" initiative will not only focus on the investment and profits of the world, but more importantly, it can bring a new trend to the world, so that equal cooperation, cultural exchanges, and economic prosperity, rather than military hegemony, will become another main axis of the future world order.

One Belt and One Road initiative is a major strategic measure for China to deepen opening-up and promote economic transformation. It is also a great cause to strengthen strategic links among Asian, African, and European countries and promote the common prosperity of countries along the belt and road. The "One Belt and One Road" emphasizes the interconnection among countries, including the hard power of road link, smooth trade and industrial cooperation, including soft power such as policy communication, cultural exchange, and talent exchange. Talents are the basis and core elements of strategy implementation.

The grand strategy of a country alludes to its all-told planning and macroscopic arrangements within a special period, targeting to realize the interest of that country. The grand strategy is long-term, full-on, stable, macroscopic, and oriented, while its tactics are temporary, focused, interchangeable, flexible, and confidential (Li & Wang, 2015). "Silk Road Economic Belt" initiative is a grand strategy of China confronting the future, alluding to a broader area and more meaningful content instead of simply a revival or duplication of the Silk Road (Wu, 2014).

The key to building a "One Belt and One Road" is interconnection. "Interconnection" focuses on the linkages of infrastructure in countries along the route, which are the basis for interoperability and the prerequisite for cooperation. While "Interchange" focuses on the high-speed (HSR) circulation of commodities, funds, technology, and personnel (Xi Jin ping, April 2019). With the development of society, the progress of science and technology, and the improvement of technology, China's transportation is becoming more and more convenient; especially the high-speed rail has brought China great benefits. It is high-speed and safe, which brings convenience and convenience to people's lives, and also promotes economic development (Fang Xin). And in terms of its practical implementation, the BRI revolves around the construction of an efficient infrastructure and transportation system which enhances interconnectivity between China and all its neighboring countries and regions, eradicates bottlenecks in cross-border trade, facilitates effective logistics systems and services and promotes greater demand for the carriage of freight. Much of the investment that is linked to the BRI is aligned to the development of the rail network, both within Asia and connecting Asia to Europe. (EIU, 2016).

Moreover, the export of high-speed rail is called "high-speed rail diplomacy" in the contemporary era. This is not only a new business card of China's diplomacy but also a good opportunity for China to establish a new international image. Therefore, the potential impact of high-speed rail on China's economy is revolutionary. It makes China start to get rid of local protectionist thinking and rationally think about regional economy with the urban division of labor as the core. It is making this ideal economic model from theory to reality (High-speed rail network, April 2019).

Furthermore, industrial development and talent support are mutually reinforcing and interdependent at all times. The implementation of international HSR construction projects urgently needs a large number of export-oriented high-speed technical talents who can adapt to the production, construction, management, and service frontline to ensure the survey, design, construction, and operation of HSR projects. Talents demand management and service (Hu Bangyao, 2016). However, the "One Belt and One Road" infrastructure construction have also put forward many new requirements for engineering personnel training, engineering education and even the entire education reform (Gongke, 2016). Moreover, the "One Belt and One Road" initiatives have been shifted from "freehand brushwork" to "meticulous painting." Only by cultivating a high level of professional talents that are urgently

needed in the construction of “One Belt and One Road” can we support the "sustainable development" of “One Belt and One Road” initiative and draw a blueprint for “One Belt and One Road” leading to a better tomorrow (Zhang Shuibo, 2019). There are opportunities, but also difficult challenges.

Besides, in the literature concept, Yang et al. (2018) compared the spatial configurations of the Chinese national urban system in both HSR and airline networks by using the 2013 origin/destination (O/D) passenger flow data instead of commonly used scheduled data. Qin & Gao (2017) reviewed development in the construction technologies of multi-function combined bridges in China, including highway and railway bridges and multi-track railway bridges, and also presented the outlook of the future expansion of long-span HSR bridges. In China, under the Belt and Road Initiative, the researchers analyzed the hinterland patterns of the CHINA RAILWAY Express (CR Express) (Jiang et al., 2018). Shoa et al. (2018) suggested a method for the choices of the urgent needs of transnational HSR construction in the B&R area. Researchers believed that HSR is not just a faster transport way but poses remarkable impacts on regional issues and transform spatial structures (Vickerman, 2017; Ureña et al., 2009). Jiang et al. (2020) mentioned that the inauguration of HSR significantly had positive impacts on regional economies, which are often considering as serious factors in planning and decision-making for policymakers.

This paper is mainly to analyze the current situation of talent exchanges with the countries along the road under the background of “One Belt and One Road,” and to integrate relevant literature collected, and to put forward relevant suggestions based on this. Moreover, this paper also aims to:

- Present Current measures in talent exchange;
- Identify the challenges and opportunities in talent exchange;
- Suggest the various strategies to enhance talent exchange.

2. Research Methodology

Methods employed in this paper include documentation and theoretical analysis. This paper is mainly based on secondary data collection through various literature. We extract data and information from the official website and the report. Moreover, data based on OBOR, trade and talent exchange has been collected from various articles, magazines, conferences and websites and other online sources for research. By collecting data in recent years, the main actions of training HSR international talents are analyzed.

3. Results

3.1. China's trade with countries along the Silk Road

Overall, China's import and export trade with the "Belt and Road" countries has increased rapidly, and import growth has outstripped exports. In 2016, Chinese enterprises directly invested 14 billion and 530 million US dollars in the "one belt and one way" countries, and the new contract amount for foreign contracted projects amounted to the US \$126 billion and 30 million, accounting for 51.6% of the total contracted projects in China over the same period. Total turnover was 75 billion US dollars, accounting for 47.7% of total turnover in the same period. Several international capacity cooperation and infrastructure interconnection projects such as the Bamu Railway and China-Pakistan Economic Corridor have been successfully implemented. As a carrier of regional interconnection, the HSR is expected to benefit from the new demands of infrastructure along the belt. In 2017, the total import and export volume of China and the countries along the silk road reached US \$1 trillion, 13.4% more than the same period last year, higher than China's total growth in foreign trade by 5.9 percentage, accounting for 36.2% of China's total import and export trade. The trade volume between China and the countries along the silk road was 7 trillion and 400 billion Yuan, up 17.8% over the same period last year, and the growth rate was higher than the national growth rate by 3.6 percentage points. Among them, exports of 4.3 trillion CNY, an increase of 12.1%, imports of 3.1 trillion CNY, an increase of 26.8%; direct investment by Chinese enterprises in countries along the road was US\$14.4 billion, and newly contracted projects in countries

of BRI was US\$144.3 billion, an increase of 14.5% over the same period of last year. In 2018, the total import and export volume of goods trade between China and the countries along the belt has an increase of 16.3% over the same period last year, an increase of 3.7 percentage points over the same period in China's foreign trade and 27.4% of the total foreign trade (The regular press conference of the Ministry of China's Commerce, 2019). Trade cooperation between relevant countries and regions has been deepening. China's trade growth rate is higher than the overall growth rate of foreign trade, accelerating the recovery of foreign trade. It has not only become a highlight of China's foreign trade but also injected new impetus into China's high-quality economic development. At the same time, it also brings tremendous opportunities for the economic development of countries along the line.

Overseas high-speed rail market has broad prospects. By 2018, the global railway equipment market will reach 148.9 billion euros, of which the HSR market will reach 19 billion euros. The railway equipment market in Europe and Asia is the largest; except Central and South America, the railway equipment market in other regions have maintained growth, with the fastest growth rates in Asia, the Middle East, and Europe.

An important measure of regional economic impacts is the effect of transport-induced density on business productivity. According to the World Bank (2014), which is mentioned by Jiang et al. (2019), the evaluated density results of HSR on different second-tier and third-tier cities are substantial. As it is explained in Table 1, they grab 0.55% of total gross domestic product (GDP) in Jinan per year, 1.03% in Dezhou, and 0.64% in Jilin. Although economic elements are definite to the decision on whether the government should invest in HSR projects, the argument for the investment goes far beyond them. It is the mixture of political and strategic factors, generally related to regional development goals, that determine the feasibility of building an HSR network. The development of the High-speed rail network in China is an outstanding example to show the influence of the government initiative on spatial transformation, as many previous studies have discussed. A list of literature on the forces of HSR on spatial transformation is illustrated in Table 1.

	Agglomeration effects Increase	
	Increase in GDP	Benefits (RMB in billions)
City		
Jinan (Beijing-Shanghai HSR)	0.55%	3.65
Dezhou (Beijing-Shanghai HSR)	1.03%	3.59
Jilin (Changchun-Jilin HSR)	0.64%	2.39

Source: Data from World Bank, 2014. Regional Economic Impact Analysis of High-Speed Rail in China. Available at: http://www.worldbank.org/content/dam/Worldbank/document/EAP/China/high_speed-rail-%20in-china-en.pdf.

3.2. Internationalized Infrastructure Construction

The connotation of "One Belt and One Road" is summed up as "five links and three similarities." "Five links" refer to policy communication, facilities communication, trade unimpeded, capital financing, and people's hearts. The "five links" are unity and indispensable. "Three Communities" means the community of interests, destiny, and responsibility. The three are also an integral whole, indivisible and win-win situation.

China has always attached great importance to the development and construction of infrastructure. In 2015, the Chinese government promulgated *Vision and Action for Promoting the Co-construction of the Silk Road Economic Belt and the Marine Silk Road in the 21st Century*, pointing out that infrastructure interconnection is the priority development area of the "One Belt and One Road" initiative. The high-speed rail industry is the leader of the infrastructure interconnection and will play a very important role in building the "One Belt and One Road" initiative. In recent years, the HSR has been a transport means worth to advocate around the world, under its advantages of energy saving ability, economy promotion potential, comfortability, high-speed, comfortable, and clean transport services (Ureña et al., 2009). Under the background of the "One Belt and One Road" initiative, China's high-speed rail has become the trend of the world. In 2016, it is the first year of the outbreak of "going out" of HSR, which was called by the media. China's HSR has gradually matured, and its territory has expanded to dozens of countries. To compete with Japan and other old railway powers, Chinese engineering cooperation enterprises have also explored a more localized way (CHINA CONSTRUCTION NEWS WEB, 2016). China's overseas high-speed rail projects include the China-Pakistan Railway, the Iran HSR, the Two-Ocean Railway, the Indonesian HSR, and the African Railway, and so on. The cost of high-speed rail construction in China is about two-thirds of that in other countries, while ticket prices are only one-fourth to one-fifth that in other countries. (World Bank, 2014) The reason why China's high-speed rail can flourish is not only the political and economic factors that cannot be bypassed but also its virtue. The achievements of China's HSR come from the ideas and concepts of introducing, absorbing and re-innovating, and the prospects of integration, customization, interconnection, intellectualization, humanization, and diversification of China's HSR technology. Innovation is the source of HSR development. Innovation will give HSR a new round of life (Wang Jun, Vice President of China National Automobile Corporation, 2018). After years of rapid development, China's high-speed rail can no longer be underestimated. By the end of 2015, China operates about 121 thousand kilometers (km) of railway in track length, out of which 19 thousand km are HSR track (NDRC, 2016). China's HSR network will continue to expand as program in the country's new Five-Year Plan for National Economic and Social Development. According to the plan, an additional ten thousand km of HSR track will be built by 2030 (NDRC, 2016).

3.3. Talent Internationalization in HSR

However, the "going out" of China's high-speed rail is not so smooth, there are still geopolitical changes, economic development endurance, compatibility of technical standards system and other constraints, especially the international talent team in quantity and quality cannot meet the needs of rapid expansion of enterprises' overseas business, which has become a "bottleneck" restricting the further development of enterprises' international business (Wang Hong, 2015). China's railway internationalization business involves more than 80 countries and regions. Overseas HSR projects are nearly 6,000 kilometers. The demand for talents related to rail transit has increased dramatically. At present, the rail transit industry is in urgent need of compound talents with both professional knowledge and international vision, who can not only understand international business but also communicate with foreign humanities. Simon Iwnick, Professor of Railway Engineering, Huddersfield University, UK, A.A. Akintola, Nigerian scholar, and reports from Australia and South Africa have pointed out the predicament of the "railway renaissance" development and the shortage of skilled personnel facing their countries. LinkedIn, a professional social networking site published the white paper on "one belt and one road" talent. It shows that the talent challenge of Chinese enterprises "going out" is focused on quality, and 66% of enterprises say it was difficult to find high-level talents in 2018. Although the investment, construction, and operation of "one belt and one road" infrastructure is the key to the interconnection of facilities, the construction of infrastructure requires a large number of funds, low short-term returns, complex construction process, and the impact of changes in the social environment. Its long-term operation will also be affected by the interests of the following political, economic, cultural and religious factions. This process of "investment, construction, and operation" is ten. It is complex and involves technical, economic, financial, legal and cross-cultural expertise. Therefore, to build these infrastructures well, high-level professionals with international vision and national feelings are the necessary conditions for this work (Zhang Shuibo, 2018). So, how to cultivate talents to adapt to it? Higher education undertakes the important responsibilities of personnel training, scientific research, social

services, cultural heritage and innovation, international exchanges and cooperation, and the important mission of educating talents for the implementation of national strategy and the healthy development of economy and society.

Training international talents for HSR going abroad is the unshirkable responsibility for Railway colleges and universities (Wang Hong, 2018). In the face of opportunities and challenges, railway colleges and universities have taken measures to train internationalized HSR talents.

Talents are the basis of promoting China's high-speed rail "going out." The construction of high-speed rail personnel needs to put forward higher requirements following new technologies and new development directions. Colleges and universities also actively seize opportunities and make progress. As the leader of the high-speed rail personnel team construction plan, they should establish joint mechanism with enterprises, training institutions, and foreign universities, strengthen collaborative training, and jointly integrate resources and build up. The platform, strive to build an international HSR talent education brand.

4. Conclusion and Suggestion

To go global, Chinese railways need internationalized talents. However, it is not enough to rely solely on the cultivation of domestic educational resources for internationalized talents. China must cooperate with foreign countries and make full use of superior resources at home and abroad to cultivate nationalized higher talents. In 2010, the Central State Council issued the Outline of the National Medium and Long Term Talent Development Plan (2010-2020) and the Decision on Accelerating the Development of Modern Vocational Education issued by the State Council in 2014, it clearly pointed out that in order to meet the needs of social and enterprise development, the joint school-enterprise cooperation model must be vigorously developed. China can cultivate internationalized HSR talents by strengthening the links with foreign universities, constructing the model of School-School cooperation, or the mode of School-School exchange of students along the silk road countries. In recent years, to promote the high-speed rail "going out" process, the state and enterprises have made efforts and contributions. However, there are still some problems in training international hot talents.

- 1) HSR talent reserve and training speed cannot meet the rapid growth of demand.
- 2) The quality and professional level of HSR employees cannot meet the international HSR personnel level and standard.
- 3) Insufficient cooperation with enterprises, universities, and governments in countries along the "One Belt and One Road."

Besides, colleges and universities should not only pay attention to English teaching but also to the cultivation of minority languages, to lay a solid foundation for promoting exchanges with countries along the Belt and Road. Therefore, because of the current development trend of high-speed rail in China, the state, enterprises, and universities should fully recognize the importance of high-speed rail internationalization personnel training for the future development of high-speed rail and national economic development. It will be the cornerstone of the development of Chinese railways in the coming decades to strengthen the training of internationalized HSR talents.

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