

SWOT Analysis on China's High-speed Rail to the Overseas

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Abstract—In recent years, China high-speed rail develops very rapidly and at the same time it meets domestic demand, it is also actively seeking for opportunities of overseas development. But the road to the overseas of China high-speed rail is not easy. This paper uses SWOT analysis method to comprehensively analyse the strengths, weaknesses, opportunities and threats of China's high-speed rail to the overseas, and then puts forward proposals to help of China's high-speed rail to go to the overseas.

Keywords-China's high-speed rail; SWOT analysis; obstacle; development; proposal

I. BACKGROUND RESEARCH

As an emerging industry with high-tech and much added value, high-speed rail occupies an important strategic position in the development of China's national economy. In recent years, with the rapid development of China's high-speed rails, Sheng Guangzu, Party Secretary and General Manager of China Railway Corporation, said that up until the end of 2014, operational length of China's high-speed rails had already reached 16,000 km, and China had already become the country with the longest high-speed railway operating mileage in the world. While meeting the demand of domestic development, China's high-speed rail is also actively seeking opportunity for overseas development. Premier Li Keqiang, titled as the promotion ambassador of China's high-speed rails, often promotes China's high-speed railways to foreign countries. Only in 2014, he has already promoted China's high-speed rails to

12 countries, including Ethiopia, Nigeria, Angola, Kenya, the United Kingdom, the United States, Zimbabwe, Russia,

Myanmar, Kazakhstan, Serbia and Thailand, expressing the willingness to construct high-speed rails cooperatively and making significant contributions for China's high-speed rails to the overseas. However, China has also encountered a lot of difficulties in promoting its high-speed rails to the overseas, and there are still a lot of shortcomings in China's high-speed rails compared with those high-speed powers like Japan, Germany and France.

II. SWOT ANALYSIS ON CHINA'S HIGH-SPEED

RAIL TO THE OVERSEAS.

A. Advantages for China's High-speed Rail to the Overseas

1) Outstanding and Reliable Techniques

Through introducing advanced foreign high-speed rail techniques, learning their respective strengths and innovating while adhering to the principle of 'for my usage', China finally formed its high-speed rail technical system with Chinese characteristics, and currently, it has already become the country with the longest high-speed rail mileage in the world. Meanwhile, China's high-speed rail technique is constantly becoming mature and progressing in a lot of practice while it has not only conquered many technical problems that have been ruled and blocked by foreign countries for a long time, but also developed its core techniques independently, such as high-speed rail traction, automation and network control. Construction work on China's high-speed rail projects, high-speed train, train control, station building, systems integration, operations management, and other fields have mastered the core technology, formed a core technologies with independent intellectual property system [1], and formed its own high-speed technology standards,

becoming one of the few complete control of high-speed technology world. For overseas rail customers, outstanding and reliable technology is a hard indicator for measuring performance of high-speed rail. China's high-speed rail has a significant competitive advantage in the international market, China's high-speed rail into the world without technical barriers.

2) Rich Experience in Construction and Operation

Construction of the high-speed railway began in the 1960s of Japan, followed by France, and Germany and other European countries also have high-speed rail construction activities. While China's high-speed railway construction started late, until October 12, 2003, Qinhuangdao-Shenyang passenger dedicated railway line was put into operation, marking China's entry into the era of high-speed rail [2]. After more than 10 years, China's high-speed rail construction is speeding up, and high-speed technology will mature in practice. China independently developed CRH380B-Alpine rail emus, ending up China's history without high-speed rails in frigid zones. Rich experience in construction operations also lowers construction costs, the World Bank's representative office in China published in July, according to a report on China's high-speed rail construction costs, China's high-speed rail is the weighted average unit cost: 350 km/h for 129 million Yuan/kilometer; speed of 250 km projects is 87 million yuan per kilometer. Internationally, the construction cost more than 300 million yuan per kilometer. Now China has become the construction experience of the rich countries in the world, China's high-speed rail construction in complex terrain can be handy. This is our foreign competitors' unparalleled advantage, but also creates favorable conditions for China to enter the international market.

3) Feasible Transaction Ways

China's high-speed rail is not necessarily money transactions, trading flexibility. China could use funds and technology to help other countries build high speed rail, and other local resources can be used to pay down debt. Like the famous Thailand high-speed rail for rice program is provided by China to build high-speed rail technology and funds and debts of Thai rice and other agricultural products. The construction of high-speed rail is a large

project requires not only adequate funding, such as the Beijing-Shanghai high-speed railway in China with a total investment of about 220.9 billion yuan, Wuhan-Guangzhou high-speed railway with a total investment of about 116 billion yuan, also requires advanced high-speed rail technology. So now there are not many countries capable of building high-speed rail, high-speed rail has many advantages that we can flock: convenient, fast, safe, comfortable and energy saving and environmental protection. In today's increasingly scarce resources, environmental pollution is getting worse, more and more countries look to high-speed rail. Expectations on the one hand to build high speed rail development in some countries domestic economy, lack of money or lack of skill on the other hand makes them powerless, high-speed rail in China would help them solve the problem. Data from the State Export-Import Bank showed that at the end of January 2015, national export-import bank loans he has 35 overseas railway construction projects, railway equipment export project provided financial support, total loan amount of about \$ 13 billion, which support the total mileage of up to 3,500 km of railway construction project.

B. Disadvantages for China ' s High-speed Rails to the Overseas

1) Inadequate Brand Image

China's high-speed trains have worked for many years at sea, but so far few, mainly because of how bad is not China's high-speed train technology, but China failed to establish a good brand image, lack of international recognition. Although China's GDP already in the world ranking after the United States, but the Chinese brands fail to follow up in a timely manner, Chinese brand in the world has become synonymous with cheap, poor quality, fake, which forms big obstacles for China's high-speed rails to the overseas. Especially high-speed market was very difficult as Europe and other developed countries, where higher requirements for high-speed image. China's high-speed trains can enter overseas markets, harvest overseas orders, not just by companies to decide, the brand image of high-speed rail also has a great impact. Otherwise, even if China's high-speed railway technology, cost-effective, high-speed rail customers are also more

willing to choose high-speed rail business of international repute.

2) *Scarcity of International Professionals*

Nowadays, English is the international language, is also China's high-speed rail to sea common to languages. High-speed rail competitors are mainly America and European countries, they account for a large advantage in this, and China's high-speed rail a lot of losses due to English talent is scarce. 2012 the end of a Nordic project, southern car after two years of hard work, only a step away from the bid, but because of translation errors and other technical experts deny[3]. China entered the international market, but also foreign economic, political, social, customs and cultural professionals. In 2014, Mexico suddenly cancelled the contracted unilaterally with China's high-speed rails in a high-speed rail project due to the political instability of Mexico, so the efforts of Chinese company became wasted.

3) *High-speed Rail Technology Develops Later*

Ever since the 1960s, China's main rivals: Japan, France, and Germany began to develop high-speed rail. After decades of continuous research and development, their high-speed rail technology has matured. Coupled with the awareness of protection of intellectual property in foreign countries is very strong, so that applies a lot of high-speed technology patents. China is entering the 21st century started developing high-speed rail, although current high-speed technology patent applications in China had reached more than 2000, but China is based on the introduction of foreign high-speed rail technology formed through continuous innovation of technology system, only a train containing hundreds or thousands of patents, China's high-speed rail to sea under a lot of patent problems. In addition to high-speed rail technology, intellectual property rights protection in China is relatively weak, after technological innovation such as lack of awareness, often been stigmatized as in some countries "technical copying" [4], which are bad for China's high-speed rail to overseas.

C. *Opportunities for China's High-speed Rail to the Overseas*

1) *Domestic Opportunities*

China's reform has entered deeper waters, economic restructuring is also at a critical period, slowdown of the domestic economy, and the traditional model of economic development is not suitable for the requirements of the times. High-speed rail to sea will help improve China's image and stimulate economic recovery and expansion of exports of high-tech industry, changing the export structure, while the high-speed rail to sea will pull architecture, services, and the rapid development of related industries, such as steel. According to the State Council for approval of the "Medium-and-long-term Railway Network Plan" (revised in 2008), construction of the high-speed rail by 2020 goal is: to establish rapid passenger passage between the provincial capital and major cities, planning "four vertical and four horizontal" passenger as well as economically developed and densely populated areas, such as intercity passenger transportation system, total mileage more than 16,000 kilometers of high-speed rail operations [5]. By the end of 2014, China's high-speed railway operating mileage has reached 16,000 roads. These data mean, and will significantly reduce the demand for high-speed rail in China after a few years, there will be a large number of rail capacity remaining, and domestic high-speed rail capacity utilization is not high, so high speed rail sea is imperative. Countries had developed strategies for high-speed rail to sea, greatly improved the China Sea initiative. Prepared by the national development and Reform Commission Organization of the "Guiding Opinions on Speeding up the Equipment to Go out", make the free dance international high-speed rail in China enterprise market, in order to help enterprises solve the worries, China's growing high-speed rail in the fierce international competition.

2) *International Opportunities*

Since 2008, to varying degrees, by the countries of the world by the United States subprime crisis triggered by the impact of the global financial crisis, economic recovery has been slow. States are looking for new sources of economic growth to spur economic growth, particularly in

China because of the high-speed rail, sparked another round of development of the national economy after orgasm, also have been offering their own high-speed rail development plan. Mexico, and India, and Poland, and Spain, and Brazil, and Australia, and Thailand, and France, and India and the United Kingdom, and Russia and the United States, many countries have enacted a high-speed rail plan, expected future will add 10,000 kilometers of high-speed rail, high-speed rail has come to global development, "golden age" [6], which created unprecedented development opportunities for high-speed rail in China Sea. HSR belongs to the high-tech industry, a number of developing countries do not have high-speed technology, but they are expected to build high-speed rail pull the national economy, and eventually achieve the goal of accelerated the country's economic development. Asian infrastructure investment bank currently spearheaded by China is actively preparing for, the purpose of which is to strengthen domestic infrastructure in developing countries to provide funds for construction, to solve their financial problems. Asian Investment Bank, the setting up of national development pace of high-speed rail, shelved due to lack of plans for high-speed rail will be built soon on the agenda. There is no doubt that coming round of high speed rail development in the world, China faces significant development opportunities. China should seize the opportunity to go out of the country to the world.

D. Challenges for China's High-speed Rails to the Overseas

1) Fierce Competition on the International Market

China's "going out" will face a variety of challenges, Japan, and France, and Germany and other developed countries began to develop high-speed rail from the 60 's of last century to today's high-speed technology is already quite mature, especially in terms of core technology is the formation of a monopoly. For years, these countries have been dominating the international high-speed rail market, and China's high-speed rail into the international market will lead to high iron structure readjustment of the export market in the world [7]. Although China has made some achievements in recent years, but China is based on the introduction of foreign high technology development. As the core technology is a business secret, not throwing only

independent innovation. Therefore, when in the face of these competitors, competitive pressures are still very great. The current economic downturn in these countries and weak recovery in desperate need of new sources of economic growth, plus many countries have introduced high-speed rail construction projects, they also smell which has enormous business opportunities. High-speed rail is a high-tech, high value-added industry, creating high-speed rail interests not only great, but seize the high speed rail market as soon as possible to improve the voice in the international rail market, and strategic significance. So, faced with the large cake of high-speed rail market in the world, each railway power is competing with China's high-speed rails fiercely.

2) Capital and Cost Risk

Flexible way of trading is one of the advantages of high-speed rail to the overseas. Chinese capital and technology in exchange for local resources, not only meeting the needs of national economic development, address again those countries that hope to develop high-speed rail funding shortage problem. On the surface, appears to be a win-win situation, and in fact is not, such transactions on the Chinese side hides a lot of the cost of capital risk. Financial and technical resources in exchange for trading for some countries more attractive, especially in some developing countries more favor. This method does indeed help to obtain some high-speed rail orders and help China's high-speed rail to go into the international market earlier. However, there are advantages and disadvantages. This transaction requires China to pay in advance, so the initial investment of the project is very large, taking into account the debt-servicing capacity of the local government, the transaction cost of capital risk is very high.

3) Barriers to the High-speed Rail Standard

High speed rail development in developed countries in Europe and America started early, high-speed technology to improve and have a mature design standard for high-speed rail. China develops very fast and to enact their design standards for high-speed rail, but now mainly uses the European standard in the world, China standard low degree of international recognition. China's first overseas project Turkey adopts the European standard project,

rather than Chinese standards. China's cost-effective advantage is based on the standards of China's high-speed rail, if we adopt the European standard, the competitive advantage of China's high-speed trains will be lost, will be controlled by others. High-speed rail as a new industry, the international high-speed rail market there is huge commercial interests, Europe and other developed countries want to corner the market. Faced with China's menacing, by high-speed standards forming invisible barriers blocking the pace of high-speed rail in China Sea. China has become the world's most comprehensive high-speed technology, building the largest and longest running mileage, operation speed of maximum, and the fastest growing country. However, HSR standard barrier seriously impedes the pace for China's high-speed rail to the overseas, and China's high-speed rail to the overseas still has a long way to go.

III. SUGGESTIONS FOR CHINA'S HIGH-SPEED

RAIL TO THE OVERSEAS

A. *Cultivate International Professionals*

In order to stimulate economic growth, many countries have launched national high-speed rail construction program, curtain rail construction has opened around the world. But high-speed rail in China developed rapidly in recent years, and high-speed rail to sea is still in its infancy stage, foreign countries change, conditions are not the same, so China urgently needs a high level of international professionals. Therefore, China's high-speed railway meets the development requirements of the personnel training system should be established and strengthened and some colleges and universities in the United, set up high-speed training centre, so that it can provide high-speed rail to the Sea provide a steady flow of international and professional talents.

B. *Enhance Independent Innovative Capacity*

Science and technology are the primary productive forces, and national rail market competition among enterprises is the core technology competition. Does not have its own core technology, will be at a disadvantage in the market competition, and each company's core technology is the secret weapon. China's high-speed train technology introduced from abroad without its own core technology

controlled by others in the market competition. Today, countries all over the world in developing green and energy-efficient economy, China also complies with the trend in green, energy saving and improve capability of independent innovation, to meet the development requirements of the era. Only enhance the ability of independent innovation, create its own core technology, China's high-speed rail from tech enthusiasts are transforming into a technology leader, to stand out in the fierce international competition, in order to establish a good brand image in China.

C. *Enhance Risk Management*

Strengthen risk management are effective ways to reduce losses and improve efficiency. Complex and changing abroad environment and domestic political, economic, social, customs are not the same. Coupled with China's high-speed rail to sea has just started, lack construction experience of foreign countries, thus needs to strengthen risk management. Bidding in overseas high-speed railway project, to fully understand the host country's political, economic, social, customs and other conditions, and drawing experience from completed projects from overseas, list the list of risks and risk responses prepared in advance for a rainy day, so as to achieve the objective of minimizing losses.

D. *Establish Good Brand Image*

A good brand image will help improve China's competitiveness in the international market, the potential customers of all ages. Brand image is one of the secrets of good publicity. In a society with advanced market economies, advertising become an important means to promote their products. Therefore, China should actively promote high-speed rail in China to the international community, can commit substantial abroad China's propaganda films, such as Times Square in New York known as the crossroads of the world; it can also invite foreign customers to experience the high-speed rail in China, use experience to prove the advantages of high-speed rail in China. The secret of a good brand image and the other is quality. Quality is the fundamental product, is the lifeblood of a business. China should strengthen the quality, strengthening quality control of high-speed rail source, strict design, construction quality control, strict

product access and authentication control, optimize and standardize the new line opened condition, pay close attention to standardize high-speed technology management [8]. The third secret is a service of the good brand image, scientifically grasp of international demand in China, international high-speed rail market segments, rich high speed rail product groups. In accordance with national needs, circumstances and cultural background of targeted research and development and innovation, such as high-speed rail products to better meet the needs of different countries of the diverse and heterogeneous nature of demand for high-speed rail, designed and built in accordance with local environmental requirements, economic development of high-speed rail [9].

E. Overseas Patent Layout of China's High-speed Rails

China's high-speed train technology is based on the introduction of digestion and absorption of foreign advanced high-speed rail technology has evolved, so overseas patent layout is extremely weak, most patents are of independent innovation in domestic applications. However China's high-speed rail to go out of the country, real international recognition, it is necessary to apply for patents in Europe and strengthening core technology patent layout planning of foreign, strengthen the protection of intellectual property core technology in the target market [10]. Today, the international high-speed rail market competition, Europe, Japan and other countries will certainly with patent barriers to block the pace of high-speed rail in China Sea. Therefore, in order to anticipate, high-speed rail in China as early as possible in a European patent strategy to patent disputes may happen in the future. Because when there are international patent dispute, China's high-speed trains will be able to use patents in Europe and defend far more effectively than in domestic patent applications.

F. China's High-speed Rails should face the Competition Jointly

High-speed rail industry chain is a systems engineering, including survey design, infrastructure, train tracks, communication signals, traction power supply, operations management, security monitoring and other technical fields. Due to professionalism, resources and technology limitations, at present none of the high-speed rail business

to Siemens, Kawasaki and Alstom heavy industries, multinationals such as compared to will be able to independently and bear the heavy responsibility of China's high-speed rail to sea. Suggested to the Government to establish high-speed rail to the sea-led group, responsible for integrated and coordinated various resources, integration of high-speed rail industry chain, together, hold together to attack and concerted efforts, not only reducing the wasteful competition between China's enterprises and can significantly reduce the cost of construction funds, time. China's high-speed railway should form hold together new ways to attack, and that high speed rail infrastructure by China railway group, China railway construction is responsible for, rail facilities in the North and South merged car was responsible for the car. Also from the national level to develop high-speed rail out medium-and long-term development planning, improving high-speed overseas strategy, coordinate various resources to further promote China's smooth sailing.

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