A Primary Study on the Science and Technology’s Exchange and Cooperation of Cross-border E-commerce between Guangdong and Countries along the Maritime Silk Route

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Abstract. Recently, with the implementation of the strategy “the Maritime Silk Road of the 21st Century” in China, cross-border e-commerce has developed significantly. As the largest trade scale province, the science and technology’s exchange and cooperation of cross-border e-commerce between Guangdong and Countries along the Maritime Silk Route are becoming increasingly close, which makes this area an important focus of study. This paper analyses status quo, bottlenecks of cooperation, and scientific and technological exchange between Guangdong and New Silk Route countries from the perspective of cross-border e-commerce, with the hope of providing a valuable reference for decision makers and scholars in the cross-border e-commerce industry.

Keywords: Science and technology, cross-border e-commerce, Guangdong, the Maritime Silk Road of the 21st Century.

1. Introduction

The prosperity of cross-border e-commerce and the construction of the Maritime Silk Road (the New Silk Road) have brought unprecedented historical opportunities for the development of Guangdong Province. As the birthplace of the New Silk Road and the pioneers of Reform and Opening up, in the field of...
history and culture, geography and economy, Guangdong Province has unique advantages. These advantages are also seen in Guangdong’s modern technological environment and resources. In the science and technology exchanges and cooperation occurring because of cross-border e-commerce, Guangdong has an unparalleled position with the countries along the Maritime Silk Route.

2. The Status Quo of Cooperation and Exchange of Scientific and Technological between Guangdong and New Silk Route Countries from the Perspective of Cross-border E-commerce

The Maritime Silk Road of the 21st Century initiative was announced by the Chinese President Xi Jinping, as the "21st Century Maritime Silk Road," along the national scope of a total of 72 countries. Through this initiative, the cooperation between China and ASEAN can be advanced to build a closer community of common destiny. According to its actual situation, the Guangdong government preliminarily put forward the 31 "Maritime Silk Road" partners based on existing trade relations. They are all the main trade partners pulling the growth rate of Guangdong.

In 2015, Guangdong Province made a normative guidance policy document “the suggestive plan of construction to cross-border e-commerce parks in Guangdong Province.” It is the first introduction in the field of planning cross-border e-commerce parks. After 2014, cross-border electricity business transactions showed explosive growth. From 2014 to 2016, China's cross-border electricity business transactions were 4.2 trillion, 5.4 trillion, and 6.3 trillion yuan. In 2016, the scope of import and export cross-border e-commerce was 22.8 billion yuan in Guangdong Province, an increase of 36.5%, ranking first in China (Figure 1).

![Figure 1](image_url)
In January 2016, the State Council decided to set up cross-border e-commerce integrated test areas in Guangzhou, Shenzhen, Shanghai, Chongqing, Tianjin, and 7 other cities in the executive meeting. Among them, two cities are in Guangdong Province. The forefront of “system heights” has helped Guangdong explore the regulatory development innovation model. At the same time, Guangdong promoted the cross-border electricity business in the whole province, supporting the declaration of certified pilots and speeding up the construction of public and overseas cross-border electricity business parks. Throughout 2016, Guangdong Province established the first phase of the 20 billion yuan Silk Road Fund and successfully held the second investment forum to African Countries and 2016 Guangdong International Fair of 21st Century Maritime Silk Road. Guangdong also promoted the construction of Saudi Arabia (Kyrgyzstan) - China's industrial agglomeration area and Iran Geshm free trade area, as well as other projects.

Guangdong Province has continuously strengthened its cooperation with the other countries of the New Silk Road in the fields of economy, trade, science, and technology. It held economic and trade cooperation exchanges in South Africa, Ethiopia, and Kenya, respectively, and signed 51 cooperation projects with a total amount of $2.2 billion dollars. From January to September of 2016, Guangdong’s imports and exports totaled 65.35 billion yuan with an increase of 8%. This accounts for 14.6% of the province's total trade, registering a year-on-year growth of 1.1 percentage points.

In the key countries of the New Silk Road, there are both developed service industry countries like Malaysia and India and manufacturing mature industry countries like Malaysia and Thailand. Other countries like Vietnam, the Philippines, Bangladesh, and Myanmar offer abundant human resources for the labor force. Nowadays, Guangdong’s industrial system is relatively mature; it has formed 10 main industries, including electronic information, petrochemical, electrical machinery, electric power, food and beverage, transportation equipment, textile and garment, general-purpose equipment, metal products, and building materials. Making use of the advantages on the market of end products, as well as on the comparative advantages technology, Guangdong should gradually make it clear of the vertical division of labor and the horizontal cooperation along with the key countries of New Silk Road. What’s more, it should enhance the allocation capacity of international resources aimed at being the important driving force of cross-border trade development with New Silk Road countries.

As the most economically prosperous province in China, on the one hand, Guangdong Province has a good economic and trade environment; but on the other hand, it also is confronted with many other difficulties like rising costs,
lack of external demand, and overcapacity. However, the New Silk Road countries have rich natural resources. Their level of industrialization is generally not high, but have a huge consumption potential. With the aid of convenient information sharing platforms and efficient commodity trading mechanisms, Guangdong and New Silk Road countries have a broad space in terms of cooperation and exchange. However, in the perspective of cross-border electricity business, they still face many problems and challenges in the industry of science and technology.

3. Bottlenecks—From the perspective of cross-border e-commerce in Guangdong Province and countries along the Maritime Silk Road in the 21st Century for science and technology cooperation

The main problems of Guangdong province and cross-border E-commerce in countries along the Maritime Silk Road in the 21st Century are in terms of the deficiency in technology and science, such as different levels of payment, lack of a scientific standard for customs clearance systems, the improvement of quality in logistics in scientific level, and the talent cultivation in modernization.

3.1 Different levels of payment

Broadly, cross-border E-commerce can be divided into self-operation and platform model while it specifically consists of self-operation, purchasing agent, posting directly, purchasing guide and flash sales, etc. Considering the complexity of transaction between different countries and diversity of platforms in cross-border E-commerce, it differs from the payment in China, which leads to more complex transaction processes and payments. To date, there exist many payments on behalf of cross-border E-commerce and each of the payment tools have different advantages varying from convenience and effectiveness. Generally, domestic and foreign currency cross-border payments are mainly applied to pay the loan through the third-party platform with cross-border countries. An example shows that, in September 2003, the Administration of Exchange Control of People’s Republic of China authorized the first 17 payment companies to start experimental units in foreign currency payment business with cross-border E-commerce, namely cross-border foreign currency payments. Third-party payment institutions involved in cross-border payment of foreign exchange first do a currency exchange at the banks, but when operating cross-border RMB payment, they will not need to do the currency exchange. In the process of cross-border foreign currency payments, great gaps can be found in language, time difference, exchange rate, payment, and transaction practices, which bring problems of information flow and low credibility.

3.2 Lack of a scientific standard for customs clearance system

With the aid of Internet and electronic information technology, it is easy to
get access to purchasing, ordering, and payment online while a proper way of transportation and logistics is still being selected, which focuses on the issues of customs clearance in unified customs territory. Different countries have various clearance systems, of which the process entails problems such as tax rebate, settlement and trade security, etc. The 56th and 57th Proclamation of General Administration of Customs contribute to the openness of cross-border commercial enterprises; however, huge gaps exist in supervision conditions and regulation methods in cargo clearance, also in clearance treatment. Thus, it is hard to form a general cross-border E-commerce clearance model. Furthermore, diversified-size enterprises in Guangdong Province and countries along the Maritime Silk Road in the 21st Century perform differently in customs clearance with large-scale enterprises operating best while small-size firms falling below the average. Due to small volumes of business and high frequency of cross-border E-commerce without a scientific and optimized customs supervision system, novel challenges appear in China.

3.3 Improvement required in the quality of scientific logistics

Logistics system must improve. Although international trade is unimpeded under the impulse of cross-border E-commerce, the logistics still hinder the development of international commerce. Currently, many problems can be found in Chinese logistics systems, such as excessive logistics enterprises without sound connections to each other, especially a lack of scale formation in international logistics system, which impedes the improvement of international logistics. The incomplete conditions of international logistics lead to the separation of logistics enterprises, adding the cost of physical distribution and hindering the progress in profits of international trade enterprises. Though people have realized the importance of enhancing logistics system and investing capital into the fundamental equipment, they do not promote the level of service quality and transport efficiency on account for lack of systematic management, especially inventory planning, inaccurate inventory, low efficiency of warehousing management, and mistakes of sending goods or delaying delivery that bring down the service experiences of customers.
3.4 Deficiency in scientific talent training and weakness in research and development and service

The competition of trade and technology, after all, is the race between talent and quality. Compared with traditional trade, the professionals for cross-border E-commerce not only acknowledge electronic commercial specialized knowledge and master the management of E-commerce, foreign communication language, practical knowledge of trading nations and the preference of consumers, but they also have some electronic commercial marketing skills. The cross-border E-commerce was substantially introduced to China in 2012, thus, the major aim to cultivate interdisciplinary talents in requirement of cross-border E-commerce enterprises did not appear in Guangdong province.

The deficiency in interdisciplinary talents of cross-border E-commerce has become a bottleneck in cross-border trades between Guangdong province and countries along the Maritime Silk Road in the 21st Century. Besides, the power of national-level research and technology in Guangzhou is still weak. Guangzhou and Shenzhen, which are regarded as two innovation poles, do not give an impetus to the development. This weakness can be pinpointed to the fact that Guangzhou entails most of universities of Guangdong, whereas they lack strength in schools and research organizations. Though many headquarters or big-scale enterprises were attracted to Guangzhou, the deficiency in research and development is still obvious. In 2015, Research and development funding of top five cities in Guangdong are Shenzhen (732.39 billion yuan), Guangzhou (380.13 billion yuan), Foshan (195.73 billion yuan), Dongguan (147.88 billion yuan), and Zhongshan (70.98 billion yuan), and other regions are lagging behind further. In 2015, the research and development intensity of Guangzhou reached merely 2.3%, even lower than the average of Guangdong province (Figure 2).
4. The Creative Strategies of Cooperation and Exchange of Scientific and Technological between Guangdong and New Silk Route Countries from the Perspective of Cross-border E-commerce

The New Silk Road is the road of both trade and science and technology. Exchanges and cooperation in science and technology are important parts of the New Silk Road of the 21st century. Based on its important role, the core areas of cross-border e-commerce in Guangdong should emphasize the following aspects.

4.1 Personnel training and scientific problem tackling

First of all, Guangdong should actively participate in international science and technology projects and establish Innovation Institutes connected with the New Silk Road. For the enterprises, universities and research institutes, they can establish R&D centers to carry out joint training of personnel to promote the spread and extension of technological achievements. Guangdong has many kinds of high-level universities, like Zhongshan University, Jinan University, South China University of Science and Technology, and Guangdong University of Foreign Studies, etc. Those universities and colleges can actively cultivate high-quality talents to meet the needs of cross-border e-commerce development; they should set up talent training programs and emphasis professional and practical courses. Second of all, the colleges and universities should actively cooperate to build effective educational and teaching platforms to improve students' practical abilities. Related enterprises can also introduce foreign experienced high-quality personnel and talents, absorbing foreign successful experiences. Finally, they should make good use of the university unions and established innovation centers and continue to support the establishment of a number of New Silk Road think tanks.

4.2 Strengthen the innovation and build the Guangdong brands

Guangdong is synonymous with "Made in China" and it is the base of the global manufacturing industry. But for a long time, its manufacturing industry has mainly relied on an extensive processing industry, a "sweat-shaped economy," with an over-reliance on low labor costs and resource consumption. Service industry, domestic market, manufacturing, and exports created today's Guangdong. However, compared with the scale of industry in the manufacturing sector, Guangdong needs to rely on the quality of its own brands, needs more enterprises like Huawei, ZTE, and BYD with its own innovative advantages in science and technology.

Guangdong’s provincial Government should provide more comprehensive policy and financial support for the development of Guangdong’s own brands. In the different districts, brand incubator centers and brand growth accelerators can be created, and so are effective measures. Creating a brand is a long process,
Guangdong enterprises should seize the opportunity to develop advanced manufacturing, high-tech manufacturing, and guide enterprises to increase R & D investment, strengthen the key core technology research, and transform them to create their own brands. Vigorously Guangdong should implement the quality strategy to promote quality innovation, and comprehensively improve the product’s core technology, environmental protection, and energy efficiency.

4.3 **Build the informatizational, technological and lean logistics**

Firstly, Guangdong should make full use of postal services, international express and overseas warehouses business and other existing channels. On the basis of that, focusing on the development of multimodal transport with the New Silk Road’s countries’ local logistics and customs enterprises. In addition, Guangdong should jointly build a government-oriented comprehensive foreign trade service platform. Meanwhile, focus should be on making the supply chain management as the main line for promoting lean logistics. Guangdong can establish border warehouses, especially in the near countries of New Silk Road countries, like Hong Kong and Macao and other regions to optimize the supply chain. Take Amazon, for example. By placing the goods in free trade regions, it saves time and storage costs. Also, they make good use of large data, increasing the efficiency of information and the effect of supply chain operations. For Amazon’s success, one of the advantages is building a global operation network and lean supply chain. Technological and lean logistics operation is the improvement of logistics quality, not only requires the accurate analysis and operation management, but also need the flexibility of the system. Application of "Internet +" and large data platforms is a good way to maximize the management of storage operations and optimize the consumer service experience.

4.4 **Develop the blue sea of national retail of the New Silk Road**

The retail exports of Guangdong mainly include clothing and accessories, household goods, computers and communicational technology products, all of which fit the traditional advantages of the industries in Guangdong Province. The retail imports are fresh food, infant food, cosmetics, 3C electronics, clothing bags, etc. The New Silk Road countries are most emerging economies. In the short term, the strengths in the cost and prices of Guangdong can promote the demand of export, but they cannot support the future of cross-border e-commerce in the Guangdong Province.

Brand is an important high-quality asset for the international trade and cross-border electricity business. Famous Brands can develop the blue sea of retail market as a fundamental weapon.

For a long time, the world’s retail market has been dominated by European and American brands while coupled with the mature e-commerce system
supporting them. Chinese enterprises with famous brands accounted for a relatively smaller portion of the market. The e-commerce retail market in Guangdong Province is the next important direction of expansion to e-commerce.

4.5 Construction of multi-level scientific and technological cooperation platform, to expand Cross-border trade E-commerce trade among the Maritime Silk Road countries.

To expand cross-border e-commerce trade among the Maritime Silk Road countries and Guangdong Province, a multi-level economic and trade cooperation mechanisms led by government, participating by industry and civil organizations should be established. Two-way platforms of international exchange for cross-border trade e-commerce trade should be built between Guangdong Province and the 21st century "Maritime Silk Road" countries.

At the same time, it is essential to speed up the import and export commodity trading center to expand the trade product categories. In addition, the Guangdong government should further guide enterprises to set up production bases, marketing network and regional headquarters, and to construct economic and trade Cooperation zones in the Maritime Silk Road countries. In the field of scientific and technological advantaging industry, such as machinery, electronics, light industry, home appliances and building materials, the government should try to attract capital investment from other Maritime Silk Road countries. Competitive industries of science and technology in Guangdong can promote investment cooperation for the emerging industries.

4.6 Develop ecological e-commerce and build technological e-commerce district

In Guangdong Province, after the development of cross-border e-commerce for the last 10 years, a complete industrial chain containing retailers, consumers, logistics, payment and technology services has gradually formed, and an independent chapter of the ecological economy has formed. The industrial upgrading of cross-border E-commerce requires deep integration and innovation within the industry and across industries, with the active participation and integration of government, business, social organizations, and civilians.

For example, Alibaba and Amazon and other large E-commerce companies have developed from the early information yellow pages into comprehensive transaction service platforms. Through a process of integrated payment, logistics, warehousing, distribution, and many other links, they have formed an entire industry chain containing the ecological economic circle. The future of science and technology e-commerce district should integrate industry chain and apply the scientific and technological innovation to build an ecological and technological chain. Such a chain can be a content video e-commerce platform
containing information, knowledge, marketing, trading, social networking, and services. Compared to the platform of traditional e-commerce, eco-technology e-commerce should have a vertical industry chain to open up and cross industry chain with integration features, including content, video, and scene. They have functions and equipment such as incubator buildings, service centers, the experiencing zone of manufacturing products, storage, and logistics areas.

5. Conclusions
Among the provinces of the New Silk Road, Guangdong has the most ports and most extensive route. In the Science and Technology’s Exchange and Cooperation of Cross-border E-commerce, it plays an important and irreplaceable role with the New Silk Road Countries. Furthermore, in the process of further construction, it will help to drive the development of maritime equipment manufacturing, logistics and transport and other related industries. For the deepening of domestic and international cooperation and gathering the production factors, there is a rare opportunity for Guangdong, as well as attracting investment and promoting the regional development. In the future, Guangdong should live up to its bigger responsibilities.

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