Development Strategy of International Service Trade Based on Big Data

Na Li¹, Dongqin Lv²,*

¹Huzhou Vocational and Technical College, Huzhou, 313000, Zhejiang, China
²Taishan University, Tai’an, 271000, Shandong, China

*Corresponding author E-mail: lvdongqin@tsu.edu.cn

Abstract. In recent years, the rapid development of China's international trade in services has brought new impetus to China's economic growth. However, due to the late development, compared with foreign countries, there is still a lack of core competitiveness. Big data (BD) can bring great commercial value, and it is currently applied in various fields. In view of the current situation of China's international trade in services, this paper puts forward the development strategy research of international service trade (IST) based on BD. This paper makes an in-depth study and analysis of BD technology and its application in China's international trade in services. It is believed that the current situation in China's international trade in services is too single, low-end industry, and low share of high-tech. Through BD technology, we can further tap the potential value behind the data, so as to improve the IST the existing problems in the scientific analysis. This paper investigates the competitiveness of China's IST. Through the survey, we can see that the T Index of China is -0.021, and the overall economic competitiveness of enterprises in service export trade is relatively weak. In the current modern service export trade, the overall competitiveness and advantage index of patent, insurance and other fields are relatively low, reaching -0.91, -0.97, -0.86. The analysis shows that the reasons behind this situation are complex, but it also indirectly shows that there is still a lot of work to be done to make China's IST bigger and stronger. First of all, we should pay attention to the analysis and application of data, and formulate scientific and effective development strategies through BD analysis and other means.

Keywords: BD Analysis, Data Mining, IST, Development Strategy

1. Introduction

In the environment of economic globalization, IST develops rapidly. In the developed countries in Europe and the United States, service trade has become an important part of global service export. The development of IST promotes the development of tourism, culture and other industries in these countries [1-3]. With the development of international trade in services, market related resources have
been redistributed among countries, thus improving the level of international trade in services. As an important service export market, China has less resources and IST is in the initial stage. The important position of China's economy in the world economy also provides opportunities for the development of China's IST [4-5].

The traditional trading platform is entity trading. Commodities or traders have to travel long distances in specific trading locations, making choices or face-to-face negotiations, which greatly increases transaction costs and risks. Nowadays, with the revolution of BD technology, great changes have taken place in the fields of electronic transaction currency, breaking through the limitations of traditional transaction time and region, and making the transaction process digital [6-8]. In addition, BD technology has promoted the construction of international trade platform and improved the international trade supply chain. In the era of BD, international trade breaks through the traditional entity business form, develops a new cross-border e-commerce or network international trade platform, and forms cross-border e-commerce or network international trade. The continuous development of trade platform has enriched the international trade mode and become a powerful supplement to the entity business model [9-10].

This paper makes an in-depth study on the application of BD technology in China and in international trade in services. It is learned that although the international trade in services has developed rapidly in recent years, it is still at a low level of development, and there are many deficiencies in both market competitiveness and related policies. As a result, China's international trade is not aware of the impact of the whole process of international trade on services. Therefore, this paper puts forward the development strategy research of IST based on BD, hoping to improve the analysis method of traditional IST through BD technology, so as to achieve the purpose of promoting the benign development of China's IST. According to the data analysis demand of China's international trade in services, combined with the characteristics of BD analysis technology, this paper puts forward an index analysis model of IST competitiveness based on BD technology. The model can solve the main problems such as insufficient data analysis of IST. This paper analyzes the application advantages of BD analysis technology in the field of IST in detail, and puts forward corresponding optimization and improvement measures combined with SWOT analysis method. The analysis shows that the research of this paper has achieved ideal results and made a contribution to the development strategy of China's international trade in services.

2. BD Analysis Technology and IST

2.1 Basic Definition of International Trade in Services

Services can be defined as the output of a series of industries, such as transportation, warehousing and postal services, information transmission and other services. Therefore, "international trade in services" can be defined as the export of services to other countries, which is a cross-border trade in services. The precise definition of international trade in services is mainly defined from these four aspects

(1) Cross border distribution
Services are provided from the boundary of one member to the boundary of another. This service trade model emphasizes the geographical boundary between service providers and consumers.

(2) Overseas consumption
Consumers who provide services from one-member area to another refer to the services that migrate from the member area to the provider area.

(3) Commercial presence
It usually refers to that a service provider of a member country establishes a business cooperation
organization in the territory of another nonmember state to provide marketing services for specific consumer groups in its member territory. Commercial organizations generally include corporate branches and unincorporated commercial organizations or representative organizations.

(4) Movement of natural persons
A natural person of one member provides services on the territory of another member. Unlike business, it does not involve investment activities, such as overseas labor services.

2.2 SWOT Analysis of China's IST

(1) Development advantages

1) Human resources
With a large population, abundant labor force and low labor cost, China has advantages in developing labor-intensive service industry.

2) Rich in tourism resources
China has beautiful natural scenery, long history and rich folk customs. In addition, with the rapid development of domestic economy and the stability of the situation, it has attracted a large number of tourists.

3) Policy advantages
Adhering to the marketization and industrialization of services, establishing an open and equal system, standardizing the management system of market access of service industries, and implementing the management of public service departments of self-employed enterprises provide a solid guarantee for the development of service trade.

(2) Disadvantages of development

1) The structure of domestic service industry is relatively low
The overall development of China's emerging modern service industry is relatively late, restricted by industry monopoly and other factors.

2) Unbalanced regional development
The eastern coastal areas opened earlier, with sufficient funds and advanced technology development, which laid a good foundation for modern service industry. The opening time of the central and western regions is relatively late, and the development of modern service industry is slow.

(3) Development threat

1) Domestic market competition intensifies
With the fulfillment of China's WTO commitments and the improvement of service market openness, many Foreign Service producers or suppliers will rush into China's market and seize the share of China's service market.

2) The threat of trade barriers in service industry
Barriers to trade in services usually refer to the measures formulated or adopted by national governments to prevent Foreign Service producers or providers from providing and selling services. According to the statistics of the world trade organization, there are more than 2000 kinds of service
trade barriers that hinder the process of service trade liberalization.

(4) Development opportunities

1) Service trade liberalization
It is the first time that cats’ rules are extended to the world service industry. According to these rules, all members promise to open up the service industry and reduce the barriers to trade in services.

2) The rapid development of China's economy
In recent years, China's main national economy has been growing at a high speed. The national economy is showing a good growth momentum of sustained and rapid development. The national economy is also developing rapidly and healthily, which will further improve China's comprehensive national strength and provide a good economic and social environment for IST.

2.3 Main Uses of BD
BD has been widely used in many industries, and has brought great business value. Its main uses are as follows. First, through the collection, management, analysis and optimization of different data sources, feedback is applied to the program of publishing these data, which further excavates the potential needs of consumers. Second, BD will bring new impetus to the development of the information industry, and new technologies, new brands and services centered on BD technology will continue to emerge. Third, BD will change the original data processing method, making the data processing samples closer to the whole, and the conclusions drawn are more reliable. Fourth, BD will become more and more important in the development of enterprises and become an important path for enterprises and even countries to improve their competitive advantages.

2.4 Analysis of Competitiveness Index

(1) Openness of international trade in services
The degree of liberalization of international trade in services is measured by the proportion of total trade in financial services in GDP:

$$\text{FOI} = \frac{X_o + M_o}{GDP_o}$$  \hspace{1cm} (1)

Among them, $X_o$ and $M_o$ are exports and imports respectively, and $GDP_o$ is GDP. The higher the level of $\text{FOI}$, the greater the openness of financial services to the international market, so the higher the degree of liberalization.

(2) IST competition index
That is, the proportion of a country’s import and export balance in the total amount:

$$\text{TC} = \frac{\sum_{i=1}^{n} M_i}{X_o}$$  \hspace{1cm} (2)

From equation (2), we can get the following results:

$$\text{TC} = \frac{X_o - M_o}{X_o + M_o}$$  \hspace{1cm} (3)

$X_o$ and $M_o$ are exports and imports of financial services trade, respectively. As a relative value of total trade volume, the index does not consider the impact of macro fluctuations such as economic expansion, that is, no matter what the absolute value of import and export is, it is between $\pm 1$. 
3. Investigation and Analysis on the Competitiveness of China's IST

(1) Determination of indicators and sample selection
According to the relevant public data, from 2010 to 2019, this paper selects six recognized influencing factors of China's service trade export: GDP, per capita GDP, added value of the tertiary industry, import service trade, trade export goods and imported goods, to measure the impact of these factors on China's service trade export. In order to prevent the heteroscedasticity between them, we take natural logarithm and logarithm respectively to classify the transportation, tourism, patent, construction, insurance and financial industries.

(2) Establishment of model
In this paper, the least square method is used to establish the first-order multiple regression model to analyze the selected time series samples.

4. Discussion

4.1 Results and Analysis
The analysis results of Table 1, Figure 1 and Figure 2 are obtained after sorting out the data through public information. From the results of Table 1 and Figure 1, we can see that China's t index is -0.021, the overall competitiveness of service trade is low, and there is a big gap between China and developed countries in Europe and the United States, and China is in a relatively inferior position in IST. From Figure 2, we can see that the evaluation index of China's international service competitive trade market competitive strategic advantage is very low, especially in the relatively modern service competitive trade strategic field, patent, insurance and international finance, reaching -0.91, -0.97 and -0.86, and most of the evaluation indexes of service competitive strategic advantage are negative, It shows that the overall competitiveness of China's service trade is not only low, but also the international competitiveness of different industries in service trade, especially in the field of modern service industry, the proportion is also very low. With the continuous improvement of China's service trade openness and the increasingly complex world economic situation, China's service trade is bound to face greater competition and challenges.

Table 1. China's service trade competition index (2010-2019).

| Particular year | TC     | RCA   | CA    | NRCA  |
|-----------------|--------|-------|-------|-------|
| 2010            | -0.03274 | 0.42  | -0.15 | -0.03 |
| 2011            | -0.03562 | 0.42  | -0.18 | -0.02 |
| 2012            | -0.04172 | 0.41  | -0.26 | -0.02 |
| 2013            | -0.02983 | 0.38  | -0.17 | -0.02 |
| 2014            | -0.02671 | 0.36  | -0.16 | -0.03 |
| 2015            | -0.02301 | 0.35  | -0.15 | -0.04 |
| 2016            | -0.02119 | 0.32  | -0.13 | -0.03 |
| 2017            | -0.01872 | 0.31  | -0.14 | -0.03 |
| 2018            | -0.01756 | 0.29  | -0.12 | -0.03 |
| 2019            | -0.01554 | 0.28  | -0.12 | -0.02 |
Figure 1. World trade competitiveness index of major countries in services in 2019
4.2 Countermeasures and Suggestions on Developing IST

(1) Vigorously develop service industry to lay a solid foundation for development
Optimize the industrial structure of service industry and promote the upgrading of industrial structure. We should deepen the development of traditional service industry, improve the content and level of service science and technology, and increase the added value of trade. At the same time, through the industrial support policy, we should focus on the cultivation and development of modern service industry to make it a new economic development point.

(2) Formulate strategic plan for development of service trade
We will formulate strategic plans for the development of trade in services and implement regional and industrial policies. According to the function orientation, give full play to the demonstration role of the city, and combine with the development level of local service industry, carry out positioning selection and promotion.

(3) Speed up the training of service trade talents
On the one hand, it is necessary to strengthen the training of existing personnel, so that they can better understand the terms and regulations of cats; on the other hand, we should appropriately adjust the professional setting of colleges and universities, and add IST courses in various foreign-related professional colleges and universities. At the same time, we should take effective measures to prevent brain drain in trade and services.

(4) Reasonable avoidance of service trade barriers
In order to protect the domestic service market, countries usually set up trade barriers, such as personnel flow barriers, capital flow barriers and so on. Therefore, we need to actively collect the relevant information of service trade barriers to provide reference for service import and export enterprises. At the same time, we should actively implement the most favored nation treatment and national treatment principles of the world trade organization, safeguard our own rights and interests, and strive for a fair international market competition environment.

5. Conclusions
Since China's entry into WTO, China's IST has developed rapidly and become an important part of China's market economy. But at the same time, it also exposes the shortcomings and shortcomings of China's international trade in services, especially in the case of increasing international trade barriers, it is urgent to optimize and adjust the existing development strategies of international trade in services. The research on the development strategy of IST based on BD proposed in this paper advocates to strengthen the use of data information, and to deeply mine the value behind the data through BD analysis and other technologies. The analysis shows that the research in this paper can improve the existing scientific analysis of international trade in services and play an important reference role in formulating and adjusting the development strategies of China's international trade in services.

Acknowledgments
1. Zhejiang University Visiting Engineer School-enterprise Cooperation Project "Internet + Foreign Trade" in the context of school-enterprise cooperation to explore the practice teaching mode of higher vocational international trade majors (Project Number: FG2018126).
2. Research on the construction of Shandong logistics enterprise-oriented supply chain financial business model (2020-JRZZ-30).
3. Soft science research program of Zhejiang (2021C35007)

References

[1] Crozet, M., Milet, E., & Mirza, D. (2016). The impact of domestic regulations on international trade in services: evidence from firm-level data. Journal of Comparative Economics, 44(3), 585-607.

[2] Biewen, E., & Schultz, S. (2015). Deutsche bundesbank's statistics on international trade in services: the dataset and its potential. Schmollers Jahrbuch: Journal of Applied Social Science Studies / Zeitschrift für Wirtschafts- und Sozialwissenschaften, 134(4), 477-486.

[3] Lee, C. W., & Park, S. (2015). Does religious similarity matter in international trade in services? World Economy, 39(3), 294-299.

[4] Ottaviano, G., Peri, G., & Wright, G. C. (2015). Immigration: the link to international trade in services. CentrePiece - The Magazine for Economic Performance, 48(1), 247–256.

[5] Trunk-Fedorova, & Marina. (2017). Regulatory autonomy and international trade in services: the eu under gats and rtas by bregt natens cheltenham: edward elgar publishing, 2016. World Trade Review, 16(04), 763-766.

[6] Liu, Z., Wang, Y., Cai, L., Cheng, Q., & Zhang, H. (2016). Design and manufacturing model of customized hydrostatic bearing system based on cloud and BD technology. International Journal of Advanced Manufacturing Technology, 84(1-4), 261-273.

[7] Liu Weiwei. (2019). The integration trend and its characteristics of social physics and BD technology%. The integration trend and its characteristics of social physics and BD technology. Dialectics of Nature Communications, 041 (009), 80-86.

[8] Yu Wangchun. (2019). Research on the role of BD technology in the construction of university library management system. Science and Technology Information Development and Economics, 004 (005), 16-19.

[9] Wu, J., Li, H., Cheng, S., & Lin, Z. (2016). The promising future of healthcare services: when BD analytics meets wearable technology. Information & Management, 53(8), 1020-1033.

[10] Cai, L., & Zhu, Y. (2015). The challenges of data quality and data quality assessment in the BD era. Data ence Journal, 14(1), 21-3.