Analysis of the research status, hot spots and trends of domestic cross-border e-commerce platforms-- Scientific knowledge graph analysis based on Cite Space

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Abstract: Behind the good development of cross-border e-commerce, cross-border e-commerce platform plays an important role.The number of relevant research literatures based on cross-border e-commerce platform is too large and the information is too complex. It is difficult to analyze and study comprehensively and accurately by using traditional data analysis methods. Therefore, the author uses bibliometric analysis, quantitative visualization analysis and Cite Space literature visualization analysis tools. To make a visual analysis of the current situation, hot spots and trends of cross-border e-commerce platforms.The analysis results show that the academic research in this field is in a stable development stage, and "supply chain", "block chain", "global value chain", "brand internationalization" and other hot topics.Newly added keywords include "platform empowerment", "cross-border logistics", "digital economy", "brand management", etc."Global value chain", "platform empowerment", "digital economy", "block chain", etc., will become the future research trends in the field of cross-border e-commerce platforms.The author will sort out and analyze the research results, so as to facilitate subsequent researchers to intuitively understand the research status, hot spots and trends of cross-border e-commerce platforms, and provide reference and basis for subsequent theoretical research and practical activities.

Keywords: cross-border e-commerce platform; literature review; bibliometrics; knowledge graph

1. Introduction

Under the general trend of economic globalization and China's e-commerce globalization, China's cross-border e-commerce has a good development momentum.Especially in the epidemic economic era, China's cross-border e-commerce industry, which has advantages such as online communication and efficient logistics, has shown a good overall trend.[1]According to customs data, China's cross-border e-commerce imports and exports have increased by nearly 10 times in five years, reaching 1.92 trillion yuan in 2021, an increase of 18.6%.The sales volume of China's Amazon Overseas shopping in 2021 was more than 9 times that of 2015.[2]As a new trade middleman, cross-border e-commerce platforms provide great transaction convenience for both sides of the platform.The powerful merchant matching function and credit guarantee function of cross-border e-commerce platform make it develop rapidly, but the problems behind its rapid development cannot be ignored.

The development of cross-border e-commerce platform is stable, and the domestic research in the field of cross-border e-commerce platform is also gradually increasing.Due to the large number and complex information of relevant research literatures in the field of cross-border e-commerce platform, it is difficult to make comprehensive and accurate analysis and research by using traditional data analysis methods. Therefore, the author uses bibliometric analysis, quantitative visualization analysis and Cite Space literature visualization analysis tools. To make a visual analysis of the current situation, hot spots and trends of cross-border e-commerce platforms.The research results are conducive to intuitively understand the research status, hot spots and trends of cross-border e-commerce platforms, and provide reference and basis for subsequent theoretical research and practical activities of researchers.

2. Research design and data sources

2.1 Study Design

The main analysis methods used in this paper include bibliometric analysis, visualization analysis of CNKI website, and visualization analysis of the current situation, hot spots and trends of cross-border e-commerce platforms by Cite Space software.Among them, the quantitative visualization analysis of CNKI website is used to study the publication of domestic research literatures in the field of cross-border e-commerce platform.Cite Space is used to study the current situation, hot spots and trends of domestic cross-border platform research. The literature information visualization analysis of Cite Space software is used to directly reflect the research situation in the field of domestic cross-border e-commerce platform.

Cite Space is a citation visualization analysis software developed by Professor Chaomei Chen of Drexel University under the background of data visualization and scientometrics. It uses a series of scientific knowledge maps to visually display the current situation, research hot spots and research trends of cross-border e-commerce logistics platforms in China in recent years.At present, no scholars at home and abroad have used Cite Space software to analyze the research literature in the field of cross-border e-commerce platform, and no scholars have comprehensively analyzed the research hotspots and research trends of cross-border e-commerce platform.Through Cite Space literature analysis tool, the author visually analyzes the research literature in the field of cross-border e-commerce platform in CNKI, China's general repository of knowledge resources. By integrating high-frequency keyword network map and keyword time zone map, the research hotspots and research trends of domestic cross-border e-commerce platform are analyzed and analyzed.

2.2 Data sources and processing

China National Knowledge Infrastructure (CNKI) was used as the source of literature data, and "cross-border e-commerce" and "e-commerce platform" were used as the keywords to search. Non-research documents such as reports and current affairs news were excluded, and a total of 1364 Chinese articles from 2009 to 2022 were retrieved.A total of 167 articles of "core journal +SCI+CSSCI+CSCD" were screened out and exported in RefWorks format, saved in download. TXT format, and imported into Cite Space as research samples for analysis.The panel operation parameter "Time Slicing" was set as 2009 Jan-2022 DEC, "Years Per Slice" was set as 1, and the Node Types Node was selected as "Keyword" to draw high-frequency Keyword network map and Keyword Time zone map. Mining and analyzing the research status, research hotspots and research trends in the field of cross-border e-commerce platform in China in the past four years.

3. Analysis of research literature publication on domestic cross-border e-commerce platform
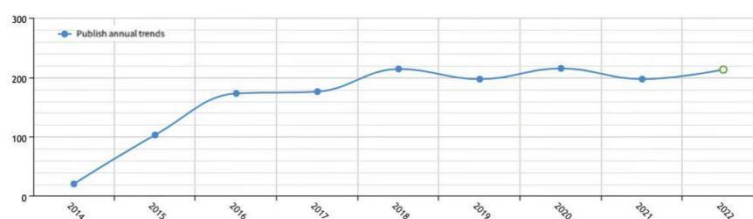

Figure 1   Broken line chart of literature publication quantity on domestic cross-border
e-commerce platforms from 2014 to 2022

The number of research papers in the field of domestic cross-border e-commerce platforms from 2014 to 2022 in the CNKI database was counted according to the year, and the publication trend chart of research papers was drawn (see Figure 1).In the past nine years, a total of 1364 domestic

research papers on cross-border e-commerce platforms have been published.The research literature on cross-border e-commerce platform first appeared in 2014, and from then on, the number of literatures entered a rapid growth stage, from 21 in 2014 to 173 in 2016. In 2017, the number of literatures published tended to be stable and entered a stable development stage.The reason for this trend is that under the general trend of economic globalization, with the deepening of the "Belt and Road" cooperation initiative and the continuous improvement of global electronic information level, cross-border e-commerce has developed rapidly.As an important part of cross-border e-commerce transactions, cross-border e-commerce platform has become the focus of domestic scholars' attention on its foundation construction, development and technological optimization, and domestic scholars' research on cross-border e-commerce platform has gradually increased.According to the annual trend chart of published research literatures, the number of published research literatures in the past five years is still around 200, and domestic scholars still attach importance to the research of cross-border e-commerce platform, which has been the object of continuous attention of the academic community.

4. Analysis of research hot spots of domestic cross-border e-commerce platforms

4.1 Analysis Ideas

Keywords of the literature represent the research topic of the literature, and the keywords with the largest number of publications or the most citations are generally the research hot spots in this field.The author uses Cite Space software to select Node Types as "Keyword" and draw the Keyword network map (as shown in Figure 2).In the high frequency keyword network graph, the font size represents the frequency of the keyword, and the larger the font size represents the higher frequency of the keyword.The lines between keywords indicate that the keywords are paid attention to by different research directions at the same time, with interdisciplinary lines.

4.2 Analysis of research hot spots

As can be seen from Figure 2, "cross-border e-commerce", "global value chain", "block chain", "supply chain", "cross-border logistics", "brand internationalization", "digital economy" and other keywords are cited frequently and published a large number of articles.Through research and analysis, we find that there are the following two research hotspots in the field of cross-border e-commerce platform in China.

One is to study the development of cross-border e-commerce platform, study experience and obtain enlightenment.[4]Zhu Yingying (2018) analyzed the successful experience of the operation of the world's largest mobile community e-commerce platform (Xiaohongshu) under the background of "Internet Plus".[5]Zhang Lei (2019) proposed that the willingness to continue use and the degree of recognition of the platform are important factors affecting the choice of enterprises, and the platform should improve the willingness to continue use and the degree of recognition from the aspects of system, product chain and service, so as to achieve long-term development.[6]Xiong Li (2019) pointed out that cross-border e-commerce platform is the core support for cross-border e-commerce enterprises to carry out relevant business, and analyzed the influence of two factors, namely the matching of transaction subject and import mode, on the competitive advantage of platform.[7]Zhao Xuanchai et al. (2020) studied the mechanism by which cross-border e-commerce platforms effectively reduce cross-border e-commerce trade costs.[8]Zhang Xiang (2022) analyzed the problems that hampered the long-term development of cross-border e-commerce in China under the Belt and Road Initiative, and proposed that an intelligent e-commerce service platform integrating logistics, warehousing and distribution should be built.

Second, from the perspective of big data, global value chain and digital economy, suggestions are put forward on the construction and technological optimization of cross-border e-commerce platform. The main nodes are "global value chain", "block chain" and "digital economy".[9]Zheng Xiaoxue et al. (2016) proposed the method of bilateral matching between cross-border e-commerce platforms and cross-border e-commerce enterprises in cross-border e-commerce supply chain, and used the algorithm to give the optimization model and solution method.[10]Tian Xue et al. (2018) tried to achieve the ultimate goal of improving economic benefits by building cross-border e-commerce cloud platforms.[11]Zhang Shun et al. (2020) analyzed the regulatory governance mechanism of cross-border e-commerce platforms to study the mechanism to ensure the healthy development of the digital economy.[12]Yang Dan (2020) studied how to cope with the "information explosion" of cross-border e-commerce from the perspective of big data, and proposed optimization strategies for cross-border e-commerce platforms to adapt to the current big data environment.[13]Guo Hailing (2021) proposed that under the rapid development of the digital economy, we should enhance the information service level of cross-border e-commerce platforms, build an information service collaboration mode of cross-border e-commerce platforms.
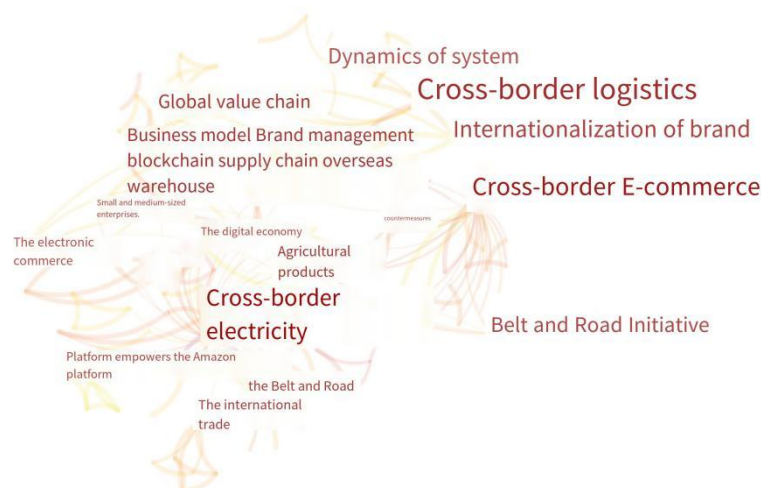

FIG. 2 Map of high-frequency keywords in sample literature of domestic cross-border e-commerce platform

5. Research trend analysis of domestic cross-border e-commerce platforms

5.1 Analysis Ideas

Using Cite Space software, the author selected Node Types as "Keyword", and the display mode was Time Zone View mode to draw the Keyword Time Zone map (as shown in Figure 3).Keywords are partitioned according to time. The font size in the map indicates the frequency of the keyword, and the larger the font size means the higher the frequency of the keyword.The lines between keywords indicate that the keywords are paid attention to by different research directions at the same time, with interdisciplinary lines.The time axis is placed at the bottom of the image, and the position of the keyword in the figure indicates the time when the keyword first appeared in the last four years.

5.2 Analysis of Research Trends

Figure 3 shows that the research in the field of cross-border e-commerce platform can be roughly divided into three stages: The first stage is from 2009 to 2013, the domestic cross-border electricity industry just budding, undeveloped belong to the country's cross-border electric business platform, but abroad, including "amazon" cross-border e-commerce platform has been mature, attracting domestic many scholars to study, so the main keywords as "cross-border electricity" and "the amazon platform".In the second stage, from 2013 to 2017, China's cross-border e-commerce

platform developed rapidly.A large number of domestic businesses enter cross-border e-commerce platforms for profit, but they are limited by their unfamiliarity with the operating rules of cross-border e-commerce platforms. Many domestic cross-border e-commerce platforms are also gradually expanding their business overseas. Scholars focus on the analysis of the operating mechanism and policy situation of cross-border e-commerce platforms. Therefore, the main keywords are "e-commerce platform", "entrepreneurship education", "supply chain", "cross-border logistics" and so on.The third stage is from 2018 to now. In the context of economic globalization and the deepening of the "Belt and Road" Initiative, domestic and local cross-border e-commerce platforms have gradually become mature after ten years of development, and the cooperation between merchants and platforms has become closer and more diversified. Cross-border e-commerce platforms have gradually shifted from the platform specification stage to the stage of technology upgrading and responding to the "Belt and Road" Initiative. Domestic scholars have studied cross-border e-commerce platforms more from the perspective of digital economy and big data, so the main keywords are "platform empowerment", "Belt and Road", "block chain", etc.With the help of keyword time zone atlas, the research focus of different stages in the field of cross-border e-commerce platform in China is displayed, and the future research trend is speculated.The domestic research on cross-border e-commerce platform in different periods is summarized as follows:

2009-2013 is the budding period of cross-border e-commerce.During this period, domestic scholars' research on cross-border e-commerce platforms is less and all of them are in the exploration stage.Amazon, the American e-commerce platform, has long been mature, and its e-book industry has already entered the Chinese market, and some domestic scholars have conducted researches on it.[14]Wan Ying (2009) began to study the Amazon platform in the United States;[15]Luo Zichu et al. (2010) discussed the marketing model of Amazon platform;[16]Youth Reporter (2011) reported that the National Copyright Administration would impose restrictions on Amazon and other foreign platforms.

2014-2017 was a period of rapid development of cross-border e-commerce platforms, with rapid development of domestic cross-border e-commerce platforms. During this period, domestic scholars not only turned their attention to domestic domestic cross-border e-commerce platforms, but also saw the positive role of cross-border e-commerce platform construction on the economy and the problems behind the rapid development of cross-border e-commerce platforms.[17]Li Jinlong (2015) explored the bonded logistics platform of cross-border e-commerce in Yiwu. Yiwu actively strives for the national pilot of cross-border e-commerce and builds an e-commerce information service platform.[2]Tao et al. (2016) put forward that cross-border e-commerce platform, as a new type of trade middleman, has different impacts on enterprises of different sizes.This is the first comprehensive study on the impact of cross-border e-commerce platforms on domestic enterprises in China, and the role of cross-border e-commerce platforms as trade intermediaries in China's cross-border economic and trade.[18]Lv Xueqing et al. (2016) recognized the lack of development norms and ambiguous market positioning of cross-border e-commerce platforms and put forward countermeasures to promote the development of cross-border e-commerce platforms in China, strengthen supply chain management and control, deeply cultivate the market and base on customers.During this period, China's cross-border e-commerce platforms developed rapidly.

The period from 2018 to now is a period of stable development of cross-border e-commerce platforms.In the context of the deepening of the "Belt and Road" cooperation initiative and the advent of the global big data era, many local e-commerce platforms, such as Alibaba and Xiaohongshu, began to operate cross-border e-commerce business, and China began to cooperate with other countries to build cross-border e-commerce platforms. Numerous opportunities and challenges coexist in the industry.Domestic scholars turn their research direction to the combination of high and new technology and cross-border e-commerce platform.In addition,many scholars also focus on the direction of technology optimization.[19]Rong Feiqiong et al. (2018) put forward the need to build credit assessment of cross-border e-commerce platforms based on big data, aiming to

provide convenient and effective quality and safety assurance for cross-border e-commerce platforms.[20]Jiao Liang (2020) proposed the construction of cross-border e-commerce platform system based on block chain technology to build the operation mode of "block chain + cross-border e-commerce" platform.[12]Yang Dan et al. (2020) proposed to optimize the personalized recommendation strategy of cross-border platforms on

the basis of big data, and optimize cross-border e-commerce platforms by combining big data and various algorithms
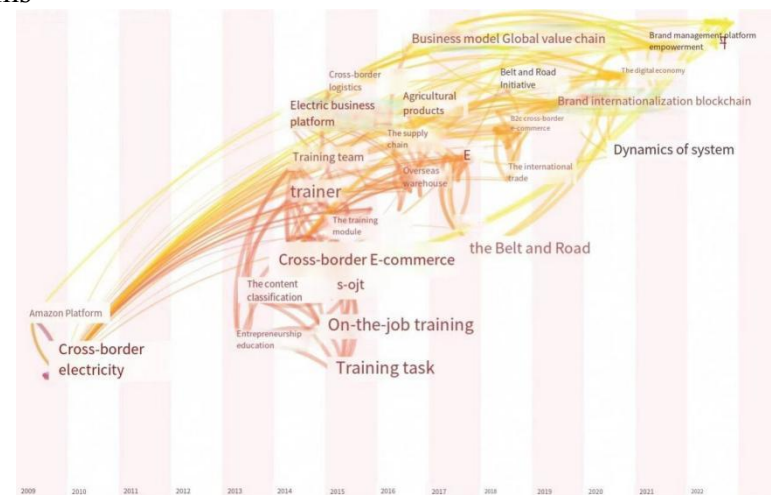

FIG. 3 Time-series map of keyword evolution in sample literature on domestic cross-border e-commerce platforms

6. Summary and research prospect

In conclusion, scholars have conducted a lot of research and analysis on cross-border e-commerce platforms from different perspectives and achieved certain results.Through Cite Space literature analysis tool, the author found that the domestic research in the field of cross-border e-commerce platform has entered a stable development stage, and the number of relevant literature published in the past five years is stable. However, there are still many deficiencies in the research situation in the field of cross-border e-commerce platform in China.

The limitation of the author's research lies in that the literature retrieval scope is limited to the Chinese literature in CNKI database, and the literature in other languages and other databases is not combed and analyzed.The data analysis samples of Cite Space were selected as "core journals +SCI+CSSCI+CSCD", and other valuable literatures were not considered.

In conclusion, the author puts forward the following suggestions: At present, there are few researches on domestic cross-border e-commerce platforms in China, and empirical studies on domestic cross-border e-commerce platforms can be conducted in the future;At present, most of the researches on cross-border e-commerce platform in China focus on the external impact of the platform or relevant policy interpretation, and relatively few researches on the platform's own technology optimization. In the future, the direction can be changed to in-depth research on the platform's operation mechanism and operation mode.Researches on cross-border e-commerce platforms are conducted from the perspective of block chain, global value chain and domestic supply chain.

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