

# Progress Analysis of Business Environment Research based on Citespace

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**Abstract:** Good business environment is a necessary condition to stimulate market vitality and promote high-quality economic development, but also a significant symbol of the modernization of national governance. In recent years, the research on business environment has attracted the wide attention of scholars all over the world. Considering the important role of China in world economic development, this paper adopts text analysis and visualization graph analysis method, and takes the journal literatures published in Web of Science (WOS) and China National Knowledge Infrastructure (CNKI) from 2012 to 2022 as samples. The research progress of the business environment is visually analyzed from the aspects of the number of publications, authors and cooperative relations, publishing institutions and the evolution of research topics. The results show that the number of articles published in both Chinese and English literature presents an increasing trend. Chinese literature focuses on national policy support and government governance, while English literature focuses on the correlation analysis between business environment and enterprises. From the perspective of the evolution path of relevant research, the research on business environment in China is not long. At present, except for a few quantitative performance evaluation analysis, most qualitative research on development countermeasures is conducted. Foreign research on business environment appeared earlier, with a wide range of research topics, and has achieved more mature results.

**Keywords:** Business environment; Text analysis; Visual analysis; Citespace.

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## 1. Introduction

Business environment is an important foundation for building a modern economic system and promoting high-quality development. It is a comprehensive reflection of a region's market environment, government environment, legal environment and social environment. Whether the business environment can be continuously optimized is the key to the agglomeration of attractive factors in a region, which ultimately affects the process of regional development [1]. Since the World Bank released its first Doing Business Report in 2003, the topic of doing business has become a major concern of countries around the world and a topic widely discussed by scholars. As the world's second largest economy, the Chinese government has attached great importance to building a business environment since the 18th National Congress of the Communist Party of China (2012). It has made a number of major strategic plans on how to optimize the business environment and improve the country's comprehensive competitiveness, which has triggered active research and discussion among Chinese scholars.

At present, a large number of studies on business environment have been carried out in the academic and industrial circles around the connotation, performance, evaluation, governance and enterprise ecology of business environment. These findings are quite inspiring for us to carry out research on business environment evaluation and development. However, these perspectives and results are scattered and need to be sorted out. Some scholars use the text analysis method to conduct review research on relevant issues [2-6]. A few scholars also try to carry out visual analysis of knowledge graph. For example, Wang et al. (2021) analyzed the journal papers published on China National Knowledge Infrastructure between 2012 and 2020 with Citespace software, and sorted out the overall research framework and research

frontier of China's business environment [7]. Similarly, Wang (2022) used Citespace to draw and summarize research hotspots and evolution trend of China's business environment during 2000-2020 based on data from CNKI [8]. Only Liu and Tang (2022) made a visual comparative analysis of Chinese and English literature, but the literature data only covered the period from 2006 to 2020 [9].

In summary, from the perspective of research methods, Citespace is a mature literature measurement and visualization analysis tool. Using this software to carry out visual quantitative analysis of business environment literature can more intuitively show the status quo and development trend of the research field than qualitative analysis. From the perspective of research content, existing studies either focus on Chinese literature or foreign literature, and lack of comparative studies integrating the two. In addition, considering the important role China plays in the world political and economic arena, sorting out the research status of China's business environment and discussing the differences and connections between China and other countries will help people around the world to deepen mutual understanding with China and engage in better economic cooperation. From the perspective of research timeliness, there is still a lack of the latest research results summary and comparative analysis. Therefore, with the help of Citespace software developed by Professor Chen Chaomei, this paper makes a visual analysis of literature [10], and uses version 6.1.R6 to make a comparative analysis of the status quo and characteristics of the research results on business environment in both Chinese and English, laying a theoretical foundation for subsequent research.

## 2. Research Methods and Data Sources

### 2.1. Research Methods

This paper uses Citespace 6.1.R6 and its software features to collect data with the keyword of "business environment", then carries out a secondary screening of the collected data, and makes a visual analysis of the retained data from the perspectives of the annual number of publications, authors' cooperative relations, institutions' cooperative relations and countries. Co-occurrence analysis and cluster analysis are carried out to study the hot topics, evolution history and research trends.

### 2.2. Data Sources

The data used in this paper came from CNKI database and WOS database. In the database of CNKI, "journal" in "advanced search" was selected, and "business environment" was the main topic in the journal search. The time was limited from 2012 to 2022, and the data source was limited to CSSCI journals and core journals. After eliminating irrelevant data, 562 effective literatures were finally obtained. In the WOS database, selected "advanced search", the data source scope was limited to SCI and SSCI journals, and entered the search statement (TS=("business environment\*" OR "business climate\*") AND DT=(Article) for retrieval. The data of English is kept, and 3258 valid literatures were obtained.

## 3. Research Data Analysis

### 3.1. Analysis of the Annual Number of Publications

The number of annual publications in the field of business

environment can reflect the research progress and status quo of this field in that period. It is not difficult to find from Figure 1 (a) that according to the trend of the number of published papers, the research of Chinese literature in this field can be divided into three stages. The first stage is from 2012 to 2016. The number of publications on business environment in China is small, which belongs to the initial stage of exploration. This indicates that the problem of business environment has been discovered in China, and some scholars have analyzed the existing results in foreign countries, but it has not received widespread attention from the society. During this period, the number of articles published in the field of business environment has steadily increased. In the second stage, the number of published papers continued to rise from 2016 to 2020, and reached its peak in 2020. The reason for the rapid increase in the number of publications during this period may indicate the importance of optimizing the business environment in China, and relevant laws and regulations and guiding documents were issued, laying a foundation for optimizing the business environment in China. And encourage scholars to actively study and explore to optimize the business environment. Therefore, the term "business environment" has been widely concerned by Chinese society and scholars. The third stage is after 2020, which belongs to the steady growth stage, and the number of publications in this stage tends to be stable. After 2020, domestic research on business environment has made a lot of achievements, filling the gap in China's research on business environment. Generally speaking, it is on the rise. According to Figure 1 (b), we can see that the number of published papers in English maintains an overall upward trend, and the trend is more stable than that in China. Now the trend is likely to continue growing.

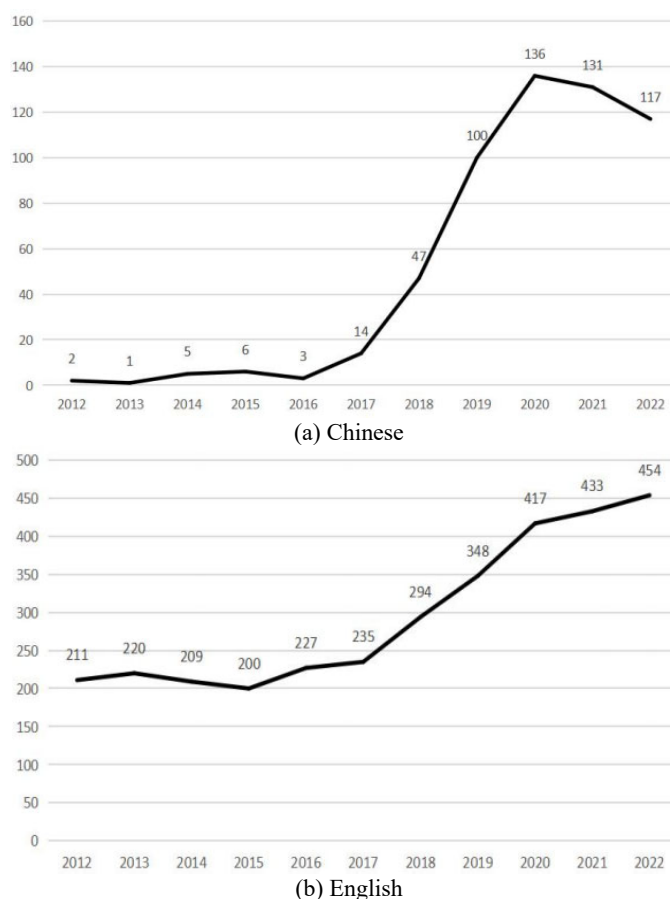


Figure 1. Annual Number of Published Literatures in Chinese and English

The number of published documents over the years reflects the research level and development speed in the field of business environment. It is found that the number of articles published on the business environment is closely related to the relevant policies in China. Before 2012, the business environment did not widely enter the vision of Chinese society and did not get attention from Chinese scholars. In 2013, the Third Plenary Session of the 18th CPC Central Committee put forward the goal of "establishing a law-based business environment" for the first time in *the Decision of the CPC Central Committee on Some Major Issues concerning Comprehensively Deepening Reform*, and the business environment officially entered the academic horizon; Since then, with the promulgation of relevant laws and regulations and the issuance of *the Regulations on Optimizing the Business Environment*, the business environment has attracted

the attention of Chinese academic circles. Relevant scholars and experts have noticed the spatial value and important research significance of this field, and the number of articles published in the field of business environment has started to show a growing trend.

### 3.2. Analysis of Author and Cooperative Relationship

The author cooperative relationship graph can clearly reflect the cooperative relationship between authors. In order to study the cooperation between authors in this field, click Author in the Citespace interface, and beautify the drawing by adjusting the character size, line color depth, etc., to get the cooperative relationship diagram between authors in the figure 2.



Figure 2. Cooperation between Chinese and English Authors

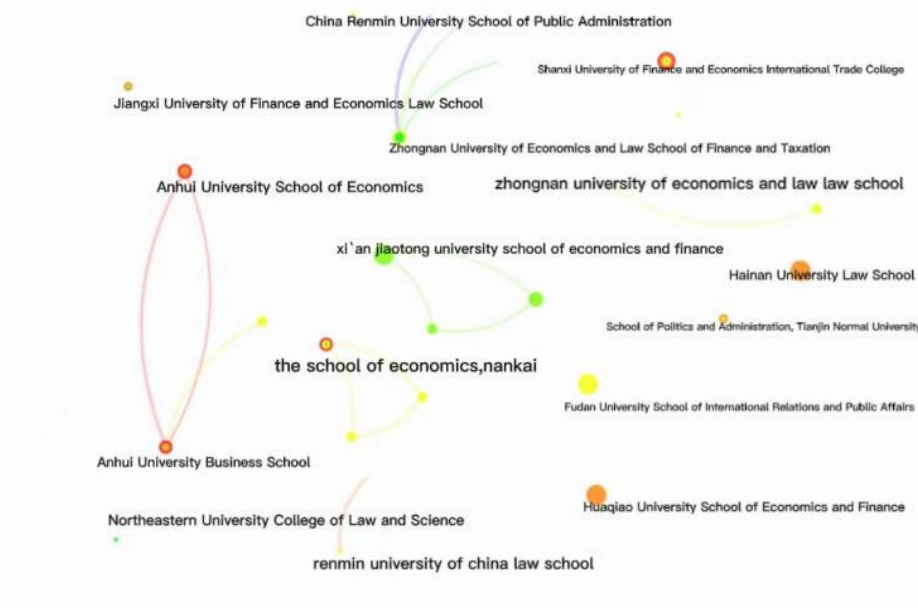
In the data on the upper left of the visualization map, N represents the node, that is, the node where the author name appears. The larger the font size of the author name is, the more frequently the author appears in the sample data. E stands for line, and line can indicate the cooperative relationship between authors. The thicker the line between authors is, the more frequently authors appear in the same

literature, and it can also reflect the closeness of the cooperative relationship between authors. In the visualization map of Chinese author cooperation,  $N=203$ ,  $E=61$ , indicating that 203 author nodes and 61 lines appeared after visualization analysis. According to the data, there were 5 Chinese authors with four or more publications in the sample data, namely Liao Fuchong, Shao Chuanlin, Song Linlin, Liu

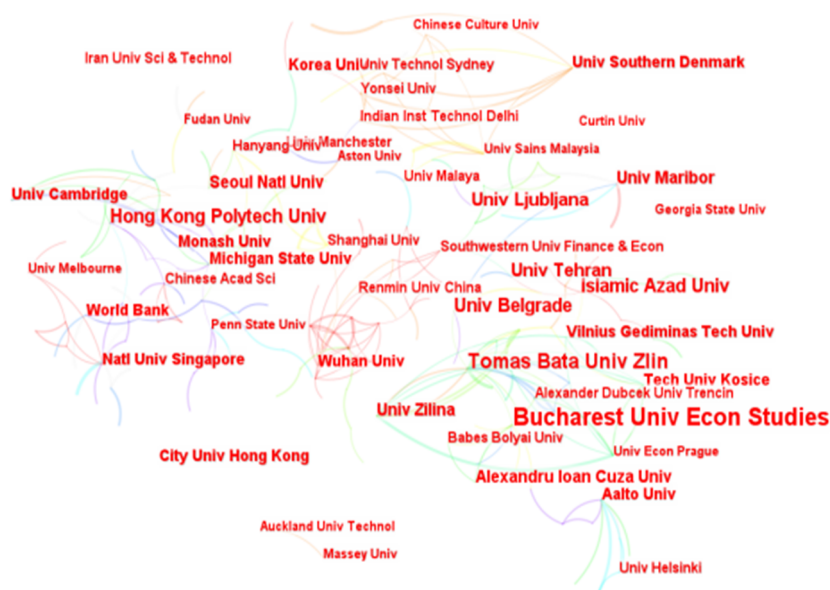
Jun and Zhou Zejiang. As can be seen from Figure 2 (a), the author cooperation network is relatively thin, and there are more groups of individual authors and pin-to-pair cooperation between authors. Generally speaking, the author groups in the field of business environment research are scattered, and no complex cooperation network has been formed. Therefore, the authors need to strengthen cooperation and exchanges. In the visual map of foreign author cooperation, N=392, E=166, there are 392 nodes and 166 lines. In the sample data, there are 10 English authors with four or more publications. As can be seen from Figure 2 (b), English authors have formed a complex and dense cooperation network and concentrated their research on business environment.

### 3.3. Analysis of Institutional Cooperation

The chart of institutional cooperation can clearly reflect the cooperation between institutions and the number of published documents. In order to find out the representative institutions with a high number of publications and the cooperation between them, institution is selected in the Citespace operation interface, the selection criterion is TopN=50, the time slice is 1, and the cooperative relationship diagram of institutions is obtained in Figure 3. Where N represents the location node of the institution name, and E represents the line between the institutions, which reflects the cooperative relationship between the institutions. In the cooperative diagram of Chinese literature institutions, N=187, E=56, indicating that there are 187 nodes and 56 lines in the diagram.



(a) Chinese



(b) English

Figure 3. Institutional Partnership

As can be seen from the figure, from the perspective of the attribution of Chinese literature, most of them come from

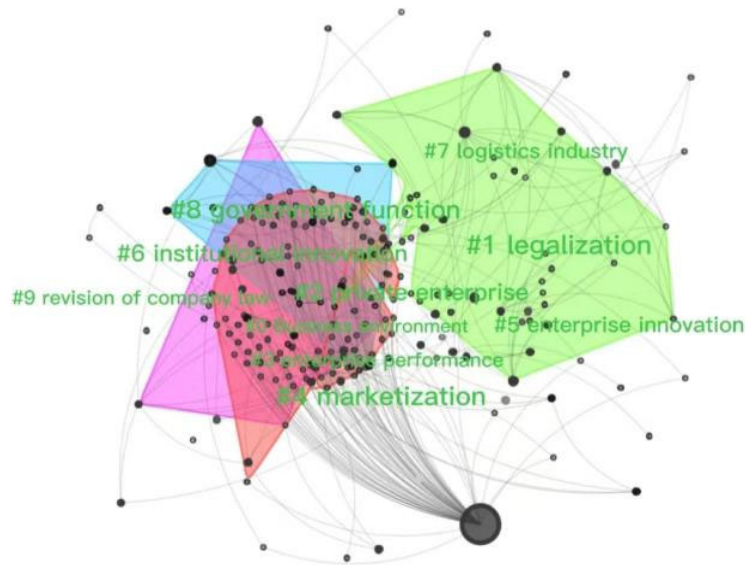


highest frequency (365 times). The business environment framework composed of rule of law, private enterprises and government services is highly relevant, which is closely related to China's legal and policy support and national conditions. The core node of English literature is "performance", which occurs 526 times.

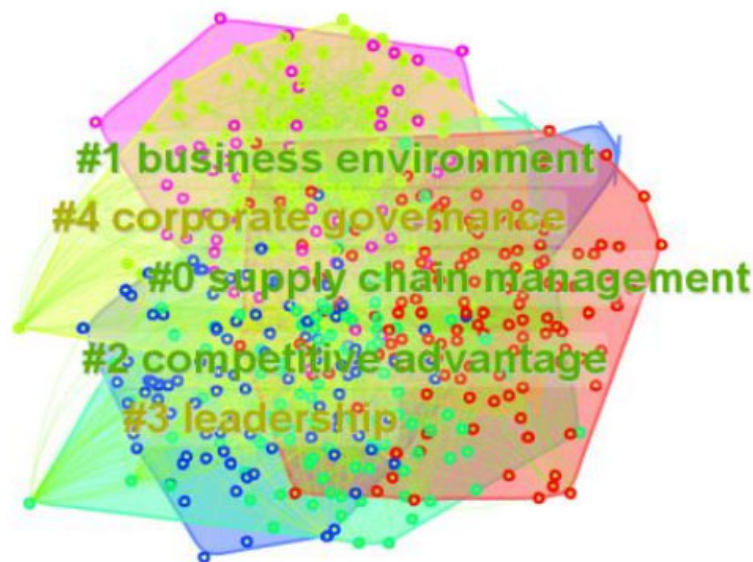
### 3.5. Analysis of Keyword Clustering

Keyword co-occurrence provides many keyword nodes. Keyword clustering is based on keyword co-occurrence, using cluster statistics method, keywords are extracted to form simplified clustering labels so as to analyze the core problems and future development trend in the field of

business environment research. Based on this, in order to make the research conclusion more accurate, click the keyword clustering function and LLR algorithm on the Citespace operation interface to cluster the keywords in the co-occurrence graph and get the keyword co-occurrence graph in Figure 5. Citespace keyword clustering has two indexes, Q and S; When Q value >0.3, the cluster structure is significant. When S value > 0.5, the clustering is reasonable and effective. In Fig.5(a), Q value =0.5831, S value =0.981; In Fig.5(b), Q value is 0.3521 and S value is 0.6812. This shows that the clustering is reasonable, effective and persuasive.



(a) Chinese



(b) English

**Figure 5.** Keyword Clustering

Figure.5 shows the clustering results of Chinese and English literatures. 10 clustering labels can be found in the LLR clustering results of Chinese literatures. The clustering centers are: (1) business environment; (2) legalization; (3) private enterprises; (4) enterprise performance; (5) marketization; (6) enterprise innovation; (7) institutional

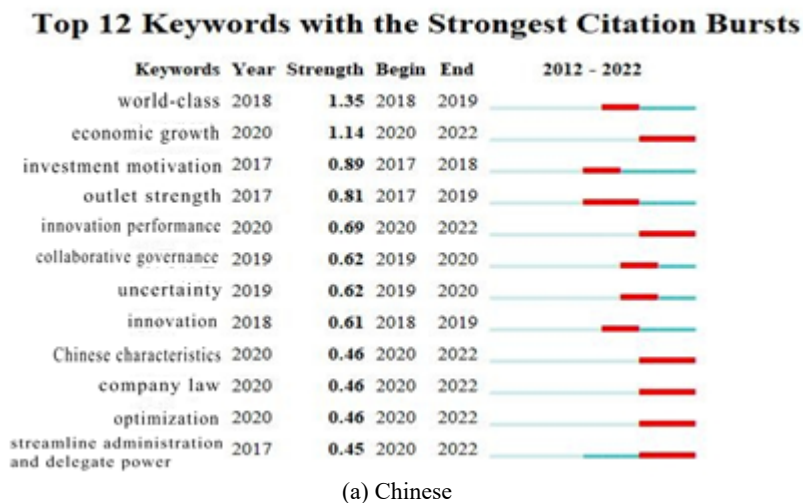
innovation; (8) logistics industry; (9) government function; (10) corporate law amendment; As can be seen from the LLR clustering results of foreign literatures, 5 clustering labels can be obtained. The clustering center is: (1) supply chain management; (2) business environment; (3) competitive advantage; (4) leadership; (5) corporate governance. It is

found that the study of English literature tends to focus on the enterprise, mainly on the impact of enterprise production, operation and competition. Chinese literature studies tend to focus on the government, focusing on Chinese policy guidelines, government governance and other perspectives.

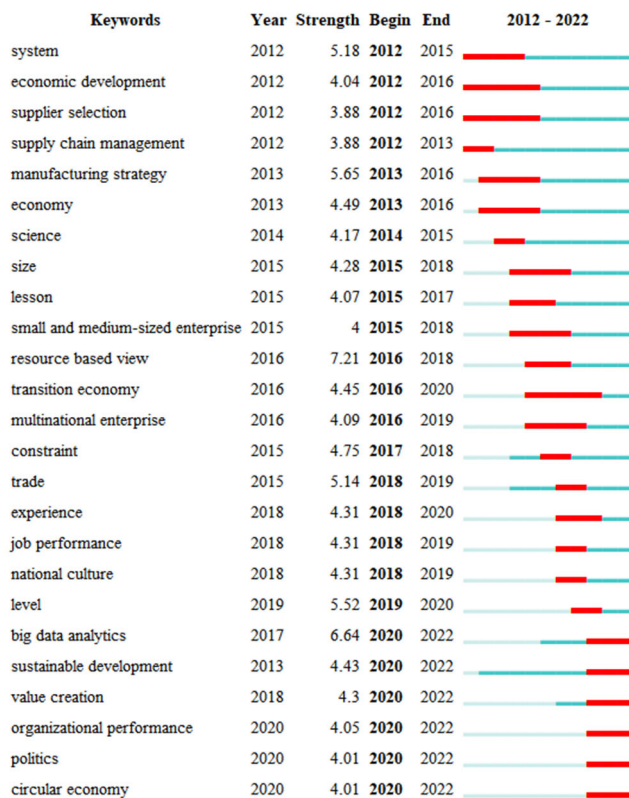
### 3.6. Analysis of Keyword Burstness

Keyword burstness analysis is one of the methods to reflect

the change of research hotspot in visualization map analysis. Through the changes of keywords in the chart, we can understand the research process and development trend in the research field. To get more detailed research dynamic developments, select "Burstness" button in Citespace control panel, and the burstness analysis results showed in figure 6.



**Top 25 Keywords with the Strongest Citation Bursts**



**Figure 6.** Keyword Burstness

The following characteristics can be seen from the time sequence diagram of burst intensity of foreign literature. (1) It can be seen that economic factors are important factors in the study of business environment through words such as economic development, transition economy and circular economy. (2) Through the words sustainable development and value creation, it can be found that the research concepts

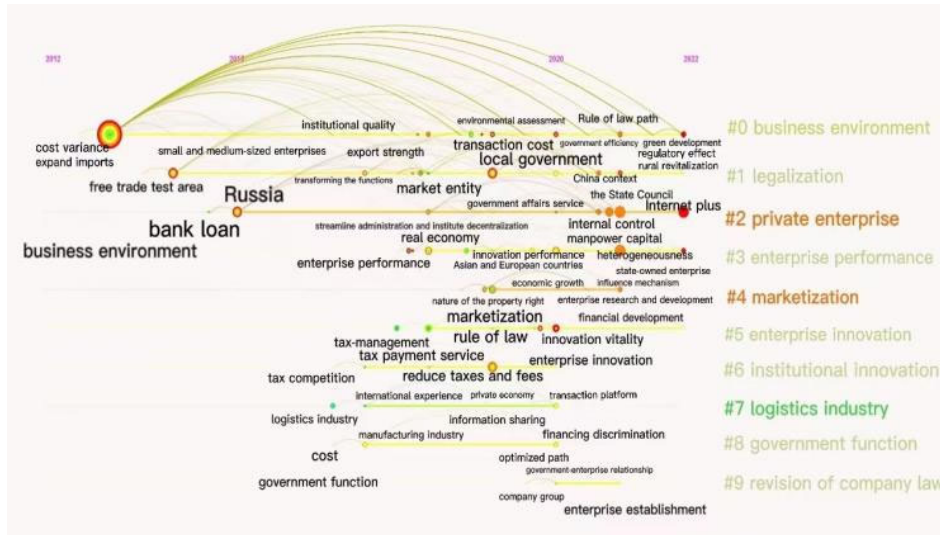
in the field of value creation and sustainable development have been welcomed by researchers in recent years. (3) organizational performance, small and medium-sized enterprise and other words show that the business environment is inextricably linked with enterprises, and the business environment has an important impact on the development of enterprises.

Through the burst intensity analysis of Chinese literature, it can be found that China has a certain importance in the field of business environment in the world. The importance of business environment encourages the government to optimize the business environment and promote economic development through a series of reforms. At the same time, the state has put forward corresponding policies, laws and regulations to support the optimization and construction of the business environment. Besides providing policy support and reform measures, scholars are also encouraged to conduct

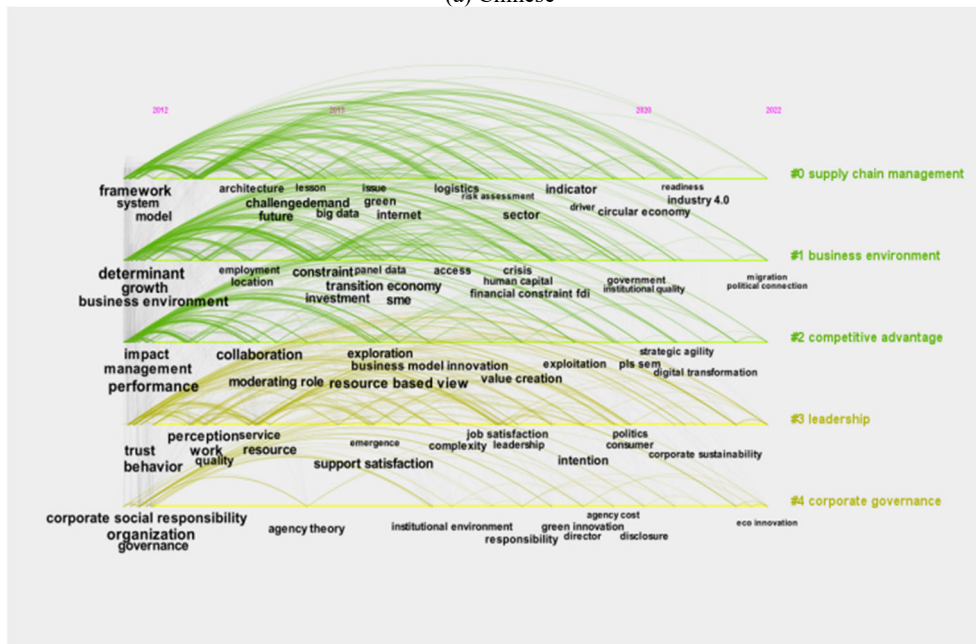
research. The results of these reforms and studies also provide guidance for future development in the field of business environment.

### 3.7. Analysis of Time Line Graph

The time line graph can also reflect the hot trends in the research field, and we can intuitively understand the time when the cluster began to appear and the development in the research process. On the basis of keyword clustering, click the time map identifier to get the time line map in Figure 7.



(a) Chinese



(b) English

Figure 7. Time Line Graph

There are 10 label contents on the right of the time line graph of Chinese literature, and each content is the key word in the co-occurrence graph. These keywords are expanded in the cluster according to their corresponding time and year, which can show the development status of each keyword cluster. The term "business environment" first appeared in 2012 and appeared in 2012 to 2022, indicating that business environment (optimization) has always been a hot topic in this research field. As can be seen from the figure, there are not many literatures on business environment in China in the early stage. In 2015, private enterprises began to appear in the

research field. The introduction of policies such as streamlining administration and delegating power to lower levels, and government service shows that the research field began to focus on the perspective of government governance. In 2017, logistics industry began to appear in the research field, but as can be seen from the line in the figure, the cluster began to become cold and did not receive continuous attention. There are 5 labels on the right of the time graph of foreign literature. As can be seen from the figure, foreign literatures in the field of business environment are more mature and richer than those in China, and continue to grow.

## 4. Conclusion

Based on the visualization analysis of the journal literature of CNKI and WOS database from 2012 to 2022, this paper analyzed and compared the literature from multiple perspectives. In the comparison of the annual publication amount, the number of relevant literature in China and abroad kept increasing, but the foreign research on business environment was obviously earlier than that in China, and the number was more. Some of the early literature studies in China and abroad have been studied and analyzed. In the comparison of author cooperation, the study found that the foreign authors appear more frequently and cooperate more closer than Chinese authors, indicating that foreign scholars pay more attention to the field of business environment than Chinese scholars. In keyword clustering, the difference in clustering results reflects the difference in the focus and research angle of Chinese and foreign scholars on the field of business. The development status and trends of business environment research are summarized, and the following conclusions are reached. Chinese and English literatures have different research concepts on business environment. Chinese literatures pay more attention to national policy support and government governance. Foreign literature focuses more on the links between business environment and enterprises.

(1) The growth trend of both Chinese and English literature is on the rise, which indicates that the business environment is in the developing stage, and has been widely concerned by scholars.

(2) From the perspective of the evolution path of the business environment, the business environment has not emerged in China for a long time. In recent years, it has been widely concerned by the academic circle, and most of the researches are qualitative analysis. Foreign research on business environment appeared earlier, and more mature results have been obtained.

(3) In the study of business environment, the cooperation between Chinese authors is not close enough to form a close cooperation group, while the cooperation relationship between foreign authors is closer.

From the perspective of Chinese research, cooperation and exchanges between authors should be strengthened and interdisciplinary cooperation should be encouraged, so as to facilitate analysis and research from a variety of perspectives and avoid one-sided research problems. The business environment is dynamic, so Chinese researches need to keep up with current political hot spots and provide research guidance and theoretical support on the business environment

optimizing.

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