Knowledge Map Analysis of Trade Union Informatization Construction Based on CiteSpace

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Abstract. This paper uses knowledge atlas to analyze the current research status, development trend and current research hotspots in the field of trade union informatization, and uses CiteSpace V knowledge atlas software to visualize and analyze the documents retrieved from CNKI database. Through the analysis, we can find that the information construction of trade unions in China shows a trend of overall fluctuation and rise, and the related research has reached a peak in 2012. After that, the information construction of trade unions in China has focused on several research topics, such as archives management and affairs management, while the overall information construction of archives and other research topics are as follows. It is the hotspot and frontier of information construction of trade unions in China at present and in the future.

1. Introduction

Nowadays, with the rapid development of information technology and the rapid development of social information, "information +" has become an inevitable trend of social development. The popularization of information technology has not only changed the daily work and life style, but also improved the work efficiency and promoted the development of all walks of life. In today's society, the comprehensive strength of an industry depends on the degree of informatization in the industry [1]. Trade union, as one of the important sectors of the society, uses information technology to deepen the level of informatization in the industry and build a faster and deeper communication bridge between trade union and its members, which has become the trend of the development of trade union information technology.

Since the eighteen Party Congress, general secretary Xi Jinping has made an important speech around the work class and trade union work. He stressed the importance of adhering to the leadership of the party on trade union work, insisting on relying on the working class wholeheartedly, insisting on striving for the Chinese dream of realizing the great rejuvenation of the Chinese nation, adhering to the development path of the socialist trade union with Chinese characteristics, and persisting in promoting the spirit of the labor model, the labor spirit, and the craftsman. God, persisting in holding high the banner of safeguarding the legitimate rights and interests of workers, persisting in enhancing the political reform and mass oriented trade union reform direction, and persisting in strengthening the construction of trade unions at the grass-roots level, profoundly expounded the necessity and importance of trade union informatization. At present, the informationization is gradually going deep into the trade union, and the informationization construction in all aspects of the trade union work is...
steadily in progress. However, in the new situation, how to further apply "Informationization +" to the trade union construction still faces many difficulties that need to be overcome step by step.

2. Research Methods and Data Sources

2.1. Research Method
In this paper, CiteSpaceV knowledge map software is used to study the problem of trade union informatization. CiteSpaceV is a scientific document analysis tool jointly developed by Dr. Chen Chaomei and Dalian University of technology. It can classify, summarize and analyze the documents in specific fields, and analyze the research hotspot and research trend in the field intuitively by drawing. CiteSpace software reflects the core authors, institutions, journals and high-frequency citations and other information in specific fields through the historical research of published literature included in CNKI database, CSSCI database, etc., which has been widely used in the research of knowledge map in various fields in recent years [2].

2.2. Data Sources
In this paper, CiteSpaceV knowledge map software is used to analyze the knowledge map of CNKI database's literature on the theme of "trade union informatization". The data is based on the published papers with the title of "trade union informatization". The time span is from 2000 to 2019 (up to June 2019), which more comprehensively reflects the recent development and research trend of trade union informatization. Through data screening, the irrelevant literature such as reviews, reviews, reports, etc. were eliminated, and 118 papers on the subject of trade union informatization were obtained.

3. An analysis of the Characteristics of Literature on Trade Union Informatization

3.1. Annual Analysis of Published Quantity
The annual distribution of the number of papers published in the field of trade union informatization is shown in Figure 1. Through figure 1, it can be found that the number of papers on the theme of trade union informatization in the period from 2000 to June 2019 is on the rise as a whole, and the relevant research began to show a peak growth in 2012. This is mainly because in 2012, the State Council issued several opinions of the State Council on vigorously promoting the development of information technology and effectively ensuring information security, emphasizing that promoting the development of social information technology and ensuring information security at the same time are of great significance for adjusting economic structure, changing development mode, ensuring and improving people's livelihood and maintaining national security.

![Figure 1. Annual distribution of research papers on Trade union informatization in China from 2000 to 2019](image-url)
3.2. Analysis of the Author

Through the analysis of the knowledge map of the author, we can clearly see the influential authors in the field of trade union informatization. Based on the analysis of the authors of the labor union informatization, as shown in Figure 2, Gao Hulin and Guo Daji have been cited in a large number. Both authors have studied the audit informatization issues within the labor union, and vigorously promoted the audit informatization, which can effectively improve the construction level of work standardization, audit quality and efficiency, and reduce audit risk. At the same time, Cao Manning (2 articles), Sun Yue (2 articles) and Tang Lihua (2 articles) who have a large number of papers have only started to study the informatization of trade unions in recent years. They have carried out the research on the informatization construction of the internal file management, economic review and management of trade unions. Through the statistics and analysis of cases, they have expounded the effectiveness of the informatization construction of trade unions.

![Figure 2. Visual map of distribution of authors of labor union informatization](image)

On the other hand, through the statistics of highly cited authors, we can analyze the highly cited authors in the field of trade union informatization. Due to the limited number of papers published on the subject of trade union informatization, it is impossible to get better high cited visualization results. Therefore, the research on trade union informatization has not formed a certain research system.

3.3. Distribution of issuing organizations

Through the analysis of the organization of the author, the experimental structure is shown in Figure 3, which can understand the main research institutions of domestic trade union informatization. Through the analysis of Figure 3, it can be seen that Nanjing Federation of trade unions of Jiangsu Province, Economic Review Committee of linli County Federation of trade unions of Hunan Province, Jilin hydrogeological survey Institute, and Hunan e-mail vocational and technical college and other
Institutions are outstanding in terms of the volume of documents and influence. However, in terms of the overall amount of documents issued, trade union informatization is an important field of informatization research in recent years, but there are few research results in the field of trade union informatization, and no systematic research results have been formed in the field.

### Figure 3. Co-existing network of trade union informatization research institutions

#### 3.4. Analysis of Journals

Based on the analysis of the source of the published journals, as shown in Figure 4, the top three journals in the field of trade union informatization can be obtained: China trade union accounting (10 articles), (5 articles) and workers (4 articles). Among them, "China Trade Union finance" is a professional periodical that pays attention to the financial information work of trade union earlier in China. It was first published by the editorial department of this journal in 2003 that "speeding up the construction of financial information of trade union". It is put forward that the financial work is an important part of trade union. It is necessary to promote and improve the scientific management of trade union financial accounting and speed up the construction of trade union information. After that, between 2010 and 2015, 9 papers on the informatization construction of financial management of trade unions were published, promoting the innovation and development of the informatization construction of financial management of trade unions. Secondly, "Chinese and foreign entrepreneurs" (2000 Peking University "Chinese core journal summary" source journal), and "workers" published the number of papers in the field of trade union informatization, second only to "China Trade Union finance", put forward the importance of file informatization in trade union management, using information technology to provide technical support for trade union file management.
Figure 4. Statistics on the sources of periodicals of trade union informatization

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4. The development trend of trade union informatization research

4.1. Keyword Analysis

The distribution of high-frequency keywords in this field can be clearly seen through the keyword knowledge map processing of the research paper on trade union informatization, as shown in Figure 5. According to figure 5, the high-frequency keywords in the field of trade union informatization research are informatization, informatization construction, trade union organization, file management, etc.
4.2. Research Trend

Through the annual analysis of key words in 2000-2019, as shown in Figure 7, we can understand the different emphasis on the research of trade union informatization in different stages. It can be seen from Figure 7 that the research on trade union informatization has different concerns in different periods from 2000 to 2019. From 2000 to 2012, the main research direction of trade union informatization is strategy research and website construction [1-12]. During this research period, it mainly focuses on the strategy and suggestions of trade union informatization, and conducts informatization construction and website construction for specific trade union work, laying a theoretical foundation for accelerating trade union informatization. During 2013-2015, the research on trade union informatization focused on financial management and fund management within the trade union system [13-20]. With the continuous growth of labor force, the number of trade unions and the total amount of trade union funds continue to increase, and the scale of assets continues to expand. Relying on the advanced concept of computer audit, the use of information technology for the trade union's economic audit operation and management, to achieve the efficient supervision and management of trade union funds, and further strengthen the funds management of system units. In
2016 -2017, the research on trade union informatization took the current "Internet +" as the research background, and explored the innovation strategy of trade union work in detail. [21-25] Combined with the characteristics of the "Internet +" era and the characteristics of the trade union work, the traditional management service mode of the trade union work is changed, and the new mode of trade union management service from the traditional mode to the "Internet plus" era is changed, and the trade union management mode has been successfully transformed into the "Internet +" management innovation mode. Since 2018, the research on trade union informatization has focused on the informatization management of trade union archives [26-31].

![Figure 7. Research Trend Distribution](chart.jpg)

5. Conclusion
Through the analysis of the knowledge map of China's trade union informatization research from 2000 to 2019, we can clearly find that the current domestic trade union informatization research shows an overall upward trend, mainly focusing on the two aspects of file management and audit management informatization, and has made some research progress. However, at present, the research on trade union informatization in China is insufficient, the cooperation between researchers is not close enough, and a complete research system has not been formed. The joint efforts of trade union informatization researchers are needed to lay the foundation for the further promotion of trade union informatization construction.

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