Evolution and Hot Spot Analysis of University Public Opinion Analysis from the Perspective of Knowledge Map

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Abstract. In this paper, CiteSpace software is used to make statistics and Analysis on the literature related to public opinion research in Colleges and universities in China in recent years collected by CNKI, and visually display and analyze the literature data through the way of knowledge map, and also reveal the research status, research hotspots and trends in this field in a visual way. In recent years, the research in the field of public opinion in Colleges and universities has achieved sustained development, but there is a lack of high impact authors of core categories, and researchers have not formed a certain degree of concern; with the development of the network, the current research direction in this field mainly focuses on campus public opinion, network public opinion, emergency public opinion, new media public opinion, but the research force has not formed a scale We can rely on the new media and network technology to further expand the research of public opinion in Colleges and universities from the perspective of crisis management and ideological and political construction.

1. Introduction
In August 2019, China Internet Network Information Center released the 44th statistical report on the development of China's Internet, which pointed out that as of June 2019, China's Internet users had reached 854 million, and the Internet penetration rate had reached 61.2%; China's mobile Internet users had reached 847 million, and the proportion of Internet users using mobile phones to access the Internet reached 99.1%. Among them, the age distribution of college students was mainly between 20 and 29 years old the proportion of Internet users was the highest, accounting for 24.6%. In this context, college students as the main users of new media, the Internet and mobile Internet have become an important channel and way for college students to express their views and participate in social activities, affecting the formation and development of social public opinion. Therefore, colleges and universities have become the main position of social network public opinion. The number of public opinion events in Colleges and universities is also increasing year by year. Colleges and universities pay more and more attention to the guidance of public opinion, gradually release information through positive attitude, guide the direction of public opinion, and gradually turn the focus to eliminate public doubts, and gradually raise the public opinion guidance to the height related to the reputation of the University, and gradually form a certain system and mechanism system in the way of guidance. However, the group of college students has its own special group nature. In the face of some obvious targeted information, college students have subjectivity, randomness, conformity, and are easy to be impulsive and blind. At the same time, college students can freely express their opinions on the major new media platforms at any time, and the information dissemination speed is fast, which leads to the
complexity and particularity of the generation, dissemination and environmental carrier of public opinion in Colleges and universities. In this context, it is particularly important for colleges and universities to deal with network public opinion events in time and improve the guidance mechanism of network public opinion.

2. Research Methods and Data Sources

2.1. Data Sources
In this paper, CiteSpaceV knowledge mapping software is used to analyze the literature on the subject of "university public opinion" in CNKI database. The data takes the published papers with "university public opinion" as the original data, and the time span is from 2007 to 2019 (up to December 2019), which more comprehensively reflects the recent development and research trend of trade union informatization. Through data screening, the review, review, report and other irrelevant literature were removed, and a total of 211 papers on the subject of public opinion in Colleges and universities were obtained.

2.2. Research Method
The author of this paper uses CiteSpaceV knowledge mapping software to study the literature in the field of public opinion research in Colleges and universities collected by CNKI in recent years. Based on the analysis method of frequency statistics, based on the relationship between the key points of literature, such as key words, research authors, research institutions, etc., the frequency of common words in all the literature is counted, so as to judge the relationship between the literature Key words, research authors, and the degree of closeness between research institutions. CiteSpaceV is a statistical visualization software developed by Chen Chaomei, a Chinese American professor of computer and information science at Drexel University. The software can be used to analyze the published documents (WOS database, CSSCI database, CNKI database) in a certain field Database, etc.) are classified, summarized and statistically analyzed to reflect the core authors, institutions, published journals and high-frequency cited papers in this field. The historical research, research hotspots and research trends in the field can be intuitively analyzed by drawing. In recent years, it has been widely used in the research of knowledge mapping in various fields [1-3].

3. Analysis of Literature Characteristics of Public Opinion Research in Colleges and Universities

3.1. Quantitative Analysis of Literature Published
The statistical results of the number of published literatures (in years) with the theme of "public opinion in Colleges and universities" are shown in Figure 1. It can be seen from the figure that the number and trend of literature published in different periods of time in this research field can help us understand the research and development process of this field. During the whole period from 2007 to 2019, the number of papers published in this field is on the rise as a whole, and relevant research has shown a significant growth trend in 2008-2011 and 2012-2019. Through the analysis of published literature in this field, it can be seen that the relevant research on university public opinion started in 2006, but the concept of "university public opinion" was not clearly put forward at that time, such as sun Lanying's "on the early warning education mechanism of University emergencies", and in 2007, sang Hua put forward the concept of "university public opinion" for the first time in the article "research and analysis of university public opinion". Since 2006, the academic community has been thinking about public opinion in Colleges and universities from scratch, from the establishment of public opinion research mechanism to the research of public opinion response mechanism, and the research on public opinion prediction, cognition, guidance, regulation and control has become increasingly mature [4-15].
Figure 1. Statistics on the number of published literatures (in years)

3.2. Analysis of Authors

According to the statistics of the authors of 211 documents on the theme of "public opinion in Colleges and universities", it is found that the authors with more papers in this field are shown in the table below. As shown in Table 1, the number of papers published by researchers in this field is not high, with Wu Xinling as the highest, and Jin Yuan, Wu Chunxiang, Yang Xiaoyan, etc. belong to the school of Humanities and social sciences of Dalian Medical University. Although the number of published literatures is 7, only 2 papers as the first author are published, forming a core group of highly influential authors in this field.

Table 1. Statistics of the number of published papers (by author)

| NO | Author          | Number | NO | Author         | Number |
|----|----------------|--------|----|----------------|--------|
| 1  | Xinling Wu     | 7      | 6  | Haitao Fang    | 4      |
| 2  | Bingchen Xie   | 6      | 7  | Xiaoyan Yang   | 4      |
| 3  | Kuiyan Zhang   | 5      | 8  | Liying Yang    | 4      |
| 4  | Nuan Jin       | 4      | 9  | Junui Fan      | 4      |
| 5  | Xianyun Hu     | 4      | 10 | Chunxiang Wu   | 4      |

At the same time, this paper analyses the knowledge map of the authors in this field and obtains the network map analysis of the co-authors as shown in Figure 2. As shown in Figure 2, we can clearly find that there are Liu Xiaoli [16], Zhang Dongmei [17-18], Chen Yan [19], Xiao Jianchang [20] and other research authors in the field of "university public opinion". The communication and cooperation among researchers in this field can reflect the dissemination and exchange of academic achievements, which plays an important role in promoting the development and progress of research in this field. However, as can be seen from Figure 2, the density of authors' cooperation network in this field is very low, and there are only a few nodes in the cooperation network, which leads to the formation of a highly cohesive cooperation in this field. As a group, academic exchanges and achievement sharing in the field of public opinion research in Colleges and universities continue to be further improved.

Figure 2. Author cooperation network
On the other hand, according to the existing "university public opinion" theme, the number of papers is only 211, the number is limited, and the literature with high citation rate is less. The literature with higher citation frequency is as shown in Table 2. The overall citation number is low, and the best citation frequency is less than 100. Therefore, the CiteSpace software cannot obtain better high cited visualization results. Most of the highly cited authors in this field rank high in citation frequency by virtue of a highly cited paper. Among them, Chen Chunzhu's research on the dissemination and guidance mechanism of public opinion in Colleges and Universities under the network environment was published as early as 2011, and most of the articles written by these authors were before 2015, which also indicates that there is no representative research achievement in this field recently. Therefore, the current research on public opinion analysis in Colleges and universities has not formed a certain research system, and the research efforts need to be strengthened as a whole.

Table 2. Highly cited authors of University Public Opinion Research

| Author       | PAPER TITLE                                                                 | Number of references | DATE  |
|--------------|------------------------------------------------------------------------------|----------------------|-------|
| Chen Chunzhu | Research on the dissemination and guidance mechanism of public opinion in Colleges and Universities under the network environment | 76                   | 2011  |
| Gao Deyi     | How to deal with the crisis in the micro Era                                 | 40                   | 2013  |
| Ding Yihao   | The problems and Countermeasures in the current network public opinion work in Colleges and Universities | 38                   | 2013  |
| Sang Hua     | Research on public opinion in Colleges and Universities                      | 37                   | 2007  |
| Huang NI     | Empirical research on College Students' online public opinion under the new media environment -- Based on the investigation and analysis of the problems | 27                   | 2014  |
| Xiao         | On the guiding mechanism of public opinion in Colleges and Universities      | 26                   | 2010  |
| Jianchaang   | Universities                                                                |                      |       |
| Sang Hua     | On early warning of public opinion crisis in Colleges and Universities       | 23                   | 2008  |
| Shen Lu      | Analysis of university network public opinion in We Media Era -- Based on the construction of opinion leaders of microblog and wechat | 21                   | 2015  |

3.3. Analysis of Research Institutions

As can be seen from Figure 3, the school of education science of Wuhan University, the school of Marxism of Chi Feng University, the Education Department of Northeast Normal University, Nan yang Normal University, etc. However, there are the same problems between the research institutions and the authors in the field of public opinion in Colleges and universities. It can be seen from Figure 4 that the cooperation density of research institutions in this field is relatively low during the period. The only cooperation network nodes of research institutions in the figure are mostly the cooperation between different departments in the same research institution, and the cooperation network density before different research institutions is also low. Therefore, in the future research Strengthening the cooperation among research institutions is conducive to the exchange and cooperation of academic achievements in this field and promotes the rapid development of this field.
4. The Development Trend of Public Opinion Research in Colleges and Universities

4.1. Keyword Analysis

Through the keyword analysis of existing literature, we can quickly understand the main research content and key technology in this field, provide research direction and technology for later researchers, and lay the foundation for the research in this field. Through the co-occurrence analysis and visualization of the keywords of 211 published articles on the theme of "university public opinion", the results are shown in Figure 4, which can clearly see the high-frequency keywords and key technologies in the research field of "university public opinion". As can be seen from Figure 4, the high-frequency keywords in this field are university public opinion, network public opinion, network guidance, new media, big data, etc.

Through the frequency statistics of keywords, we can get the keyword frequency statistical. After ranking the keyword frequency in the field of public opinion research in Colleges and universities, the higher frequency is: 87 times of university public opinion, 54 times of university public opinion, 22 times of public opinion, 22 times of network public opinion, 15 times of public opinion guidance and 12 times of new media. According to the statistical analysis of keyword frequency of relevant literature on public opinion research in Colleges and universities, the research hotspots in this field mainly focus on the current "new media" and "We Media" environment, based on "big data" technology, aiming at "university public opinion" and "network public opinion", through public opinion analysis, the "public opinion guidance" mechanism is finally realized.
4.2. Research Trend Analysis

By analysing the knowledge map of university public opinion keywords, we can understand the focus of network public opinion research in different historical stages. According to the knowledge map analysis of keywords in different periods of network public opinion, we can get the map analysis results as shown in Figure 5.

**Table 3.** Keyword frequency statistics

| NO | KEY WORD                                      | TIMES | NO | KEY WORD                                      | TIMES |
|----|----------------------------------------------|-------|----|----------------------------------------------|-------|
| 1  | Public opinion in Colleges and Universities  | 87    | 6  | new media                                    | 14    |
| 2  | colleges and universities                    | 54    | 7  | We Media                                     | 12    |
| 3  | public opinion                               | 22    | 8  | big data                                     | 11    |
| 4  | Internet public opinion                      | 22    | 9  | University network public opinion             | 10    |
| 5  | Public opinion guidance                      | 15    | 10 | Public opinion monitoring                    | 10    |

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![Knowledge Map](image)

**Figure 5.** Analysis of research topics

According to figure 5, the core themes of public opinion research in Colleges and universities in China are different in different periods from 2007 to 2019. During 2007-2010, the research direction of university public opinion gradually appeared in the research field, and gradually began to pay attention to the public opinion communication and public opinion guidance of colleges and universities in response to emergencies [21-28]; from 2010 to 2013, the domestic research on university public opinion mainly focused on the popular new media Renren data to conduct online public opinion analysis, mainly focusing on the guidance mechanism. From 2013 to 2016, the emergence of new media such as wechat has gradually become a means of communication between people, and has become a research focus of public opinion analysis in Colleges and universities. China's information dissemination has undergone profound changes. This strategic transformation and pattern change have brought about new changes in student work, ideological and political education, and public opinion monitoring. This requires people to think about the analysis, monitoring and guidance of public opinion events from a new perspective. The media environment is diversified and open, it makes the social culture more rich, inclusive and reserved, and highlights the importance of public opinion guidance. Only by grasping the "root" of public opinion guidance in Colleges and universities can we grasp its end and cure the symptoms and root causes in the complex and changeable public opinion situation of colleges and universities. Since 2016, with the development of media and the changes of public opinion environment, the social, economic and cultural ideological trend has been fiercely debated, and college students' thinking in the social background. The concept, behavior choice, personality psychology and even political inclination are greatly disturbed by the public opinion environment. "The popularity of new media and the penetration of new media culture in college students have brought certain challenges to public opinion security in Colleges and universities," The construction of public opinion security in Colleges and Universities under the new media environment is an important part of campus security. The situation and tasks of public opinion guidance in Colleges and universities are constantly changing. Based on the background of big data,
combined with the current ideological and political work, establishing a systematic and long-term
guidance mechanism and exploring the basic mode of public opinion guidance in Colleges and
universities have become the main research topics at this stage [29-32].

5. Summary
In recent years, the public opinion management of emergencies in Colleges and universities has made
great progress from the beginning to the effective management. However, the frequent occurrence of
emergencies in Colleges and universities has affected the normal teaching and scientific research order,
and even endangered the security and stability of colleges and universities. In the future, with the
change of public opinion environment in Colleges and universities, the overall level of public opinion
guidance research needs to be improved, the supervision and management of public opinion should be
more scientific, reasonable and humanized, and the research methods should be improved. The key to
ensure the effect of public opinion guidance is to stimulate the enthusiasm and good acceptance
attitude of teachers and students in the whole process of public opinion guidance. Public opinion
management in Colleges and universities will enter a new stage of development and research.

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