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Current Situation, Hot Spots and Trends of Research on Comrade Xiaoping's Thought on Science and Technology—CiteSpace-based Visual Mapping Analysis

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Abstract: *Comrade Xiaoping's scientific and technological thought is an important part of Comrade Xiaoping's theory. Using CiteSpace to visualize and analyze the research literature on Comrade Xiaoping's scientific and technological thought in the CNKI database in the past 30 years, it is found that the research chronology can be divided into three phases: fluctuating upward, continuing downward and falling into silence. In terms of research space, although a stable core group of authors has been formed, it is mostly one-way cooperative research, and the research institutions as a whole show a balanced pattern between the north and the south, and mainly rely on academic platforms related to Comrade Xiaoping's research to carry out research. In terms of research content, the research hotspots focus on four aspects: first, the theoretical research on Comrade Xiaoping's scientific and technological thought; second, the practical research on Comrade Xiaoping's scientific and technological thought; third, the research on the inheritance and development of Comrade Xiaoping's scientific and technological thought; and fourth, the research on Comrade Xiaoping's thesis on science and technology, education and talents. Future research should return to the classical literature and discover new issues; base on the national strategic needs of the new era and explore the contemporary value of Comrade Xiaoping's thought on science and technology; strengthen the communication and cooperation among relevant scholars and organizations, and carry out cross-disciplinary and interdisciplinary research.*

Keywords: *Comrade Xiaoping's Thoughts on Science and Technology; Hot Spots and Trends; CiteSpace*

1. Introduction

Comrade Xiaoping attaches great importance to the important role of science and technology in reform and opening up and socialist modernization, and has put forward a series of ideas and viewpoints on the development of science and technology, forming a system of scientific and technological thought that includes the theory of modern scientific and technological epistemology, the theory of modern scientific and technological production, and the theory of modern scientific and technological talents, etc., [1] which is an important part of the theory of Comrade Xiaoping. At present, the research on Comrade Xiaoping's scientific and technological thought has achieved rich results, mainly focusing on the following two aspects, one is the overall research on Comrade Xiaoping's scientific and technological thought; the other is the theoretical interpretation of Comrade Xiaoping's thesis on science and technology, economy, science and technology, education, scientific and technological talents, scientific and technological system reform, and the development of high technology, and so on. With the help of CiteSpace software, this paper intends to carry out econometric visualization analysis on the research results of Comrade Xiao Ping's scientific and technological thought in the CNKI database in the past 30 years to reveal the research status, hotspots and development trends in this field, so as to present the research pattern of Comrade Xiao Ping's scientific and technological thought in a panoramic way and provide reference for further relevant research.

2. Research methodology and data sources

In this paper, through the use of knowledge map functions such as the author of the article, the institution of the article, keyword co-occurrence, keyword clustering and keyword emergence detection

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in this research field, the research on Comrade Xiaoping's scientific and technological thought in the past 30 years is visually sorted out and presented to achieve the effect of "a map displaying the spring and autumn, at a glance; a map is better than 10,000 words, at a glance"[2] effect. In terms of data source and sample selection, this paper selects China Knowledge Network (CNKI) database as the source of literature data, and the author firstly sets the type of literature as "Periodicals" through advanced search, and sets the "Subject" as "Xiaoping" + "Comrade" + "Comrade". Comrade" + "science and technology" or "science and technology" to search, the search time is limited to 1994-2024. The search time was limited to 1994-2024. 1048 effective documents were obtained, and the selected documents were transcoded and visualized by CiteSpace software.

3. Statistical Analysis of Basic Characteristics of Literature

3.1. Statistical analysis of annual publications

In order to show more clearly the research heat and issuing trend of Comrade Xiao Ping's scientific and technological thought, this paper roughly divides the research of Comrade Xiao Ping's scientific and technological thought into three stages.

In the first stage (1994-2003), the research on Comrade Xiaoping's thought on science and technology showed a fluctuating upward trend, and after reaching the peak in 1999, there was a slight decline, but still maintained an average of close to 60 articles per year. 1992, the 14th National Congress of the Party established the guiding position of Comrade Xiaoping's theory of constructing socialism with Chinese characteristics for the whole Party, and the relevant papers began to appear and increase. In 1995, the strategy of "developing the country through science and education" was put forward, and in 1999, the National Conference on Technological Innovation reiterated Comrade Xiaoping's important assertion of " developing high technology and realizing industrialization ", which set off the attention of Comrade Xiaoping's ideas on science and technology, especially on high technology, and the amount of articles published was high, and the number of articles was high. thought, the amount of articles issued was as high as 90, more than twice that of 1996. In the second stage (2004-2013), the research on Comrade Xiaoping's thoughts on science and technology in academia showed a continuous downward trend, but the number of related papers still averaged nearly 30 per year. Among them, the number of papers reached 94 in 2004 in commemoration of the 100th anniversary of Comrade Xiaoping's birth, and has declined year by year since then. In the third stage (2014-2024), the research on Comrade Xiaoping's scientific and technological thought enters a period of silence, although the number of papers issued in 2014 in commemoration of the 110th anniversary of Comrade Xiaoping's birth rises, but the overall number is maintained at a relatively small number.

3.2. Analysis of leading study authors

Highly prolific authors have significant influence in a certain research field, which is an important indicator reflecting many aspects of academic contribution, research trend, academic communication and academic ecology in the field. According to Price's law $M=0.749(Nmax)^{1/2}$, the calculation shows that authors with $M\geq 2$ publications are the core authors in the field, and together they form the main force of research in the field. Prof. Li Guihua from the School of Marxism of Jilin University ranked the first place with 7 articles , Prof. Chen Zhaofeng from Nantong University was the second place, in addition, there are scholars such as Zhang Liling and Zhang Taoguang followed by other scholars. According to statistics, among the 1048 articles, 51 scholars have 2 or more publications, accounting for 17.53% of the total number of researchers on Comrade Xiaoping's thought on science and technology, which is higher than the 10% stipulated by Price's Law. This indicates that research in this field has formed a stable core group of authors for research.

3.3. Analysis of major issuers

The analysis of issuing institutions can reflect the geographical distribution and unit distribution of the research author group in a certain research field, providing reference for an in-depth understanding of the development of the field. Among the major institutions carrying out research on Comrade Xiaoping's ideas on science and technology, the one with the largest number of published articles is the Party School of the Central Committee of the Communist Party of China, with a total of 10 articles. They are followed by Jilin University, Wuhan University, Hebei University and 14 other schools respectively, with more than 6 articles. The geographical distribution of these institutions shows a

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balanced pattern between the north and the south. Among the top 20 institutions, 7 are teacher training institutions. It is worth noting that these institutions mainly rely on academic platforms related to the study of Comrade Xiao Ping to carry out research, such as the Research Center for the Theory of Comrade Xiao Ping at the Party School of the Central Committee of the Communist Party of China (CPC), the Research Center for the Theory of Comrade Xiao Ping at Jilin University, the Research Society for the Theory of Comrade Xiao Ping at Wuhan University, and the Research Center for the Theory of Comrade Xiao Ping at Northeastern Normal University, among others.

4. Research Hot Spots and Trend Analysis

Keywords are the condensation of the main content and research focus of an article. Mapping high-frequency keywords for a certain period of time and analyzing their frequency of occurrence, centrality, keyword clustering, keyword emergence detection, etc., can reflect the research hotspots, thematic distribution, and the course of deduction within the field.

4.1. Keyword co-occurrence analysis

Keyword co-occurrence analysis is to reveal the intrinsic relevance of academic research content in a certain field and the microstructure of the subject area by describing the correlation and combination between keywords and keywords, in order to show the development dynamics and development trend of the field. [3] Through the analysis, it can be seen that "Comrade Xiaoping" "science and technology" "scientific and technological thought" "science and education to develop the country " "productivity" "Jiang Zemin" "education" "science and technology" "development" and "knowledge economy" are high-frequency keywords in the study of Comrade Xiaoping's scientific and technological thought. Among them, several keywords such as "Comrade Xiaoping", "science and technology", "scientific and technological thought", "science and education" and so on. The intermediary centrality of the nodes is greater than 0.1, which has a greater influence in the co-occurrence knowledge network of the keywords and plays an important intermediary role in linking related topics. The high-frequency keywords "Chairman Mao" and "Comrade Xiaoping" reflect the vertical continuity of Comrade Xiaoping's scientific and technological thought research. The keywords "science and education", "knowledge economy", "productivity", "education", "scientific and technological talents", etc. are the keywords of Xiaoping's thought on science and technology. Scientific and technological talents" is the static focus of the study of Comrade Xiaoping's scientific and technological thought, "reform", "innovation", "development" is the dynamic presentation of Comrade Xiaoping's scientific and technological thought. "Reform", "Innovation" and "Development" are the dynamic presentation of Comrade Xiaoping's scientific and technological thought.

4.2. Keyword Cluster Analysis

Co-word clustering analysis method is to use the calculation method of clustering to operate on the correlation of co-occurring words to keywords in the articles, and to gather and categorize the closely related words, so as to excavate the theme and focus of a certain research field . [4] In order to further analyze the thematic clustering of Comrade Xiaoping's scientific and technological thought research, this paper, with the help of CiteSpace software, utilizes the LLR algorithm to analyze the keywords in the 1048 documents with clustering labels, and generates the keyword clustering mapping of Comrade Xiaoping's scientific and technological thought research, which mainly contains #0 Comrade Xiaoping, #1 productivity, #2 scientific and technological thought, #3 science and education for a better country, #4 development view , #5 Scientific and Technological Outlook, #6 Scientific and Technological System, #7 Strategy, #8 Civil-Military Integration, and other 8 significant clusters, and calculated the clustering Modularity (Modularity) Q = 0.4594, and the Weighted Mean Silhouette (S = 0.835, both of which are greater than the checking standard (Q > 0.3, S > 0.5). This indicates that the clustering structure is significant and the clustering results are efficient and credible.

Combined with the main contents of related papers, the thematic hotspots of Comrade Xiaoping's scientific and technological thought research are mainly in the following four areas.

First, the theoretical study of Comrade Xiaoping's ideas on science and technology. This cluster covers such subject terms as "scientific and technological view", "scientific and technological thought", "productive forces" and "development concept". Among the existing related studies, the theoretical research centering on the important assertion that "science and technology is the first productive force"

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is the most prominent. Qin Shusheng and others believe that the theories, guidelines and policies put forward by Comrade Xiaoping on science and technology issues have formed a systematic scientific and technological thinking, laying an important ideological foundation and theoretical contribution to the development of science and technology in China.[5]

The second is the practical study of Comrade Xiaoping's ideas on science and technology. This cluster includes such subject terms as "science and education for the country", "science and technology system", "military-civilian integration", "strategy", and so on. This kind of research focuses on combining Comrade Xiaoping's scientific and technological thought with the national strategic policy and the development of reform practice. After entering the 21st century, studies on the integration of science and technology and economy, reform of science and technology system, and development of civil-military integration have appeared one after another. Liu Hong and Chen Zhaofeng believe that the integration of science and technology and economy is both a scientific summary of Comrade Xiaoping's laws of science and technology and economic development in the contemporary world and the basic idea of policy and institutionalization of Comrade Xiaoping's science and technology thought.[6]

The third is the study of the inheritance and development of Comrade Xiaoping's scientific and technological thought. The Chinese communists represented by Chairman Mao, Comrade Xiaoping, etc. are more obvious in the keyword co-occurrence mapping. On the one hand, it is the inheritance research. Hao Xiaoshan believes that Comrade Xiaoping's scientific and technological thought is both the inheritance of Marx's principle that science and technology are productive forces and the great development and innovation of Marxist scientific and technological thought. [7] On the other hand, it is developmental research. Since the 18th Party Congress, China has vigorously implemented the innovation-driven development strategy, placing scientific and technological innovation at the center of the overall situation of national development. As a result, the academic community has begun to pay attention to Comrade Xiaoping's relevant discourse on science and technology innovation.

The fourth is the study of Comrade Xiaoping's relevant discourses on science and technology, education and human resources. The first is the study of science and technology and education. Xiao Xinfa believes that the synchronous development of science and technology and education is the correct reflection of Comrade Xiaoping on the essential link between science and technology and education, the organic combination of science and technology and education, is China's implementation of the "science and technology to develop the country" strategy and socialist modernization of the inevitable requirements. [8]Secondly, Comrade Xiaoping's view of scientific and technological talents has also been the focus of attention of the academic community for a long time. The report of the 20th Party Congress pointed out that "education, science and technology, and talents are the basic and strategic support for the comprehensive construction of a socialist modernized country." Against this background, some scholars have begun to pay attention to Comrade Xiaoping's discourse on education, science and technology, and talents.

5. Conclusion

The current academic research on Comrade Xiaoping's thought on science and technology has achieved fruitful results, but there are still the following three expandable research spaces.

First, return to the classic literature to find new problems. The author to "Comrade Xiaoping" and "science and technology" related composite phrases in the "Selected Writings of Comrade Xiaoping", "Collected Writings of Comrade Xiaoping", "Comrade Xiaoping's Annals" and other classic literature to search and statistics, and found that the most discussed is the importance of science and technology, science and technology and the combination of economy. The most discussed topics are the importance of science and technology, the combination of science and technology with economy, education as the foundation of science and technology development, the promotion of high-tech industrialization, the importance of basic research, the reform of science and technology system, and the cultivation of scientific and technological talents. These scientific assertions have provided important theoretical guidance for the development of science and technology in China. Future research should return to the classic literature to dig out new issues from the above high-frequency phrases to further deepen the study of Comrade Xiaoping's thought on science and technology.

Secondly, based on the strategic needs of the country in the new era, the contemporary value of Comrade Xiaoping's ideas on science and technology is being explored. The Third Plenary Session of the 20th CPC Central Committee proposed to "promote the integrated reform of the institutional

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mechanism of education, science and technology talents, improve the new type of national system, and enhance the overall effectiveness of the national innovation system." [9] This provides new opportunities for the study of Comrade Xiaoping's thought on science and technology in the new era. On the one hand, theoretical research should be deepened. The majority of scholars should combine the strategic requirements of science and technology development in the new era, broaden and deepen the interpretation of Comrade Xiaoping's thought on science and technology, and further excavate the connotation and value of Comrade Xiaoping's thought on science and technology in the era. On the other hand, research on inheritance and development should be emphasized. Since the founding of New China, the guiding ideology of the Party in leading the development of science and technology has been both inherited and advanced with the times. In the new era, we should continue to explore the theoretical wisdom of Comrade Xiaoping's thought on science and technology in building a strong scientific and technological country, deepening the reform of the scientific and technological system, and developing the new quality of productive forces.

Thirdly, in terms of the strength of the main body of research, exchanges and cooperation among relevant scholars and organizations should be strengthened, and cross-disciplinary and interdisciplinary research should be carried out. On the one hand, relying on research groups and platforms such as the Comrade Xiao Ping Theory Research Society, centers and bases, we should build an academic community for the study of Comrade Xiao Ping's thought on science and technology, so as to promote in-depth research on his thought on science and technology with high quality. On the other hand, science and technology is a comprehensive, systematic and integrated category, and the development of science and technology broadly and profoundly affects all aspects of human social development. In the specific research and application of Comrade Xiaoping's thought on science and technology, it has become a development trend to synthesize multidisciplinary and multidisciplinary research in political science, management, history, etc., and cross-disciplinary and interdisciplinary research should be actively explored in order to promote innovative development of research in this field.

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