ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202402_7(2).0009

A Retrospective and Frontier Research on Science and Technology Talent Policy

-- Bibliometric Analysis Based on the CiteSpace Knowledge Graph

Junling Wang, Xinyu Guo*, KaiJie Guo

School of Public Management, Shandong Technology and Business University, Yantai, Shandong, China

*Corresponding Author. Email: gxy729905@163.com

Abstract

Based on the literature related to the science and technology talent policy in Shandong Province in the CNKI journal database, this paper uses the bibliometric method, CiteSpace tool for quantitative analysis and information mining, and shows the spatial distribution characteristics and evolution of the research on science and technology talent policy in Shandong Province based on the visual knowledge graph. The results show that at present, foreign scholars' research is mainly concerned with the sustainable development of scientific and technological talents and the transformation of scientific and technological achievements, while domestic research mainly focuses on the scientific and technological talent policy at the central level. Therefore, it is an important trend to strengthen the overall research on the science and technology talent policy in a specific region, the evaluation research of the science and technology talent policy, and the discussion from the perspective of the micro level.

Keywords

Science and Technology Talent Policy; CiteSpace; Knowledge Graph.

1. Introduction

S&T talent resources are an important resource for promoting S&T progress and social development, and the S&T talent policy is an important guarantee for effectively developing manpower resources and building a contingent of S&T talents. As the first resource, talent is the foundation to enhance the core competitiveness of the city, so all parts of the country have introduced preferential policies based on the national strategy to vigorously improve the introduction and training of scientific and technological talents. Improving the policy system for scientific and technological innovation talents is conducive to optimizing policy projects, providing guarantee for talent development, and further stimulating the vitality of talent innovation. So, what is the current research status of scientific and technological talent policies at home and abroad? What are the main areas of research of current scholars? What are its standout features? What are the shortcomings and weaknesses of the research? What is the direction and path of innovation and development in the future? Answering these questions has important guiding significance and reference value for improving the work of future scientific and technological talents. In view of this, this paper uses the literature related to science and technology talent policy in Web of Science and CNKI journal databases as the data source, and uses bibliometric method to analyze the spatiotemporal characteristics and research topics.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202402_7(2).0009

2. Data Sources and Research Methods

CiteSpace is a visualization software that can identify and display new trends and trends in related fields by analyzing keywords, authors, institutions, and other elements of existing literature. This paper uses CiteSpace software to clearly reveal the current research on science and technology talent policy at home and abroad. First of all, we entered the Web of Science and collected authoritative journal papers on the theme of science and technology talent policy through advanced search, with a time span from 2000 to June 2023, and a total of 67 authoritative journal papers were screened after excluding literature unrelated to the topic. Sixty-seven journal papers were imported into CiteSpace software through data conversion, and the keyword clustering network knowledge graph was plotted in the above time period (2000-June 2023), which is conducive to better revealing the change trend of science and technology talent policy theme research, as shown in Figure 1. In the same way, a total of 221 authoritative journal papers were retrieved by entering CNKI, and the keyword clustering network knowledge graph was plotted in the above time period (2000-June 2023), This is shown in Figure 2.

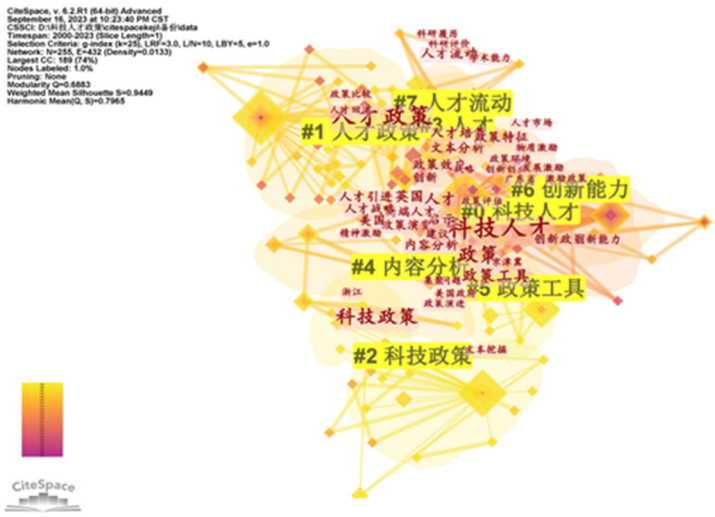

Figure 1. Knowledge graph of foreign science and technology talent policykeyword clustering network

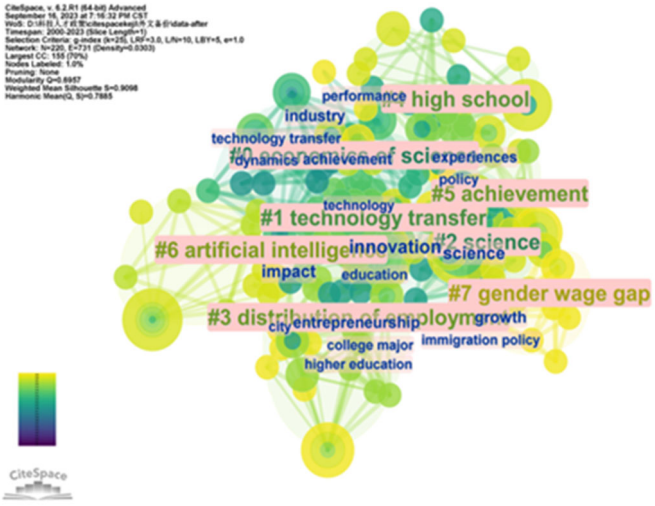

Figure 2. Knowledge graph of domestic science and technology talent policy keyword clustering network

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202402_7(2).0009

3. An Overall Analysis of the Research Status of Scientific and Technological Talents

3.1. The Current Situation of Foreign Science and Technology Talent Policy Research

As can be seen from Figure 1, the research on scientific and technological talent policy in foreign countries mainly focuses on the sustainability of talents and the transformation of scientific and technological achievements. Scientific and technological talents are the main force of a country's innovation and development, and they are a valuable resource to promote innovation and development. South Korea will face the problem of a shortage of scientists and engineers in emerging industries, and has proposed to coordinate the relationship between the government, industry, and universities to provide high-level human resources, especially those with postgraduate training, for emerging industries(Bae, S.-O., & Lie, J,2016).[1] As corporate globalization is limited by changes in the macro environment, it will become extremely difficult for high-tech companies seeking high-skilled STEM (science, technology, engineering and mathematics) talents to find talents through global talent pools(Elaine Farndale et al.,2020）.[2] To promote the development of science and technology parks, the factors affecting the sustainable development of science and technology parks are studied through the distribution of questionnaires, and the research shows that the cooperation of stakeholders and the introduction of high-quality talents can effectively promote the innovation and technology transfer of science and technology parks (Eduardo Cadorin et al.,2019).[3]

3.2. The Current Situation of Domestic Scientific and Technological Talent Policy Research

As can be seen from Figure 2, since the 21st century, the research on science and technology talent policy in China has shown a trend of "policy evolution-policy econometric analysis-policy effect analysis". At the beginning of the 21st century, the research mainly focused on sorting out the evolution trend and structural framework of the central or local science and technology talent policies in a certain period of time. For example, since the reform and opening up, China's science and technology talent policy has been divided into four stages, and the characteristics of science and technology talent policy changes are summarized from the policy paradigm concepts such as design concept and policy objectives (Wei Ju,2018).[4] China's policy on scientific and technological talents has undergone three periods of transformation, namely, the declassification of intellectuals after the reform and opening up, the shift to market-oriented management of scientific and technological talents, and the strategic development of talents after China's accession to the WTO(Lianjun Han,2019).[5] With the rise of measurement methods, some scholars have used a combination of econometric analysis methods and policy tools to study science and technology talent policies. For example, some scholars analyze the content of policy texts by constructing a four-dimensional analytical framework of policy quantity, policy type, policy tools, and policy subjects, and explore the evolution trend of science and technology talent policies dominated by regional development goals (Juan, Yao, 2021; Jiamin, Huang, 2023).[6-7] In recent years, the research on the policy effect of scientific and technological talents has become a hot topic, the results show that there are obvious regional differences in the impact of science and technology talent policy on regional innovation performance. For example, The threshold regression model is used to test the impact of science and technology talent policy on regional innovation performance, and the results show that there are obvious regional differences between science and technology talent policy and regional innovation performance. (Kang Li,2021;Juan Xu,2023).[8-9]

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202402_7(2).0009

4. Conclusions and Prospects

Many achievements have been made in the field of scientific and technological talent research, but there are still limitations in the research on the evolution of scientific and technological talent policy. At present, the research of foreign scholars mainly focuses on the sustainable development of scientific and technological talents and the transformation of scientific and technological achievements, and the domestic research on scientific and technological talent policy mainly focuses on the scientific and technological talent policy at the central level, and there are few overall research on the scientific and technological talent policy in a specific region and the evaluation of scientific and technological talent policy. Most of the research on the text of science and technology talent policy is mainly carried out by constructing a multi-dimensional framework, and few studies discuss the science and technology talent policy from the perspective of the key words of the policy text. In studies involving keyword extraction, manual extraction is often used, which takes a lot of time and manpower. Therefore, future research can further expand the research on scientific and technological talents at the micro level; This paper discusses how to further improve and innovate the introduction, evaluation, training and incentive mechanism of scientific and technological talents under the background of talent agglomeration effect, and effectively improve the agglomeration level of high-level talents in China.

Acknowledgments

This paper was supported by the following funds: Key Research and Development Program of Shandong Province (Soft Science Project, 2022RKY05002)

References

[1] Bae S O, Lie J. The Coming Crisis of Scientific and Technological Expertise in South Korea Science and Technology Policy and Trends in the Supply of Scientists and Engineer [J]. Asian Survey, 2016, 56(4): 676-706.

[2] Farndale E, Thite M, Budhwar P, et al. Deglobalization and Talent Sourcing: Cross-National Evidence from High-Tech Firms [J]. Human Resource Management, 2021, 60(2): 259-72.

[3] Cadorin E, Klofsten M, Löfsten H. Science Parks, Talent Attraction and Stakeholder Involvement: An International Study [J]. Journal of Technology Transfer, 2021, 46(1): 1-28.

[4] Wei Ju, Xiaohu Zhou. Changes and Prospects of China's Science and Technology Talent Policy in the New Era[J].Chinese Human Sciences,2018(11):50-56.

[5] Lianjun Han, Xia Li . Three Transformations of China's Science and Technology Talent Policy and Future Prospects [J]. Philosophy of Science and Technology, 2019,36(03):99-104.

[6] Juan Yao, Hongyuan Liu, Xinyan Peng. Research on the Evolution Trend of High-level Science and Technology Talent Policy under the Guidance of Regional Development Goals: Based on the Econometric Analysis of High-level Science and Technology Talent Policy Text in Sichuan Province [J]. Journal of Sichuan Normal University (Social Sciences), 2021,48(05):143-150.

[7] Kang Li, Chen Huang, Dasheng Deng. Analysis of The Impact of Provincial Science and Technology Talent Policy on the Agglomeration of Science and Technology Talents [J]. Research the World, 2021(07):41-47.

[8] Wenbin Zhang. Research on the Cultivation of Entrepreneurial Ability of Higher Vocational Students Based on the Concept of School-Enterprise Collaborative Innovation[J]. Vocational Education Forum, 2015, (17): 34-37.

[9] Juan Xu, Mengxiao Zhang, Tianyu Luo. Research on the Threshold Effect of Science and Technology Talent Policy on Regional Innovation Performance [J]. Techno-Economic,2023,42(07):1-12.