Analysis of Knowledge Graph on the Subject of Domestic Human Resource Management Practice

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Abstract. Human resource is contained in the knowledge, ability and employee relationship of the employees in the enterprise, and it is the competitive advantage that the competitors can not imitate, and the effective practice of human resources management can promote the organization innovation. This study uses the knowledge map research method to analyze the journals on the practical subject of human resources management in China, taking the periodicals included in the core journals from 1994 to 2018 as the research object, and using citespace software to analyze the journals from the literature authors and the publishing organizations. By drawing the map of scientific knowledge, we can identify the current situation and research focus in China.

1 Introduction

Human resources have become a strategic resource of an enterprise and the most important resource of an enterprise or organization. Scholars at home and abroad have made rich research results on "human resources" and "human resource management". In order to clearly present the context of existing research results, the scientific knowledge map research method is used to analyze the retrieved literature, grasp the hot changes and development of human resource management research, and provide reference and reference for the theoretical research and practice of human resource management.

2 Data sources and research methods

2.1 Data collection status

The Chinese literature uses CNKI database as the basic data source. Since the information of irrelevant literature will affect the accuracy of citespace analysis, the resource type selects the journal, the subject is "Human Resource Management Practice", and the core journal is selected for retrieval, and the time is not set. And finally got 1066 literature records, the time span is from 1994 to 2018.

2.2 Introduction to research software and principles

Knowledge graph is a method of visual analysis of a research field through various means such as data mining, scientific measurement, information analysis,and graph drawing. It can not only reveal the static knowledge

structure frame diagram,but also display Dynamic spectrum of knowledge development process [2]. Cite Space software developed by Dr. Chaomei Chen from the School of Information Science and Technology of Drexel University in the United States was used to analyze the literature based on the JAVA language. The software version used in this study was Citespace5.3.R4. Through map drawing and data analysis, combined with quantitative and qualitative analysis, the paper author's cooperation network analysis, keyword co-occurrence network analysis, etc. are carried out. Analyzing the keyword co-occurrence network can find research hotspots; through the analysis of the authors and the cooperation network with high frequency of articles, the core scholars and their academic exchange relationships within the research topic can be found.
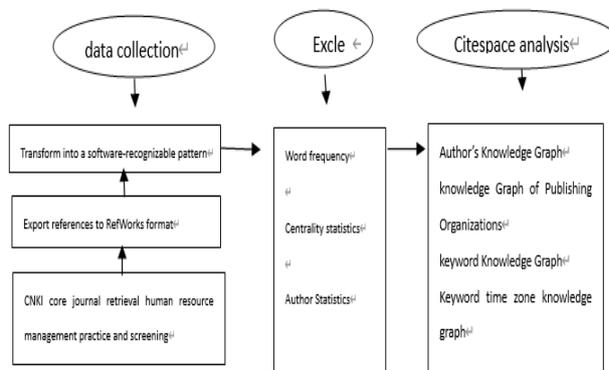

Fig. 1 Data acquisition and analysis process

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3 Visual analysis of research focus and development trend

3.1. Analysis of the author's knowledge graph

Scientific research cooperation is the driving force for the development of science today. By studying the mainstream academic groups of the theme of human resource management practice, it is helpful to discover the development law of the theme. Figure 2 shows a one-year slice. The top 50 of the introduction includes 106 authors, 75 nodes, and no crops. Table 3 shows that the author with the most essays is Professor Zhao Shuming. The Burst value of Professor Peng Jianfeng, Professor Peng Jisheng, Professor Fang Hongjun and Professor Xing Zhouling is non-zero, and they are the "emerging figures" of this topic that need to be paid attention to [3]. Professor Liu Shanshi is the only author whose betweenness centrality is not zero, indicating that Professor Liu promotes the connection between different scholars. Try to ensure that lines are no thinner than 0.25 point.
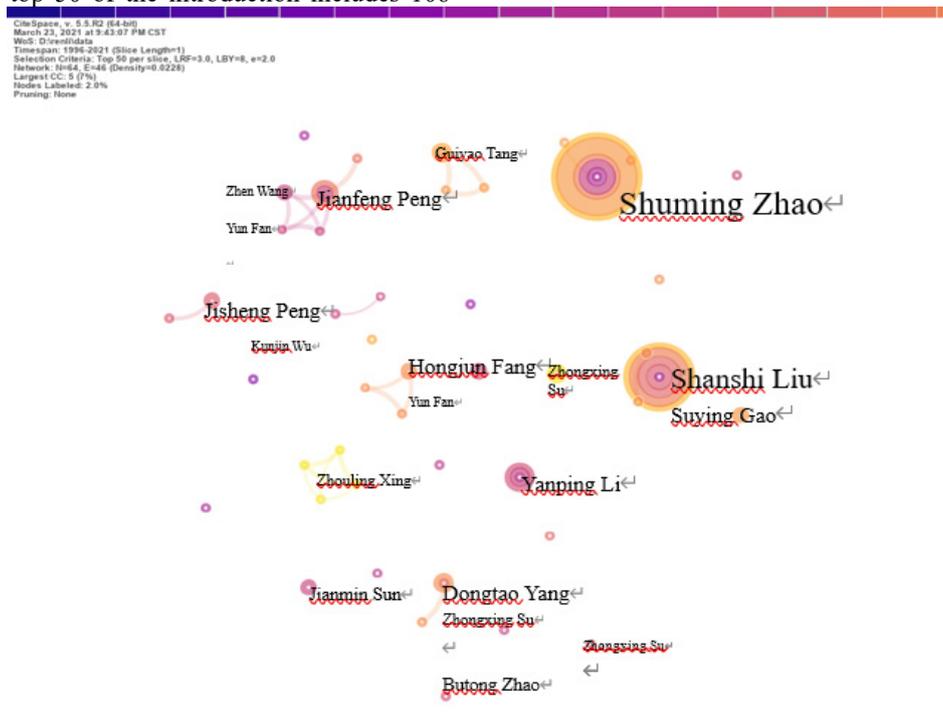

Fig.2 Author's Co-occurrence Knowledge Graph

Table 1 Authors with more than 5 articles

Author	Freq	Burst	Centrality	Author	Freq	Burst	Centrality
Shuming Zhao	32			Guiyao Tang	7		
Shanshi Liu	29		0.01	Zhouling Xing	7	3.37	
Yanping Li	9			Zhen Wang	7		
Jianfeng Peng	9	3.96		Zhongxing Su	6		
Jisheng Peng	9	3.33		Yun Fan	6		
Hongjun Fang	9	4.93		Suying Gao	6		
Dongtao Yang	9			Kunjin Wu	5		
Jianmin Sun	8			Butong Zhao	5		

3.2. Knowledge Graph Analysis of Research Institutions

Figure 3 shows the cooperative knowledge map of teaching and research institutions on the theme of human resource management practice from 1994 to 2018. The annual ring represents the history of posting [4], the size of the node and node label text represents the number of postings in 24 years, and the connection between nodes Represents the cooperative contact of the issuing agency

[5]. As shown in Figure 3 and Table 2, a total of 76 institutions have published core journals on this topic. The business school of Nanjing University has the largest number of articles with 72 articles, the second is Renmin University of China, with 54 articles, and the third is School of Business Administration, South China University of Technology, published 45 articles. Among them, the central intermediary of the School of Business of Renmin University of China and the School of Management of Shandong University is not 0, which proves that the scholars of this institution have academic cooperation and exchanges with other institutions.

Fig. 3 Knowledge map of publishing organizations

Table 2 Cooperative knowledge map of issuing institutions

mechanism	Freq	Cent rality
School of Business, Nanjing University	72	0
School of Labor and Human Resources, Renmin University of China	54	0
School of Business Administration, South China University of Technology	45	0
School of Business, Renmin University of China	17	0.01
Shandong University School of Management	14	0.01
Zhejiang University School of Management	13	0
School of Management, Xi'an Jiaotong University	11	0
School of Economics and Management, Wuhan University	9	0
Nankai University Business School	8	0
School of Biochemical Engineering, Beijing Union University	7	0
School of Management, Wuhan University of Technology	6	0
Business School of Hohai University	6	0

3.3 Keyword co-occurrence knowledge graph analysis

Import the data source into the citespace software, set the node type to keywords, and the default system settings to get the keyword co-occurrence map, as shown in Figure
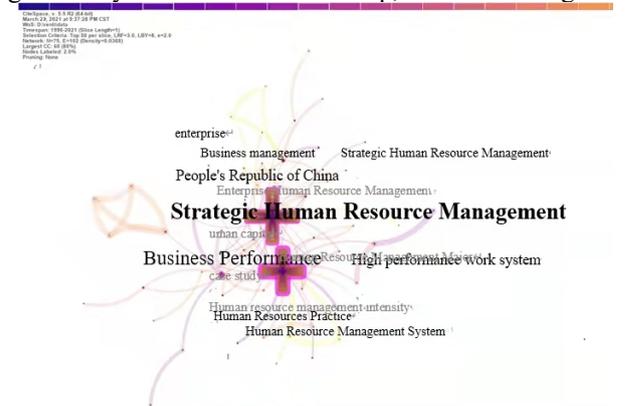

Fig. 4 Keyword co-occurrence knowledge map

Analyzing Figure 2, there are 187 nodes, which represent the number of keywords, and there are 504 node connections, which represent the links between keywords, and the network density is 0.029. The line between nodes represents the relationship between keywords. The line indicates that two keywords appear together in a document. The thickness indicates the number of occurrences, and the color corresponds to the time of first appearance, varying from dark to light Represents the change in time from early to recent. The thicker the line, the denser it is. Table 3 is obtained by sorting out the keyword frequency and centrality data obtained by the software. The word frequency analysis method is a method of using the frequency of keywords or subject terms in a certain research field to study the development trends and research hotspots of this field. In the bibliometric method, centrality represents the "mediation" role of keywords in the graph, and the nodes between different groups are the research issues surrounding the field. Table 3 shows keywords that appeared 5 times or more from 1994 to 2018. To sort out and summarize high-frequency keywords, the research hotspots under the theme of domestic human resource management practice mainly include the following: first, macro research; second, micro research; third, performance; fourth, research methods; Fifth, research perspective, and sixth, function. As shown in Table 4. Regarding the occurrence of practical phrases in the three high-frequency keywords, it can be seen that the existing scholars' research on the practical application of theoretical support is a current hot spot, and the practice of human resource management has important guiding significance for enterprise human resource management [6].

Table 3 Frequency and centrality of high-frequency keywords

Keyword	Freq	Centrality	Keyword	Freq	Centrality
human resource Management	311	0.7	High-performance human resource practices	8	0.06

Human Resource Management Practice	118	0.4	Human Resource Management Model	6	0.06
Human Resources	77	0.31	Organizational support	6	0.06
Strategic Human Resource Management	87	0.21	Human Resources Practice	18	0.05
Organizational Performance	57	0.17	Human Resource Management System	18	0.05
Business Performance	51	0.13	Enterprise Human Resource Management	16	0.04
High performance work system	31	0.09	human capital	16	0.03
People's Republic of China	17	0.09	Human Resource Management Major	12	0.03
enterprise	44	0.08	case study	6	0.03
Business management	34	0.08	Human resource management intensity	5	0.02
Strategic Human Resource Management	25	0.06			

Table 4 Keyword subject classification table

theme	Keywords (frequency)
Macro	Human Resource Management (311); Strategic Human Resource Management (87) Strategic Human Resource Management (25); Human Resource Management Model (6)
Micro	Organizational support (6); human capital (16); intensity of human resource management (5)
Performance	Organizational performance (57); corporate performance (51); high-performance work system (31) High-performance human resource management (8)
method	Case study (6)
Perspective	People's Republic of China (17); Enterprise (44); Enterprise Management (34) Human Resource Management Major (12)
Function	Human Resource Management Practice (118); High-Performance Human Resource Management Practice (8) Human Resource Practice (18)

3.4 Evolutionary process and research hotspot knowledge map analysis

This study uses the time zone analysis and imaging methods of citespace software to integrate 1066 documents from 2014 to 2018 to form a knowledge map characterized by the development and evolution of keywords. In Figure 5, "Enterprise Management", "Enterprise Human Resource Management", "Human Resource Management", "Human Resource Management Practice [7]", "Strategic Human Resource Management [8]", and "Human Resource Model" are formed in Figure 5. "Human Resource Practice [9]", "Human Resource Management Mode", "Human Resource Management Intensity [10]", "Big Data", and "Organizational PsychologicalOwnership".
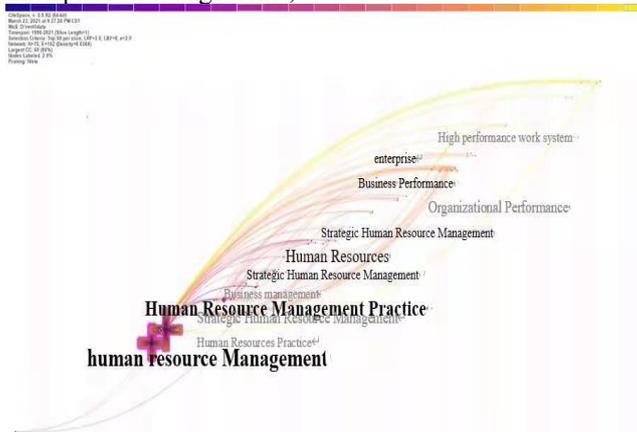

Fig. 5 Keyword time zone knowledge map

4 Conclusion

In this paper, through a visual analysis of research data on the theme of human resource management practices in the CNKI core journal database from 1994 to 2018, it explores the domestic authoritative authors, publishing organizations, and institutions that have had a significant impact on human resource management research in the past 25 years. The focus of research on human resource management practice，Through research, clarified the research context of human resource management practice as the theme, grasped the development of theory and practice, and provided support for the current stage of human resource management research and innovation

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