Research on Hotspots of Human Resource Management in the Digital Economy Era Based on Co-word Analysis

Yumeng Zhang[1, *]

[1]School of Management, Wuhan University of Technology, Wuhan, China
[*]Corresponding author. Email: 282141@whut.edu.cn

ABSTRACT

With the advent of the digital economy era, artificial intelligence and big data have brought great changes to the field of human resource management. Based on the database of China Knowledge Network, this paper uses co-word analysis to sort out the literature focusing on the field of human resource management in the era of digital economy in the past seven years (2016-2022), and then uses SPSS to conduct cluster analysis and multi-dimensional scale analysis, and finds that the current research hotspots in the field of human resource management mainly focus on human capital innovation brought by information management, human resource management innovation brought by big data Based on the findings of the study, we provide suggestions for the development of human resource management in the digital economy, and offer new perspectives and directions for human resource management research.

Keywords: Human resource management, Digital Economy Era, Co-word analysis.

1. INTRODUCTION

As advanced science and technology such as cloud computing, artificial intelligence and big data continue to emerge, the digital economy era is gradually changing various states in the human resources sector, with far-reaching effects on the change of employment channels and the structure of the labour market. At the 2016 G20 Hangzhou Summit (a meeting of G20 finance ministers and central bank governors), the President put forward the development of the digital economy as the main path for China's innovation growth, and the 14th Five-Year Plan for the Development of the Digital Economy issued by China's State Council on 12 January 2022 clearly states that the output value of the digital economy will reach 10% of GDP by 2025. Many companies have consequently gradually started to adapt their human resource management models using the concepts of the digital economy era, and corresponding corporate innovations have led to the integration of modern information technology with the traditional field of human resource management. The development of the field of human resource management in the digital economy has gradually become a hot topic of research in the field of human resource management and is receiving more and more attention from researchers.

In recent years, scholars have researched and elaborated on the possible changes in HRM in the digital economy from different perspectives, with different emphases. For example, scholars such as Zhao Jingwei [1] believe that the digital economy will change the labour market, which in turn will promote and facilitate the field of HRM (1); Zhao Yixuan [2] believes that public HRM will enhance its public nature because of big data, while other human resources will also show a sharing economy and flexible employment because of big data.

To summary up, under the profound influence of the digital economy, scholars have been conducting research on the changing direction of human resource management [3]. And various adjustments, innovations and re-upgrades have been made to HR management models and specific initiatives. A clear study of the hotspots of human resource management in the digital economy can provide new ideas to enhance the efficiency of the allocation of human resources in society [4].

2. DATA SOURCES AND STUDY DESIGN

Styles can be applied using the style palette available within the template. To activate it the press Ctrl+Shift+s. Apply the style as required based on the content and context. (Please don't highlight your text in yellow.)

2.1 Data Sources

This study used CNKI as the main data source (index: SCI-Expanded, CSSCI, CSCD, CPCI-SSH, e-sci). The keywords "digital economy", "digitalization", "Internet+", "big data", etc. were selected to the search was conducted to reflect the background of the digital economy; and the keywords of "human resource management", "human resource development" and "online recruitment" were selected to reflect the background of the digital economy; and the intersection of the two sets of search results was taken as the sample articles. The intersection of the two sets of search results was used as the sample articles. The time range was "2016-2022" and 235 articles were finally obtained.

Through the analysis, it can be concluded that the number of papers related to the research development hotspots and trends of human resource management in the context of the digital economy era in the past seven years from 2016 to 2022 have shown an overall upward trend, indicating that scholars in this field have gradually raised their attention to its development. On the one hand, this is because with the advent of the digital economy era, new ideas on the integration of big data and human resources management are constantly put forward [5]; on the other hand, due to the development of big data technology and the deep cross-fertilisation of information technology with various fields, the field of human resources

management, as the frontline of enterprise practice informatization, has seen a gradual increase in practical research results in this area [6].

2.2 Study Design

In this study, we used the information co-occurrence mining system citespace to build a word frequency matrix of high frequency keywords, and used the statistical analysis software SPSS to perform keyword clustering analysis and multidimensional scale analysis on the word frequency matrix.

3. ANALYSIS OF RESEARCH FINDINGS

3.1 Statistical analysis of keyword frequency

The keywords in Figure 1 can be summarised into three main levels of research on HRM in the digital economy. The first is at the level of the digital economy, which is focused on the issues of zero-worker employment and wage premiums. The second is at the level of big data to analyse the heroes generated by the digital economy on human resource management in various industries, and the third is to explore the impact of artificial intelligence on labour relations and labour practices.
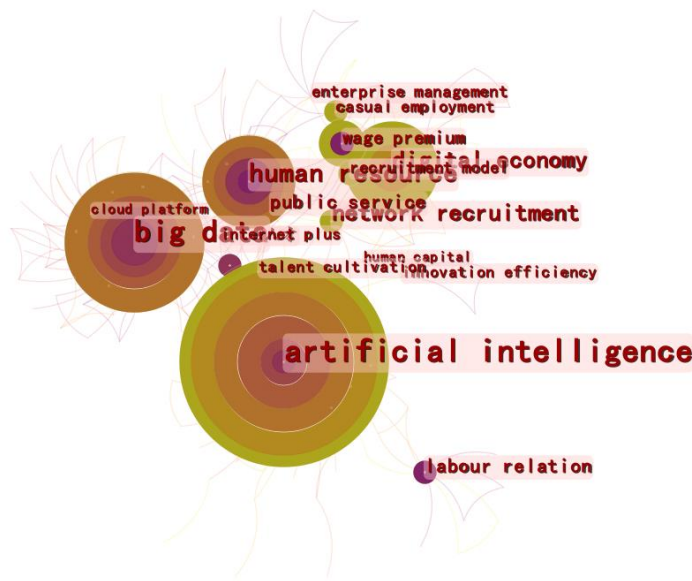

Figure 1 map of the co-occurrence of keywords in human resource management research in the digital economy

3.2 Keyword co-word matrix

To further analyse the relationship between keywords, a co-word analysis was conducted to calculate the co-word matrix of high frequency keywords.

The co-word matrix shows that the keyword K1 "artificial intelligence" appears most frequently, followed by K2 "big data", K3 "human resources", K4 "digital economy". We can see that among the correlations with "human resources", "artificial intelligence" is the most relevant, higher than "big data" and " informatization.

The "digital economy" and "wage premium" are both hot areas of research in this direction.

In addition, the correlation between K2 "big data" and K12 "informatization" and K7 "online recruitment" is also higher, indicating that "big data" and "informatization" are currently the hot areas of research. This indicates that there is currently a greater interest in the role of "big data" and "information technology" in online recruitment and the restructuring of employment.

Table 1. List of keyword numbers

No.	Keyword	Word Frequency	No.	Keyword	Word Frequency
K1	Artificial Intelligence	50	K9	Human capital	6
K2	Big Data	37	K10	Public Services	5
K3	Human Resources	37	K11	Casual Employment	5
K4	Digital Economy	25	K12	Informatization	5
K5	Wage Premium	10	K13	Innovation Efficiency	5
K6	City Size	8	K14	Recruitment models	5
K7	Online recruitment	7	K15	Enterprise Management	5
K8	Labour relations	6	K16	Sharing Economy	5

*	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16
K1	50	11	17	2	1	3	1	3	2	1	1	0	3	1	0	0
K2	11	37	27	0	2	0	4	1	0	1	0	5	1	0	1	2
K3	17	27	37	1	2	0	7	3	0	2	1	2	3	3	3	3
K4	2	0	1	25	2	2	2	0	6	2	2	0	1	1	2	0
K5	1	2	2	2	10	2	0	0	0	0	3	0	0	0	0	0
K6	3	0	0	2	2	8	0	0	0	0	2	0	0	0	0	0
K7	1	4	7	2	0	0	7	0	0	0	0	0	1	5	1	0
K8	3	1	3	0	0	0	0	6	0	0	0	2	0	0	0	0
K9	2	0	0	6	0	0	0	0	6	0	0	0	1	0	0	0
K10	1	1	2	2	0	0	0	0	0	5	0	0	0	0	1	0
K11	1	0	1	2	3	2	0	0	0	0	5	0	0	0	0	0
K12	0	5	2	0	0	0	0	2	0	0	0	5	0	0	0	0
K13	3	1	3	1	0	0	1	0	1	0	0	0	5	0	0	0
K14	1	0	3	1	0	0	5	0	0	0	0	0	0	5	1	0
K15	0	1	3	2	0	0	1	0	0	1	0	0	0	1	5	0
K16	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	5

Figure 2 Co-term matrix of HRM research in the digital economy

3.3 Keyword clustering analysis

As can be seen from the figure 3，Category 1 focuses on the employment of casual workers and wage premiums, which have been the focus of attention at the level of the digital economy; category 2 focuses on the analysis of the heroes of the digital economy on human resource management in various industries at the level of big data, and category 3 focuses on the impact of artificial intelligence on labour relations and labour practices.
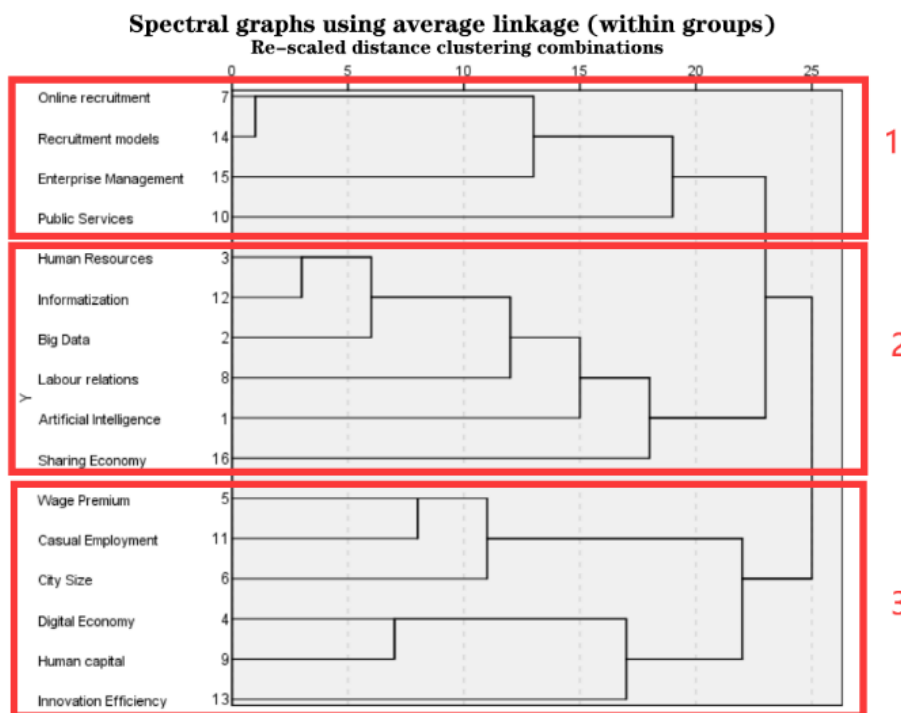
Spectral graphs using average linkage (within groups)
Re–scaled distance clustering combinations

Figure 3 Keyword clustering dendrogram

3.4 Keyword multidimensional scale analysis

The multidimensional scale analysis generated the multidimensional scale analysis mapping of high frequency keywords of human resource management in the era of digital economy. spss metric can get Stress=0.0569, RSQ=0.995, which is in line with the index of $1\% \leqslant$ Stress $\leqslant 10\%$, RSQ>0.6 and close to 1, indicating that the mapping fits well, this 18 core keywords can reflect the current hotspots in the field The deep structure of the research.

As can be seen from the figure 4, there are three domains. Domain 1 is concentrated in the third quadrant, with high centripetal and density, indicating that there is a stable research pattern and structure in this part of the topic. Domain 2 is concentrated in the first quadrant, with a low centripetal degree and low density, indicating that the internal links are relatively loose and the research is still in the exploration stage.
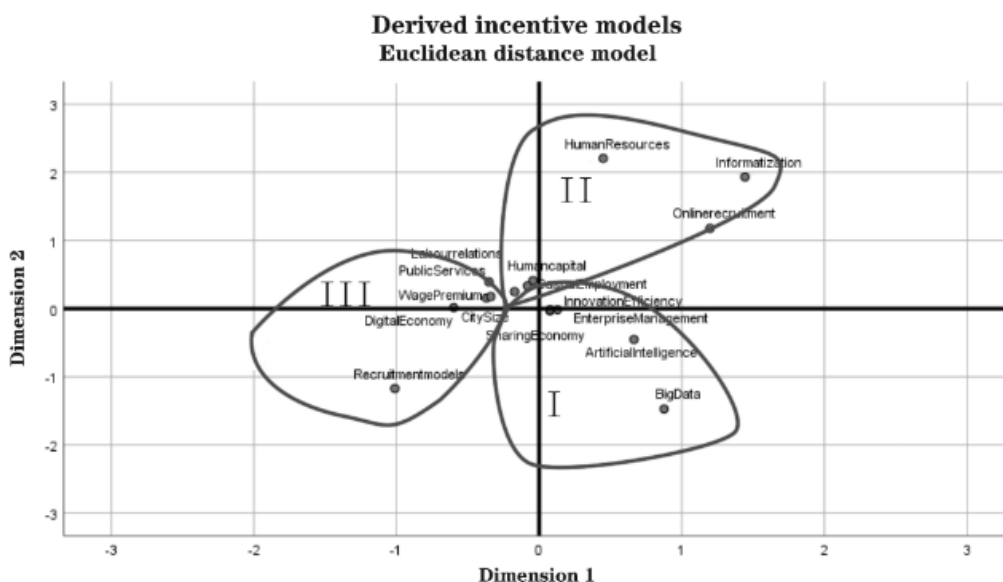
Derived incentive models
Euclidean distance model

Figure 4 Keyword clustering dendrogram

4. CONCLUSIONS

Through combing the theoretical level and carrier level of the literature related to human resource management in the digital economy in the past seven years on China Knowledge, and analyzing the high-frequency keywords by using word frequency analysis and co-word analysis, we conclude that: the research at the theoretical level mainly focuses on how to use big data to improve labor relations, realize the sharing economy in the digital economy, and develop new human resource management models to enhance Research at the practical level focuses on the changes in human resources and human capital under the existing digital economy, and this part of the research is mostly empirical, i.e. Category 2; research at the structural level focuses on the emergence of wage premiums and the problem of casual employment in the digital economy, and this type of research often takes online recruitment as an entry point to explore in depth the structural The research often takes online recruitment as the starting point to explore the structural contradictions in the digital economy.

With the continuous development of big data and artificial intelligence technologies and their integration with the labour market, core information technology such as the Internet, cloud computing, the Internet of Things, and other information technologies are also gradually applied in the field of human resource management, providing strong technical support for the rapid development of human resource management. The development and establishment of many online recruitment applications and recruitment platforms now provide practicable occasions for the digital direction of HRM, while more and more enterprises and public service industries are investing in the construction of a digital economy, all of which have strongly contributed to the changes in the field of HRM.

REFERENCES

[1] Zhao Jingwei. On the impact of the digital economy on labor relations[J]. Brand Research, 2022(17): 179-182.

[2] Zhao Yixuan, Zhao Shuming, Luan Jialui. Artificial intelligence-based human resource management. A theoretical model and research outlook [J]. Nanjing Social Science, 2020(02): 36- 43. [3] C. Baier, J-P. Katoen, Principles of Model Checking, MIT Press, 2008.

[3] Tang Guiyao, Yu Bingjie, Chen Mengyuan, et al. Organizational communication and employee innovation based on the intensity of human resource management in A study on organizational communication and employees' innovative behavior based on the role of human resource management intensity [J]. Journal of Management. 2016, 13(01): 76-84.

[4] Zheng Liyong, Kong Yan. Modern human resource management based on the perspective of psychological capital theory value-added research [J]. East China Economic Management, 2019, 33(01): 154-159.

[5] G.D. Penna, B. Intrigila, I. Melatti, E. Tronci, M.V. Zilli, Bounded probabilistic model checking with the muralpha verifier, in: A.J. Hu, A.K. Martin (Eds.), Proceedings of the Formal Methods in Computer-Aided Design, Springer, Berlin, Heidelberg, 2004, pp. 214–229. DOI: https://doi.org/10.1007/978-3-540-30494-4_16

[6] Wang Xiaodong, Wan Kaidi,Zhou Yue. Visual analysis of human resource sharing research based on CiteSpace [J]. Journal of Yuncheng College, 2022, 40(1):71-77.