Human Resources Management and Services 2025, 7(1), 3578.
https://doi.org/10.18282/hrms3578

Review

Review of the development of research themes in human resource management: A bibliometric co-citation analysis of the 1970s and 1980s

Yu-Shen Fang

College of Economics and Management, Zhaoqing University, Zhaoqing 526061, China; fang.yushen@qq.com

CITATION

Fang Y. Review of the development of research themes in human resource management: A bibliometric co-citation analysis of the 1970s and 1980s. Human Resources Management and Services. 2025; 7(1): 3578. https://doi.org/10.18282/hrms3578

ARTICLE INFO

Received: 28 November 2024
Accepted: 22 January 2025
Available online: 18 February 2025

Abstract: This study aims to explore the evolution of the human resources field in Western academia during the 1970s and 1980s, focusing on the trends in research topics across different decades. The analysis utilizes citation co-citation analysis, multivariate statistical analysis, and social network analysis. The research data were drawn from the Web of Science (WoS) database, comprising 1278 documents. By distinguishing between different time periods, the study identifies shifts in the field across two distinct time frames, visualized through multidimensional scaling maps. The results indicate that the 1970s were dominated by seven major research streams, while the 1980s introduced eight research streams, with "human resources" emerging for the first time as a prominent research frontier. The volume of literature, co-citation frequency, and citation counts all increased over time, reflecting the growing vibrancy and expanding scope of research in the field. Although citation co-citation analysis provides objective quantitative insights, issues such as the purpose of citations, the extent to which cited documents influence citing documents, and the varying layers of citation impact may introduce potential errors in the co-citation analysis results.

Keywords: human resources; bibliometric co-citation; knowledge mapping; discipline evolution; research frontier

1. Introduction

The concept of human resources was first introduced and clearly defined by Drucker in 1954 (Drucker, 2007). However, it was not until the 1990s that human resource management (HRM) theory made significant strides in practice and became widely accepted by business organizations. Over time, HRM gradually replaced traditional personnel management, leading to the continuous development and maturation of new theories. This evolution underscores the discipline's growing impact within the social sciences (Marciano, 1995). HRM has evolved through several stages: traditional personnel management, HRM, human resource development and management, and strategic HRM. Contemporary organizations emphasize management practices such as talent recruitment, selection, development, utilization, and retention, viewing employees as human capital and strategic resources, which enhances organizational competitive advantage (Barney et al., 2001; Ulrich, 1998). Additionally, Casey and McMillan (2008) found in their review of industrial development and labor relations from 1974 to 2006 that the importance of HRM has steadily increased.

As any discipline matures, new branches typically emerge within its research field. In exploring these branches, two common research approaches are often observed. One approach involves qualitative research methods to review the literature, while the other employs quantitative methods, such as bibliometrics, scientometrics, or informetrics, to analyze literature, authors, publications, keywords,

and other knowledge carriers. These methods help analyze the internal mechanisms of the discipline's system, track its growth and evolution, reveal its development, identify key research frontiers, and predict trends and activity patterns (Fang and Fang, 2022; Liu et al., 2008; Trujillo and Long, 2018).

The purpose of this study is to review HRM in the 1970s and 1980s by creating a knowledge map and analyzing the academic sources cited during that period. The study aims to uncover the development processes, structures, trends, and relationships between various node networks, using both static and dynamic diagrams to extract implicit or potentially useful knowledge. This approach is dual in nature, serving as both a visualized knowledge graphic and a serializable knowledge lineage. It reveals the activities between knowledge flows or clusters in HRM while illustrating the networks, interactions, intersections, and evolution of the discipline's structural changes. This reflects the key components of knowledge inheritance and diffusion (Liu et al., 2008). The graphical representation concretely reflects the discipline's characteristics and inherent value, complementing and enhancing the results derived from qualitative research.

Thus, the knowledge map generated through co-citation analysis will assist the HRM discipline in understanding the areas, responsibilities, professions, and academic positions it has rapidly developed over time. These findings have significant academic value. The research results will reveal evolutionary processes across different periods, identify the most influential research fronts and emerging subfields, and reflect the discipline's knowledge structure, theories, issues, and changes. They will also provide insights into future research trends in the field and offer a comprehensive knowledge map for newcomers to quickly grasp the overall body of knowledge in this domain. Therefore, the objectives of this study are as follows:

To explore the evolution of the clustering distribution (research themes) within the HRM discipline in the 1970s and 1980s.

To identify the most influential research fronts and newly active subfields during that period through knowledge mapping.

To provide a rapid understanding of the HRM discipline's knowledge system from a macro perspective for entry-level researchers or non-HRM scholars and experts.

2. Literature review

2.1. Current research status of HRM

As the field of HRM continues to grow rapidly, it becomes increasingly difficult to explore the dynamic evolution of the discipline using traditional methods such as literature reviews and content analysis. HRM is not a static field; new research areas are constantly emerging. Therefore, to investigate its evolution and predict future development trends, a scientific, objective, and effective approach is required. Bibliometrics offers valuable data on the transmission of academic networks and the circulation of knowledge concepts, highlighting the fundamental drivers behind a discipline's internal innovations, external branching, or widespread dissemination. Co-citation analysis, a key tool in bibliometrics, plays a significant

role in quantitative research. It uncovers the relationships between newer and earlier literature based on mutual citation patterns. By examining these citation and co-citation relationships, one can better understand the connections and developments between different disciplinary areas and the process of literature dissemination. This, in turn, helps to elucidate the current state of research and predict future trends (Trujillo and Long, 2018).

Previous HRM research has commonly focused on reviews and prospects (Liu and Deng, 2009; Wang and Zhang, 2017), organizational culture and group characteristics (Song et al., 2018), enhancing organizational performance (Cui et al., 2020), strategic human resource management (She and Zhang, 2016), and competency analysis (Zhao et al., 2019), among others. In recent years, there has been a growing trend of research specifically utilizing bibliometric methods. For example, studies have focused on the relationship between artificial intelligence (AI) and human resource management (HRM) (França et al., 2023). García-Lillo et al. (2016) analyzed journal articles published in the International Journal of Human Resource Management from 2000 to 2012 to explore HRM's knowledge structure during that period. Contreras et al. (2024) examined 284 academic papers published between 2001 and 2022, discussing HRM and digitalization, with the aim of analyzing the development, status, and trends of HRM's digital transformation. Kişi (2023) analyzed 786 articles published between 2002 and 2022 concerning the antecedents and consequences of employee engagement. Chae et al. (2020) employed co-citation analysis with keywords to examine 1158 research papers published in three major HRM journals in Korea from 2007 to 2018. Interestingly, co-citation analysis methods are frequently applied in other research fields, reflecting the strength of those fields. The use of bibliometric methods in HRM to explore the evolution of the discipline over different periods is widely recognized as an essential and indispensable method for contributing to the field's development. It is also an innovative approach that helps reflect the core knowledge within the discipline.

From the above discussion, it is evident that the research samples primarily stem from two approaches. The first involves searching for journals and literature indexed in a specific academic database, defining a time frame for the search, and using keyword searches. The second approach focuses on analyzing articles published within a particular time frame in a specific HRM journal indexed in an academic database. The first approach employs keyword searches across the entire academic database, spanning multiple journals, to gather samples related to a specific topic in the research design. However, these samples may cover a broad HRM domain and will require further filtering. In contrast, the second approach directly analyzes articles published within a defined time frame in a dedicated HRM journal, thus reducing the need to filter out non-HRM-related articles. Both methods have their advantages. However, to date, we have not come across any earlier research that uses bibliometric methods to analyze the development process and knowledge structure of HRM during periods such as the 1970s and 1980s. This research fills that gap.

2.2. Co-citation analysis

Co-citation analysis helps reveal the knowledge structure of a specific research field, offering insights into how literature evolves over time and identifying potential emerging trends. It encompasses two main aspects: first, it relates to the impact of scientific advancements, with contributions evaluated based on the frequency of citations; second, it is presented graphically, using visual representations to depict the scientific structure of the research field, including its theories and knowledge (Noyons et al., 1999).

The co-citation theory in bibliometrics was proposed by Small (1973) and Marshakova (1973) while studying the citation structure and classification of literature. This theory is a scientific mapping technique used to show whether cited publications, authors, or journals are referenced by other publications in a database. The more frequently they are co-cited, the stronger the connections in the scientific map. It refers to the relationship between two (or more) documents when they are both cited by another document. In this case, the two documents (the cited documents) share a thematic or conceptual relationship. Specifically, if documents A and B, regardless of their publication dates, are both cited by later works, they are said to have a co-citation relationship. The more frequently they are co-cited, the higher the relevance of their content. By comparing them over different periods, changes in the development patterns of disciplinary themes can be identified. This creates a measurable connection between the two articles (Trujillo and Long, 2018).

Co-citation analysis is a quantitative technique that analyzes the co-citation relationships of representative literature within a discipline. Typically, co-citation matrices are formed using scientometric software, and tools such as SPSS for multivariate analysis and UCINET for calculating centrality are employed to visualize the relationships between documents through multidimensional scaling (MDS) and social network diagrams (Jiang and Chen, 2010; Sainaghi et al., 2019; Wang and Zhu, 2019). This process simplifies the complex co-citation relationships among numerous objects into fewer relationships within clusters and calculates the connection values between clusters, creating a cluster knowledge map. It provides researchers with a clear and efficient way to visualize potential and hidden knowledge structures, evolution, and progress within a particular subject, as well as the development trends of academic thought (Small et al.,1985).

Co-citation analysis involves three main entities: Documents, authors, and journals. This method is typically divided into Document Co-citation Analysis (DCA), Journal Co-citation Analysis (JCA), and Author Co-citation Analysis (ACA). DCA involves examining co-citation-related clusters, network groups, and their evolution, highlighting the structural relationships between co-cited references. It reflects the research fields, development trends, and core literature within a discipline. JCA focuses on journals as the basic unit, establishing co-citation relationships and their intensity to determine the disciplinary nature of journals and identify core journals. ACA helps in understanding the authors within a given field, tracking changes in author groups, and inferring the development trends of the discipline (White and McCain, 1998). Therefore, co-citation analysis emphasizes the similarities between co-cited documents, authors, or journals, making it a powerful

tool for identifying the core literature, authors, and research topics within a discipline, as well as for mapping the knowledge structure of that discipline (McCain, 1990).

However, ACA and JCA primarily treat individuals and publishing institutions as the basic units of analysis, which leads to viewing them as independent knowledge production entities. This approach makes it more difficult to observe the status of community activities and the dialogical relationships between different clusters within an entire discipline (Su, 2004). In contrast, DCA establishes co-citation network relationships based on cited documents as the basic unit, grouping a large number of documents into clusters through citation relationships. This forms a disciplinary cluster network that reflects the connections and structural characteristics of disciplinary knowledge, revealing the development trends and changes in the relationships between different areas of knowledge within a field. This method has been widely applied across various disciplines to clarify their development, including HRM (Yang et al., 2022), strategic management (Rollnik-Sadowska and Grabińska, 2024), talent training, and employee engagement (Espina-Romero et al., 2023; Kişi, 2023).

3. Research design and methods

3.1. Sample data source

Data were collected from the Web of Science (WoS) database, focusing on HRM literature published during the 1970s and 1980s. Three authoritative, long-established, and representative journals in the field were selected: *Human Resource Management*, *Personnel Review*, and *Public Personnel Management*. The earliest publication year was 1972, from Public Personnel Management, followed by Personnel Review in 1975, and Human Resource Management again in 1985. A total of 1278 journal articles were retrieved, including 542 articles from the 1970s (1970–1979) and 736 articles from the 1980s (1980–1989), as shown in **Table 1**.

Table 1. Year of publication and number of journal articles indexed in the three sample journals.

Journal Name	Database Coverage	1970–1979	1980–1989	Total
Human Resource Management (HRM)	1985-present		115	115
Personnel Review (PR)	1975-present	132	217	349
Public Personnel Management (PPM)	1972-present	410	404	814
Total		542	736	1278

Note: The count includes only article publications.

These three journals provide an objective and comprehensive reflection of HRM's development during the respective periods. The 2023 Impact Factors for these journals were 7.59, 5.35, and 4.99, respectively (Resurchify, 2024a, 2024b, 2024c). To capture the evolution across two distinct periods (the 1970s and 1980s) and facilitate the dialogue between the literature, this study divides the timeframes into the commonly accepted decade units: 1970–1979 as the 1970s and 1980–1989 as the 1980s.

3.2. Data analysis methods

The first step involved using scientometric software Bibexcel to compute the co-citation matrix, which measures the strength of co-citation between articles. Subsequently, SPSS software was employed for Pearson correlation analysis, cluster analysis, MDS, and factor analysis. These methods were used to reveal the spatial relationships and degrees of association between the analyzed objects. Specifically, cluster analysis and MDS were applied to represent the analyzed objects as nodes on a plane. Based on the results of factor analysis, these nodes were grouped into clusters. The final analysis examined the relationships between the nodes, clusters, and sub-clusters (Andrews, 2003).

Factor analysis is used to identify the underlying structure of variables and simplify the observations while explaining the interrelationships among variables. It also uncovers latent variables that may influence observed changes. In this study, principal component analysis (PCA) was employed as part of the factor analysis, with the maximum variance method used for rotation. This method is suitable for the co-citation analysis matrix and helps generate thematic profiles, which highlight the distribution density of the study subjects (Chen et al., 2005).

Cluster analysis groups samples with similar characteristics into the same cluster, based on their proximity. Samples that are closer together are considered more similar. The number of clusters is typically determined by the number of principal factors extracted from the factor analysis. This remains an unresolved challenge in cluster analysis, as the aim of co-citation analysis is not to test the number of clusters, but to provide information for further discussion. Consequently, most studies use the number of factors extracted from the factor analysis to determine the number of clusters (Andrews, 2003). In this study, hierarchical cluster analysis, cluster variables, and Euclidean distance were used to group similar objects into different categories.

MDS is used to calculate distance data (i.e., dissimilarity data) to identify the consistency between similar or dissimilar events. By applying cluster analysis, MDS assigns higher similarity or variance within the same cluster, representing the degree of similarity in statistical terms. Based on this, variables or individuals are grouped into different categories, with nodes representing their relative positions. The closer the distance between two nodes, the more closely they are related, and the more central their position in the map. Conversely, more dissimilar objects will be placed further apart on the periphery (Chen, 2005).

MDS analysis must ensure that the stress and RSQ values fall within a reasonable range to successfully explain the similarity between objects. Stress refers to the stress coefficient, and the lower the value, the better the fit. According to Kruskal (1964), when the stress coefficient is 0, the fit between the dimensions is perfect. A value of 0.025 indicates an excellent fit, 0.05 indicates a good fit, 0.10 indicates a fair fit, and values greater than 0.20 indicate a poor fit. Therefore, the smaller the stress coefficient, the better the fit between the map and the original data. RSQ represents the square of the correlation coefficient between distances (R-squared), which indicates the proportion of variance explained. A higher RSQ value signifies better explanatory power of the dimensions (Huang, 2001). In other words,

the stress coefficient and the dimensional fit are inversely related: a higher stress coefficient indicates a poorer dimensional fit.

Through this aggregated two-dimensional spatial map, the closeness and relative positions of the objects can be intuitively observed. Relationships that are more closely associated are grouped together, and the types of connections between variables can be explained. This method aggregates similar objects into distinct groups, helping to identify the fields of each research cluster.

3.3. Data execution steps

First, for the 1278 articles, any inconsistencies in author names and references were identified and corrected to ensure the accuracy of both author and document names, thereby improving the precision of the analysis data. The bibliometric co-citation matrix was then constructed using the scientometric software Bibexcel, which analyzes the co-citation frequency matrices of literature across different time periods. There are generally three methods for determining the threshold: the researcher's own experience, the recommendations of Price (1965), and the upper and lower bounds of Zipf's law (Donohue, 1974). After conducting multiple tests with these methods and considering the differences in cumulative co-citation frequency distributions and the specific research context for the two time periods (the 1970s and 1980s), this study ultimately selected 27–51 high-frequency keywords as the basis for determining the sample size.

Since the focus of co-citation analysis is not on citation counts but on the similarity between documents, the co-citation frequency matrix was transformed into a similarity matrix using Pearson correlation coefficients in SPSS. This transformation resulted in the co-citation analysis matrix, which guided cluster analysis and eliminated discrepancies caused by citation frequency differences. This ensured that high-frequency and low-frequency citations did not disproportionately influence the analysis, facilitating easier visualization and interpretation of the knowledge graph (McCain, 1990). The correlation coefficients were then used to conduct cluster analysis, MDS, and factor analysis, the most commonly used methods in co-citation analysis. Similarity is measured by the correlation coefficient, where a stronger positive correlation indicates that two journals have more similar research fields or perspectives, suggesting a closer disciplinary knowledge background.

Following the application of cluster analysis, MDS, and factor analysis, MDS maps of the HRM discipline during different periods were generated. Additionally, UCINET and NetDraw software were used to calculate the centrality of the literature, identifying the key clusters and core articles within the discipline. Frequency and centrality are not always strongly correlated (Chen, 2011). From a knowledge theory perspective, key nodes are articles or topics that significantly influence other nodes within a specific period. These works present major theories or innovative concepts and play an important role in shaping new research frontiers.

4. The evolution of the HRM discipline and discussion

4.1. HRM in the 1970s

In the 1970s, a total of 542 papers and 5,206 references were published, with the highest citation frequency reaching 10. Of these, 27 papers, each with a citation frequency greater than 4, were selected for analysis. This analysis revealed seven principal component factors, which formed seven clusters. The clusters were further analyzed using MDS, resulting in a knowledge map of human resource studies for that period. The Stress and RSQ values of the graph were 0.16983 and 0.85882, respectively (as shown in **Figure 1**). The seven principal components together explained 86.788% of the variance, with the first factor explaining 19.261%, the second 18.801%, and the third 14.626%. The fourth through seventh factors accounted for 12.561%, 9.626%, 6.614%, and 5.30%, respectively. The first three factors cumulatively explained 52.688% of the variance, indicating that the research frontiers they represented were the most prominent during the 1970s.

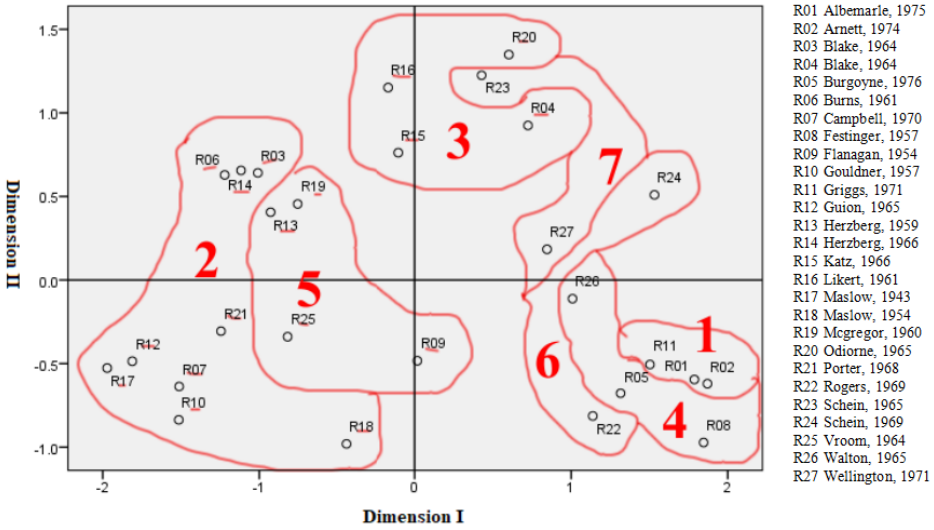

Figure 1. Knowledge map of HRM discipline in the 1970s.

Note: The points in the figure are simplified with the code "R" followed by a number to avoid overlapping text due to long document titles.

The MDS map clearly illustrates the co-citation relationships among the literature, forming seven distinct clusters. During this period, due to the relatively low number of co-citations, the spatial distribution on the map appears more scattered. Based on the clustering results, the top three clusters are "Cluster 2", which includes 9 nodes, and "Cluster 3" and "Cluster 5", each containing 4 nodes. From the perspective of related disciplines, "Cluster 1" focuses primarily on topics such as employment discrimination, industrial relations, and addressing racial discrimination within companies. "Cluster 2" pertains to effective management and includes fields like business, management, and applied psychology, addressing issues such as behavior, motivation, attitudes, and performance. "Cluster 3" centers on goal management. "Cluster 4" covers cognitive and behavioral theories, as well as labor negotiations. "Cluster 5" focuses on work motivation. "Cluster 6" pertains to training and development, while "Cluster 7" deals with organizational psychology and the study of public sector organizations.

It is evident that the main research topics in HRM during the 1970s included labor relations and racial discrimination, effective management, goal management,

cognitive and behavioral theories, labor negotiations, work motivation, training development, organizational psychology, and public sector organizations. The number of papers in "Cluster 2", "Cluster 3", and "Cluster 5" was notably higher than in the other clusters, suggesting that effective management, goal management, and work motivation were the primary knowledge sources during the 1970s. From the perspective of centrality, core literature, and the network's edge perspective, the top five works in "Cluster 2" and "Cluster 5" contributed more than those from other clusters.

The 27 representative co-cited papers from this period included 20 books, 4 journal articles, and 3 legal documents, with books being the primary source of knowledge references. The top five central works were R13 and R25 from "Cluster 5", and R07, R03, and R14 from "Cluster 2" (as shown in **Table 2**). These works had the strongest connections and were core documents that helped construct the entire network. They also represent the most important literature and research frontiers in human resources during the 1970s.

Table 2. Top five core articles from the 1970.

Centrality	Frequency	Literature	Author(s)	Publication Year	Cluster	Code
16	10	The motivation to work.	Herzberg, F.	1959	5	R13
12	5	Work motivation.	Vroom, V. H.	1964		R25
11	10	Managerial behavior, performance, and effectiveness.	Campbell, J. P. et al.	1970		R07
10	5	The managerial grid.	Blake, R. R. and Mouton, J. S.	1964	2	R03
8	4	Work and the nature of man.	Herzberg, F.	1966		R14

4.2. HRM in the 1980s

In the 1980s, a total of 736 papers and 12,974 references were published, with the highest citation frequency reaching 36. A total of 51 papers, each cited more than six times, were selected for analysis. Using the same analytical approach as in the previous period, eight principal component factors were identified, forming eight clusters. These clusters were then combined with MDS to create the knowledge map for the discipline during this period. The Stress and RSQ values of the graph were 0.12770 and 0.92425, respectively (as shown in **Figure 2**). The eight principal components together explained 85.498% of the variance. The variance explained by each factor was as follows: the first factor accounted for 30.954%, the second for 19.830%, the third for 9.595%, the fourth for 7.219%, the fifth for 5.569%, the sixth for 5.250%, the seventh for 3.926%, and the eighth for 3.154%. The first three factors cumulatively explained 60.379% of the variance, indicating that the research frontiers they represented were the most prominent during this period. The node density in **Figure 2** is much more concentrated than in the previous period, with greater similarity between the domains of the literature. Over time, the research topics gradually shifted from being diverse to more focused.

During the 1980s, the number of co-citations increased significantly compared to the previous period. From the perspective of related disciplines, the clusters are as follows: "Cluster 1" primarily explores topics such as corporate culture,

organizational change, innovative management, business process reengineering, strategic HRM, career development, compensation, behavioral theory, and labor negotiations. “Cluster 2” focuses on excellence, innovative management, action-oriented organizations, corporate culture, production efficiency, organizational structure, change management, cross-cultural issues, and work motivation. “Cluster 3” involves innovation management, public administration, flexible organizations, and employee performance evaluation. “Cluster 4” addresses HRM, performance evaluation, competency grading, compensation, and organizational effectiveness. “Cluster 5” is concerned with effective management, leadership decision-making, organizational management, and work motivation. “Cluster 6” focuses on gender segregation and gender equality. “Cluster 7” deals with competitive strategy. “Cluster 8” pertains to public sector organizations.

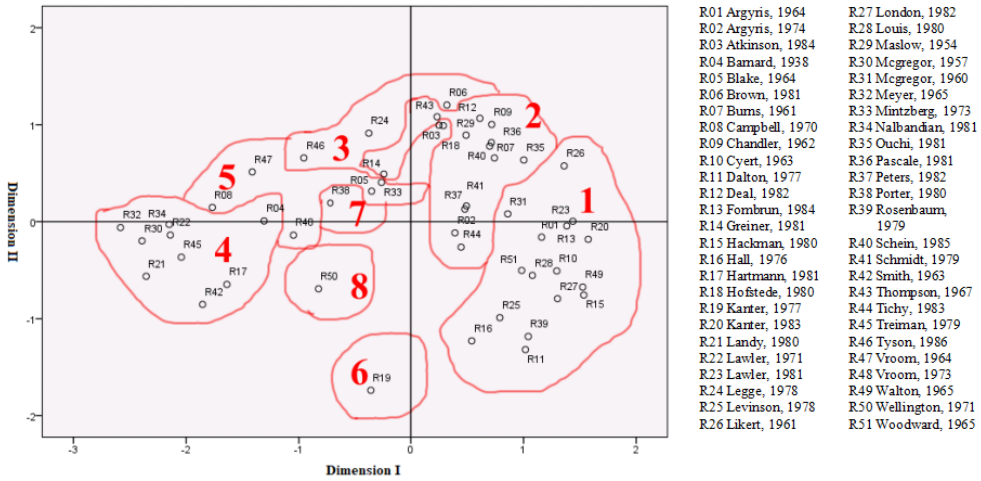

Figure 2. Knowledge map of HRM Discipline in the 1980s.

Note: The points in the figure are simplified with the code “R” followed by a number to avoid overlapping text due to long document titles.

The research results map shows that many clusters represent cross-subfield research, focusing on specific topics or theories. Many scholars concentrated on areas such as organizational management, organizational structure, corporate culture, production efficiency, employee performance, behavioral theory, and labor negotiations. These clusters were formed based on research in these areas.

The significant increase in co-citations during this period created a more complex co-citation network. This suggests that the research content of the discipline became more active and enriched, with the scope of research continually expanding. Comparing this with the MDS map in **Figure 2**, it is evident that the clusters were not static but rather dynamically interconnected. The number of articles in “Cluster 1”, “Cluster 2”, and “Cluster 4” was notably higher than in the other clusters, indicating that these were the major sources of knowledge and research frontiers at the time.

During this period, the focus of research shifted. The dominant topic of “effective management”, which had been the most influential in the 1970s, dropped to fourth place. The scale of “Cluster 1”, “Cluster 2”, and “Cluster 4” was significantly larger than that of other clusters, indicating substantial progress

compared to the previous phase. The content covered a broader range of disciplinary theories. For example, the term "human resources" made its first appearance, contributing to the rapid development of the field and becoming the central research frontier of the 1980s. Furthermore, the research area of "racial discrimination", which had been prominent in the 1970s, was no longer present. Instead, new areas such as "gender equality", "competitive strategy". and "public sector organizations" emerged. This shift signifies a clearer focus on the core research areas of HRM, establishing a foundational knowledge base for the discipline and highlighting its importance within the network. These areas also represented the most active and significant parts of human resource research at the time, with their academic ideas increasingly cited as forward-thinking literature within the field.

The 51 representative cited works from this period consist of 41 books and 10 journal articles, with books being the primary source of knowledge citations. From the perspective of the centrality of the literature network and core and edge perspectives, the top five core articles in "Cluster 2" (R37, R35) and "Cluster 1" (R31, R16, R26) suggest that these articles were the most influential and contributed significantly to human resource research, representing some of the most important literature in the field at that time (as shown in **Table 3**).

Table 3. Top five core articles from the 1980s.

Centrality	Frequency	Literature	Author(s)	Publication year	Cluster	Code
84	36	In search of excellence: Lessons from America's best-run companies.	Peters, T. J. and Waterman, R. H., Jr.	1982	2	R37
53	14	Theory Z: How American business can meet the Japanese challenge.	Ouch, W. G.	1981		R35
40	11	The human side of enterprise.	McGregor, D.	1960		R31
39	10	Careers in organizations.	Hall, D. T.	1976	1	R16
32	7	New patterns of management.	Likert, R.	1961		R26

4.3. Discussion

The evolution of the knowledge map in HRM reveals the research topics represented in the co-citation clusters of literature across different periods. In terms of co-citation, literature with higher centrality has a greater impact, while literature with lower centrality can be considered as research frontiers. Price (1965) found that the peak of a paper's citations typically occurs in the second year after its publication, suggesting that the data in this study exhibits a certain time lag. From this perspective, low centrality does not necessarily indicate outdated content, and a high co-citation frequency does not automatically imply a central position within the literature network. However, highly central literature generally comes from popular research clusters of the time and plays a significant role in driving new research frontiers. In contrast, research frontiers with low centrality do not exhibit a significant positive correlation with those having high centrality.

In the knowledge construction of the HRM discipline, the research topics of interest primarily involve interdisciplinary knowledge cited between "clusters." The top three academic fields are management, applied psychology, and business studies. Other relevant fields include interdisciplinary psychology, social psychology, labor

relations, sociology, employment discrimination, training and development, employee selection, economics, and both quantitative and qualitative research. These areas have laid the foundational knowledge for HRM.

The mapping characteristics in **Figures 1** and **2**, along with the clustering distribution of research topics, highlight the breadth and diversity of the HRM field. The research topics of the 1970s and 1980s form primary clusters of interconnected visual patterns, with topics located at the edge of the map or those with fewer nodes within clusters representing emerging research areas. These newly emerging topics are likely to attract the interest of researchers. Regarding the main evolutionary paths, it is clear that some clusters are more focused on social psychology, with psychology gradually integrating into the HRM discipline and shifting toward the use of psychological research methods to validate findings.

The majority of these publications come from the United States and the United Kingdom. While contributions are made by researchers from many different countries, the most frequently cited works predominantly originate from the U.S. and the U.K., where they hold a dominant position in both the quantity and impact of academic research. For example, The Motivation to Work, first published in 1959, continues to influence the field today.

4.4. Research limitations

First, the research sample is limited to articles published in three journals indexed by the WoS academic database: *Human Resource Management*, *Personnel Review*, and *Public Personnel Management*. Articles from other relevant journals are not included in this study. As a result, the research findings are constrained by the scope of these selected journals and their associated citation data. Secondly, the WoS database used in this study is affected by the publication years available through school library subscriptions, and it undergoes regular updates. Additionally, bibliometric co-citation analysis itself evolves over time, which may lead to differences in the findings of this study when compared to future analyses. Third, while bibliometric co-citation analysis offers objectivity in quantitative research, this study does not explore the purposes of citations, the scope and impact of the cited works, or other factors that could influence the citation process. These factors might introduce errors into the results of the bibliometric co-citation analysis. Despite these limitations, the findings of this study remain representative and reliable within its defined scope.

5. Conclusion

This study employs bibliometric co-citation methods, utilizing multivariate statistical analysis (including factor analysis, cluster analysis, and MDS), along with social network analysis through UCINET and NetDraw software to examine centrality. It presents a knowledge map of academic clusters in the field of HRM from the 1970s to the 1980s, highlighting the primary knowledge sources cited within each cluster. Based on these findings, the study further analyzes the research directions of each cluster and identifies the main research trends in HRM during this period. From the perspectives of specialized fields and dedicated journals, the results

indicate that HRM research was highly active during this time, with significant growth in the number of publications, citation counts, and citation frequencies. These highly cited works had a considerable impact on the HRM field, serving as core knowledge sources of the era. This study provides researchers with a comprehensive overview of past research topics, including influential research clusters and potential future research directions.

In academia, HRM is generally divided into several key areas: human resource planning, recruitment and staffing, training and development, performance management, compensation and benefits management, and labor relations management. These areas help business owners understand the core principles of employee and HRM. Throughout the research process, it becomes clear that many scholars base their studies on business management theory, focusing on topics such as organizational management, corporate culture, production efficiency, organizational structure, employee performance, career development, compensation, behavioral theory, and labor negotiations. These research areas collectively form co-citation groups.

In the 1970s, the major research clusters in HRM were: “Cluster 1”, which explored racial discrimination in corporations; “Cluster 2”, which focused on effective management; and “Cluster 3”, which examined management by objectives. Together, these three clusters accounted for 52.688% of the accumulated information. In the 1980s, the main research clusters included: “Cluster 1”, which studied corporate culture, organizational change, and innovative management; “Cluster 2”, which examined action-oriented organizations, production efficiency, and organizational structure; and “Cluster 3”, which explored flexible organizations and employee performance evaluation. These three clusters accounted for 60.379% of the accumulated information. Within the field of HRM, there were no distinct factions. However, several scholars were particularly active and made significant contributions. These scholars represent some of the most influential authors in the literature of the time, including Herzberg, Vroom, Campbell, Blake and Mouton, Peters and Waterman, Ouchi, McGregor, Hall, Likert, and others.

Finally, since this study primarily uses bibliometric co-citation analysis to trace the evolutionary history of HRM, future research could expand the sample by including journal articles from additional academic databases, such as Scopus and Google Scholar, to enhance the comprehensiveness of the sample. Alternatively, methods such as content analysis, meta-analysis, and further bibliometric techniques could be applied to explore the relationships between cited and citing works, as well as the transitions between research paradigms. This approach would provide a more complete and detailed knowledge map of HRM and its related disciplines. Additionally, employing other bibliometric analysis tools—such as CiteSpace, CoPalRed, IN-SPIRE, Leydesdorff’s Software, Network Workbench Tool, Science of Science (Sci2) Tool, VantagePoint, and VOSViewer—could further investigate the development process of the field, new concepts, emerging research trends, and other aspects. Furthermore, in HRM professional education and training programs, it is recommended to offer a diverse range of courses in management, applied psychology, and business studies to cultivate students’ ability to integrate theory and practice across disciplines.

Conflict of interest: The author declares no conflict of interest.

References

Andrews, J. E. (2003). An author co-citation analysis of medical informatics. Journal of Medical Library Association, 91(1), 47–56.

Barney, J., Wright, M., Ketchen, D. J. (2001). The resource-based view of the firm: Ten years after 1991. Journal of Management, 27(6), 625–641. https://doi.org/10.1016/S0149-2063(01)00114-3

Casey, D. L., McMillan. G. S. (2008). Identifying the "invisible colleges" of the industrial & labor relations review: A bibliometric approach. Industrial & Labor Relations Review, 62(1), 126–132. https://doi.org/10.1177/001979390806200107

Chae, C., Yim, J.-H., Lee, J., et al. (2020). The bibliometric keywords network analysis of human resource management research trends: The case of human resource management journals in South Korea. Sustainability, 12(14), 5700. https://doi.org/10.3390/su12145700

Chen, C. M. (2011). Predictive effects of structural variation on citation counts. Journal of the American Society for Information Science, 63(3), 431–449. https://doi.org/10.1002/asi.21694

Chen, C., McCain, K., White, H., et al. (2005). Mapping scientometrics (1981–2001). American Society for Information Science and Technology, 39(1), 25–34. https://doi.org/10.1002/meet.1450390103

Chen, S. Y. (2005). Multivariate analysis. Huatai Publishing House.

Contreras, F., Jauregui, K., Rank, S. (2024). The intellectual structure of human resource management and digitalization research: A bibliometric-mapping analysis. Journal of Engineering and Technology Management, 73(11), 1–13. https://doi.org/10.1016/j.jengtecman.2024.101829

Cui, G. D., Li, S. T., Cheng, Y. Y., et al. (2020). The approach of improving organizational performance by electronic human resource management: A case study based on the perspective of employee empowerment. Human Resources Development of China, (3), 78–92+114. https://doi.org/10.16471/j.cnki.11-2822/c.2020.3.006

Donohue, J. C. (1974). Understanding scientific literature: A bibliometric approach. MIT Press.

Drucker, P. F. (2007). The practice of management, 1st ed. Routledge Publishing.

Espina-Romero, L. C., Aguirre Franco, S. L., Dworaczek Conde, H. O., et al. (2023). Soft skills in personnel training: Report of publications in Scopus, topics explored and future research agenda. Heliyon, 9(4), e15468. https://doi.org/10.1016/j.heliyon.2023.e15468

Fang, Y. S., Fang, L. C. (2022). A review of Chinese e-commerce research: 2001–2020. IEEE Access, 10, 49015–49027. https://doi.org/10.1109/ACCESS.2022.3172433

França, T. J. F., Mamede, H. S., Barroso, J. M. P., et al. (2023). Artificial intelligence applied to potential assessment and talent identification in an organisational context. Heliyon, 9(4), e14694. https://doi.org/10.1016/j.heliyon.2023.e14694

García-Lillo, F., Úbeda-García, M., Marco-Lajara, B. (2016). The intellectual structure of human resource management research: A bibliometric study of the international journal of human resource management, 2000–2012. The International Journal of Human Resource Management, 28(13), 1786–1815. https://doi.org/10.1080/09585192.2015.1128461

Huang, H. M. (2001). The relationship of journal productivity and citation: In the case of the library and information science in Taiwan. Available online: https://hdl.handle.net/11296/wgs6n9 (accessed on 26 January 2025).

Jiang, C. L., Chen, Y. G. (2010). Transform CSSCI data to Bibexcel data to actualize co-occurrence matrix and a case study. Library Journal, (4), 58–63+42. https://doi.org/10.13663/j.cnki.lj.2010.04.013

Kişi, N. (2023). Bibliometric analysis and visualization of global research on employee engagement. Sustainability, 15(13), 10196. https://doi.org/10.3390/su151310196

Kruskal, J. B. (1964). Nonmetric multidimensional scaling: A numerical method. Psychometrika, 29, 115–129. https://doi.org/10.1007/BF02289694

Liu, X., Deng, R. (2009). A decade review and prospect of human resource management education in China—summary of the 10th annual conference of the teaching and practice sub-committee of the China human resource development association (Chinese). Human Resources Development of China, 10, 17–19.

Liu, Z. Y., Chen, Y., Hou, H. Y. (2008). Scientific knowledge mapping: Methods and applications. People's Publishing.

Marciano, V. M. (1995). The origins and development of human resource management. Academy of Management Journal, Best paper proceedings, 1, 223–227. https://doi.org/10.5465/ambpp.1995.17536494

Marshakova, I. V. (1973). System of document connection based on references. Nauchn-Techn.Inform.Ser.2, 6(2), 3–8.

McCain, K. W. (1990). Mapping authors in intellectual space: A technical overview. Journal of the American Society for Information Science, 41(6), 433–443. https://doi.org/10.1002/(SICI)1097-4571(199009)41:6<433::AID-ASI11>3.0.CO;2-Q

Noyons, E. C. M., Moed, H. F., Luwel, M. (1999). Combining mapping and citation analysis for evaluative bibliometric purposes: A bibliometric study. Journal of the American Society for Information Science, 50(2), 115–131. https://doi.org/10.1002/(SICI)1097-4571(1999)50:23.0.CO;2-J

Price, D. J. (1965). Networks of scientific papers: The pattern of bibliographic references indicates the nature of the scientific research front. Science, 149(3683), 510–515. https://doi.org/10.1126/science.149.3683.510

Resurchify. (2024a). Human resource management. Available online: https://www.resurchify.com/impact/details/24718 (accessed on 3 September 2024).

Resurchify. (2024b). Personnel review. Available online: https://www.resurchify.com/impact/details/63777 (accessed on 3 September 2024).

Resurchify. (2024c). Public personnel management. Available online: https://www.resurchify.com/impact/details/25468 (accessed on 3 September 2024).

Rollnik-Sadowska, E., Grabińska, V. (2024). Managing neurodiversity in workplaces: A review and future research agenda for sustainable human resource management. Sustainability, 16(15), 6594. https://doi.org/10.3390/su16156594

Sainaghi, R., Köseoglu, M. A., d'Angella, F., et al. (2019). Sharing economy: A co-citation analysis. Current Issues in Tourism, 23(4), 929-937. https://doi.org/10.1080/13683500.2019.1588233

She, X. S., Zhang, Z. (2016). Research on the linkage strategy of strategic human resource management and organizational effectiveness. Theoretical Investigation, 2, 76–80.

Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. Journal of the American Society for Information Science, 24(4), 265–269. https://doi.org/10.1002/asi.4630240406

Small, H., Sweeney, E. Greenlee, E. (1985). Clustering the science citation index using co-citations. II. Mapping science. Scientometrics, 8, 321–340. https://doi.org/10.1007/BF02018057

Song, L. F., Song, Y. F., Xiong, Z., et al. (2018). High commitment to organizational commitment under human resource management and organizational culture change mechanism: Taking ZTE as an example. Science of Science and Management of S.& T., 6, 149–160.

Su, K. H. (2004). Social production of sociological knowledge: Invisible colleges among sociologists in Taiwan (Chinese). Taiwanese Sociology, 8, 133–192.

Trujillo, C. M., Long, T. M. (2018). Document co-citation analysis to enhance trans disciplinary research. Science Advances, 4(1), 1–9. https://doi.org/10.1126/sciadv.1701130

Ulrich, D. (1998). A new mandate for human resources. Harvard Business Review, 76(1), 124–134.

Wang, L. C., Li, Y. Y., Zhu, J. W. (2019). The evolution of the overseas research on academic professional mobility in recent 20 years: Analysis of scientific knowledge map based on CiteSpace (Chinese). Review of Higher Education, 3, 25–34.

Wang, Z., Zhang, Y. Q. (2017). Service-oriented human resource management: A literature review and agenda for future research (Chinese). Foreign Economics & Management, 2, 86–101.

White, H. D., McCain, K. W. (1998). Visualizing a discipline: An author co-citation analysis of information science, 1972–1995. Journal of the American Society for Information Science, 49(4): 327–355. https://doi.org/10.1002/(SICI)1097-4571(19980401)49:4<327::AID-ASI4>3.0.CO;2-4

Yang, X., Yan, S., He, J., Dong, J. (2022). Review and prospects of enterprise human resource management effectiveness: Bibliometric analysis based on Chinese-language and english-language journals. Sustainability, 14(23), 16112. https://doi.org/10.3390/su142316112

Zhao, C., Ma, F. F., Gao, Z. H. (2019). How do role expectations and effectiveness of HR affect the overall effectiveness of HRM function?—An analysis based on response surface methodology. Research on Economics and Management, (1), 133–144. https://doi.org/10.13502/j.cnki.issn1000-7636.2019.01.011