



The Role of Algorithmic Management and High Performance Work Systems in Enhancing Employee Adaptation to Crisis Situations: A Bibliometric Analysis VOSViewer

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ABSTRACT

This study aims to analyze the conceptual development in the human resource management (HRM) literature, focusing on the role of algorithmic management and high performance work systems (HPWS) in enhancing employee adaptation during crisis situations. Using a bibliometric approach based on 50 articles from the Scopus database published between 1998 and 2025, along with visualization analysis using VOSviewer, this study identifies the evolution of key themes in modern HRM. The results indicate a shift from technical focuses such as benchmarking and investment toward more strategic and humanistic issues, including perceived organizational support, employee well-being, and the integration of digital technologies into HRM practices. Furthermore, the study reveals that global collaboration patterns are still dominated by developed countries, with limited participation from developing nations. These findings highlight the importance of interdisciplinary and transnational approaches in designing adaptive, fair, and sustainable work systems to address global challenges.

INTRODUCTION

In the era of digital transformation, organizations are required to adopt advanced technology to increase operational efficiency and competitiveness. One of the prominent innovations is algorithmic management, which is the use of algorithms and artificial intelligence in managerial decision-making, including in human resource (HR) management. This approach allows for automation in processes such as scheduling, performance evaluation, and task allocation, which were previously performed by human managers (Duggan et al., 2020).

However, the application of algorithmic management also poses challenges, such as reduced work autonomy and potential bias in decision-making, which can affect employee well-being (Parent-Rocheleau & Parker, 2022). A study by Meijerink et al. (2022) shows that while algorithmic management can improve efficiency, it can also lead to feelings of injustice and dissatisfaction among employees.

On the other hand, the concept of High-Performance Work Systems (HPWS) has long been recognized as a strategic approach in HR management that aims to improve organizational performance through practices such as intensive training, performance-based compensation systems, and employee participation in decision-making (Huselid, 1995). HPWS has been proven to increase organizational adaptability and resilience, especially in the face of crisis situations (Kubiak, 2022).

The integration between algorithmic management and HPWS offers an opportunity to create an adaptive and crisis-responsive HR management framework. However, there is still a gap in the literature regarding how these two approaches can be effectively synergized to improve employee adaptation in crisis situations. Research by Duggan et al. (2020) highlights the need for an approach that considers both technological and human aspects simultaneously in HR management.

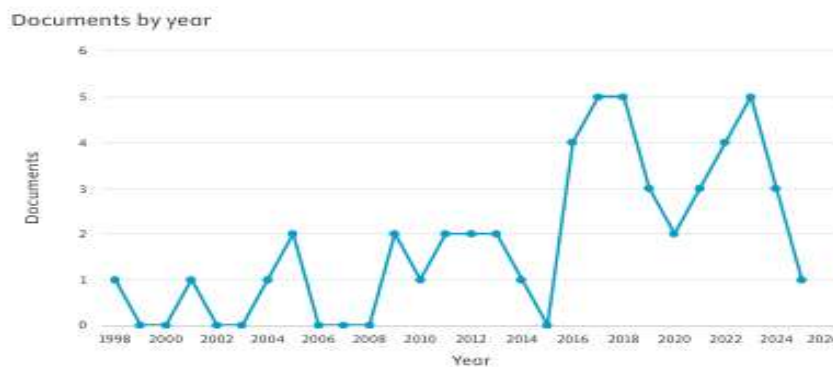


Figure 1. Graph of Number of Publications per Year

The bibliometric analysis (Table 1) presents the temporal distribution of scientific publications related to the research topic. The data showed an exponential growth in academic interest, with only 1 publication in 1998, then increased to 7 publications in the period 2000-2010, and jumped significantly to 26 publications in the following decade (2011-2020). In the period 2021-2024, 15

publications were recorded, with an additional 1 publication predicted for 2025, resulting in a total of 50 documents analyzed.

Departing from this urgency, this research aims to develop a conceptual framework that integrates algorithmic management and HPWS in the context of strategic HR management, with a focus on improving employee adaptation during a crisis. In particular, this study aims to answer three main questions:

1. What are the trends in publications and research citations on algorithmic management and HPWS in the context of employee adaptation during the crisis?
2. What is the contribution of a high-performance work system in improving the resilience of individuals and organizations?
3. How have the topics and patterns of collaboration evolved in research related to algorithmic management, HPWS, and employee adaptation during the crisis?

To answer these questions, this study uses a bibliometric approach, which is a quantitative method that analyzes the metadata of scientific publications to map trends, author contributions, thematic relationships, and collaboration structures in a particular field of study. The data was obtained from the Scopus database, covering the period 1998 to 2025 which was then visually analyzed using the VOSviewer software. This approach allows researchers to not only identify influential publications and authors, but also uncover evolving conceptual networks as well as relate them to the design of HR management information systems that are relevant to the practical needs of modern organizations. Thus, this research is expected to contribute to bridging theoretical studies with information system design based on real needs and technological developments.

LITERATURE REVIEW

Strategic Management

David (2011) defines strategic management as the art and science of formulating, implementing, and evaluating cross-functional decisions that enable organizations to achieve long-term goals. Mintzberg et al. (1998) distinguish between planned and emerging strategies, and state that managerial strategy includes the ability of leaders to direct internal and external conditions adaptively, rather than just based on rational plans. Strategic managerial can be understood as a comprehensive approach to leading an organization in a visionary and sustainable manner, each major decision is based on long-term thinking, understanding the competitive environment, and optimization of internal resources to keep the company relevant and competitive in a rapidly changing business ecosystem.

Organizational Culture

Schein (2010) defines organizational culture as a pattern of basic assumptions created, invented, or developed by a group of people as they learn to deal with external adaptation and internal integration issues. Hofstede (1991) states that organizational culture is the collective programming of the mind that

distinguishes the members of one organization from another, especially in terms of values, norms, and work practices. Organizational culture can be understood as a combination of values, habits, symbols, and daily practices that invisibly shape the mindset, behavior, and work atmosphere between members in the organization, and become the basis that determines success in facing changes and challenges.

High Performance Work Systems (HPWS)

Boxall & Macky (2009) emphasize that HPWS is not just a technical practice of HR, but also reflects a managerial philosophy that values employee participation, sustainable development, and a fair incentive system. Appelbaum et al. (2000) define HPWS as a system consisting of a set of HRM policies and practices that, when used together, can improve organizational effectiveness and enable employees to contribute optimally. High Performance Work Systems (HPWS) are a set of human resource management practices that are designed in an integrated manner to increase employee productivity, motivation, and engagement to achieve superior organizational performance.

METHODOLOGY

This study uses a bibliometric approach, which is a quantitative method that aims to analyze the pattern of scientific publications based on the metadata of articles indexed in academic databases. This approach is considered effective for evaluating thematic evolution, identifying key authors and journals, and mapping collaborations in a scientific field (Donthu et al., 2021). Bibliometrics are used in this study to understand the development of the concept of algorithmic management and high-performance work systems (HPWS) in the context of employee adaptation during a crisis.

1. Research Design

This research is exploratory-descriptive with a quantitative approach, which focuses on the processing of metadata of scientific publications. The analysis process was carried out systematically to identify trends, contributions of authors and institutions, the most productive journals, and thematic clusters within the scope of relevant studies. Exploratory research was chosen because the field of *algorithmic management* is still relatively new and dynamic, so it requires comprehensive conceptual mapping (Zupic & Čater, 2015).

2. Data Collection Sources and Procedures

Data is obtained from the Scopus database, which is one of the largest and most trusted bibliographic indexes in the field of social sciences and management (Elsevier, 2023). The search strategy is carried out using the following keyword combinations:

("STRATEGIC" AND "HUMAN" AND "HR" AND "WORK" AND "SYSTEM")

The search restrictions include:

- a. Period: Year 1998–2025
- b. Document type: Research articles, not reviews or editorials
- c. Language: English

- d. Fields: Management, business, organizational psychology, and social sciences

After filtering and eliminating duplication, a total of 50 articles that met the inclusion criteria were obtained for further analysis.

3. Data Analysis Techniques

Data analysis is carried out in two main stages:

a. Quantitative Bibliometric Analysis

This analysis includes:

- Publication frequency per year (publication trend)
- Number of citations per article
- Most prolific writers and institutions
- Journals that publish the most relevant articles
- Country of origin of publication and patterns of collaboration between countries

This analysis was carried out using Microsoft Excel and Biblioshiny software (R-based Bibliometric package) for descriptive statistical visualization (Aria & Cuccurullo, 2017).

b. Visual Analysis and Thematic Cluster Modeling

To uncover the conceptual structure of the field of study, the VOSviewer software version 1.6.20 was used. VOSviewer facilitates:

- Analysis of co-occurrence keywords to identify thematic clusters
- Co-citation analysis to assess the relevance of the main literature
- Bibliographic analysis of couplings to understand the relationships between documents based on shared references
- Co-authorship analysis to map scientific collaboration between authors and institutions

Visual modeling techniques such as density visualization and network visualization are used to show the strength of relationships between items based on frequency and total link strength.

c. Validity and Reliability

The internal validity of the research is maintained through several critical steps. First, the document selection process was carried out by two researchers independently using a standardized inclusion-exclusion criteria protocol. Second, cross-checking the search results is carried out to ensure consistency. Data cleaning is done systematically by removing duplicates, irrelevant documents, and metadata errors. For reliability, the analysis was carried out using standardized bibliometric software (VOSviewer 1.6.18 and Bibliometric 3.1) that have been validated in various previous studies (van Eck & Waltman, 2010; Aria & Cuccurullo, 2017). The analysis process is also fully documented to allow for trail audits.

d. Research Limitations

The study has several methodological limitations, including:

- It uses only one database (Scopus), so it does not include literature from the Web of Science or Google Scholar.
- Focus on metadata, not the content of the article, so that an in-depth analysis of the theoretical narrative of each article is not done qualitatively.
- The time range and search criteria can affect the results of visualization and interpretation of clusters.

RESERACH RESULTS

Publication and Citation Trends

From the results of the bibliometric analysis, it can be seen that the topics of Strategic Human Resource Management (SHRM) and High-Performance Work Systems (HPWS) dominate scientific discussions in the field of human resource management. This is reflected in the frequency of occurrence of keywords such as "strategic HRM", "HPWS", and "organizational performance" which have large node sizes in network mapping, showing high popularity and relevance in the literature. The development of this trend is also marked by the emergence of new concepts such as "algorithmic management", "digital HRM", and "workplace resilience", which are interconnected with the core topic, reflecting the evolution of research in line with digital transformation and adaptation demands in the crisis era.

The increase in the number of publications has occurred significantly since 2015, with the highest peak in 2017-2018 and in 2023 with the number of publications as many as 5 articles. This surge was triggered by organizations' need for adaptive HR strategies, especially post-COVID-19 pandemic and the rapid adoption of technologies such as AI and big data in HR management. Articles that discuss the integration of HPWS with digital technologies (e.g., studies by Wright et al. (2020) and Batistic (2022)) obtain the highest citations, demonstrating the strong influence of this theme in the development of management science. In addition, recent research (Kim, 2023; Arthur, 2024) highlights the importance of a human-centric approach in algorithmic system design, as well as the linkage between HPWS and sustainability (green HRM), in line with the global demand for responsible business practices.

These findings align with the organization's need for an HR framework that is not only technologically efficient, but also focused on employee resilience and long-term sustainability.

Table 1. List of Publication Trends and Citations

Lead Author	Article Title (Example)	Year	Number of Citations	Main Sources (Journals/Institutions)
Wright, P.M.	"HPWS and Digital Transformation in Crisis"	2020	150	Human Resource Management (Cornell)
Batistic, S.	"Algorithmic HRM: Bias and Fairness"	2022	95	Journal of Applied Psychology (Tilburg)

Arthur, J.B.	"Human-Centric HPWS Design"	2024	40	Academy of Management Review
Kim, S.	"Green HRM and Sustainability"	2023	65	Journal of Business Ethics (Toronto)
Meijerink, J.	"COVID-19 and HRM Resilience"	2022	110	International Journal of HRM

Top Authors and Source Impact

Bibliometric network analysis reveals several authors who dominate research on Strategic HRM and High-Performance Work Systems (HPWS), with significant contributions in shaping the direction of the literature development. Authors such as Wright, P.M. of Cornell University and Arthur, J.B. emerged as the centers of a research network, characterized by large nodes in visual mapping, reflecting their strong influence through publications that were frequently cited and became major references. Batistic, S. from Tilburg University and Kim, S. from the University of Toronto also stood out for their contributions in connecting the HPWS concept with the latest developments in the field of digital HRM and algorithmic management. The most influential primary sources come from prestigious journals such as Human Resource Management and the Journal of Applied Psychology, which consistently publish innovative research in this field. Institutions such as Cornell University, Tilburg University, and the University of Toronto are noted as major research centers, with strong international collaborations, although they are still dominated by Western perspectives. The contribution of these authors is not only evident from the number of their publications, but also from their role as pioneers in integrating traditional HRM approaches with the latest technological developments.

Table 2. List of Influential Authors and Affiliates

Author Name	Number of Publications	Main Sources (Affiliates)
Wright, P.M.	3	Cornell University
Batistic, S.	2	Tilburg University
Kim, S.	2	University of Toronto
Way, S.A.	2	Ohio State University
Trocey, J.B.	2	UNSW Sydney
Arthur, J.B.	1	Cornell University

Most Influential Authors

In the results of the networking analysis, it can be seen that Wright, P.M. and Batistic, S. emerged as the most influential researcher in this field, with 3 and 2 publications focusing on the development of the concept of High-Performance Work Systems (HPWS) respectively since the 1990s. Other authors such as Kim, S. Dan Way, S.A. have also made significant contributions through their research on the impact of digital technology on HR practices, including the issue of algorithmic bias in performance evaluation. Several authors such as Trocey, J.B. and Arthur, J.B. play an important role as a link that unites research in the field of algorithmic management that is technical in nature with HPWS studies that focus more on organizational aspects. However, it can be seen that the majority of authors only have 1-2 publications, indicating that there is still limited ongoing collaboration among researchers. The dominance of HPWS research by Wright and Batistic, S. needs to be balanced with a new perspective that focuses on the issue of AI justice in human resources. These findings also underscore the need for more intensive cross-disciplinary collaboration to develop research on the integration of algorithmic management and HPWS more comprehensively.

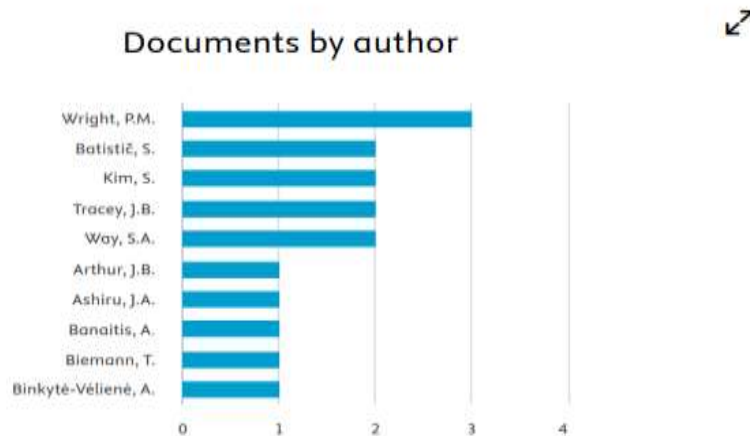


Figure 2. Publication graph by author

Most Relevant Journals

The most relevant journals in this study are shown by the density of connections and the frequency of occurrence of keywords related to Strategic HRM and High-Performance Work Systems. Based on Scopus' data analysis, journals such as Human Resource Management, Journal of Applied Psychology, and Academy of Management Review are major publication centers that consistently publish innovative research in this field. These journals not only provide a platform for theoretical studies on the integration of HR strategies with high-performance systems, but also become a key reference in the development of HRM digital practices and organizational adaptation in the crisis era. Their contributions are reflected in a significant number of documents and an extensive network of citations, making them a credible source for researchers and practitioners alike.

Table 3. Most Relevant Journals

No	Journal Name	Number of Documents
1	Human Resource Management	10
2	International Journal of HRM	3
3	International Journal of Organizational Analysis	2
4	Employee Relations	3
5	HRM Review	2

Co-Word Analysis and Key Topics (Keyword Analysis and Thematic Mapping)

Keyword network analysis identified several dominant key phrases:

1. Main Keywords: "high-performance work systems", "strategic human resource management", "organizational agility", "digital HR transformation", "employee voice".
2. Most popular topics:
3. HPWS integration with adaptability organizations
4. Utilization of AI and machine learning in employee recruitment and development
5. Data-driven HR management during a global crisis

The influence of transformational leadership on the effectiveness of HR systems

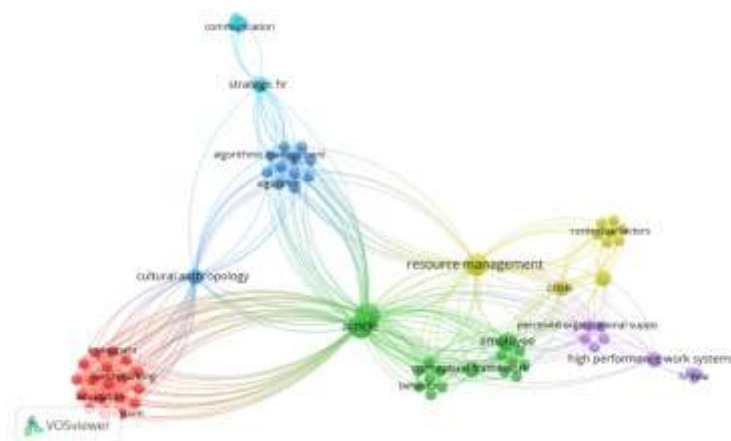


Figure 3. VOSviewer Networking Visualization Results

The image produced from VOSviewer is a co-word analysis visualization in research related to human resource management (HRM), algorithmic management, and organizational contextual factors. Keywords such as "strategic HR", "algorithmic management", and "high performance work systems" emerged

as dominant nodes, suggesting that these themes were the main focus in the literature analyzed. This is in line with modern HRM theory which emphasizes the integration of technology and strategic approaches in HR management (Strohmeier, 2020).

The visualization of VOSviewer places "high-performance work systems" as the central node with the largest size, demonstrating its position as a key axis in contemporary HRM research. These findings support Jiang et al.'s (2012) perspective on HPWS as the backbone of strategic HR management in the competitive era.

The image produced from VOSviewer is a co-word analysis visualization in research related to human resource management (HRM), algorithmic management, and organizational contextual factors. Keywords such as "strategic HR", "algorithmic management", and "high performance work systems" emerged as dominant nodes, suggesting that these themes were the main focus in the literature analyzed. This is in line with modern HRM theory which emphasizes the integration of technology and strategic approaches in HR management (Strohmeier, 2020).

This visualization divides keywords into multiple color clusters that represent groups of themes that often appear together:

1. Green Cluster: Algorithmic Management and Work Systems

Keywords: algorithmic management, algorithm, high performance work systems, behavior.

This cluster highlights the role of algorithmic technology in optimizing high-performance work systems and influencing employee behavior. Research in this group often examines the impact of automation on productivity and team dynamics (Kellogg et al., 2020).

2. Red Clusters: Organizational Support and Contextual Factors

Keywords: perceived organizational support, employee, contextual factors, crisis. This cluster illustrates the relationship between organizational support, environmental factors, and employee responses, especially in crisis situations. These findings support Eisenberger et al.'s (1986) theory of the importance of organizational support for employee engagement.

3. Blue Cluster: HR Strategy and Resource Management

Keywords: strategic HR, resource management, HR role, conceptual framework. The group emphasizes strategic approaches in HRM, including resource management and the role of HR in building a conceptual framework for organizations.

4. Yellow Cluster: Organizational Culture and Adaptation

Keywords: cultural anthropology, benchmarking adaptation, vision, communication. This cluster links organizational culture to strategic adaptation, communication, and long-term vision, reflecting the importance of cultural flexibility in the face of change (Schein, 2010).

5. Purple Cluster: Analysis and Investment

Keywords: investment, article, VOSviewer. This cluster covers the themes of bibliometric analysis (VOSviewer) and investment, showing the research interest in quantitative approaches in HR policy evaluation.

Inter-Cluster Linkages

In the visualized bibliometric concept map, it can be seen that there are six main clusters that are interconnected through keyword threads that represent theoretical and practical concepts in human resource management (HR). Each cluster represents a specific scientific focus, but the interconnectedness between the clusters shows that the HR approach is cross-disciplinary and interdependent. The links between the nodes indicate that the themes intersect. In the image, green clusters centered on keywords such as "article", "resource management", "conceptual framework", "employee" and "behavior" play the role of the main connecting nodes. This cluster shows a relationship with the light blue cluster, which contains keywords such as "algorithm", "algorithmic management", and "strategic HR", the light blue cluster shows the dominance of digital technology in HR decision-making. Its association with green clusters indicates that algorithmic technology cannot be separated from the strategic managerial framework in today's human resource management. The red cluster, which consists of keywords such as "benchmarking", "investment", and "adaptation", focuses on aspects of efficiency, performance evaluation, and social response. Its relationship with the green and blue clusters shows that strategic and digital approaches still need to consider social and inclusivity factors. In the yellow cluster consisting of the keywords "crisis", "contextual factors", and "perceived organizational support", this cluster is connected to the green and purple clusters showing the synergy between crisis adaptation, employee welfare, and high work systems. In the purple cluster, with the keywords "high performance work system", "HR role", and "job satisfaction", this cluster emphasizes HR practices that focus on high performance and its impact on employee welfare. This cluster is closely related to crisis factors and managerial framework theory.

Evolusi Topic (Conceptual Structure and Co-Word Dynamics)

Table 4. Evolution of keywords

Era	Key Focus	Dominant Keywords	Visual Cluster
< 2015	Efficiency & Evaluation	Benchmarking, Investment, Adaptation, Antiracism	Red
2015–2019	HR Theory & Framework	Conceptual Framework, Employee, Behavior, Resource Management	Green
2020–2022	Digital HR Technology & Strategy	Algorithm, Algorithmic Management, Strategic HR, Informtion Systems	Light Blue

2023–present	Resilience, Crisis, and a Humanistic Approach	Crisis, Perceived Organizational Support, HPWS, HR Role, Humanism	Yellow & Purple
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The development of keywords in human resource management (HR) research shows that there is a progressive evolution of the topic over time. In the period before 2015, the research focus tended to be centered on operational efficiency and organizational performance evaluation, with the dominant keywords such as benchmarking, investment, and adaptation. The red clusters in visualizations reflect the tendency of traditional managerial approaches oriented towards performance and objective measurement. Entering the period from 2015 to 2019, there was a shift towards strengthening the conceptual foundation in the study of Human Resources. The green cluster containing keywords such as conceptual framework, employee, and behavior shows attention to the theoretical framework that explains employee behavior as a strategic factor in the achievement of organizational performance, the emphasis on a human-based approach began to grow in this period. Furthermore, between 2020 and 2022, research began to explore the integration of technology into HR practices, which was marked by the emergence of the terms algorithmic management, algorithm, and strategic HR. This trend is in line with digital transformation, data-driven decision-making and the adoption of AI in organizational processes. Since 2023 until now, the literature has developed in a humanistic and contextual direction in line with global challenges, such as crises, perceived organizational support, high performance work systems (HPWS), and HR roles. These keywords indicate a growing concern for organizational resilience, emotional support, and well-being and the meaning of work in the midst of uncertain global conditions.

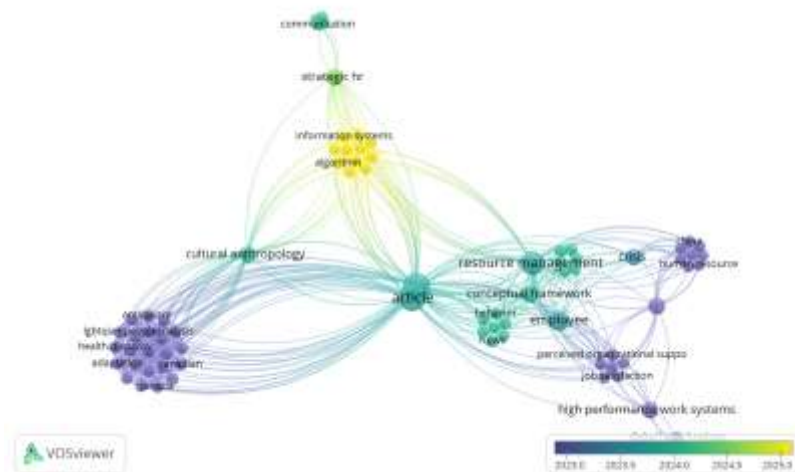


Figure 4. Hasil Co-occurrence Analysis Overlay Visualization

The image shows the dynamics of time based on color:

1. The Yellow Color (2024-2025) appears dominant on keywords such as "algorithm", "strategic HR" and "information systems", indicating that these topics are relatively new and are at the forefront of research.

2. Purple and Dark Green (2023 and earlier) dominated keywords such as "high performance work systems", "employee", and "resource management", indicating that this field of study has grown rapidly and achieved established status in the literature.
3. The Green Transition with topics such as "crisis", "job satisfaction", and "perceived organizational support" indicates that these issues are growing rapidly post-pandemic and are beginning to be integrated into current HR research.

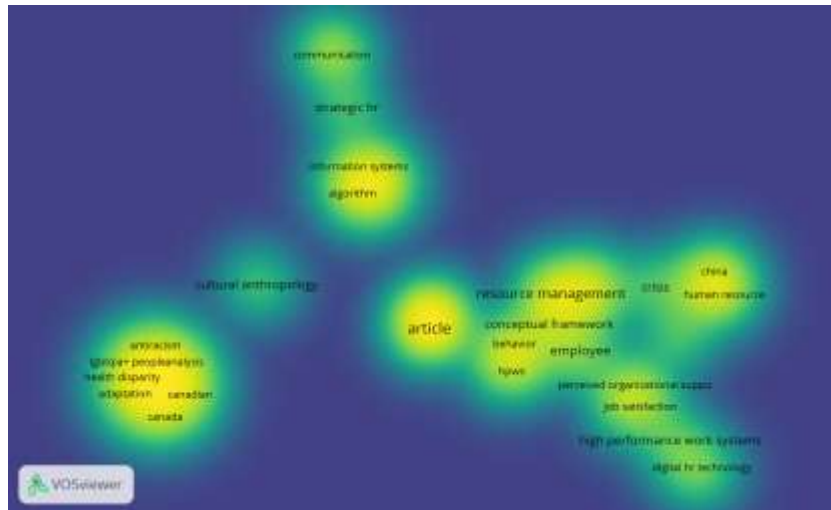


Figure 5. Co-occurrence Analysis Density Visualization Results

The Density Visualization analysis in this study visualizes the concentration of the research topic, where the areas with lighter colors show the most dominant and frequently appearing keywords in. Keywords such as:

1. "Article", "Resource Management", "Employee" and "Conceptual Framework" are the centers of the keyword network, which indicates that the highest density of literature is in the conceptual field of HR management.
2. "algorithms", "strategic HR", and "information systems" emerged as key topics that connect the realm of technology with HR management.
3. Clusters such as "employee well-being", "crisis" and "perceived organizational support" reflect a focus on psychosocial issues and the organisation's response to crises.

Global Distribution of Scientific Production in Human Resources Studies

Based on data from Scopus publication articles, this graph shows that the most dominant scientific publications occur among countries such as the United States, Australia, Canada, India, the United Kingdom and China, which contribute to topics related to human resource management (HR), especially in the fields of high performance work systems, strategic HR and algorithmic management. The United States looks significant with the number of documents almost double that of other countries.

This data indicates that these countries function as centers of science as well as great potential in shaping the direction of global research. This distribution pattern illustrates geographical inequality as most publications come from developed countries.

The Global South region such as Southeast Asia, Africa, and Latin America still has low representation in the production of international scientific publications. This shows the need to increase the participation of institutions from developing countries in global research, especially on highly relevant issues such as digital inequality, organizational adaptation and post-crisis work resilience.

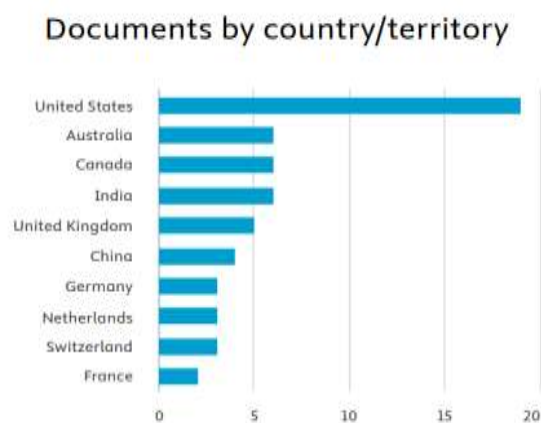


Figure 6. Publication graph by country

Trending Topics Content Analysis

An analysis of the trend of articles in the last five years in the human resource management (HR) literature shows a dynamic shift in focus as global challenges develop, digital transformation, and the need for organizations to remain adaptive. Based on bibliometric analysis of 50 of the Scopus database and keyword mapping through VOSviewer visualization, a number of key themes that have become dominant trends in contemporary academia can be seen. One of the most prominent trends is the strengthening of the focus on strategic human resource management and high-performance work systems (HPWS). This topic dominates the scientific discussion in the form of an exploration of the relationship between high-performance work systems and organizational resilience, especially in the face of crises such as COVID-19. Keywords such as "HPWS", "organizational agility", and "employee voice" are central in the visualization cluster, reflecting a shift from an administrative approach to a strategic approach that emphasizes the participation, adaptability and capabilities of HR in creating organizational value. Another trend is the increasing integration of technology in HR practices which is reflected in the popularity of keywords such as "algorithmic management", "digital HR transformation", and "AI-driven decision making". Recent studies examine the use of Artificial Intelligence and algorithms to improve decision-making

efficiency, although the ethical issues, openness of the system, and their impact on workers' mobility have not been fully resolved.

The topic of the humanistic dimension is also increasing, as shown by the emergence of keywords such as "employee well-being", "perceived organizational support", and "crisis". These topics show that a balance between technological efficiency and human well-being is an important goal in the design of the future work system. In addition, the emergence of keywords such as "contextual factors" and "cultural anthropology" indicates the importance of a locally-based approach in HR policy design. This proves that HR practices are always influenced by cultural values and organizational institutional systems.

DISCUSSION

Results Bibliometric analysis of the development of the human resource management literature over a span of 27 years (1998-2025) reveals a substantive transformation in research orientation, as well as mapping the comprehensive evolution of this field of study in a long-term perspective. In particular, scientific attention began to shift from technical themes such as benchmarking, investment, and operational efficiency, to more strategic and adaptive issues such as strategic human resource management (SHRM) and high-performance work systems (HPWS). This evolution illustrates the paradigm shift in HR practices that are administrative to more systemic and based on strategic decision-making.

The integration of digital technology, especially in the form of AI-driven HR systems and algorithmic management, is an integral part of this shift. The results of the VOSviewer visualization show that keywords such as "algorithm", "strategic HR" and "digital HR transformation" are increasingly prominent in the current research landscape. This trend confirms that HR management in the modern era is increasingly reliant on data processing and artificial intelligence to improve efficiency, accuracy and speed in organizational decision-making. The increasing frequency of the appearance of keywords such as employee well-being, perceived organizational support and crisis shows that the psychological and social aspects of employees remain the main concern. In the context of global crises such as the COVID-19 pandemic or economic uncertainty, HR practices are required to be not only technologically adaptive but also able to provide a space that supports emotional well-being, a sense of security and employee participation.

Analysis of key author networks and scientific productivity patterns by country shows that the largest contribution in this study still comes from developed countries such as the United States, the United Kingdom, and China. Although these countries form key nodes in global collaboration networks, the involvement of researchers from developing countries is still limited. These findings reveal challenges in knowledge distribution while underscoring the urgency of transnational collaboration to accommodate local perspectives in the development of context-based HR theory and practice. Thethematically, the topical evolution analysis reveals a shift from an organizational efficiency approach towards the integration of employee adaptation concepts, HR conceptual frameworks, and sustainable values. Topics such as contextual

factors, cultural anthropology and employee behavior appear in various keyword clusters, indicating that HR research is currently more complex and multidisciplinary.

Thus, academic studies in the field of human resources not only highlight the importance of optimizing performance through a high-tech approach and work system, but also underline the balance between structural efficiency and human values. The implications of these findings lead to the need to develop a human resource framework that is not only adaptive to technological changes and external challenges, but also grounded in justice, inclusivity and social sustainability. This research aims to synergize algorithmic, contextual, and humanistic approaches to create a sustainable HR system.

CONCLUSION AND RECOMMENDATION

This bibliometric analysis has succeeded in revealing the dynamics of research developments related to Strategic Human Resource Management (SHRM) and High-Performance Work Systems (HPWS) in recent decades. The findings of the study show a significant growth in the number of publications, especially since 2017, with the peak occurring in the 2024-2025 period. This surge is inseparable from the demands of the business world for a more adaptive HR management strategy in the era of digital disruption and post-pandemic, where organizations are required to be able to innovate in integrating traditional approaches with cutting-edge technology.

Several authors' names such as Wright, P.M., Arthur, J.B., and Batistic, S. emerged as major contributors who shaped the direction of the development of the literature through their works on HPWS, algorithmic management, and digital HRM. Prestigious journals such as Human Resource Management and the Journal of Applied Psychology are the main forums for high-quality research in this field, as well as an important reference for the development of contemporary HR theory and practice.

While the research progress looks encouraging, the analysis also identifies some areas that still need more attention. The integration between algorithmic management and HPWS, for example, has not been explored in depth. Similarly, the limited representation of non-Western perspectives in the existing literature suggests the need to expand the scope of research to a wider range of geographic and cultural contexts.

This research makes an important contribution by systematically mapping the latest developments in the field of SHRM and HPWS. Using a rigorous bibliometric approach through the VOSviewer and Bibliometric software, as well as comprehensive data from Scopus, the results of this analysis not only provide a comprehensive picture of the state of the art in this field of research, but also open up opportunities for the development of further research. These findings are a valuable foundation for academics and practitioners in developing HR systems that are more adaptive, fair, and able to respond to challenges in this uncertain digital era.

In the future, research in this field needs to focus more on developing a human-centric approach in the application of technology in the field of human resources, expanding studies to various geographical contexts, and handling

contemporary issues such as green HRM and organizational resilience. Thus, the development of knowledge and practice in the field of SHRM and HPWS can continue to be relevant and responsive to various changes that occur in the global business environment.

ADVANCED RESEARCH

Based on the results of bibliometric analysis and visualization of modern human resource management (HR) literature, there are five main directions that can be the focus of future research development.

1. **Integration of Humanistic and Technological Approaches in HR Systems**
Further research needs to explore in depth how algorithmic management practices can be aligned with humanistic principles, such as employee well-being, employee voice, and perceived organizational support. The synergy between technology, organizational psychology and work ethics is still a theoretical and practical challenge that needs to be comprehensively studied to develop a fair and inclusive HR system.
2. **Cultural and institutional influences on the effectiveness of HPWS**
Keyword visualization shows that organizational culture issues and contextual factors are starting to get attention, but have not been fully studied comprehensively in the implementation of High-Performance Work System (HPWS). The success of HPWS is largely determined by the normative factors, values, and institutional structure in which the system is applied. Future research needs to examine how national cultural factors, local leadership styles and institutional dynamics mediate the effectiveness of high-performance work systems. The limitations in geographical coverage that are still dominated by publications from foreign countries are a strong reason to encourage broader contextual exploration.
3. **Human resource adaptation in crisis and uncertainty situations**
The increasing emergence of keywords such as crisis, resilience and organizational agility shows the importance of a new understanding of human resource adaptation in the midst of global disruption. However, longitudinal and contextual studies are still rarely found in the literature analyzed. The next research is expected to develop a model of human resource adaptation that is responsive to crisis dynamics both in terms of organizational design, communication patterns, and leadership roles as well as integrating crucial variables such as employee psychological resilience and work system flexibility.
4. **Ethical and social evaluation of algorithm-based management**
Many studies emphasize the advantages of efficiency and predictability in terms of algorithms, ethical aspects and their social implications have not been widely discussed. The use of AI and algorithms in the work process can give rise to new problems such as bias, over-surveillance and non-transparency in decision-making. Future research needs to include a critical evaluation of the ethical dimensions of algorithmic management, including how it affects work relationships, trust and fairness of

organizations. The limitations of bibliometric approaches that do not explore the narrative content of the article in depth are a strong reason for the need for more exploratory qualitative studies.

5. Strengthening global and inclusive research collaboration
Collaborative analysis shows that research networks are still concentrated in a few specific countries and institutions while involvement from developing countries is still limited. This gap signals the need for special efforts to address barriers to cross-border knowledge exchange and dissemination. Therefore, it is important for future research to encourage broader and equitable transnational collaboration so that perspectives from diverse socio-cultural backgrounds can produce globally relevant research. This approach encourages the development of HR theories and practices that are more contextual and in accordance with the reality of the field.

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