



Exploring the Impact of Digital Transformation on Human Resource Management: A Bibliometric Analysis of Strategic Innovation and Organizational Efficiency

Niken Aprila Pratiwi¹, Salwa Azzahra^{2*}
Universitas Negeri Yogyakarta

Corresponding Author: Salwa Azzahra, salwaazzahra.2023@student.uny.ac.id

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ABSTRACT

This study systematically examines the evolving landscape of digital transformation in human resource management (DT-HRM) through a bibliometric analysis of literature indexed in Scopus from 2008 to 2025. The analysis reveals a significant surge in scholarly interest, particularly after the COVID-19 pandemic, reflecting a paradigm shift from conventional HR practices to data-driven and technology-based strategies. Key themes identified include artificial intelligence, digital technologies, innovation, leadership, and strategic alignment within HRM. The findings highlight the multidisciplinary and global nature of DT-HRM research, with contributions spanning diverse sectors and regions. Despite this growth, the literature remains fragmented, underscoring the need for integrative approaches that combine bibliometric and content-based analyses to deepen theoretical and practical insights. The study also emphasizes the importance of addressing ethical, cultural, and social implications of technology adoption in HR. These insights provide valuable guidance for academics, practitioners, and policymakers to foster evidence-based innovation, responsible technology implementation, and strategic alignment in HRM, ultimately enhancing organizational efficiency and adaptability in the digital era.

INTRODUCTION

The rapid evolution of digital technologies has profoundly transformed the way organizations manage their human resources. Digital transformation (DT) in Human Resource Management (HRM) refers to the integration of advanced technologies such as Artificial Intelligence, Digital Technologies, and Data Analytics into HR processes to enhance operational efficiency, drive innovation, and align talent strategies with organizational goals (Behl & Sampat, 2025). As a result, HRM is no longer perceived as merely administrative but as a strategic function contributing to long-term competitiveness.

This transformation aligns with the broader framework of Industry 4.0, which emphasizes automation, interconnectivity, and smart decision-making (Upadhyaya, 2024). In the context of HRM, this includes data-driven talent acquisition, personalized employee development, predictive workforce analytics, and digital performance management systems (Meng et al., 2022). However, digital HR transformation also raises critical issues related to leadership, strategic alignment, and organizational culture, calling for a human-centered approach to ensure ethical and sustainable change.

Although scholarly interest in DT-HRM is growing, current literature remains fragmented across various themes such as innovation, strategy, and performance. There is a lack of comprehensive bibliometric studies that systematically map the relationships between digital transformation, strategic innovation, and organizational efficiency within the HRM domain. As a result, knowledge gaps remain concerning influential research contributions, emerging thematic clusters, and future research directions (Gerstlberger & Prause, 2024).

This study aims to systematically explore the scientific landscape of digital transformation in human resource management using a bibliometric analysis approach. The specific objectives include:

- a. Identifying the growth trend of publications and the most influential authors, journals, and institutions;
- b. Analyzing key themes and keywords—such as artificial intelligence, digital technologies, leadership, industry 4.0, and strategy—that dominate the DT-HRM literature;
- c. Mapping the intellectual structure of the field to reveal how digital transformation intersects with strategic innovation and organizational performance.

By using bibliometric tools such as VOSviewer, this research provides a data-driven overview of the knowledge structure in DT-HRM. The study visualizes thematic clusters and keyword co-occurrences that define current research directions. These insights contribute to the academic discourse on digital HR strategies while guiding practitioners and policymakers toward evidence-based innovation and efficiency in managing human capital (Faraz et al., 2025).

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by (Davis, 1987) to explain the factors that influence individuals in accepting and using technology. The two main constructs in TAM are perceived usefulness (PU) and

perceived ease of use (PEOU). In the context of HRM, this model is used to explain how employees and organizations adopt digital systems such as ERP, AI, and IoT to support HR management processes. Based on previous research by Margherita & Braccini (2020), which confirms that the use of ERP and AI in HRM can improve workforce agility and strategic decision-making.

Open Innovation Theory

The Open Innovation Theory was introduced by (Chesbrough, 2003) and focuses on the idea that companies should not only rely on internal innovation but also open themselves up to external innovation. In the context of HRM, this theory suggests that organizations use external technology and ideas from outside to innovate their HR processes, including recruitment, training, and employee development. The use of digital technology, such as online learning platforms, AI-based recruitment systems, and data analytics tools, can accelerate innovation in HRM and improve workforce performance and productivity. (Foss et al., 2011) found that companies adopting open innovation in HRM, including the use of technology for training and recruitment, experienced improved employee performance.

Task Technology Fit

The Task Technology Fit (TTF) Theory, introduced by (Goodhue & Thompson, 1995), states that technology will be more effective in improving performance if there is a fit between the tasks to be completed and the technology used. In the context of HRM, technologies such as ERP and AI can increase productivity if the systems are designed to support specific HR tasks, such as recruitment management, training, and performance evaluation. The higher the fit between the technology applied and the tasks in HRM, the greater the impact on workforce productivity.

METHODOLOGY

Research Design

This study adopts a quantitative bibliometric analysis approach to systematically examine the development and structure of scholarly research related to digital transformation in Human Resource Management (DT-HRM). Bibliometric analysis enables researchers to assess patterns, themes, and intellectual structures within a research field using quantitative indicators such as publication count, citation frequency, and keyword co-occurrence (Zupic & Čater, 2015). The method is especially suitable for understanding the evolution and thematic focus of research across large volumes of academic literature.

Data Source and Search Strategy

All bibliographic data were retrieved from the Scopus database—one of the world's largest and most reputable abstract and citation databases for peer-reviewed literature. The following search query was used to extract relevant documents:

TITLE-ABS-KEY ("Digital Transformation" AND "Human Resource Management" AND "Artificial Intelligence" AND "Innovation" AND "Digital Technologies" AND "Digital Technologies" AND "Industry 4.0" AND "Strategy" AND "Data Analytics").

The search was conducted in June 2025, and was limited to:

1. Publication types: Journal articles, conference papers, and book chapters.
2. Language: English.
3. Timeframe: 2008–2025.

After cleaning for duplicates and filtering non-relevant articles, a total of 67 documents were selected for analysis.

Data Analysis Techniques

Bibliometric analysis was conducted using the software VOSviewer (version 1.6.20), a specialized tool for constructing and visualizing bibliometric maps. The analysis included:

1. Descriptive Analysis: Identification of publication trends over time, most productive authors, countries, institutions, and journals.
2. Keyword Co-occurrence Analysis: Mapping frequently used keywords to reveal the conceptual structure of the field.
3. Citation and Co-citation Analysis: Measuring the influence and connectivity between documents, authors, and journals.

Keyword normalization and synonym merging were applied to improve the accuracy of co-occurrence mapping (e.g., combining "HRM" and "Human Resource Management"). Clustering techniques within VOSviewer were used to identify thematic groupings (e.g., clusters around AI, leadership, performance management, and strategic innovation).

Research Framework and PRISMA Compliance

The research process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency and replicability in data selection and analysis (Page et al., 2021). The four-phase flow included:

1. Identification (initial Scopus search),
2. Screening (removal of duplicates and irrelevant titles),
3. Eligibility (abstract and full-text assessment),
4. Inclusion (final dataset selection for analysis).

Limitations

This study is limited to English-language documents indexed in the Scopus database. As such, relevant grey literature, regional publications, or practitioner reports may not be represented. Additionally, bibliometric techniques capture citation patterns but do not assess research quality or theoretical depth directly (Gaviria-Marin et al., 2019).

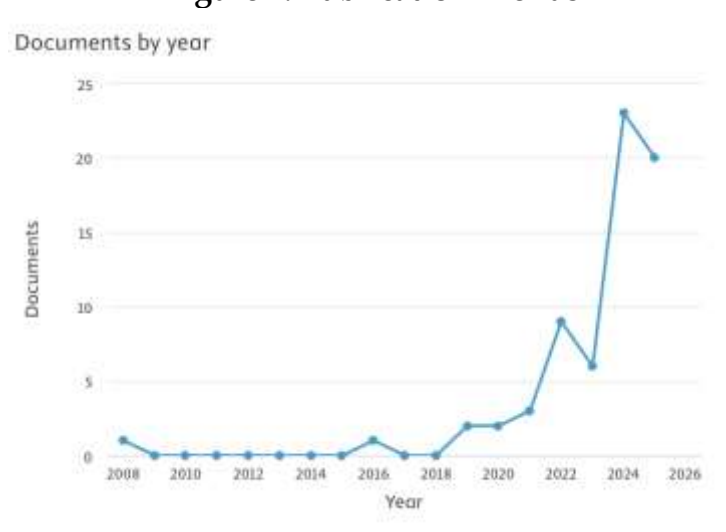
RESULTS AND DISCUSSION

General Bibliometric Analysis Results

From the results of the annual publication trend analysis, there has been a significant increase in the number of documents discussing the topics of digital transformation, innovation, and human resource management (HRM). From 2008 to 2017, publication activity on this theme was relatively stagnant with very few documents, and in some years there were no publications at all. However, starting in 2019, there was a gradual increase, and a sharp surge was recorded in 2022, reaching its peak in 2024 with a total of 23 documents. This phenomenon shows that the issue of digital transformation in the context of HRM is gaining serious attention, especially after the pandemic, which has accelerated digitalization in various organizational sectors.

The increase in the number of publications reflects a paradigm shift in human resource management, from conventional systems to digital technology-based systems such as the use of artificial intelligence (AI), human resource information systems (HRIS), and data-driven recruitment platforms. These technologies enhance efficiency and foster innovation in HR decisions, employee growth, and productivity.

Figure 1. Publication Trends

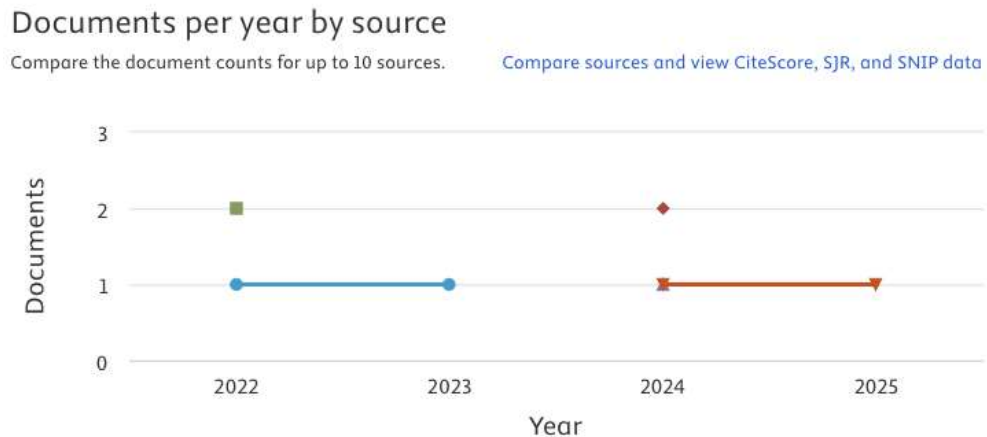


Meanwhile, the distribution of documents based on publication sources shows that research contributions are not concentrated in just one journal. Between 2022 and 2025, scientific sources published one to two documents per year. This indicates that the issues of digital transformation and human resource management are multidisciplinary and have attracted the attention of journals focused on technology, management, and organizational innovation. The diversity of sources also demonstrates that this research has a broad scope and cross-disciplinary relevance, both in academic and practical contexts.

Overall, the upward trend in publications and dissemination of sources indicates that this topic continues to evolve and has the potential to become a key focus in future HRM research. Some opportunities for further research could be directed toward the integration of digital technology in employee development

strategies, the use of big data in performance evaluation, and the transformation of work culture through technology. With increasing attention being paid to this theme, digital transformation in HRM can be seen as a strategic element that drives organizations to be more adaptive, innovative, and competitive in facing the challenges of the digital age.

Figure 2. Journal Source Trends

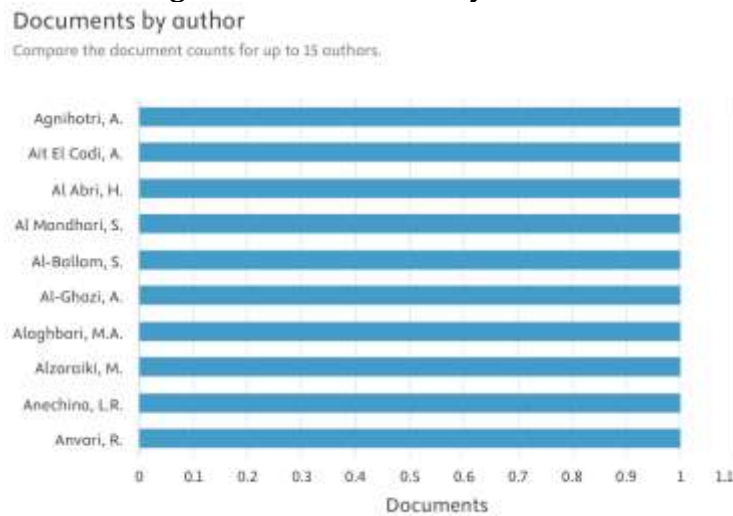


In addition to examining annual publication trends and source distribution, identifying authors who contribute to the theme of digital transformation in HR management is also important for understanding the direction and strength of scientific collaboration in this field. Based on the “Documents by Author” graph, it can be seen that no single author dominates publications significantly. A total of 15 authors are recorded as having only one document relevant to this research topic. Some of them are Agnihotri, A.; Ait El Cadi, A.; Al Abri, H.; Al Mandhari, S.; Al-Ghazi, A.; and Anvari, R.

This phenomenon indicates that studies on digital transformation in HR management are still evenly distributed and incidental in nature, not dominated by a particular research group or single academic figure. This can be interpreted as the topic being relatively new and not yet having formed a strong and focused scientific community. However, on the other hand, this situation also opens up opportunities for collaboration among researchers across institutions and countries to deepen and expand the scope of research in this field.

This low author dominance also indicates that scientific contributions on this topic are still wide open, and there is still much room for further exploration, whether through theoretical, empirical, or interdisciplinary approaches. New researchers and academic institutions can play a crucial role in shaping the direction of future research through more systematic studies, including the use of bibliometric methods, organizational case studies, or integration with information technology and data analytics approaches. Thus, this data reinforces the argument that the topic of digital transformation in human resource management is a field that is still evolving and dynamic. The challenge lies in how to establish this field as an organized and sustainable research community capable of making significant contributions to modern digital-based management practices.

Figure 3. Documents by Author



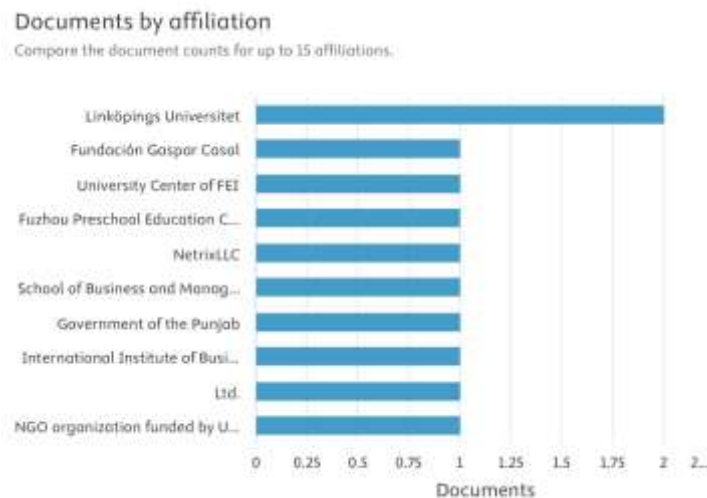
In addition to tracing publication trends by year, author, and source, identifying institutional affiliations also provides important insights into the geographical and institutional distribution of research related to digital transformation in HR management. Based on the “Documents by Affiliation” graph, it is evident that institutional contributions to this topic are scattered and relatively evenly distributed. Most institutions contribute only one document, except for Linköpings Universitet, which has two documents and is the institution with the highest contribution in this data.

The presence of institutions from various countries and backgrounds, such as Fundación Gaspar Casal (Spain), University Center of FEI (Brazil), NetrixLLC (technology corporation), and the Government of Punjab (Pakistan), shows that attention to the issue of digital transformation in human resources is not limited to academic institutions, but also involves government agencies, non-governmental organizations, and the private sector. This indicates that the urgency of digital transformation in HR management has transcended sectoral and geographical boundaries, reflecting its global and interdisciplinary nature. Interestingly, the participation of institutions such as Fuzhou Preschool Education College and NGOs funded by the UN signifies that this topic also has an important social dimension. Digital transformation in HR is not only focused on large corporate sectors but is also beginning to be applied in the contexts of education, public services, and sustainable development.

This situation presents opportunities for enhanced cross-institutional collaboration to strengthen research and the implementation of digital-based HRM practices. Diverse affiliations can spur comparative studies across countries and sectors, which are highly useful in shaping technology adoption strategies that are contextual, inclusive, and relevant to both local and global needs. Thus, although the distribution of institutional contributions does not yet indicate a strong concentration of research in a particular region or academic center, it does show that this topic has broad appeal and is an open area for

further exploration by any institution interested in innovation and HR development in the digital age.

Figure 4. Top Institution In Publication



The distribution of publications by country or region also provides an important overview of the centers of research activity related to digital transformation in human resource management. Based on the “Documents by Country or Territory” graph, it can be seen that China ranks highest with the largest number of documents, reaching more than 14 publications. It is followed by India with over 8 documents, and the United States with 6 documents. Other countries such as the United Kingdom, France, Italy, South Africa, Australia, Brazil, and Germany also contributed, albeit in smaller numbers.

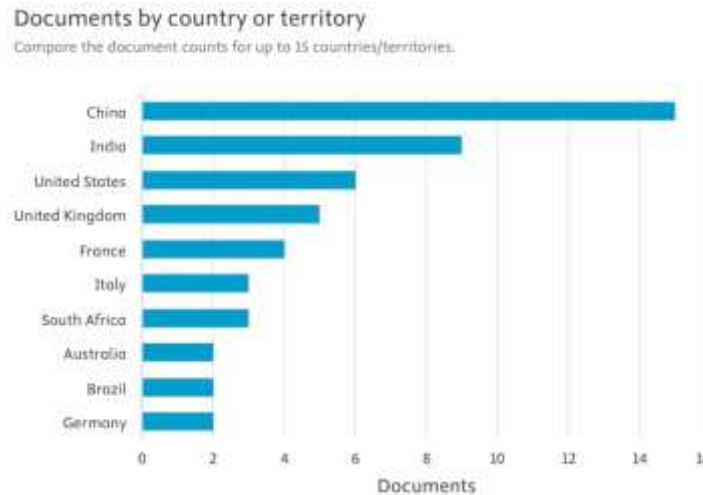
The dominance of China and India in this publication reflects Asia's increasingly strong position as a center of innovation and digital transformation, including in the field of HRM. Technological advances, rapid digital economic growth, and the need to manage large-scale workforces are likely to be the main drivers of active research in these countries. Meanwhile, the presence of Western countries such as the United States, the United Kingdom, and France indicates that digital transformation in HRM is a global issue receiving attention across various policy and economic contexts.

The involvement of developing countries such as South Africa, Brazil, and India also suggests that the adoption of technology in human resource management is not exclusive to developed nations. Instead, these countries view digitalization as a strategic means to address structural challenges such as limited human resource infrastructure, high labor mobility, and the need to improve productivity and efficiency in the public and private sectors.

The relatively broad geographical distribution of publications reinforces the argument that the topic of digital transformation in human resources has evolved into a cross-border and cross-cultural issue. This opens up significant opportunities for international comparative studies and the development of HRM policies and practices that are contextually grounded yet aligned with global trends. In this context, cross-border collaboration, the exchange of best

practices, and the inclusive adaptation of technology are crucial in driving innovative and sustainable HRM advancements.

Figure 5. Documents by Country or Territory



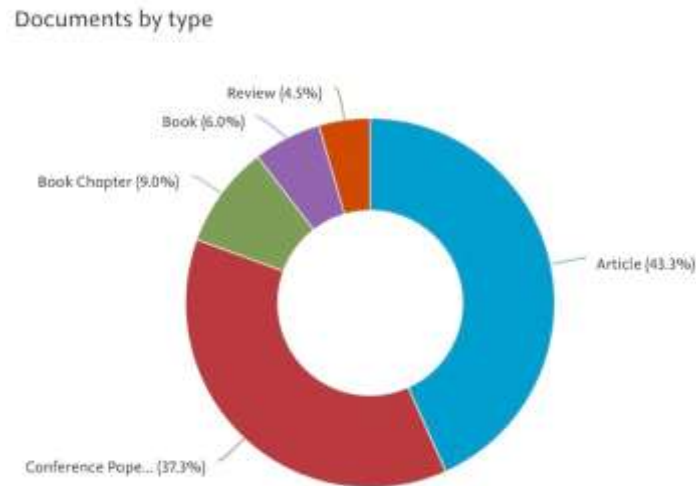
The types of documents published also provide an important overview of the characteristics and depth of research on the topic of digital transformation in HR management. Based on the “Documents by Type” graph, the majority of publications are dominated by scientific articles (43.3%), followed by conference papers (37.3%), book chapters (9.0%), books (6.0%), and review articles (4.5%). The dominance of scientific articles underscores that most related research has undergone rigorous peer-review processes and been published in reputable academic journals, thereby serving as a theoretical and practical foundation for the development of digital-based human resource management.

A significant portion of conference papers shows that this topic is also a concern in academic and professional forums. Conferences serve as a platform for introducing new ideas, cutting-edge methodologies, and technological innovations in HRM. Thus, the high proportion of conference papers also indicates that digital transformation in HRM is a growing topic and part of a dynamic global academic discussion.

Meanwhile, although book chapters and books are fewer in number, they contribute to the development of broader theoretical concepts and multidisciplinary approaches. Books and book chapters often present more holistic discussions, covering practical, policy, and socio-cultural contexts relevant to the implementation of digital technology in human resource management. The relatively small number of review articles (4.5%) indicates that systematic reviews or meta-analyses on this theme are still very limited. This opens up significant opportunities for researchers to develop comprehensive literature reviews to summarize scattered findings, identify research gaps, and formulate future research agendas. Thus, the distribution of these document types reflects that the topic of digital transformation in HRM is still in its developmental stage, with a strong combination of theoretical exploration and

practical contributions. Researchers, practitioners, and policymakers can utilize these types of publications as needed – whether as academic sources, decision-making materials, or references in training and capacity building for HR in the digital era.

Figure 6. Documents by Type



The study of digital transformation in human resource management (HRM) is not limited to a single discipline, but involves various fields of knowledge. Based on the "Documents by Subject Area" graph, it is evident that the largest contribution comes from the field of Business, Management, and Accounting, accounting for 22.4%, followed by Computer Science (16.1%) and Engineering (15.4%). This indicates that the topic of digital transformation in HRM is highly relevant in managerial and organizational contexts, while also closely intertwined with aspects of information technology and systems engineering.

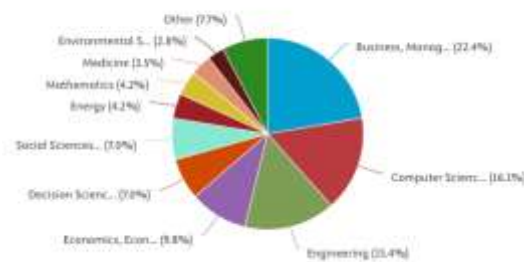
The dominance of the management field reflects a focus on strategy development, organizational innovation, and HR process efficiency in the digital age. Meanwhile, contributions from computer science and engineering indicate that the success of digital transformation is also largely determined by technological infrastructure, HR information system development, and the adoption of intelligent software such as Artificial Intelligence (AI), Machine Learning, and Human Resource Information System (HRIS).

Contributions from other fields such as Economics (9.8%), Decision Sciences (7.0%), and Social Sciences (7.0%) reinforce the understanding that HR digitalization must also be understood from the perspectives of decision-making, organizational behavior, and its impact on social structures and the workforce. Even fields like Energy, Mathematics, and Health (Medicine), despite their smaller shares, demonstrate the relevance of this topic in a broader and cross-sectoral context. Interestingly, there is also a contribution from the field of Environmental Science (2.8%), which can be interpreted as an integrative approach to building sustainable organizations, where digital transformation in HR also considers aspects of a green, efficient, and resource-friendly work environment.

This distribution indicates that research on digital transformation in HRM has strong interdisciplinary characteristics. Collaboration across fields is essential to create comprehensive solutions, from policy formulation to technology implementation in the workplace. Researchers and practitioners are expected to adopt a cross-disciplinary approach to address the complex challenges in human resource management in the rapidly evolving digital era.

Figure 7. Documents by Subject Area

Documents by subject area

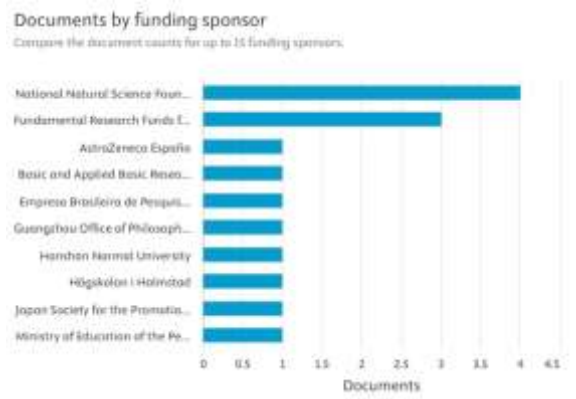


The funding aspect also provides important information regarding institutional support for research related to digital transformation in HR management. Based on the “Documents by Funding Sponsor” graph, it can be seen that the most active sponsor is the National Natural Science Foundation of China with a total of 4 documents, followed by Fundamental Research Funds for the Central Universities with 3 documents. These two sponsors are from China, which also consistently ranks as the country with the most publications in the previous graph. This demonstrates the strong commitment of the Chinese government to promoting strategic research related to innovation and digitalization, including in the field of human resource management. In addition to government agencies, there is also support from industrial institutions such as AstraZeneca España, indicating that the private sector also plays a role in funding studies related to human resource management in the digital era, particularly in the context of health or organizational technology. Funding from institutions such as the Brazilian Industrial Research and Innovation Company (Brazil), the Guangzhou Office of Philosophy and Social Science, and Hanshan Normal University shows that research on this topic is not only attracting attention in the fields of technology and business but also in the fields of social sciences and education.

The existence of institutions such as Höskolan i Halmstad (Sweden) and the Japan Society for the Promotion of Science (Japan) indicates that support for research on digital transformation of human resources is global in nature and not limited to a single geographical region. The involvement of education ministries such as the Ministry of Education of the People’s Republic of China demonstrates that this agenda is also considered important for the development of higher education and national research policies. From this data, it can be concluded that digital transformation in HRM is a strategic area that has begun to attract

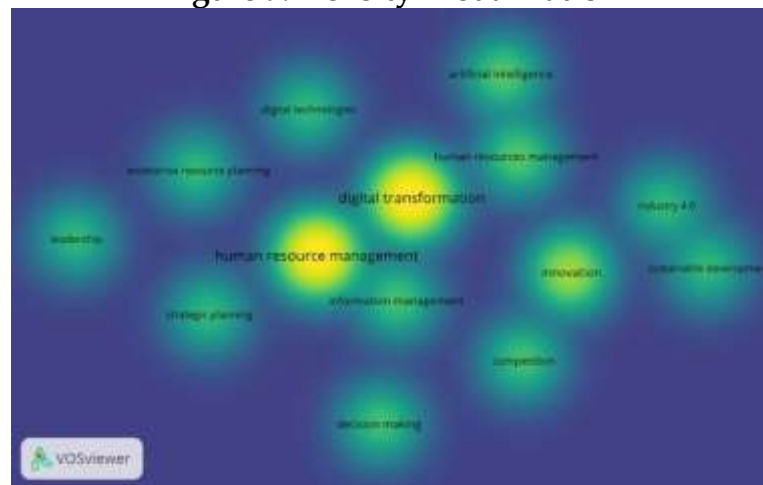
attention from various funding institutions, including government agencies, universities, and industry. However, the number of funded documents remains relatively small compared to the total number of publications, indicating that there is significant potential to increase research funding in this field to drive broader and more impactful policy development and implementation.

Figure 8. Documents by Funding Sponsor



Visualization of Conceptual Relationships

Figure 9. Density Visualization

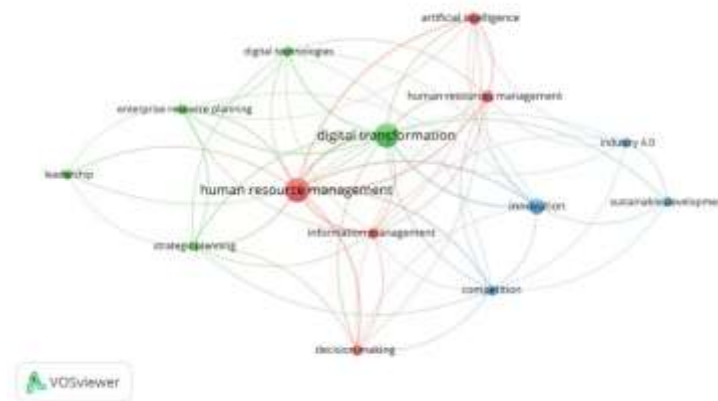


The first image shows that the terms “digital transformation” and “human resource management” have the highest density (intensity of discussion) compared to other terms. The bright yellow color in this area indicates that these two topics are the main focus of the analyzed document corpus. Other topics that appear relatively frequently, though not as intensely as the two main focuses, include “innovation,” “artificial intelligence,” and “information management,” marked by a light green color.

This shows that in the current research context, HR digitalization is most often discussed in the context of technological innovation and information management. Meanwhile, terms such as “leadership,” “decision making,” and “sustainable development” are in areas with lower density (blue-green color),

indicating that these topics have a contribution but are still limited in the literature.

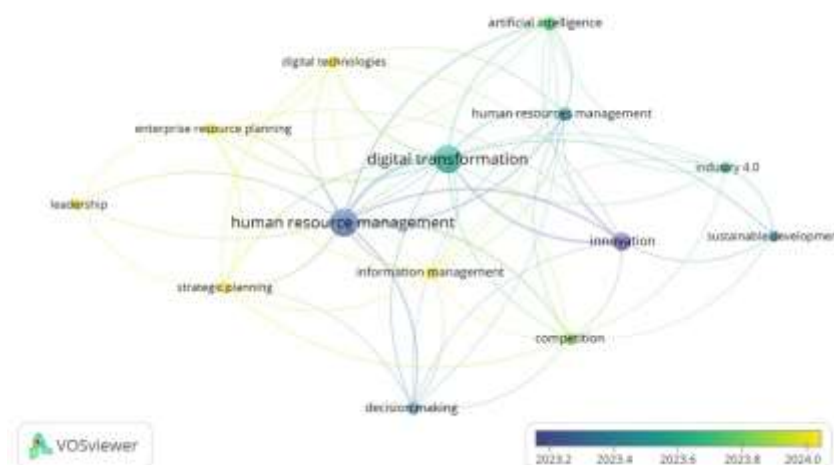
Figure 10. Network Visualization



In the network map, we can see the interconnecting relationships between topics. “Human resource management” and “digital transformation” occupy a central position and are the main nodes with many lines connecting to other concepts. For example, “HRM” is closely related to “strategic planning”, “enterprise resource planning”, and “leadership”, while “digital transformation” is strongly connected to “digital technologies”, ‘AI’, and “information management”. This shows that HRM topics are often discussed in terms of strategy and organization, while digital transformation is more often associated with technology and system infrastructure.

The color groups indicate different clusters. For example, the green cluster clusters planning and technology issues; the blue cluster emphasizes competition, innovation, and sustainability aspects; while the red cluster tends to emphasize advanced technology aspects such as AI and decision-making.

Figure 11. Overlay Visualization



In the overlay map, the color gradation shows the average occurrence time of a topic in the 2023-2024 timeframe. Blue color indicates terms that appear more in the beginning, while yellow indicates terms that appear in more recent publications. Topics such as “human resource management”, “decision making”, and “innovation” tend to be in the dark blue color, indicating that these discussions started intensifying early on. Meanwhile, terms such as “digital technologies”, “strategic planning”, and “leadership” are on the yellow spectrum, indicating that these topics are emerging as the latest trends.

These findings indicate a shift in focus from internal aspects of HR management (decision making, information management) towards leveraging technology and organizational strategy in the broader context of digitalization. This reinforces the assumption that the adoption of digital transformation has now entered a strategic and integrative phase, not just technical or administrative.

Implication

The results of the bibliometric analysis in this study have a number of important implications for both the development of science and its application in human resource management (HRM) practice. From a theoretical perspective, the findings show that studies on digital transformation in HRM have increased significantly in recent years, especially since 2022. This reflects that the topic has become a focal point in interdisciplinary scientific discourse, particularly in the fields of management, information technology, and computer science. The presence of topics such as digital transformation, human resource management, innovation, and artificial intelligence as key nodes in the network visualization highlights the need for an interdisciplinary approach to understanding HR dynamics in the digital age. Therefore, academics are encouraged to develop a theoretical framework that can integrate managerial, technological, and organizational behavioral aspects holistically.

From a practical perspective, these results indicate that organizations need to adapt their HR management strategies to the increasingly complex demands of digital transformation. The interconnection between topics such as strategic planning, leadership, decision-making, and enterprise resource planning shows that modern HRM must prioritize data-driven decision-making and technological readiness to support organizational efficiency and innovation. HRM practitioners are required not only to understand the technical aspects of digitalization but also to manage organizational cultural change and enhance employees' adaptive capacity in a digitalized work environment.

On the other hand, policy implications also need to be considered. Analysis of funding institutions shows that several national and international institutions have provided support for research development in this field, such as the National Natural Science Foundation of China and various global universities and research institutions. This fact underscores that digital transformation in HR is not only an academic and practical issue but has also become a priority in national research and innovation policies across countries. Therefore, governments and higher education institutions need to expand support for strategic research in this field through funding allocation, the development of

technology-adaptive regulations, and the establishment of digital competency standards for workers and HR managers. In this way, digital transformation in HR can proceed in an inclusive and sustainable manner, yielding positive impacts for organizational development in the

CONCLUSION

This study presents a comprehensive bibliometric analysis of scientific literature on digital transformation in human resource management (DT-HRM) during the period 2008 to 2025. The results of the study show a significant increase in the number of publications, especially after the COVID-19 pandemic, which indicates the importance of DT-HRM as a strategic and organizational issue in the digital era.

The dominant themes identified in the analysis include digital technology, artificial intelligence (AI), innovation, leadership, and strategic alignment. This confirms the shift in the role of HRM from an administrative function to a driver of innovation and organizational efficiency in the Industry 4.0 era. Keyword co-occurrence analysis and citation networks also reveal an increasingly developed and interdisciplinary intellectual structure.

Geographically, countries such as China, India, and the United States dominate publication output, indicating that the development of digital HR practices has become a global trend. However, the still dispersed and decentralized structure of the literature points to greater opportunities for cross-institutional and cross-national collaboration.

RECCOMENDATION

For Academics

Integration between bibliometric analysis and content-based systematic reviews is essential to deepen the understanding of theories and empirical findings in the field of Digital Transformation in Human Resource Management (DT-HRM) (Zupic & Čater, 2015). Future research should focus on specific industry contexts or the public sector, including SMEs and the education sector, in order to provide more practical contributions (Meng et al., 2022). Furthermore, studies on the ethical, cultural, and social implications of AI and automation in HR functions are crucial to ensure the responsible implementation of technology.

For Practitioners

HR professionals need to prioritize the enhancement of digital skills and adopt data-driven decision-making models to improve workforce planning and organizational performance. There must be strategic alignment between technology implementation and organizational values so that digital transformation can be accepted and executed inclusively. Open innovation strategies, including collaboration with external technology providers or startups, can effectively accelerate digital HR transformation.

For Policymakers and Institutions

Government agencies and universities should promote interdisciplinary research that integrates management, technology, and behavioral sciences within the HRM context. National digital transformation strategies must include the development of digital human resource competencies as a top priority. Regulations related to data privacy, AI ethics, and fairness in digital recruitment processes need to be strengthened to support a sustainable and equitable transformation (Gerstlberger & Prause, 2024).

ADVANCED RESEARCH

Every study has its limitations, and this bibliometric study is no exception. Although it uses the latest data and comprehensive visualizations of various aspects—from publication trends, regional distribution, document types, affiliations, to thematic analysis using VOSviewer—this study is still limited to the data available in one main database and does not cover the entire global scientific publication ecosystem. Additionally, this bibliometric approach is quantitative-descriptive in nature and does not delve deeply into the conceptual content of each analyzed article.

Therefore, it is recommended that future research combine this bibliometric approach with systematic literature review or content analysis methods to explore more deeply the theories, models, or approaches used in the topic of digital transformation in HR management. Further research could also focus on specific sectoral or regional contexts, such as the education sector, public services, or digital startups in developing countries. Additionally, given the importance of technologies such as artificial intelligence and enterprise resource planning in HR, qualitative studies based on organizational case studies or in-depth interviews with HR practitioners can provide richer and more relevant contextual insights into field practices. By integrating qualitative and quantitative approaches, future research is expected to contribute more holistically to the development of HR management science and practice in the digital era.

REFERENCES

- Behl, A., & Sampat, B. (2025). *Digital Transformation* (A. Behl & B. Sampat, Eds.). Routledge India. <https://doi.org/10.4324/9781003626640>
- Chesbrough, H. (2003). *The logic of Open Innovation: MANAGING INTELLECTUAL PROPERTY*.
- Davis, F. (1987). User Acceptance of Information Systems: The Technology Acceptance Model (TAM). *Division Of Research School of Business Administration*, 1–36.
- Faraz, A. Z., Deng, Y., Arshad, S., & Rui, S. (2025). Digital transformation as a catalyst: linking green CSR to sustainable development through

- environmental strategy and innovation in Pakistani SMEs. *Kybernetes*.
<https://doi.org/10.1108/K-12-2024-3338>
- Foss, N. J., Laursen, K., & Pedersen, T. (2011). Linking customer interaction and innovation: The mediating role of new organizational practices. *Organization Science*, 22(4), 980–999. <https://doi.org/10.1287/orsc.1100.0584>
- Gaviria-Marin, M., Merigó, J. M., & Baier-Fuentes, H. (2019). Knowledge management: A global examination based on bibliometric analysis. *Technological Forecasting and Social Change*, 140, 194–220. <https://doi.org/10.1016/j.techfore.2018.07.006>
- Gerstlberger, W. D., & Prause, G. K. (2024). Introduction to the Special Issue “The twin challenge of sustainability and digital transformation.” In *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration* (Vol. 32, Issue 2). University of Pardubice. <https://doi.org/10.46585/sp32022137>
- Goodhue, D. L., & Thompson, R. L. (1995). Task-Technology Fit and Individual Performance. In *Source: MIS Quarterly* (Vol. 19, Issue 2).
- Margherita, E. G., & Braccini, A. M. (2020). Organizational impacts on sustainability of industry 4.0: a systematic literature review from empirical case studies. In *Digital Business Transformation: Organizing, Managing and Controlling in the Information Age* (pp. 173-186). Springer International Publishing.
- Meng, S., Wang, P., & Yu, J. (2022). Going Abroad and Going Green: The Effects of Top Management Teams’ Overseas Experience on Green Innovation in the Digital Era. *International Journal of Environmental Research and Public Health*, 19(22). <https://doi.org/10.3390/ijerph192214705>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. In *The BMJ* (Vol. 372). BMJ Publishing Group. <https://doi.org/10.1136/bmj.n71>

Upadhyaya, H. (2024). *Digital Education And Economic Transformation: Bridging The Gap*.

Zupic, I., & Čater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods*, 18(3), 429–472.
<https://doi.org/10.1177/1094428114562629>