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Mapping the Intellectual Structure of Digital Human Resource Management: A Bibliometric Analysis and Research Agenda (2009–2025)

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Abstract

Background: Digital Human Resource Management (Digital HRM) has emerged as a critical domain of inquiry as rapid technological transformations reshape traditional HR practices. As organisations increasingly integrate digital tools into their core functions, there is a pressing need to understand how these innovations influence strategic HRM processes and employee-level outcomes.

Objective: This study systematically analyses the existing literature on Digital HRM to identify major research trends, map the field's intellectual structure, and propose a comprehensive agenda for future scholarly exploration.

Methodology: A bibliometric analysis was conducted using metadata from the Scopus database, spanning the period from 2009 to 2025. Utilising *Bibliometrix* (R-package) and *VOSviewer*, the study analysed annual publication trends, citation networks, influential journals, and the evolution of thematic clusters through co-occurrence and co-citation analysis.

Results: The findings reveal an exponential growth in Digital HRM research, with a significant surge in publications recorded since 2020. The intellectual landscape is currently dominated by three major thematic clusters: (1) AI and analytics-driven HR decision-making, (2) the strategic management of digital transformation in HRM, and (3) the intersection of digital tools with sustainability-oriented HR practices.

Conclusion: Digital HRM is a rapidly evolving, interdisciplinary field that is central to enhancing organisational agility and sustainability. The integration of disruptive technologies into HR

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frameworks presents significant theoretical and practical opportunities for advancing the future of work.

Unique Contribution: This study provides a longitudinal overview of the Digital HRM field, formalising the fragmented literature into distinct intellectual clusters. It introduces a multidimensional research agenda that bridges technical implementation with human-centric factors such as leadership and digital sustainability.

Key Recommendation: It is recommended that future research shift focus towards the psychological impact of AI-driven HR practices on employee engagement. Furthermore, scholars should explore the role of leadership in navigating digital shifts and examine the specific implications of digital HR adoption within emerging economies.

Keywords: digital human resource management, digital transformation, bibliometric analysis, VOSviewer, research agenda.

Introduction

In recent decades, Digital HRM has emerged as a critical area of research, situated at the intersection of Human Resource Management (HRM), digital transformation, and organisational behaviour. As organisations confront the pressures of technological disruption and Industry 4.0, HRM systems are increasingly recognised as strategic tools that foster organisational agility, sustainability, and adaptability. Digital HRM integrates digital technologies, data analytics, and intelligent systems into HR practices, significantly reshaping employee experiences and outcomes (Strohmeier, 2020; Theres & Strohmeier, 2024).

Empirical research demonstrates that Digital HRM practices, including e-recruitment, digital training, HR analytics, and AI-enabled systems, positively impact employee engagement, performance, and adaptability (Huynh Thi Thu et al., 2025; Alrifae & Alhabeeb, 2025; Zhou et al., 2025). Drawing on frameworks such as the AMO model, social exchange theory, and self-determination theory, studies suggest that employees perceive these practices as signals of organisational support, leading them to respond proactively (Pham et al., 2025; Stanley & Aggarwal, 2025).

Recent studies also underscore the importance of leadership and contextual factors in shaping the effectiveness of Digital HRM. Leadership styles and organisational culture significantly influence how Digital HRM practices are implemented and perceived by employees (Chen et al., 2025; Ajitha et al., 2025; Wu et al., 2025). Research from emerging economies, such as Vietnam and Jordan, highlights the crucial role of institutional conditions and cultural values in shaping the adoption and impact of Digital HRM practices (Huynh Thi Thu et al., 2025; Abu Hilal et al., 2025; Alexandro, 2025).

Despite rapid growth in Digital HRM research, the field remains fragmented and lacks a clear intellectual structure. Comprehensive bibliometric reviews are scarce, pointing to the need for more systematic studies (Bindra et al., 2025; Rajan & Niranjan, 2025). This study aims to fill this gap by conducting a bibliometric analysis of Digital HRM research published from 2009 to 2025.

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

The study will map the field's development, identify influential authors and journals, and propose future research directions, thereby providing a more integrated understanding of Digital HRM as a strategic and sustainable HRM paradigm.

Literature Review

Digital HRM has evolved as a key research area, integrating digital technologies, data analytics, and intelligent systems into HR practices. Initially, Digital HRM focused on improving administrative efficiency, but the field now emphasises its strategic role in shaping employee behaviour and enhancing organisational outcomes.

Studies show that Digital HRM practices like e-recruitment, HR analytics, and AI-supported decision-making positively influence employee engagement, performance, and adaptability (Strohmeier, 2020; Theres & Strohmeier, 2024). Despite the growing focus on employee outcomes, a significant gap remains in understanding how Digital HRM influences employee behaviour across organisational contexts. Most studies have not fully explored the behavioural mechanisms through which Digital HRM practices impact motivation, job satisfaction, and performance in digitally transformed workplaces (Chen et al., 2025; Stanley & Aggarwal, 2025).

Another important research gap is the lack of exploration into how Digital HRM contributes to sustainable HRM. While recent studies have linked Digital HRM to employee well-being and organisational performance (Virmani et al., 2025; Abu Hilal et al., 2025), there is limited research on how digital HR practices can foster sustainable workforce development, particularly regarding long-term skill renewal, employee adaptability, and sustainability-oriented HRM.

Research frameworks like the AMO model and social exchange theory have been used to understand the impact of Digital HRM on employee attitudes and behaviour. However, the role of leadership, organisational culture, and contextual factors in shaping the effectiveness of Digital HRM remains underexplored, especially in emerging economies (Ajitha et al., 2025; Wu et al., 2025).

Despite growth in the field, the literature remains fragmented. While studies have addressed various aspects of Digital HRM, there is a lack of comprehensive bibliometric reviews that map the field's overall intellectual structure and thematic evolution. These gaps highlight the need for more systematic studies that explore the intersections of Digital HRM with employee behaviour, leadership, and sustainability (Bindra et al., 2025; Rajan & Niranjan, 2025).

Methodology

To establish the final dataset for analysis, this study followed the research procedure illustrated in Figure 1. Data were collected from the Scopus database using a structured search strategy applied to the article title, abstract, and keywords fields. The search query was formulated as follows:

TITLE-ABS-KEY (("digital human resource management" OR "digital HRM" OR "digital HR") AND ("human resource management" OR HRM)).

This search string was designed to capture publications explicitly addressing Digital HRM while ensuring conceptual alignment with the broader human resource management domain. By including commonly used variants of the Digital HRM concept, the query aimed to ensure

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comprehensive coverage of relevant studies while avoiding excessive retrieval of unrelated digital or information systems research.

The search retrieved publications from 2009 to 2025, corresponding to the emergence and rapid development of Digital HRM as a distinct research field. Following the initial retrieval, the documents were screened based on predefined inclusion criteria. Only peer-reviewed publications written in English were retained, while non-English documents and records not directly related to Digital HRM were excluded. After this refinement process, 165 documents remained, constituting the official dataset for subsequent bibliometric analysis.

Reliability and Validity:

The reliability and validity of this study were ensured through several measures:

- Data Source: Scopus, a reputable and comprehensive database, is used as the primary source, ensuring the inclusion of high-quality, peer-reviewed publications.
- Inclusion Criteria: Only peer-reviewed English-language articles were included, ensuring that the data reflect high-quality, relevant research.
- Use of Established Tools: The analysis employed Bibliometrix and VOSviewer, both well-established tools in bibliometrics. Bibliometrix was used for performance analysis, while VOSviewer facilitated co-citation and keyword co-occurrence analyses, enabling the mapping of intellectual structures and emerging research themes.
- Cross-Verification: The results from Bibliometrix and VOSviewer were cross-verified to ensure consistency and accuracy, improving the reliability of the findings.

The analytical process began with a descriptive statistical analysis to provide an overview of the research landscape on Digital HRM. This analysis examined publication and citation trends over time, document types, contributing countries, author collaboration networks, leading journals, and influential authors. These descriptive analyses were conducted using Biblioshiny, the web-based interface for the Bibliometrix package in R, to generate and visualise the leading bibliometric indicators.

Subsequently, co-citation and keyword co-occurrence analyses were performed using VOSviewer (version 1.6.20). These analyses enabled the identification of groups of documents sharing similar citation patterns and conceptual foundations, thereby mapping the intellectual structure of Digital HRM research. Based on the resulting clusters, the main research themes were examined and labelled, providing insights into dominant topics, thematic evolution, and emerging research directions in the Digital HRM literature.

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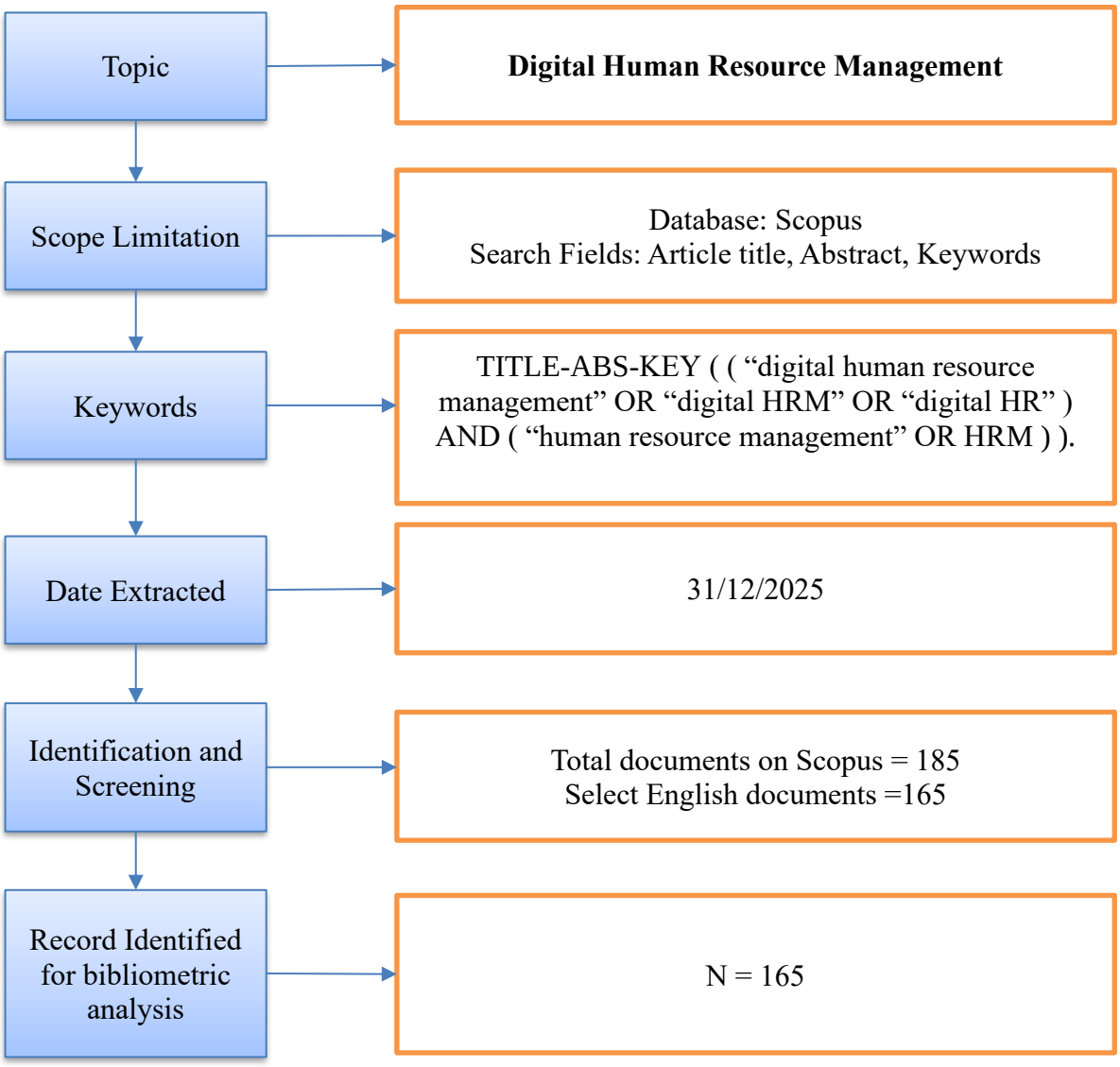

Figure 1. Research procedure

Results And Discussion

Descriptive Statistics

Table 1: Main Information of Data

Timespan	**2009:2025**
Sources (Journals, Books, etc.)	99
Documents	165
Annual Growth Rate %	26.86
Document Average Age	3.01
Average citations per doc	9.224

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

References	1336

Table 1 summarises the main descriptive characteristics of the dataset used in this bibliometric review on Digital Human Resource Management. The analysis covers publications from 2009 to 2025, reflecting the emergence and rapid development of Digital HRM as a research domain. The dataset comprises 165 documents retrieved from 99 distinct sources, including academic journals, books, and other scholarly outlets.

The annual growth rate of publications is 26.86%, indicating strong, accelerating scholarly interest in Digital HRM. The average age of the documents is 3.01 years, suggesting that the literature is relatively recent and continues to evolve dynamically. On average, each document receives 9.224 citations, highlighting a moderate but growing academic impact. In total, the analysed publications cite 1,336 references, demonstrating a substantial and diverse theoretical foundation underpinning Digital HRM research.

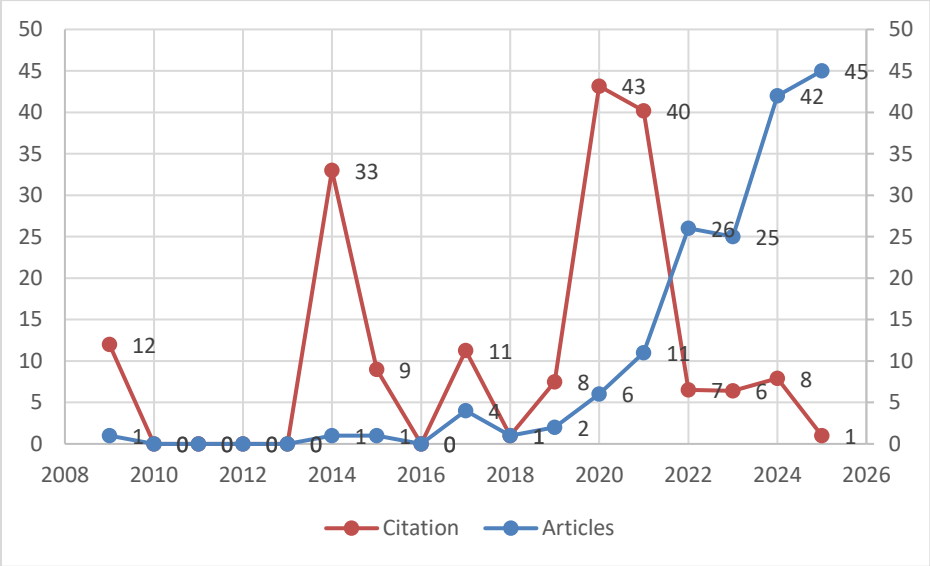

Figure 2. Number of documents and citations

Figure 2 illustrates the evolution of publications and citations in Digital HRM research from 2009 to 2025. From 2009 to 2013, research output was minimal, with fewer than 2 publications per year and limited citations, reflecting the field's early stage.

From 2014 to 2018, publication activity increased modestly, with short-term citation peaks, especially in 2014 and 2017, indicating influential studies despite low publication volume.

A sharp increase in citations occurred around 2020 and 2021, peaking at over 40 per year, showing growing recognition of foundational Digital HRM research. Publication output rapidly expanded from 2021, reaching 26 publications in 2022 and over 40 per year by 2024 and 2025.

However, citation levels in recent years have remained moderate, which should not be interpreted as a decline in scholarly interest. Rather, this pattern reflects the well-documented citation time-lag effect, whereby recently published studies require several years to accumulate citations.

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

Overall, the figure shows a shift from an exploratory phase to a period of rapid growth in Digital HRM research, marked by an increase in publications and an early concentration of citations.

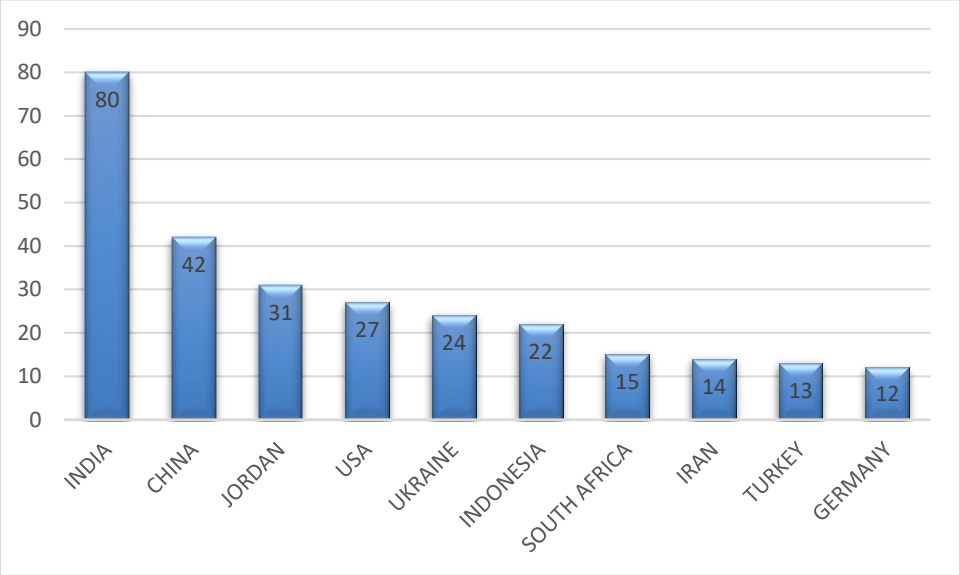

Figure 3: Countries' Scientific Production

Figure 3 presents the global distribution of Digital HRM research by country. India leads with 80 publications, followed by China (42) and Jordan (31), indicating a strong concentration of research activity in emerging and transition economies. This pattern suggests that Digital HRM is closely associated with rapid industrial digitalisation, workforce modernisation, and national digital transformation agendas in these contexts. Large-scale government initiatives promoting digital infrastructure, artificial intelligence, and Industry 4.0 strategies in countries such as India and China likely stimulate academic and practical interest in digitally enabled HR systems. Similarly, in transition economies such as Jordan, Digital HRM may serve as a strategic instrument to enhance competitiveness and accelerate human capital development.

Although the United States (27 publications) and Germany (12 publications) remain important contributors, their relative share is lower than that of several emerging economies. This may reflect stronger institutional pressures in developing contexts to modernise HR practices as part of broader economic transformation strategies. Overall, the geographic distribution indicates that Digital HRM research is increasingly shaped by national digitalisation priorities in emerging economies rather than being driven solely by traditional Western academic centres.

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Types of documents

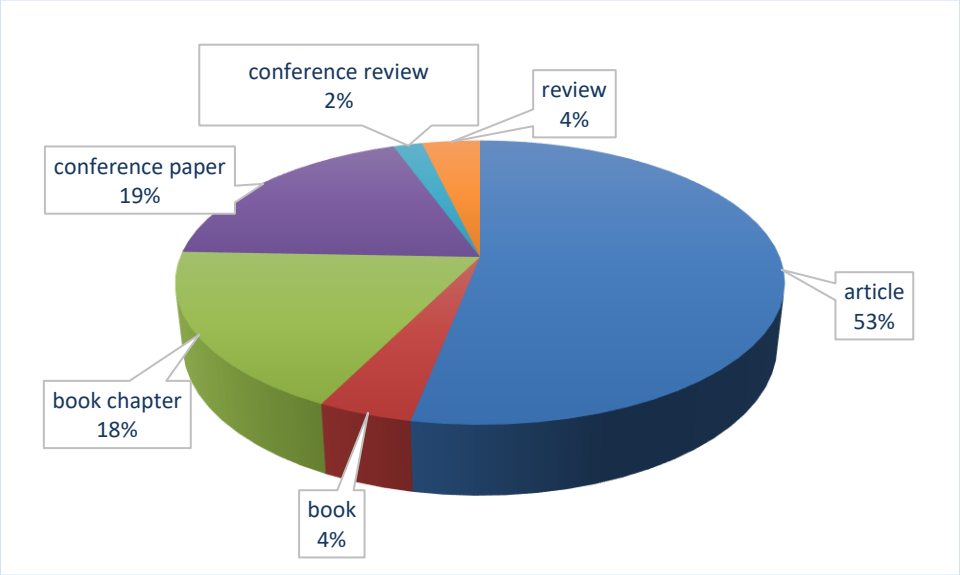

Figure 4. Statistics by the type of published documents

Figure 4 shows the distribution of publication types in Digital HRM research. Journal articles account for 53% of total publications, indicating that scholarly knowledge in Digital HRM is primarily disseminated through peer-reviewed journals.

Conference papers account for 19%, reflecting the field's dynamic nature, where early findings and new ideas are often presented at conferences. Book chapters account for 18%, highlighting the importance of edited volumes in advancing conceptual discussions and interdisciplinary views on digital transformation in HRM.

Books and review articles each account for 4%, indicating a growing effort to consolidate existing knowledge in Digital HRM. Conference reviews account for the smallest share, at 2%, indicating their marginal role in the overall publication landscape.

This distribution highlights that Digital HRM is an evolving field, with a strong journal-based core complemented by conference and book contributions that support theoretical and exploratory research.

Table 2. Top 10 Journals Publishing

Sources	Articles
LECTURE NOTES IN NETWORKS AND SYSTEMS	6
SUSTAINABILITY (SWITZERLAND)	4
ASIA PACIFIC JOURNAL OF HUMAN RESOURCES	3
INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	3
SUSTAINABLE FUTURES	3
ACM INTERNATIONAL CONFERENCE PROCEEDING SERIES	2

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

DISCOVER SUSTAINABILITY	2
E3S WEB OF CONFERENCES	2
HUMAN RESOURCE MANAGEMENT REVIEW	2
INTERNATIONAL JOURNAL OF DATA AND NETWORK SCIENCE	2

Table 2 shows the distribution of publications across the most influential sources in Digital HRM research. Lecture Notes in Networks and Systems has published six papers to date, reflecting the strong connection between Digital HRM and interdisciplinary fields such as digital technologies and Industry 4.0 applications.

Sustainability (Switzerland) ranks second, with four publications, indicating the growing integration of Digital HRM into sustainability-oriented management research. This suggests that Digital HRM is being studied not only for efficiency and technological advancements, but also for sustainable development and long-term organisational performance.

Several core HRM journals, including the Asia Pacific Journal of Human Resources, International Journal of Human Resource Management, and Sustainable Futures, each contributed three publications, showing sustained interest in Digital HRM within the broader HRM and management research communities.

Additionally, interdisciplinary outlets and conference proceedings, such as the ACM International Conference Proceedings Series, E3S Web of Conferences, and Discover Sustainability, each published 2 documents, reflecting the evolving nature of Digital HRM, which intersects with fields such as computer science, data analytics, and sustainability studies. The inclusion of Human Resource Management Review highlights the conceptual and theoretical importance of Digital HRM in high-impact HRM scholarship.

The distribution of publications suggests that Digital HRM does not yet have a single disciplinary home. Core HRM journals, such as the International Journal of Human Resource Management and the Asia Pacific Journal of Human Resources, anchor the field within mainstream HRM scholarship. In contrast, interdisciplinary outlets such as Sustainability and technology-oriented proceedings reflect the field's cross-disciplinary expansion into the domains of digital transformation and data analytics. This distinction clarifies that while Digital HRM is rooted in HRM theory, its development increasingly spans multiple disciplinary boundaries.

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

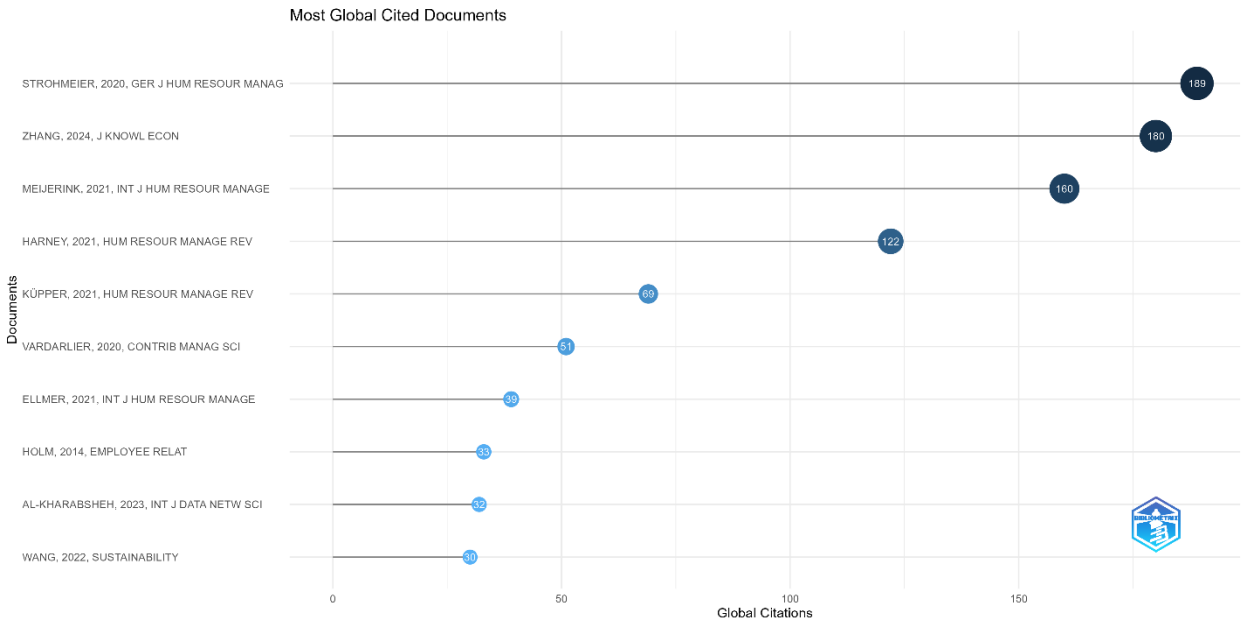

Figure 5: Most Cited Documents

Table 3. Top ten studies with the highest citations

Title	Author	Total Citations
Digital human resource management: A conceptual clarification	Strohmeier (2020)	189
Digital human resource management in the knowledge economy	Zhang (2024)	180
The duality of digital HRM: Balancing efficiency and employee experience	Meijerink & Bondarouk (2021)	160
Talent management and digitalisation: A review and research agenda	Harney & Collings (2021)	122
Digital HRM and organisational transformation: A systematic review	Küpper & Klein (2021)	69
Digital transformation of human resource management: A systematic literature review	Vardarlier (2020)	51
Digitalisation of human resource management and employee outcomes	Ellmer & Reichel (2021)	39
Organisational barriers to the adoption of HR analytics	Holm (2014)	33
Big data analytics and digital transformation in human resource management	Al-Kharabsheh et al. (2023)	32
Digital transformation, human resource management practices, and sustainability performance	Wang et al. (2022)	30

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

Figure 5 and Table 3 present the most cited publications in Digital HRM, highlighting the studies that have significantly shaped the field's conceptual and empirical development. Citation patterns reveal a strong concentration of influence around a limited number of foundational works.

Strohmeier (2020), with 189 citations, is the most influential study, providing a conceptual clarification that distinguishes Digital HRM from related constructs such as e-HRM and HR information systems. Zhang (2024) (180 citations) further reflects the integration of Digital HRM into the digital and knowledge economy. Meijerink and Bondarouk (2021) (160 citations) advance the duality perspective of Digital HRM, while Harney and Collings (2021) (122 citations) offer an influential review linking talent management and digitalisation. Additional contributions by Küpper and Klein (2021) and Vardarlier (2020) emphasise organisational transformation and digital change in HR.

More recent studies, including Al-Kharabsheh et al. (2023) and Wang et al. (2022), indicate growing interest in big data analytics, sustainability, and responsible digital transformation. The citation landscape demonstrates that Digital HRM has evolved into a distinct and increasingly structured research domain grounded in key conceptual and review-based contributions.

Co-occurrence of author keywords

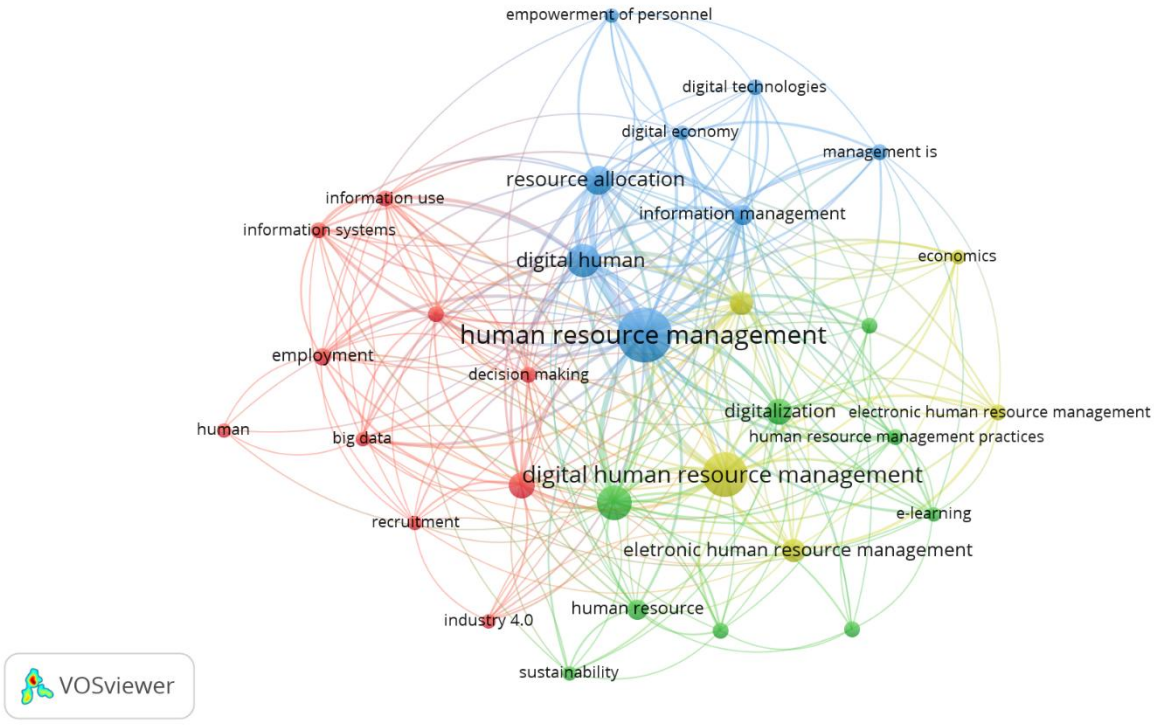

Figure 6: The network of co-occurring keywords

Based on the keyword co-occurrence analysis using VOSviewer, four distinct research clusters were identified in Digital HRM literature. Figure 6 visualises the network of co-occurring

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

keywords, while Table 4 summarises the thematic content and sub-themes associated with each cluster, representing the core intellectual structure of Digital HRM research.

Cluster 1 focuses on AI- and analytics-driven HR decision-making, highlighting the use of artificial intelligence, big data, and information systems in algorithmic HR processes. Sub-themes include algorithmic recruitment tools and the role of analytics in training, employment decisions, and workforce planning, reflecting the growing reliance on automated technologies in Industry 4.0 contexts.

Cluster 2 focuses on digital transformation and sustainable HRM, exploring how digitalization reshapes HR systems to support sustainability and long-term human capital development. Sub-themes emphasise the role of digital HR systems in workforce development and the use of e-learning to enhance organisational adaptability and sustainability.

Digital tools such as AI-enabled learning platforms, adaptive e-learning systems, and real-time skills analytics support continuous capability renewal by identifying skill gaps, personalising development pathways, and aligning training investments with long-term strategic objectives. These mechanisms enable organisations to institutionalise continuous reskilling and upskilling processes, thereby strengthening workforce adaptability in rapidly changing digital environments. By embedding learning into everyday workflows and strategic planning cycles, Digital HRM contributes to long-term employability and sustainable human capital development rather than merely improving short-term administrative efficiency.

Cluster 3 focuses on the digital economy and information-based HRM, examining how digital technologies and management information systems enable effective HR resource allocation and empower employees in digitally enabled organisations. Sub-themes include the strategic role of information management systems in HR and employee empowerment through digital technologies.

In this context, certain system-related keywords appear in both Cluster 1 and Cluster 3, indicating some terminological overlap between the two themes. However, this overlap does not imply conceptual redundancy. Rather, the clusters differ in analytical focus and organisational level. In Cluster 1, information systems primarily function as analytics-enabled decision-support infrastructures that facilitate operational HR decision-making, including algorithmic recruitment, training analytics, employment decisions, and predictive workforce planning. In contrast, Cluster 3 emphasises management information systems as enterprise-level coordination and governance mechanisms that enable strategic HR resource allocation, digital orchestration, and organisational integration. Thus, while both clusters share a common digital backbone, Cluster 1 reflects an algorithmic, decision-centric orientation, whereas Cluster 3 represents a strategic, resource-allocation perspective within digitally enabled HRM.

Cluster 4 reflects electronic HRM and the economic foundations of Digital HRM, building on e-HRM literature and economic perspectives that emphasise efficiency and resource optimisation. Sub-themes capture the transition from traditional e-HRM to integrated Digital HRM frameworks, while also maintaining the relevance of economic efficiency in HR digitalisation.

Together, these clusters demonstrate the multidimensional nature of Digital HRM research, covering technology-driven decision-making, strategic digital transformation, information-based

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

resource management, and economic perspectives. This structure highlights Digital HRM's evolution from administrative e-systems to a strategic, data-driven, and sustainability-oriented field.

Table 4: Thematic Clusters of Digital HRM

Cluster	Keywords	Main theme	Sub-themes
Cluster 1 (Red)	artificial intelligence; big data; decision making; employment; human; industry 4.0; information systems; information use; personnel training; recruitment	**AI- and analytics-driven HR decision-making**	1. Algorithmic recruitment and selection 2. Data-driven training, employment, and workforce planning
Cluster 2 (Green)	digital human resource practices; digital transformation; digitalization; digitization; e-learning; human resource; human resource management; sustainability; sustainable development	**Digital transformation and sustainable HRM**	1. Digital HR systems for sustainable human capital development 2. E-learning and digital capability building for sustainability
Cluster 3 (Blue)	digital economy; digital human; digital technologies; empowerment of personnel; human resource management; information management; management information systems; resource allocation	**Digital economy and information-based HRM**	1. Information management systems and strategic HR resource allocation 2. Employee empowerment in digitally enabled organizations
Cluster 4 (Yellow)	digital human resource management; economics; electronic human resource management; electronic human resource; natural resources management	**Electronic HRM and economic foundations of Digital HRM**	1. Evolution from e-HRM to integrated Digital HRM 2. Economic efficiency and resource-based perspectives in HR digitalization

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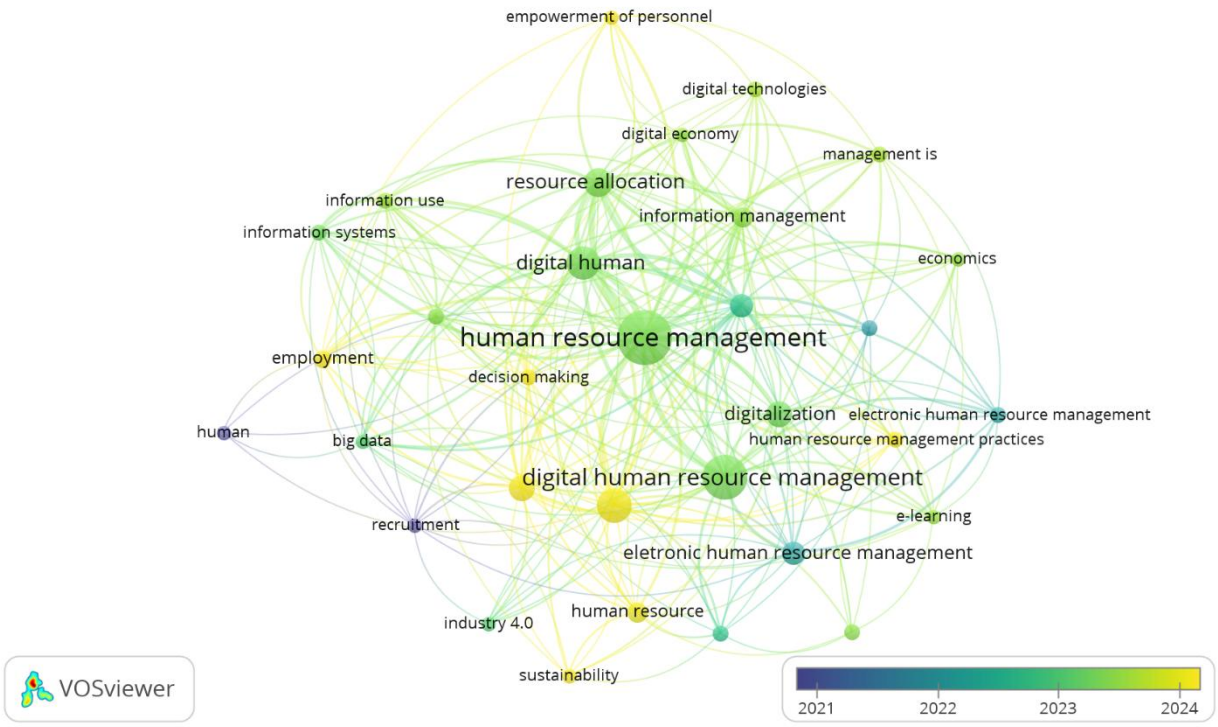

Figure 7. Keyword co-occurrence evolution

Figure 7 presents the temporal evolution of keyword co-occurrence in Digital HRM research using VOSviewer's overlay visualisation. The colour gradient indicates the average publication year of each keyword, revealing shifts in research emphasis over time.
Between 2016 and 2018, research focused on foundational and system-oriented concepts such as HRM, information systems, decision-making, and employment, reflecting the early integration of digital technologies into HR practices. From 2019 to 2021, attention shifted toward more advanced and strategic themes, including big data, Industry 4.0, digital economy, and resource allocation, marking the move toward analytics-driven Digital HRM.

Since 2022, the emphasis has increasingly centred on digital transformation, e-learning, and sustainability, highlighting continuous learning and long-term human capital development. In the most recent period (2023–2024), integrated and human-centred perspectives gained prominence, with digital HRM, digital technologies, and employee empowerment emerging as key themes.
Figure 7 thus illustrates the progression of Digital HRM research from system-oriented digitalisation to analytics-driven decision-making and, more recently, to integrated, sustainability-oriented, and employee-centred approaches.

E-ISSN: 2735-9891 DOI: https://doi.org/10.5281/zenodo.20253586

Table 5. Evolution of Digital HRM Research Phases

Phase	Period	Dominant Focus	Key Keywords	Theoretical Orientation
Phase 1	2009–2016	System-oriented digitalization	e-HRM, information systems, decision-making	Efficiency & administrative logic
Phase 2	2017–2021	Analytics-driven transformation	big data, AI, Industry 4.0	AMO & strategic HRM
Phase 3	2022–2025	Human-centred & sustainability-oriented	digital transformation, empowerment, sustainability	Behavioural & sustainability perspectives

Table 5 synthesises the temporal evolution illustrated in Figure 7, highlighting the transition from system-oriented digitalisation to analytics-driven HR decision-making and, more recently, to sustainability-oriented and employee-centred approaches.

Discussion And Future Research

The findings of this bibliometric analysis provide a comprehensive overview of the evolution of Digital HRM research. The field has shifted from a technology-oriented extension of e-HRM to a strategic, behaviour-oriented research domain within HRM (Strohmeier, 2020; Meijerink & Bondarouk, 2021). Digital HRM practices are increasingly viewed as powerful mechanisms that influence employee attitudes, perceptions, and behaviours in digitally transforming organisations (Harney & Collings, 2021; Milhem et al., 2025).

A key insight is the strong behavioural orientation of Digital HRM, with research focusing on how digital HR practices affect employee outcomes, including engagement, innovation, and performance (Chen et al., 2025; Zhou et al., 2025). The prominence of behavioural perspectives, such as the AMO framework and social exchange theory, further emphasises the role of Digital HRM in shaping employee behaviours (Pham et al., 2024; Stanley & Aggarwal, 2025).

Recent studies have also integrated sustainability and long-term performance perspectives into Digital HRM, conceptualising it as part of sustainable HRM systems that align technology with human and organisational objectives (Virmani et al., 2025; Abu Hilal et al., 2025). Digital HRM practices, such as e-learning and talent management, contribute to employee well-being and organisational performance (Mahmoud et al., 2025; Huynh Thi Thu et al., 2025).

Leadership, particularly digital and ethical leadership, has been identified as an important factor influencing the effectiveness of Digital HRM practices (Ajitha et al., 2025; Wu et al., 2025). The bibliometric findings further highlight leadership as a critical contextual mechanism shaping how Digital HRM systems are implemented and perceived. However, future research requires greater conceptual clarity regarding what constitutes digital or ethical leadership in AI-driven HR contexts. Digital leadership refers to leaders' ability to strategically integrate digital technologies into HR processes while fostering employee trust, adaptability, and learning. In AI-enabled HR systems, leaders must not only support technological adoption but also manage algorithmic transparency, fairness, and accountability. Studies also show a shift from Western-centric research

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to more context-sensitive investigations in emerging economies such as Vietnam and Jordan, reflecting the impact of institutional and cultural factors on Digital HRM (Huynh Thi Thu et al., 2025; Alexandro, 2025).

Ethical leadership becomes particularly salient in AI-driven HR decision-making, where automated recruitment, performance analytics, and predictive workforce planning may introduce bias or reduce perceived procedural justice. Ethical leaders play a crucial role in ensuring that digital HR systems are implemented responsibly, balancing efficiency gains with employee well-being and fairness considerations. Future empirical research should examine how digital and ethical leadership moderate the relationship between AI-based HR systems and employee outcomes such as engagement, trust, and proactive behaviour. Beyond its contextual importance, leadership also serves as a theoretical bridge connecting behavioural, technological, and sustainability-oriented research streams in Digital HRM.

This bibliometric analysis clarifies the intellectual architecture of Digital HRM by demonstrating its convergence across strategic HRM, information systems, organisational behaviour, and sustainability (Harney & Collings, 2021; Virmani et al., 2025). Future research should explore the impact of digital transformation and AI on HRM systems, the role of Digital HRM in enhancing employee well-being, and the influence of leadership on employee behaviour (Mahmoud et al., 2025; Shakhshina et al., 2025). Additionally, research should examine the relationship between Digital HRM and employee behaviour in sustainability-oriented organisations and explore cross-national and cross-cultural differences (Ciziuniene et al., 2025). Collectively, these findings reinforce the integrative role of Digital HRM as a strategically embedded and theoretically convergent research domain.

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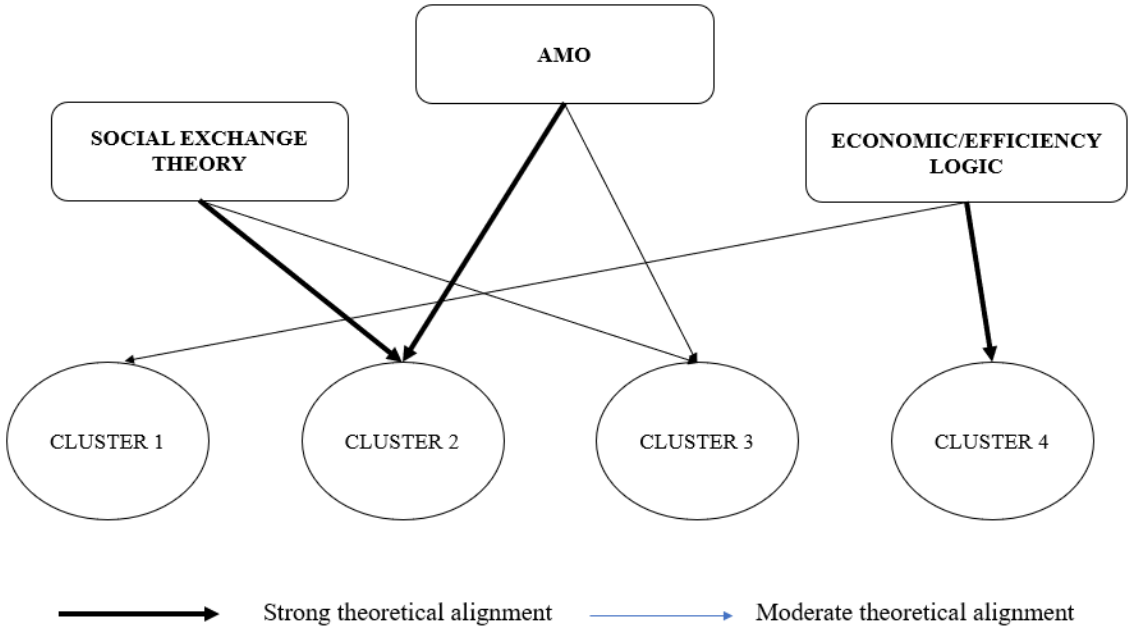

Figure 8. Theoretical Mapping of Digital HRM Clusters

As illustrated in Figure 8, the AMO framework demonstrates the strongest theoretical alignment with Cluster 2, where digital HR practices directly support ability development, motivation enhancement, and opportunity creation through continuous reskilling and sustainable workforce strategies. A moderate alignment is observed with Cluster 3, which emphasises strategic information systems and employee empowerment. Social exchange theory similarly aligns most strongly with Cluster 2, reflecting employee reciprocity mechanisms in response to digitally enabled support and sustainability-oriented HR practices, while showing moderate relevance to Cluster 3. In contrast, Cluster 4 is primarily grounded in economic and efficiency logic, emphasising resource optimisation and the legacy of e-HRM systems. Cluster 1 demonstrates a moderate association with efficiency logic, given its focus on algorithmic decision-making and analytics-driven optimisation.

Future research in emerging economies should move beyond general contextual references and examine specific cultural and institutional variables. Relevant factors include collectivist versus individualistic cultural orientations, regulatory maturity regarding data protection and AI governance, institutional trust, digital infrastructure development, and labour market formalisation. These variables may significantly shape employee perceptions of algorithmic HR practices and moderate the relationship between Digital HRM implementation and employee outcomes.

While this study provides a comprehensive overview of Digital HRM research, it is subject to several limitations. First, the analysis relies solely on the Scopus database. Although Scopus offers broad international coverage and high-quality indexing standards, excluding other databases such

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as Web of Science or ProQuest may have led to the omission of relevant publications, particularly those indexed in regional or discipline-specific outlets. Differences in database coverage could affect citation counts, journal representation, and thematic patterns. Second, bibliometric analysis emphasises quantitative mapping and may not fully capture nuanced theoretical debates or emerging conceptual contributions not yet reflected in citation patterns. Future studies could adopt multi-database approaches and complementary qualitative systematic reviews to provide a more comprehensive understanding of Digital HRM research (Theres & Strohmeier, 2024).

Conclusion

This bibliometric review moves beyond descriptive mapping to define the intellectual structure of Digital HRM research. The findings consolidate a previously fragmented field into four interconnected thematic pillars: AI-driven HR decision-making, digital transformation and sustainable HRM, information-based strategic HRM, and economic foundations of digitalisation. By mapping these clusters to their underlying theoretical orientations and temporal evolution, this study contributes to the integration of[0 disparate research streams into a coherent framework.

Rather than viewing Digital HRM as a purely technological extension of e-HRM, the results position it as a multidimensional and strategically embedded research domain that integrates performance mechanisms, sustainability concerns, and contextual influences. In doing so, this review provides a foundation for future theory development and empirical testing, particularly in AI-driven and cross-national contexts.

Declarations

AI Use Statement: The authors confirm that no Artificial Intelligence tools were used in the writing or production of this manuscript.

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Ethical Approval: Ethical approval was not required for this study as it was based on secondary bibliometric data.

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