

Digital Human Resource Management Supporting Digital Transformation: A Systematic Literature Review

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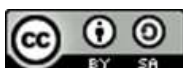
ABSTRAK

Transformasi digital telah menjadi suatu keharusan strategis bagi organisasi dan menuntut manajemen sumber daya manusia (MSDM) untuk mengambil peran yang lebih adaptif dan strategis. Penelitian ini bertujuan untuk mengidentifikasi strategi utama, faktor pendukung, serta tantangan dalam penerapan MSDM digital guna mendukung transformasi digital. Systematic Literature Review (SLR) dilakukan dengan mengikuti pedoman PRISMA, dengan tahap awal mengidentifikasi lebih dari 1.000 artikel terindeks nasional dan internasional yang diterbitkan antara tahun 2000 hingga 2025. Melalui proses penyaringan dan penilaian kelayakan yang terstruktur, sebanyak 23 artikel dipertahankan untuk dianalisis secara mendalam. Hasil tinjauan menunjukkan bahwa praktik MSDM digital, termasuk Human Resource Information Systems (HRIS), otomatisasi proses, analitik SDM, dan pelatihan digital, secara signifikan meningkatkan efisiensi organisasi, produktivitas karyawan, serta pengembangan kompetensi. Perbandingan sektoral mengungkapkan adanya perbedaan orientasi, di mana organisasi swasta lebih menekankan pada produktivitas dan daya saing, sedangkan organisasi publik lebih memprioritaskan efektivitas layanan dan akuntabilitas. Faktor-faktor pendukung utama dalam keberhasilan penerapan MSDM digital meliputi kepemimpinan transformasional, kesiapan budaya organisasi, serta pengembangan keterampilan digital yang berkelanjutan. Temuan penelitian ini menegaskan bahwa transformasi digital dalam MSDM tidak hanya sebatas adopsi teknologi, tetapi juga memerlukan kapabilitas manajerial, manajemen perubahan, dan keselarasan budaya organisasi. Penelitian ini merekomendasikan strategi lintas sektor serta desain penelitian metode campuran untuk memberikan pemahaman yang lebih komprehensif mengenai bagaimana MSDM digital dapat memperkuat daya saing organisasi di era digital.

Kata Kunci: manajemen sumber daya manusia; MSDM digital; transformasi digital; HRIS; systematic literature review.

ABSTRACT

Digital transformation has become a strategic imperative for organizations and requires human resource management (HRM) to assume a more adaptive and strategic role. This study aims to identify the main strategies, enabling factors, and challenges in implementing digital HRM to support digital transformation. A Systematic Literature Review (SLR) was conducted following PRISMA guidelines, initially identifying more than 1,000 international and national indexed articles published between 2000 and 2025. Through a structured screening and eligibility process, 23 articles were retained for in-depth analysis. The review shows



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that digital HRM practices including Human Resource Information Systems (HRIS), process automation, HR analytics, and digital training significantly enhance organizational efficiency, employee productivity, and competence development. Sectoral comparisons reveal different orientations: private organizations mainly emphasize productivity and competitiveness, whereas public organizations prioritize service effectiveness and accountability. The key enabling factors for successful digital HRM include transformational leadership, organizational culture readiness, and continuous development of digital skills. The findings highlight that digital transformation in HRM goes beyond technology adoption; it also requires managerial capability, change management, and cultural alignment. The study recommends cross-sector strategies and mixed-method research designs to provide a more comprehensive understanding of how digital HRM can strengthen organizational competitiveness in the digital era.

Keywords: human resource management; digital HRM; digital transformation; HRIS; systematic literature review.

INTRODUCTION

The Fourth Industrial Revolution has profoundly transformed how organizations are managed, including the management of human resources (HRM). Digital transformation has become a strategic necessity for organizations seeking to survive and remain competitive in the global era. In this context, human resources play a critical role as the primary driver of technology adoption and utilization; however, the readiness of human resources to face digital transformation remains uneven. Common challenges include resistance to change, low levels of digital literacy, and misalignment between HRM strategies and organizational technology policies.

This study therefore focuses on a literature-based examination of HRM strategies and practices that support digital transformation, with the aim of identifying key enabling factors and barriers in their implementation. Drawing on Human Capital Theory (Becker, 1964), investment in digital skills through continuous training and education is considered a strategic lever for enhancing organizational competitiveness, as human competencies represent valuable assets that generate long-term economic returns. From a Resource-Based View (RBV) perspective (Barney, 1991), well-designed digital HRM practices can become strategic resources that are unique and difficult to imitate, thereby creating sustainable competitive advantage. Furthermore, Dynamic Capability Theory (Teece, Pisano, & Shuen, 1997) emphasizes the importance of organizational capacity to sense, seize, and reconfigure resources in response to environmental dynamics. In this perspective, digital transformation in HRM is not limited to technology deployment, but also requires managerial capability to build an adaptive, responsive, and innovative work culture, with transformational leadership playing a central role in driving cultural change and reducing employee resistance to digitalization.

The classical management functions proposed by Terry (1972) also offer a relevant lens. Management functions—planning, organizing, actuating, and controlling—are reflected in different stages of digital HRM implementation. The planning function appears in the formulation of technology adoption strategies; the organizing function in the structuring of digital work processes and role distribution; the actuating function in the implementation of Human Resource Information Systems (HRIS), automation, analytics, and digital training programs; and the controlling function in evaluating the effectiveness of digitalization initiatives in improving organizational performance. Thus, digital transformation in HRM requires the comprehensive application of management functions to ensure that organizational strategic objectives can be achieved.

Based on this conceptual foundation, the present study addresses three research questions: (1) How can digital human resource management strategies enhance

organizational efficiency, employee productivity, and competence development? (2) What factors determine the success of digital HRM implementation in supporting organizational digital transformation? and (3) How do differences in the orientation of digital HRM implementation between the private and public sectors influence the effectiveness of organizational digital transformation?

METHOD

This study employs a Systematic Literature Review (SLR) approach guided by the PRISMA framework to ensure transparency and traceability of the review process. Literature searches were conducted in major academic databases, including Scopus, Web of Science, ScienceDirect, and Google Scholar. The initial search yielded more than 1,000 articles. The first screening applied a publication year filter (2020–2025) to capture the most recent developments related to digital transformation. The search strategy used the following combination of keywords: (“human resource management” OR “HRM” OR “digital HR”) AND (“digital transformation” OR “e government” OR “information system integration”) AND (“land administration” OR “public sector” OR “agrarian”). This process resulted in 23 articles that met the inclusion criteria and were retained for in-depth analysis.

The inclusion criteria were: (1) articles published in peer-reviewed journals; (2) studies explicitly examining the role of human resource management in supporting digital transformation; and (3) studies providing empirical data, case studies, or systematic analyses relevant to digital HRM in organizational settings. The exclusion criteria were: (1) articles focusing on digital transformation without linking it to HRM; (2) non-scientific publications (such as opinion pieces or news reports); and (3) studies outside the context of public or private sector organizations.

The study selection process comprised three stages: (1) title and abstract screening to remove clearly irrelevant records; (2) full-text assessment to determine alignment with the research focus; and (3) duplication checks and backward citation tracking to identify and include additional relevant sources. Data analysis followed the PICOC framework (Population, Intervention, Comparison, Outcome, Context). The population covered public and private organizations; the intervention referred to the implementation of digital HRM strategies such as Human Resource Information Systems (HRIS), technology-based information systems, process automation, HR analytics, and digital competence development; the comparison involved organizations that had not fully adopted these strategies; the outcomes included improvements in performance, efficiency, and digital transformation readiness; and the context focused on contemporary organizational settings, with benchmarks drawn from international literature. The PRISMA flow diagram summarizing the article selection process is presented in Figure 1.

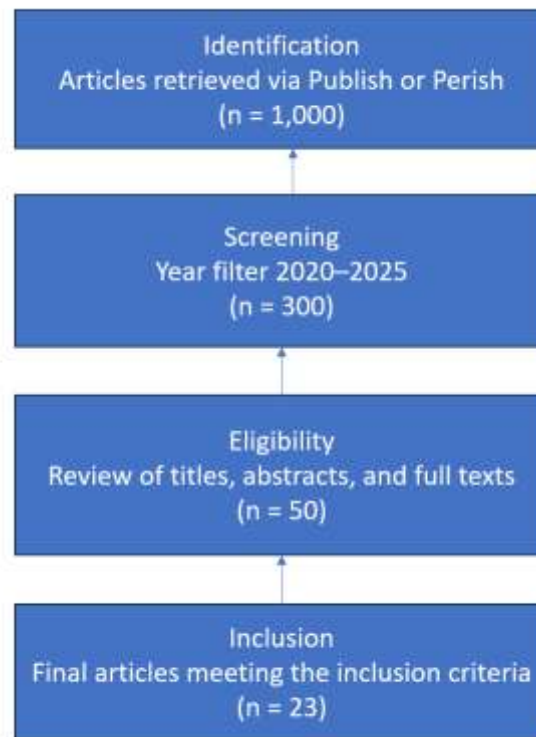


Figure 1. Prisma Flow

This study employed a Systematic Literature Review (SLR) method guided by the PRISMA protocol to ensure transparency and traceability of the review process. Literature searches were conducted in the Scopus, Web of Science, ScienceDirect, and Google Scholar databases. The initial search yielded more than 1,000 articles. A screening process was then applied using a publication year filter (2020–2025) to capture studies reflecting the most recent developments in digital transformation. The selection was further refined using the following combination of keywords: (“human resource management” OR “HRM” OR “digital HR”) AND (“digital transformation” OR “e government” OR “information system integration”) AND (“land administration” OR “public sector” OR “agrarian”). This stage resulted in 23 articles that met the predefined inclusion criteria and were retained for detailed analysis.

RESULTS AND DISCUSSION

This review covers publications released between 2000 and 2025. The results of the literature search and selection process are summarized in Table 1 below.

Table 1. Critical Review of Empirical and Conceptual Studies on Digital HRM

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
1	Smart HRM 4.0: The Digital Transformation of Human Resource Management in Tourism	Seočana c (2025)	Bibliometric analysis and content analysis of HRM and Industry 4.0 in tourism	Independent: Adoption of Industry 4.0 technologies (AI, robotics, IoT). Dependent: Smart HRM	Industry 4.0 technologies improve operational efficiency, support innovation, and enable a B2E	Provides an important contribution to understanding digital HRM transformation in tourism

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
				practices (recruitment, training, performance management, employee engagement), operational efficiency, employee satisfaction.	(business-to-employee) approach to enhance employee experience. Challenges include potential job loss due to automation and the need for new skills, requiring lifelong learning and a supportive organizational culture.	and highlights both potentials and challenges of Industry 4.0. However, limited database coverage and the absence of in-depth quantitative analysis constrain the generalizability of the results. Still a valuable foundation for further research and practical HRM applications in the digital era.
2	Challenges and Strategies of Human Resource Management in the Era of Digital Transformation: A Literature Study	Saputri et al. (2024)	Systematic narrative literature review with qualitative synthesis	Independent: Digital transformation challenges. Dependent: Digital HRM strategies.	Identifies six key HRM challenges in the digital era: non-standard work models, job polarization, technology-induced unemployment, skills gaps, changing work environments, and data security. Strategies include digitalization of employment, evaluative HR functions, training and development management, talent selection, work flexibility, and integrated data management.	Offers a comprehensive overview of HR challenges and strategies, supported by relevant international literature. The narrative approach allows deep synthesis and practical recommendations. However, the purely qualitative nature and lack of primary empirical data limit the generalization of findings.
3	Human Resource Competency	Larasati & Perkasa	Qualitative case study of five manufacturing	Independent: Digitalization challenges.	Continuous training, AI-based learning	Provides strong insight into HR

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
	Development Strategies in Facing Digitalization Challenges in the Industrial Era	(2025)	and IT companies using in-depth interviews, literature review, observation; purposive sampling; thematic analysis with NVivo	Dependent: HR competency development strategies.	technologies (e-learning, simulations), and cross-disciplinary collaboration significantly enhance HR competencies. Higher levels of digitalization correlate with higher competency gains; one IT firm records 95% digitalization and 90% competency improvement. Transformational leadership is critical in fostering an innovation-supportive culture.	development strategies in the digital era through in-depth qualitative and thematic analysis, increasing validity. Limitations: only five firms, limited industry diversity; barriers such as AI cost and cultural resistance are not deeply explored; focus on manufacturing and IT restricts generalizability. Future research should add quantitative analysis and mitigation strategies for employee resistance.
4	Digital HRM for Public Service Efficiency in the Industry 4.0 Era	Sari & Hartono (2024)	Qualitative case study (interviews and observations in a public service agency)	Independent: Digital HRM practices, public service technologies. Dependent: Service efficiency, service quality.	Digital HRM improves efficiency and quality of public services.	Highly relevant to public services such as land certification. Focus on a specific public sector context enriches practical insight but limits generalization. Methodological procedures need clearer description to strengthen rigor.

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
5	Optimizing Digital Transformation in HRM for Organizational Productivity	Widjaja & Santoso (2023)	Quantitative survey with regression analysis in organizations implementing HRIS	Independent: Digital technologies (HRIS, automation). Dependent: Organizational productivity.	Digital transformation via HRIS and automation increases organizational productivity.	Focus on productivity aligns with administrative and land-administration contexts. However, coverage is limited to specific technologies and may not capture the full spectrum of digital HRM practices.
6	Digital Human Resource Management: Efficiency Through Automation and Analytics	Strohmeier & Piazza (2023)	Mixed methods (survey and interviews in technology firms)	Independent: Automation, HR analytics. Dependent: Organizational efficiency.	Automation and HR analytics significantly enhance HRM and organizational efficiency.	Published in a leading journal with strong methodological design and focus on automation. Other HRM dimensions (culture, leadership) are treated less extensively, reducing holistic understanding.
7	Human Resource Management Strategies	Moore & Enderwick (2022)	Narrative literature review	Independent: HR strategies (talent management, motivation). Dependent: Business performance, employee satisfaction.	Strategic HRM improves employee engagement and organizational outcomes.	Broad coverage of HR strategies provides solid academic grounding, but weakens focus on specific digital HRM practices. The link to digital transformation is not explicit, limiting direct applicability to digital contexts.

N o	Title	Author s	Methodology	Research variables	Main findings	Critical review
8	HRM Strategies in Facing Digital Transformation Challenges	Nugraha & Lestari (2023)	Systematic literature review	Independent: Digital challenges (skills, data security). Dependent: Success of HRM.	Digital strategies such as training and upskilling help overcome HRM challenges related to digital transformation.	Provides structured synthesis but lacks empirical evidence. Insights remain at conceptual level, requiring empirical validation.
9	Digitalization of Recruitment and Training in the Digital Era	Pratama & Dewi (2024)	Quantitative survey with SEM in firms using e-recruitment	Independent: Digital technologies (e-recruitment, e-training). Dependent: Recruitment efficiency, employee skills.	Digitalization improves recruitment efficiency and enhances employee skills through online training.	Focuses on specific applications in particular organizational contexts, which limits broader generalization but provides useful operational insight.
10	Human Resource Management at Rendani Airport Manokwari	Tamba & Yertas (2024)	Qualitative case study (interviews with airport HR managers)	Independent: HRM practices. Dependent: Operational efficiency of the airport.	Effective HRM practices improve airport operations and employee performance.	Very context-specific (one airport), limiting generalizability. Methodological details are not fully elaborated, which reduces analytical depth, but the study offers useful practical lessons.
11	HRM Sustainability through Digital Technology Adoption	Susilo & Raharjo (2023)	Quantitative survey and secondary data analysis in sustainability-oriented organizations	Independent: Digital technologies. Dependent: Sustainability of HRM performance.	Digital technologies support the sustainability of HRM performance.	Narrow focus on sustainability limits applicability across different organizational goals.

N o	Title	Author s	Methodology	Research variables	Main findings	Critical review
						Generalization is constrained by specific sample characteristics .
1 2	Digital Transformation in HR Planning: Evidence from the Hospitality Sector	Bondarouk & Brewster (2023)	Mixed methods (survey and case study in the hospitality industry)	Independent: Digital transformation. Dependent: Effectiveness of HR planning.	Digital transformation improves the accuracy and effectiveness of HR planning in hospitality firms.	Strong sector-specific insights but limited generalization beyond hospitality. Useful as a reference for service-oriented organizations.
1 3	Developing Digital HR Competence in the Era of Digital Transformation	Hartono & Widodo (2024)	Systematic literature review	Independent: Digital skills training. Dependent: HR competence, digital adaptation.	Digital training programs enhance HR competencies required for digital transformation.	Conceptually rich but lacks empirical insight; future studies should test proposed relationships quantitatively.
1 4	Human Resource Management at PT PLN (Persero) Manokwari Regency	Siagian & Sinaga (2024)	Qualitative case study (interviews and document analysis at PT PLN)	Independent: HRM practices. Dependent: Organizational performance.	HRM practices contribute to improved organizational performance at PT PLN.	Highly specific to one organization; findings cannot be easily generalized. Methodological description is limited, reducing analytical robustness.
1 5	Innovative Digital HRM Models for Organizational Efficiency	Hidayat & Pratama (2023)	Quantitative survey with regression in digital firms	Independent: Digital HRM model. Dependent: Organizational efficiency.	Digital HRM models enhance organizational efficiency.	Empirical validation is promising but requires replication in more diverse contexts to confirm robustness.
1 6	The Impact of Industry 4.0 Technologies	Susanto & Rahayu	Quantitative SEM analysis in firms adopting	Independent: Industry 4.0 technologies.	Industry 4.0 technologies improve the	Multi-author design and SEM analysis

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
	on HRM Effectiveness	(2024)	Industry 4.0	Dependent: HRM effectiveness.	effectiveness of HRM processes.	strengthen credibility, although sectoral focus may limit wider applicability.
17	Enabling Factors for Digital HR Development in Digital Transformation	Widodo & Lestari (2024)	Qualitative interviews with digital HR practitioners	Independent: Digital HR factors (training, technology). Dependent: Success of digital transformation.	Training and appropriate technologies support successful digital HR development and transformation.	Specific focus provides rich insight but restricts generalization. Further quantitative testing is needed.
18	Digital Transformation in Corporate Management: The Role of HRM	Kurniawan & Putri (2023)	Quantitative survey of managers in digital companies	Independent: Digital HRM strategies. Dependent: Corporate management efficiency.	Digital HRM strategies enhance the efficiency of corporate management.	Wide focus on corporate management reduces depth on specific HRM mechanisms; more detailed analysis of HRM practices is needed.
19	Digital Human Resource Management Mode under the Background of Digital Transformation	Wang & Li (2023)	Mixed methods (survey and content analysis in digital firms)	Independent: Digital HRM mode. Dependent: HRM efficiency, organizational performance.	Digital HRM modes increase HRM efficiency and organizational performance.	Timely focus on digital HR models and published in a reputable journal, but findings remain somewhat general and require deeper analytical elaboration.
20	Strategic HR in the Digital Age: Addressing Transformation Challenges	Meijerink & Bondarouk (2023)	Systematic literature review and expert interviews	Independent: Digital transformation challenges. Dependent: HRM success.	Strategic digital HRM helps organizations address key digital transformation challenges.	Published in a leading journal with strong strategic insights; provides a solid conceptual base for

No	Title	Authors	Methodology	Research variables	Main findings	Critical review
						aligning HRM with digital transformation.
21	The Role of Digital HRM Functions in Digital Transformation Readiness	Ardianto & Permanan (2024)	Quantitative survey and secondary data analysis in digital organizations	Independent: Digital HRM functions (analytics, automation). Dependent: Digital transformation readiness.	Digital HRM functions significantly enhance organizational readiness for digital transformation.	Multi-author study improves credibility; however, readiness is self-reported, which may introduce bias.
22	Digital Transformation and Its Implications for HRM in the Public Sector	Fikri, Artiningsih & Shaddiq (2024)	Qualitative case study (interviews in public sector organizations)	Independent: Digital transformation in the public sector. Dependent: HRM effectiveness.	Digital transformation improves HRM effectiveness in the public sector.	Highly relevant to e-government and public administration. Nevertheless, the specific institutional focus restricts generalization to other contexts.
23	Competency-Based HRM in the Digitalization Era	Setiawan & Nugraha (2023)	Quantitative survey in organizations implementing competency-based HRM	Independent: Competency-based HRM practices. Dependent: HRM effectiveness in the digital era.	Competency-based HRM practices increase HR effectiveness in the digitalization era.	Multi-author publication provides diverse perspectives; empirical design is sound but could be expanded to include digital-specific indicators (e.g., digital competence metrics).

Source: Processed secondary data, 2025.

The literature review indicates that the digitalization of human resource management makes a tangible contribution to improving organizational performance. First, the implementation of technologies such as Human Resource Information Systems (HRIS), automation, and HR analytics has been shown to enhance efficiency, productivity, and employee competence development. Second, clear differences emerge between the orientations of the private and public sectors. Private organizations tend to emphasize efficiency and productivity in responding to market demands, whereas public organizations focus more on service effectiveness and organizational cultural readiness. Third, research objectives vary across sectors and industries: in tourism,

digitalization is often linked to workforce vulnerability and job displacement due to automation, while in the aviation sector the primary emphasis is on improving operational efficiency.

These findings reaffirm that digital HRM plays a strategic role in strengthening organizational competitiveness. In line with Human Capital Theory, investment in digital training and skill development is a key factor in building long term competencies. Moreover, digital HRM functions not only as an operational tool but can also become a unique strategic resource, as posited by the Resource Based View (RBV), thereby enabling the creation of sustainable competitive advantage. The differences in orientation between the private and public sectors further highlight the relevance of Dynamic Capability Theory: private organizations must adapt more rapidly to technological change to maintain productivity and efficiency, while public organizations face challenges related to cultural readiness and employee resistance. These contrasts suggest that the success of digital transformation is strongly influenced by an organization's capacity to realign itself with environmental dynamics.

The review also underscores that the success of digital HRM is determined not only by technology adoption, but also by the strengthening of managerial capabilities, organizational culture, and transformational leadership. Visionary leaders can drive changes in work behaviour, reduce resistance to digitalization, and ensure that technology genuinely supports the achievement of strategic goals. Although the literature reveals relatively consistent patterns of findings, important research gaps remain—particularly the limited number of quantitative empirical studies and cross sector investigations. Future research is therefore recommended to employ mixed method designs with broader sectoral coverage, in order to provide a deeper and more comprehensive understanding of the role of digital HRM in supporting organizational transformation. Table 2 presents a more detailed critical review of the selected studies.

Table 2. Summary of Digital HRM Findings Across Sectors

Aspect	Private sector	Public sector	Relevant literature/theories
Main focus	Productivity and efficiency	Service effectiveness and bureaucratic efficiency	Human Capital Theory; Resource-Based View (RBV)
Technologies used	HRIS, automation, HR analytics	Limited HRIS; focus on service integration	RBV; Dynamic Capability
Key challenges	Market competition; rapid adaptation to new IT	Employee resistance; organizational culture readiness	Dynamic Capability; Transformational Leadership
Impact on competencies	Increased digital skills and talent development	Improved digital literacy among civil servants	Human Capital Theory
Cross-industry variation	Tourism: workforce vulnerability due to automation	Air transport: operational efficiency; public administration: data-driven digital services	RBV; Dynamic Capability

Source: Processed secondary data, 2025.

CONCLUSION

First, in relation to the question of how digital HRM strategies enhance efficiency, productivity, and competence development, this review shows that the adoption of HRIS, automation, and HR analytics consistently improves process efficiency, organizational performance, and employee competence across various settings. Investments in continuous digital training and learning programs strengthen employees' human capital and support long term capability building in line with Human Capital Theory.

Second, regarding the key factors that determine the success of digital HRM implementation, the findings highlight the critical role of transformational leadership, organizational culture readiness, and continuous digital skill development. Digital HRM contributes most effectively to organizational transformation when technological initiatives are integrated into HRM strategy, supported by leaders who champion change, and embedded in a culture that is open to innovation and data driven working practices; under these conditions, digital HRM functions not only as an operational tool but also as a unique strategic resource, consistent with the Resource Based View.

Third, in response to the question on sectoral differences between private and public organizations, the review reveals that private organizations tend to prioritize productivity and efficiency, whereas public organizations emphasize service effectiveness and the cultural readiness of civil servants. This divergence underscores the importance of dynamic capabilities: private organizations must adapt quickly to technological disruption to maintain competitiveness, while public organizations face the added challenge of managing resistance and aligning bureaucratic culture with digital transformation. Overall, the synthesis of 23 PRISMA based SLR articles demonstrates a relatively consistent pattern across sectors and industries, while also exposing gaps in quantitative and cross sector empirical evidence.

Practically, organizations are advised to integrate digital technologies into their HRM strategies, optimize digital training and upskilling initiatives, and intentionally cultivate adaptive, innovation oriented work cultures. Future research should adopt mixed methods designs with broader cross sector coverage in order to develop more comprehensive digital HRM strategies that are responsive to the needs and constraints of modern organizations.

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