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Digital Human Resource Management in Border Public Organizations: A Systematic Literature Review

Angga Tritisari[1], Maria Cristiana Iman Kalis[2], M.Irfani Hendri[3]
[1,2,3]Fakultas Ekonomi dan Bisnis Universitas Tanjungpura, Indonesia
[1]Jurusan Agrobisnis , Politeknik Negeri Sambas, Indonesia
[1]tritisariangga@gmail.com , [2]mariakalis@ekonomi.untan.ac.id, [3]muhammad.irfani@ekonomi.untan.ac.id

***Corresponding Author**

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ABSTRACT

Digital transformation in the public sector drives the adoption of Digital Human Resource Management (Digital HRM) as a strategic tool to improve organizational efficiency and public service quality. However, existing studies remain scattered and fail to fully capture the interrelationships between driving factors, barriers, and organizational outcomes, particularly in border regions facing infrastructure and resource constraints. This study conducts a systematic literature review (SLR) to examine Digital HRM's role in influencing public sector organizational outcomes and to identify its implementation drivers and barriers. From a total of 320 articles identified in the initial stage, a screening process was conducted, reducing the list to 60 articles; ultimately, 30 empirical studies meeting the inclusion criteria were analyzed in greater depth. Study quality was evaluated using the Mixed Methods Appraisal Tool (MMAT), and data synthesis was conducted via deep thematic analysis.Findings indicate that Digital HRM adoption is shaped by technological, organizational, human, and institutional factors, with perceived usefulness, organizational readiness, and leadership support being the most significant drivers. Conversely, resistance to change, infrastructure limitations, and digital skills gaps serve as major barriers. Implementation successfully enhances operational efficiency, service quality, employee performance, and decision-making quality, often mediated by employee engagement and knowledge sharing. In border regions, limited connectivity and resources are critical factors determining implementation effectiveness. This study contributes a comprehensive synthesis of Digital HRM dynamics in the public sector and broadens theoretical perspectives by integrating the border region context, offering a solid foundation for formulating tailored future policies.

INTRODUCTION

Digital transformation has now become a crucial component of public sector reform in many countries, including in human resource management. In this context, Digital Human Resource Management (Digital HRM) is increasingly being utilized as a means to enhance organizational efficiency, service quality, and data-driven decision-making (Amirova et al., 2025). Based on several empirical studies, the implementation of digital HR systems can simplify administrative processes, accelerate service delivery, and improve operational efficiency (Shakir et al., 2025). Moreover, digitalization is driving a shift in the role of HR functions from primarily administrative to more strategic with a focus on creating organizational value and enhancing long-term performance (Theres & Strohmeier, 2024).

Conceptually, Digital Human Resource Management (Digital HRM) refers to the use of digital technology to carry out key functions in human resource management, such as recruitment, employee training, performance management, and personnel administration. In the literature, this term is often used interchangeably with e-HRM and HRIS, although each differs in terms of the level of technology integration and the scope of its application (Barghini & Bonti, 2026). In practice, Digital HRM is implemented through various systems, such as e-performance, e-learning, HRIS, as well as cloud-based and artificial intelligence platforms that support HR process automation and data-driven decision-making (Ziqubu, 2026). Therefore, Digital HRM not only plays a role in improving efficiency but also serves as a driver of broader organizational change.

The implementation of Digital Human Resource Management (Digital HRM) is becoming increasingly important, particularly from the perspective of public sector organizations in border regions. These regions generally face several structural challenges, such as limited access to digital infrastructure, low connectivity, and great distances from government centers, all of which impact the performance of public services. Several studies on the implementation of information and communication technology in resource-constrained areas indicate that connectivity, adequate technology, and organizational support are key factors in the success of the digitalization process (Ziqubu, 2026). On the other hand, studies on the geography of the internet and the digital divide also indicate that remote areas, including

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border regions, tend to face greater barriers in effectively accessing and utilizing digital technologies (Barghini & Bonti, 2026). In this context, border regions can be considered a special case and influence the manner of implementation as well as the level of success in implementing Digital HRM.

State-of-the-art research indicates that Digital HRM has been examined from various perspectives, particularly regarding the factors involved in implementing such systems, the barriers encountered during implementation, and its impact on organizational performance. Several studies indicate that the Digital HRM implementation process is influenced by technological factors such as perceived usefulness and ease of use, as well as organizational factors such as digital readiness and leadership support (Al-Alawi et al., 2023). On the other hand, the main barriers frequently reported include resistance to change, limitations in technological infrastructure, and the digital skills gap (Shakir et al., 2025; Ziqubu, 2026). Meanwhile, in terms of outcomes, the implementation of Digital HRM has been shown to improve efficiency, service quality, and enhance employee engagement and performance (Amirova et al., 2025).

Although the topic has been extensively studied, the existing literature still contains several gaps that have not been adequately addressed. Many studies focus on the direct relationship between technology and work outcomes, but few have thoroughly investigated how the process of technology adoption actually unfolds. Studies capable of simultaneously integrating driving factors, barriers, and outcomes within a comprehensive framework remain limited (Theres & Strohmeier, 2024). Furthermore, the context of border regions as environments with specific characteristics has not received sufficient attention, even though these conditions can significantly influence the success of implementation. Therefore, a systematic literature review (SLR) approach is needed to compile scattered empirical research findings and provide a more comprehensive understanding.

Based on the above discussion, this study aims to systematically analyze how Digital HRM is adopted and implemented in public sector organizations, including identifying the factors that drive or hinder this process, as well as the impact of such implementation on organizational performance. The study's focus also encompasses the context of border regions. In this research, border areas are considered a unique context that may influence how Digital HRM is implemented, particularly in situations where resources are limited and service demand is high. This approach is expected to provide a more contextual understanding of Digital HRM implementation in the public sector.

The scope of this research focuses on empirical studies discussing Digital HRM in public sector organizations, specifically regarding aspects of adoption, implementation, and organizational outcomes within the context of digital human resource management. Although not all of the analyzed studies were conducted specifically in border regions, this context is still used as an analytical perspective to evaluate the extent to which existing findings are relevant in peripheral conditions. This approach allows for the use of a broader body of literature without losing focus on the primary context of interest.

The contribution of this study lies in its effort to present a more comprehensive synthesis by integrating driving factors, barriers, and organizational outcomes in the implementation of Digital HRM in the public sector. In addition, this study also introduces the perspective of border regions as a relatively new viewpoint in the literature. The findings are expected to provide practical insights for policymakers and public organizations in designing HR digitalization strategies that are more responsive to the geographical conditions and structural constraints they face (Amirova et al., 2025).

LITERATURE REVIEW

Digital human resource management has become a key element in the transformation of public sector organizations in the digital age. Digital Human Resource Management (Digital HRM) refers to the integration of digital technology into various HR functions to enhance efficiency, effectiveness, and the strategic value of the organization. A number of studies indicate that the implementation of systems such as e-HRM, HRIS, and data-driven platforms not only streamlines administrative processes but also fosters improved decision-making quality and organizational transparency (Amirova et al., 2025; Shakir et al., 2025). These developments indicate that Digital HRM is no longer viewed merely as an operational tool but has become an integral part of organizational strategy that contributes to broader transformation in the public sector.

Conceptually, Digital HRM encompasses a wide range of practices, such as digital recruitment, e-performance appraisal, e-learning, and the use of HR analytics in decision-making. In the literature, this concept is often associated with e-HRM and HRIS, which ultimately leads to ambiguity in the use of terminology (Barghini & Bonti, 2026). Nevertheless, Digital HRM is generally understood as an advanced stage of e-HRM that has been integrated with more advanced technologies, such as cloud computing and artificial intelligence. Its implementation enables organizations to automate various processes, expand access to information, and support real-time communication between work units (Ziqubu, 2026; Shakir et al., 2025).

Several studies indicate that the success of implementing Digital HRM is determined by various factors that can be divided into four aspects: technology, organization, people, and institutions. From a technological perspective, factors such as the level of benefits gained, ease of use, and system quality are key drivers of the adoption process (Al-Alawi et al., 2023). At the organizational level, leadership support, internal readiness, and alignment with digital strategy also play a significant role in the success of implementing the system (Amirova et al., 2025). From an individual perspective, the ability to use technology and the willingness to adapt to change are important factors

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influencing system acceptance (Ziqubu, 2026). Additionally, institutional factors such as regulatory pressure and the drive to reform bureaucracy also help encourage public organizations to adopt digital technology in the HR field (Phinaitrup, 2026).

Although there are various driving factors, the implementation of Digital HRM still faces several significant challenges. Several studies indicate that resistance to change, inflexible bureaucratic culture, and inadequate infrastructure are major barriers to technology adoption in the public sector (Shakir et al., 2025; Ziqubu, 2026). Additionally, disparities in digital proficiency and a lack of training programs often result in implemented systems not being utilized to their full potential. Other challenges also arise from the complexity of system integration, as well as data security and privacy issues, particularly regarding the use of cloud-based and artificial intelligence technologies (Priyashantha, 2023). These conditions indicate that Digital HRM transformation cannot rely solely on technology investment but also requires organizational adaptation and the strengthening of human resource capacity.

In terms of outcomes, various studies show that Digital HRM has a positive impact on organizational performance at various levels. At the individual level, the implementation of e-HRM has been shown to increase employee engagement, job satisfaction, and work effectiveness (Alshibly & Alzubi, 2022). At the organizational level, Digital HRM contributes to improved operational efficiency, productivity, and the quality of decision-making (Amirova et al., 2025; Shakir et al., 2025). Furthermore, the implementation of this technology also fosters innovation through easier access to information and enhanced knowledge sharing (Satispi et al., 2023). However, the relationship between Digital HRM and organizational outcomes is not always direct. Several research findings indicate that these effects are typically influenced by mediating factors, such as employee engagement and knowledge sharing.

In the public sector, the implementation of Digital HRM has distinct characteristics compared to the private sector, primarily due to the strong influence of institutional and bureaucratic factors. This situation becomes even more complex when applied to border regions, which generally face limitations in digital infrastructure, poor connectivity, and a scarcity of resources. Several studies in regions with such conditions indicate that success in implementing technology is highly dependent on organizational readiness and infrastructure support (Ziqubu, 2026). Within this framework, border regions can be viewed as conditions that influence, and even determine, the relationship between the implementation of Digital HRM and the outcomes achieved by organizations.

Although research on Digital HRM continues to evolve, there are still some significant gaps. Much of the research focuses primarily on the direct relationship between technology use and outcomes, without delving deeper into the implementation process. On the other hand, research capable of simultaneously integrating various driving factors, barriers, and outcomes into a single comprehensive framework remains limited. Furthermore, the context of border regions has not been extensively discussed, even though such conditions can significantly impact the success of technology implementation.

This highlights the importance of a more integrated approach to gain a deeper understanding of the dynamics of Digital HRM. Based on this review, this study proposes a conceptual framework that integrates the factors driving adoption, barriers to implementation, and outcomes achieved by organizations in the public sector, while taking into account border regions as a context that influences these relationships. This approach is expected to provide a more comprehensive picture of how Digital HRM is implemented, operated, and generates an impact on organizations in complex and challenging conditions.

METHOD

This study employs a Systematic Literature Review (SLR) approach to comprehensively examine and evaluate the literature on Digital Human Resource Management (Digital HRM) in the public sector, particularly in border regions. This method was chosen because it provides a systematic, transparent, and replicable process for identifying, selecting, and analyzing relevant studies. Through this approach, various empirical findings from diverse contexts can be integrated, thereby providing a more comprehensive understanding of the driving factors, barriers, and organizational outcomes of Digital HRM implementation.

The conduct of the SLR in this study adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological consistency while minimizing potential bias in the literature selection process. The stages involved include formulating research questions, literature search, study selection, quality assessment, data extraction, and synthesis of findings.

Data Sources and Search Strategy

The literature review was conducted using the Scopus database as the primary source, given its extensive coverage of internationally reputable journals. The search strategy was designed by combining keywords representing the three main focuses of the research: Digital HRM, the public sector, and aspects of adoption and organizational outcomes. The keywords used include various terms such as “digital human resource management,” “e-HRM,” and “HRIS,” as well as terms related to the public sector such as “public sector,” “government organization,” and “public administration.” Additionally, keywords related to adoption and impact were included, such as “adoption,” “implementation,” “drivers,” “barriers,” and “organizational outcomes.” This combination yielded a number of initial articles, which were subsequently screened through a filtering process.

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Study Selection and Inclusion/Exclusion Criteria

The study selection process was conducted in stages, adhering to the PRISMA principles. The initial stage involved screening based on titles and abstracts to identify relevant articles. Subsequently, a full-text review was conducted to ensure the article's content aligned with the research focus. Inclusion criteria included studies that clearly addressed Digital HRM or digital HR systems within public sector organizations, as well as those highlighting aspects of adoption, implementation, or organizational outcomes. Studies employing quantitative, qualitative, or mixed-methods approaches were included in the analysis. Conversely, articles not focused on digital HRM, studies addressing only the private sector without relevance to the public sector, and conceptual articles lacking empirical data support were excluded from the review. Articles not available in full-text format were also excluded from the analysis.

Study Quality Evaluation

To ensure the methodological quality of the analyzed studies, this research employs the Mixed Methods Appraisal Tool (MMAT) as an evaluation instrument. The selection of MMAT is based on its ability to assess various research designs quantitative, qualitative, and mixed methods which align with the nature of the Digital HRM literature. The evaluation process was conducted by two independent validators to enhance the reliability of the results.

Each study was reviewed based on several criteria, such as the clarity of the research objectives, the appropriateness of the methods, the validity of the data, and the accuracy of the analysis. If there were differences in assessment, these were resolved through discussion until a consensus was reached. Only studies with methodological quality deemed adequate were proceeded to the next stage of analysis.

Data Extraction

The data extraction process was conducted systematically using a pre-designed table. From each study, information such as the author's name and year of publication, research design, location and sample characteristics, implementation context, variables analyzed, and key findings was collected. Additionally, data related to drivers, barriers, organizational outcomes, and the theoretical frameworks used were also recorded to support the synthesis process. This entire process was conducted consistently to ensure that information relevant to the research question could be compared in a more structured manner across studies.

Data Analysis and Synthesis

Data analysis was conducted using a thematic analysis approach to identify patterns and key themes in the literature. Findings from each study were then grouped into several themes, such as research trends, adoption drivers, implementation barriers, and organizational outcomes of Digital HRM. The synthesis process proceeded in stages by comparing results across studies to identify similarities, differences, and remaining gaps.

Relationships between variables were also examined to understand the mechanisms explaining how Digital HRM influences organizational performance. In this study, border regions were used as an analytical perspective to interpret the findings, particularly in examining the impact of infrastructure, connectivity, and resource constraints on the adoption and effectiveness of Digital HRM in the public sector. This approach helps generate a more contextual and relevant understanding for organizations operating in regions with such constraints.

SLR Process Flow

Overall, the systematic literature review (SLR) process in this study was conducted through structured stages, ranging from literature identification to synthesis of findings. The flow includes the processes of searching, screening, selecting, and analyzing relevant studies. To provide a clearer picture, all these stages are visualized in a PRISMA diagram showing the number of articles at each stage, from the initial search results to the final studies analyzed.

The initial literature search identified 320 articles from the Scopus database. After an initial screening process based on document type and relevance to the research topic, 60 articles were retained for the next selection stage. Subsequently, a screening process based on titles and abstracts resulted in the exclusion of 30 articles deemed inconsistent with the research focus on Digital HRM in the public sector. The remaining 30 articles were then evaluated through a full-text review, and all met the established inclusion criteria. Thus, a total of 30 studies were included in the final synthesis process.

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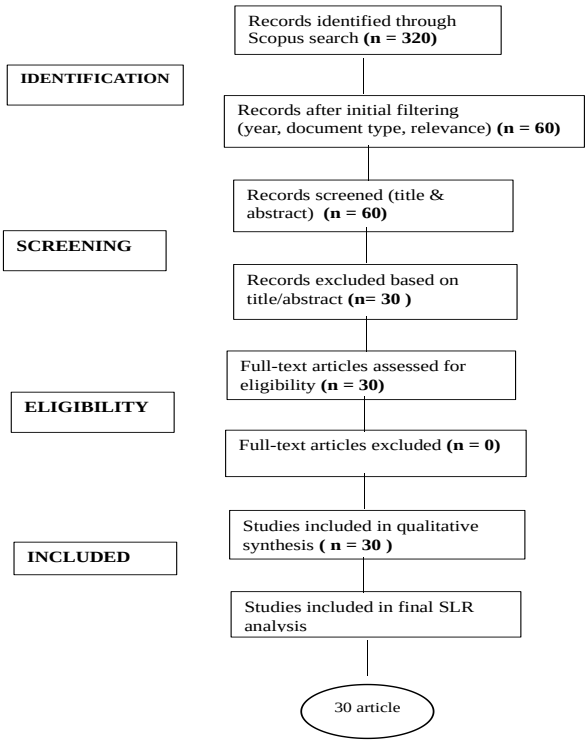

Figure 1. PRISMA Flowchart of the Systematic Literature Review Process

RESULT

The results of this systematic literature review indicate that Digital Human Resource Management (Digital HRM) in the public sector is no longer used merely as an administrative tool but has evolved into a strategic framework that supports comprehensive organizational change and transformation. This development aligns with findings from research on Green HRM, which demonstrates a shift from operational practices toward an approach that is more integrated with organizational performance. The implementation of systems such as e-HRM, HRIS, and digital performance management has proven capable of improving operational efficiency, service quality, and employee performance (Amirova et al., 2025; Shakir et al., 2025). However, this relationship is not direct. In various situations, the impact of Digital HRM is influenced by factors such as employee engagement, knowledge sharing, and implementation effectiveness, highlighting the importance of an approach that combines social and technical aspects in understanding its implementation.

Table 1. Summary of Digital Human Resource Management (GHRM) Articles

No.	Author & Year	Sector / Country	Digital HRM Focus	Key Findings / Main Contribution
1	Amirova et al. (2025)	Public Sector	The impact of Digital HRM implementation on public sector performance and service delivery efficiency.	The implementation of digital HR systems significantly improves operational efficiency, service quality, employee performance, and decision-making quality.
2	Shakir et al. (2025)	Public Sector / HR Performance	The use of information systems to enhance employee human resource performance skills.	Digitalization simplifies administrative processes and accelerates service delivery, but faces critical barriers such as resistance to change, infrastructure limitations, and digital skills gaps.
3	Ziqubu (2026)	Public Sector / KwaZulu-Natal (South Africa)	Bridging the digital divide in human resource functions through Information and Communication Technology (ICT) usage.	Successful technology implementation in resource-constrained areas is highly dependent on organizational readiness, connectivity, adequate technology, and external infrastructure support.
4	Al-Alawi et al. (2023)	HR Management / Arab Gulf	Adopting digital transformation within human resources management.	The adoption process is heavily driven by technological factors (perceived usefulness and ease of use) as well as

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				organizational factors (digital readiness and leadership support).
5	Barghini & Bonti (2026)	HR Management / General (Sustainability Insights)	Conceptual clarification between Digital HRM and Electronic HRM, including insights into sustainability.	Resolves the terminological ambiguity between e-HRM and Digital HRM while highlighting that remote and border areas experience heightened barriers due to the digital divide.
6	Theres & Strohmeier (2024)	HR Management / Meta-analytic	Theoretical foundations of digital human resource management acceptance and use research via a UTAUT meta-analysis.	Digitalization shifts the core role of HR functions from purely administrative tasks toward strategic objectives focused on creating long-term organizational value.
7	Alshibly & Alzubi (2022)	Remote E-working / Organizational Commitment	The effects of e-HRM practices on remote e-working effectiveness and organizational commitment.	At the individual level, the implementation of e-HRM practices directly enhances employee engagement, job satisfaction, and overall work effectiveness during remote operations.
8	Satispi et al. (2023)	Public Sector / Civil Servants	Utilizing Human Resources Information Systems (HRIS) to enhance civil servants' innovation outcomes.	The deployment of HRIS technology successfully fosters organizational innovation by facilitating seamless information access and reinforcing a culture of knowledge sharing.
9	Phinaitrup (2026)	Public Sector / State-Owned Enterprises	Transformational leadership, public service motivation, commitment, and institutional performance.	Institutional factors, such as regulatory pressure and the strategic drive to reform bureaucracy, motivate public sector organizations to adopt digital technology within HR departments.
10	Priyashantha (2023)	HR Management / Disruptive Technologies	Disruptive technologies for human resource management and conceptual framework development.	Identifies that transformation via Digital HRM introduces complex hurdles surrounding system integration, data security, and privacy issues when adopting cloud-based and AI technologies.

DISCUSSION

Comparison with Previous Studies

The findings of this study align with previous research emphasizing the role of technology in the adoption of digital systems, particularly within the TAM and UTAUT theoretical frameworks. However, as demonstrated in the GHRM study, this research highlights that organizational and leadership factors are equally important in determining the success of its implementation. Unlike most previous studies that focused solely on the direct relationship between technology and work outcomes, the results of this SLR indicate that the success of Digital HRM depends on how it is implemented and the surrounding factors. This is particularly true in the public sector and remote areas with limited infrastructure and resources (Ziqubu, 2026; Al Alawi et al., 2023). Therefore, this study contributes by introducing a more complex relationship model compared to previous research.

Practical Implications

The findings of this study offer several important implications for public sector organizations. The implementation of Digital HRM is not sufficient if it focuses solely on providing technology; it also requires readiness across the entire organization. This includes improving infrastructure, enhancing employees' digital competencies, and active support from leadership. Consistent with the findings of GHRM research, the roles of leadership and organizational culture significantly influence the success of such implementation. In the context of border regions, organizations are expected to be better able to adapt to various constraints, particularly regarding connectivity and resources. These conditions make strategies such as continuous training, strengthening digital capabilities, and change management increasingly important to ensure the effective and sustainable implementation of Digital HRM.

Implications for Future Research

This study indicates that there are still gaps in the literature, particularly in explaining the mechanisms linking Digital HRM to organizational outcomes. As found in the GHRM study, many studies still employ cross-sectional approaches, thus failing to clearly demonstrate causal relationships. Moving forward, research needs to develop more

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comprehensive models by considering mediating and moderating variables, such as organizational culture, leadership, and institutional pressure. Longitudinal and mixed-methods approaches are also crucial for capturing the dynamics of Digital HRM implementation in a more in-depth and comprehensive manner.

Future Research Directions

Future research should focus on integrating Digital HRM with new technological advancements, such as artificial intelligence, big data analytics, and digital governance in the public sector. This development is crucial for understanding how these technologies can strengthen HR's strategic role within organizations. Additionally, the scope of research should be expanded to under-researched areas, such as border regions, rural areas, and organizations with limited resources. In line with recommendations from the GHRM study, research conducted across multiple countries and various sectors is necessary to ensure that the findings can be applied more broadly. On the other hand, efforts to integrate technological, organizational, and institutional perspectives within a single analytical framework are a crucial step toward enriching the development of digital human resource management literature in the future.

Strengths of the SLR

The primary strength of this study lies in the use of a systematic literature review (SLR) approach, which was conducted in a structured and comprehensive manner, thereby enabling the organized synthesis of findings from various empirical studies. This approach helps provide a more complete picture compared to studies that focus on only a single aspect. Additionally, this study employs an analytical framework that encompasses drivers, barriers, and organizational outcomes, thereby clarifying the understanding of Digital HRM in the public sector. Consistent with previous research, this approach also aids in understanding patterns, relationships, and gaps in the research more deeply.

Limitations

This study has several limitations that should be noted. First, the literature sources used are limited to specific databases, so there remains a possibility that relevant studies were not identified during the search process. Second, the dominant use of quantitative approaches in the reviewed studies is seen as limiting the understanding of contextual aspects and social dynamics in the implementation of Digital HRM. Additionally, the limited number of studies specifically addressing border regions poses a challenge in generalizing the findings. This aligns with findings in GHRM studies highlighting the influence of specific contexts and the scarcity of longitudinal research. Therefore, the results of this study should be interpreted with caution and can serve as a foundation for future research.

CONCLUSION

This study demonstrates that Digital Human Resource Management (Digital HRM) has evolved into a strategic approach that plays a crucial role in enhancing organizational performance in the public sector. Based on a synthesis of 30 empirical studies, Digital HRM is not merely an administrative tool but an integrated system that links human resource management with broader organizational transformation processes. Its implementation through various systems such as e-HRM, HRIS, e-performance, and e-learning has proven to have a positive impact on operational efficiency, service quality, as well as employee performance and engagement. The success of Digital HRM implementation is determined by a combination of technological, organizational, human, and institutional factors. Leadership support, organizational readiness, and digital competencies serve as key drivers, while resistance to change, infrastructure limitations, and skill gaps remain significant challenges. Research findings also indicate that the impact of Digital HRM on organizational outcomes is not always direct but occurs through intermediary factors such as employee engagement and knowledge sharing; therefore, an approach that integrates social and technological aspects is crucial for understanding its implementation.

This study contributes by developing a conceptual framework that integrates driving factors, barriers, and organizational outcomes into a comprehensive model. Additionally, border regions are introduced as a context that enriches the analysis, particularly in understanding the implementation of Digital HRM in environments with limited resources and infrastructure. Nevertheless, limitations remain regarding the scarcity of studies specifically addressing border regions and the dominance of quantitative approaches in the reviewed literature. Future research is recommended to employ longitudinal designs, mixed-methods approaches, and expand the context to remote areas and various countries. The integration of technologies such as artificial intelligence, big data analytics, and digital governance also represents a key direction that needs to be developed. Overall, Digital HRM is a key driver of organizational change in the public sector in the digital era. If managed effectively, its implementation not only enhances efficiency and performance but also strengthens organizational capacity to address various challenges, particularly in resource-constrained areas such as border regions.

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