

DIGITAL HUMAN RESOURCE MANAGEMENT IN PUBLIC SECTOR ORGANIZATIONS IN BORDER AREAS: A SYSTEMATIC REVIEW OF ADOPTION DRIVERS, BARRIERS, AND ORGANIZATIONAL OUTCOMES

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Abstract

Digital transformation in the public sector has encouraged the use of Digital Human Resource Management (Digital HRM) as a strategic instrument for improving organizational efficiency and the quality of public services. Nevertheless, the available studies remain fragmented and have not yet provided a comprehensive synthesis of the relationships among adoption drivers, implementation barriers, and organizational outcomes, particularly in border areas that often face infrastructure and resource constraints. This study conducts a systematic literature review (SLR) to examine the role of Digital HRM in shaping organizational outcomes in the public sector and to identify the factors that influence its successful implementation. It also investigates the drivers and barriers affecting the adoption process. The review follows the PRISMA guidelines and uses Scopus as the primary database. Of the 320 articles identified at the initial stage, 60 remained after preliminary screening, and 30 empirical studies that met the inclusion criteria were analyzed in depth. The quality of each study was assessed using the Mixed Methods Appraisal Tool (MMAT), while the evidence was synthesized through thematic analysis. The findings show that Digital HRM adoption is influenced by technological, organizational, human, and institutional factors. Perceived usefulness, organizational readiness, and leadership support emerged as the most significant drivers, whereas resistance to change, inadequate infrastructure, and digital skills gaps were the most frequently reported barriers. Digital HRM was found to improve operational efficiency, service quality, employee performance, and the quality of decision-making. However, these relationships are often mediated by employee engagement and knowledge sharing. In border areas, limited connectivity and resources are particularly important in determining implementation effectiveness. This study contributes a more integrated synthesis of the relationships among drivers, barriers, and organizational outcomes in public-sector Digital HRM. By positioning border areas as the analytical context, it also broadens a theoretical perspective that has received limited attention. The findings are expected to support the development of Digital HRM policies and implementation strategies that are more responsive to field conditions and capable of adapting to existing constraints.

Keywords: Digital Human Resource Management, Public Sector, Border Areas, Systematic Literature Review, Organizational Outcomes.

INTRODUCTION

Digital transformation has become an essential part of public-sector reform in many countries, including the management of human resources. Within this development, Digital Human Resource Management (Digital HRM) is increasingly used to improve organizational efficiency, service quality, and data-driven decision-making (Amirova et al., 2025). Empirical studies indicate that digital HR systems can simplify administrative processes, accelerate service delivery, and improve operational efficiency (Shakir et al., 2025). Digitalization has also shifted the role of the HR function from a predominantly administrative position toward a more strategic role focused on organizational value creation and long-term performance improvement (Theres & Strohmeier, 2024). Conceptually, Digital Human Resource Management (Digital HRM) refers to the use of digital technology to perform core human resource management functions, including recruitment, employee training, performance management, and personnel administration. In the literature, the term is often used alongside e-HRM and HRIS, although these concepts differ in their level of technological integration and scope of application (Barghini &

Bonti, 2026). In practice, Digital HRM is implemented through systems such as e-performance, e-learning, HRIS, and cloud- and artificial-intelligence-based platforms that support both HR process automation and data-driven decision-making (Ziqubu, 2026). Digital HRM therefore serves not only as a means of improving efficiency but also as a broader driver of organizational change.

The implementation of Digital Human Resource Management becomes especially important when viewed from the perspective of public-sector organizations in border areas. Such regions commonly face structural problems, including limited access to digital infrastructure, low connectivity, and considerable distance from government centers, all of which affect public-service performance. Studies on information and communication technology adoption in resource-constrained areas show that connectivity, adequate technology, and organizational support are essential to successful digitalization (Ziqubu, 2026). Research on internet geography and the digital divide likewise shows that remote areas, including border regions, face greater difficulties in accessing and effectively using digital technology (Barghini & Bonti, 2026). In this context, border areas represent a distinctive condition that can shape both the implementation process and the success of Digital HRM.

The state of the art shows that Digital HRM has been examined from several perspectives, especially the factors that influence adoption, the barriers that emerge during implementation, and its effects on organizational performance. Studies suggest that adoption 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). Commonly reported barriers include resistance to change, limited technological facilities, and gaps in digital skills (Shakir et al., 2025; Ziqubu, 2026). In terms of outcomes, Digital HRM has been associated with greater efficiency, better service quality, and stronger employee engagement and performance (Amirova et al., 2025).

Despite the growing body of research, several issues remain insufficiently addressed. Many studies focus on the direct relationship between technology and work outcomes without examining in depth how the implementation process unfolds. Studies that simultaneously integrate adoption drivers, implementation barriers, and organizational outcomes into a unified framework are also limited (Theres & Strohmeier, 2024). Moreover, border areas have received inadequate attention as environments with distinctive characteristics, even though such conditions can significantly affect implementation success. A systematic literature review (SLR) is therefore needed to consolidate dispersed empirical findings and provide a more comprehensive understanding.

Based on these considerations, this study systematically analyzes how Digital HRM is adopted and implemented in public-sector organizations. It identifies the factors that facilitate and impede the process and examines the effects of implementation on organizational performance. The review also incorporates the context of border areas, which are treated as a distinctive condition that can influence Digital HRM implementation, particularly where resources are limited and service demands are high. This approach is expected to provide a more contextual understanding of Digital HRM implementation in the public sector.

The scope of this study is limited to empirical research on Digital HRM in public-sector organizations, particularly studies addressing adoption, implementation, and organizational outcomes in the context of digitally enabled human resource management. Although not all of the studies analyzed were conducted specifically in border areas, the border context is retained as an analytical lens for assessing the relevance of existing findings under peripheral conditions. This approach allows the review to draw on a broader body of literature without losing focus on its principal context of interest.

The contribution of this study lies in presenting a more comprehensive synthesis that integrates adoption drivers, implementation barriers, and organizational outcomes in public-sector Digital HRM. It also introduces border areas as a relatively new perspective within the literature. The findings are expected to provide practical input for policymakers and public organizations in designing HR digitalization strategies that are more responsive to geographic conditions and structural constraints (Amirova et al., 2025).

LITERATURE REVIEW

Digital human resource management has become an important element of public-sector organizational transformation in the digital era. Digital Human Resource Management (Digital HRM) refers to the integration of digital technologies across HR functions to improve efficiency, effectiveness, and the strategic value of the organization. Studies show that systems such as e-HRM, HRIS, and data-based platforms not only accelerate administrative processes but also improve decision-making quality and organizational transparency (Amirova et al., 2025; Shakir et al., 2025). These developments demonstrate that Digital HRM is no longer viewed merely as an operational tool; it has become part of a broader organizational strategy for public-sector transformation.

Conceptually, Digital HRM encompasses practices such as digital recruitment, e-performance appraisal, e-learning, and the use of HR analytics in decision-making. The literature frequently associates the concept with e-HRM and HRIS, creating some ambiguity in terminology (Barghini & Bonti, 2026). In general, however, Digital HRM is understood as an advanced stage of e-HRM that incorporates technologies such as cloud computing and artificial intelligence. Its implementation enables organizations to automate processes, expand access to information, and support real-time communication across work units (Ziqubu, 2026; Shakir et al., 2025).

Research indicates that successful Digital HRM implementation is determined by factors that can be grouped into four dimensions: technological, organizational, human, and institutional. From a technological perspective, perceived usefulness, ease of use, and system quality are major adoption drivers (Al-Alawi et al., 2023). At the organizational level, leadership support, internal readiness, and alignment with digital strategy strongly influence implementation success (Amirova et al., 2025). At the individual level, digital competence and willingness to adapt to change shape system acceptance (Ziqubu, 2026). Institutional factors, including regulatory pressure and bureaucratic reform initiatives, also encourage public organizations to adopt digital technology in HR management (Phinastrup, 2026).

Despite these drivers, Digital HRM implementation continues to face complex challenges. Studies identify resistance to change, inflexible bureaucratic cultures, and inadequate infrastructure as major obstacles to technology adoption in the public sector (Shakir et al., 2025; Ziqubu, 2026). Uneven digital capabilities and insufficient training programs often prevent existing systems from being used optimally. Additional challenges arise from the complexity of system integration and concerns regarding data security and privacy, particularly when cloud-based technologies and artificial intelligence are used (Priyashantha, 2023). These conditions show that Digital HRM transformation cannot rely solely on technological investment; it also requires organizational adjustment and stronger human-resource capacity.

In terms of outcomes, studies show that Digital HRM has positive effects on organizational performance at several levels. At the individual level, e-HRM can improve employee engagement, job satisfaction, and work effectiveness (Alshibly & Alzubi, 2022). At the organizational level, Digital HRM contributes to operational efficiency, productivity, and better decision-making (Amirova et al., 2025; Shakir et al., 2025). It also supports innovation by facilitating access to information and strengthening knowledge sharing (Satispi et al., 2023). Nevertheless, the relationship between Digital HRM and organizational outcomes is not always direct; several studies indicate that its effects are mediated by factors such as employee engagement and knowledge sharing.

Digital HRM in the public sector has characteristics that differ from those of the private sector, particularly because of the strong influence of institutional and bureaucratic factors. The situation becomes more complex in border areas, which commonly experience limited digital infrastructure, weak connectivity, and scarce resources. Evidence from similarly constrained areas suggests that successful technology implementation depends heavily on organizational readiness and infrastructure support (Ziqubu, 2026). Within this framework, the border context may influence, or even determine, the relationship between Digital HRM implementation and organizational outcomes.

Although Digital HRM research continues to develop, several clear gaps remain. Much of the literature emphasizes direct relationships between technology use and outcomes without examining the implementation process in sufficient depth. Studies that combine drivers, barriers, and outcomes within a single integrated framework are still limited. The border-area context is also underrepresented, despite its potential to substantially affect the success of technology implementation. These gaps underscore the need for a more integrated approach to understanding the dynamics of Digital HRM.

Based on this review, the study proposes a conceptual framework that combines adoption drivers, implementation barriers, and organizational outcomes in the public sector, while treating border areas as a condition that influences these relationships. This approach is expected to provide a more complete account of how Digital HRM is adopted, operated, and translated into organizational effects under complex and resource-constrained conditions.

METHOD

This study employs a Systematic Literature Review (SLR) to comprehensively examine and evaluate the literature on Digital Human Resource Management (Digital HRM) in the public sector, with particular attention to border areas. The method was selected because it provides a systematic, transparent, and replicable process for identifying, selecting, and analyzing relevant studies. By integrating empirical findings from diverse contexts, the approach offers a more complete understanding of the drivers, barriers, and organizational outcomes associated with Digital HRM implementation.

The SLR follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to maintain methodological consistency and minimize potential bias in the literature-selection process. The stages included formulating the research questions, searching the literature, selecting studies, assessing quality, extracting data, and synthesizing the findings.

Data Sources and Search Strategy

The literature search used Scopus as the primary database because of its broad coverage of reputable international journals. The search strategy combined keywords representing the study's three main areas of focus: Digital HRM, the public sector, and adoption and organizational outcomes.

The search terms included “digital human resource management,” “e-HRM,” and “HRIS,” together with public-sector terms such as “public sector,” “government organization,” and “public administration.” Additional adoption- and impact-related terms included “adoption,” “implementation,” “drivers,” “barriers,” and “organizational outcomes.” These combinations generated the initial set of articles, which was then subjected to the screening stages.

Study Selection and Inclusion/Exclusion Criteria

Study selection was conducted in stages in accordance with PRISMA principles. The first stage involved screening titles and abstracts to identify relevant articles, followed by full-text review to confirm alignment with the research focus. The inclusion criteria covered studies that explicitly examined Digital HRM or digitally enabled HR systems in public-sector organizations and addressed adoption, implementation, or organizational outcomes. Quantitative, qualitative, and mixed-method studies were included. Articles that did not focus on digital HRM, studies limited to the private sector without public-sector relevance, and conceptual papers without empirical evidence were excluded. Articles for which full text was unavailable were also omitted.

Study Quality Assessment

To ensure the methodological quality of the studies included in the analysis, the Mixed Methods Appraisal Tool (MMAT) was used as the assessment instrument. MMAT was selected because it can evaluate quantitative, qualitative, and mixed-method designs, which reflects the characteristics of the Digital HRM literature. Two independent assessors conducted the evaluation to improve reliability. Each study was reviewed against criteria including clarity of purpose, appropriateness of method, data validity, and analytical accuracy. Any differences in assessment were resolved through discussion until consensus was reached. Only studies judged to have adequate methodological quality proceeded to the next stage of analysis.

Data Extraction

Data were extracted systematically using a pre-designed table. Information collected from each study included the authors and year of publication, research design, location and sample characteristics, implementation context, variables analyzed, and principal findings. Data on drivers, barriers, organizational outcomes, and the theoretical frameworks used were also recorded to support synthesis. The procedure was applied consistently so that information relevant to the research questions could be compared across studies in a structured manner.

Data Analysis and Synthesis

The data were analyzed using thematic analysis to identify recurring patterns and major themes in the literature. Findings from each study were grouped into themes such as research trends, adoption drivers, implementation barriers, and organizational outcomes of Digital HRM. The synthesis proceeded by comparing studies to identify similarities, differences, and remaining gaps. Relationships among variables were also examined to understand the mechanisms through which Digital HRM affects organizational performance. Border areas were used as an analytical lens when interpreting the findings, particularly in assessing the effects of infrastructure, connectivity, and resource limitations on the adoption and effectiveness of Digital HRM in the public sector. This approach produced a more contextual understanding relevant to organizations operating under constrained conditions.

SLR Process Flow

Overall, the systematic literature review followed a structured sequence from literature identification to evidence synthesis. The process covered searching, screening, selecting, and analyzing relevant studies. For clarity,

these stages are presented in a PRISMA diagram showing the number of articles at each stage, from the initial search results to the studies included in the final analysis.

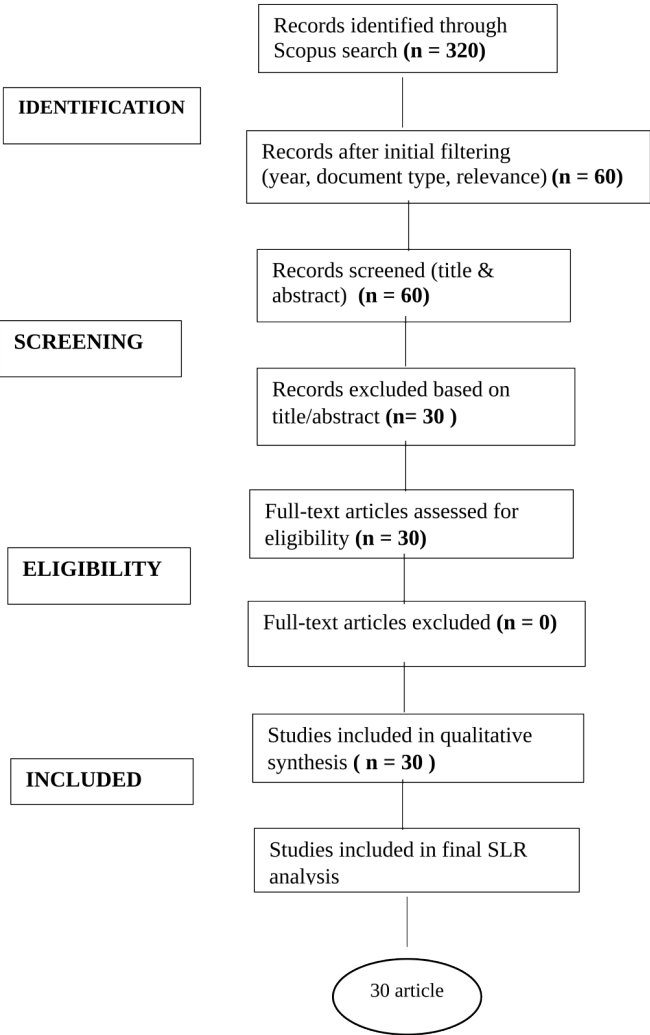


Figure 1. PRISMA Flowchart of the Systematic Literature Review Process

The initial literature search identified 320 articles in the Scopus database. Following preliminary screening by document type and relevance to the research topic, 60 articles were retained for the next selection stage. Title and abstract screening then excluded 30 articles that did not align with the focus on Digital HRM in the public sector. The remaining 30 articles underwent full-text assessment, and all met the established inclusion criteria. Consequently, 30 studies were included in the final synthesis.

DISCUSSION

The systematic literature review shows that Digital Human Resource Management (Digital HRM) in the public sector is no longer used solely as an administrative tool; it has developed into a strategic framework supporting broad organizational change and transformation. This development is consistent with Green HRM studies that describe a shift from operational practices toward approaches more closely integrated with organizational performance. Systems such as e-HRM, HRIS, and digital performance management have been shown to improve operational efficiency, service quality, and employee performance (Amirova et al., 2025; Shakir et al., 2025). These effects, however, are not always direct. In many cases, the impact of Digital HRM depends on employee engagement, knowledge sharing, and implementation effectiveness, underscoring the importance of a socio-technical approach to understanding its application.

Comparison with Previous Studies

The findings are consistent with earlier research emphasizing the role of technology in digital-system acceptance, particularly within the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). However, as also indicated by Green HRM studies, this review shows that organizational and leadership factors are equally important in determining implementation success. Unlike much previous research, which focuses primarily on direct relationships between technology and work outcomes, this SLR indicates that Digital HRM success depends on the manner of implementation and the surrounding conditions, especially in public-sector and remote settings where infrastructure and resources are limited (Ziqubu, 2026; Al-Alawi et al., 2023). The study therefore contributes a more complex model of these relationships than that offered in much of the earlier literature.

Practical Implications

The findings have several important implications for public-sector organizations. Digital HRM implementation should not focus only on providing technology; it also requires organization-wide readiness. This includes improving infrastructure, strengthening employees' digital competencies, and ensuring active leadership support. Consistent with Green HRM research, leadership and organizational culture strongly influence successful implementation. In border areas, organizations must adapt to constraints in connectivity and resources. Continuous training, digital-capability development, and change management are therefore essential to ensure that Digital HRM is implemented effectively and sustainably.

Implications for Future Research

The review also identifies limitations in the literature, particularly in explaining the mechanisms linking Digital HRM with organizational outcomes. As observed in Green HRM research, many studies continue to use cross-sectional designs, which cannot clearly establish causal relationships. Future research should develop more comprehensive models that incorporate mediating and moderating variables such as organizational culture, leadership, and institutional pressure. Longitudinal and mixed-method approaches are also needed to capture the dynamics of Digital HRM implementation in greater depth.

Future Research Directions

Future research should focus on integrating Digital HRM with emerging technologies such as artificial intelligence, big data analytics, and digital governance in the public sector. This direction is important for understanding how such technologies can strengthen the strategic role of HR within organizations. Research settings should also be extended to underexamined contexts, including border areas, rural regions, and resource-constrained organizations. In line with recommendations from Green HRM studies, multi-country and cross-sector research is needed to improve the broader applicability of findings. Integrating technological, organizational, and institutional perspectives within a single analytical framework will also be important for advancing the Digital HRM literature.

Strengths of the SLR

The principal strength of this study is its structured and comprehensive systematic literature review, which enables findings from multiple empirical studies to be integrated in an organized manner. This approach provides a more complete overview than studies examining only one dimension. The analytical framework also incorporates drivers, barriers, and organizational outcomes, thereby clarifying the dynamics of Digital HRM in the public sector. Consistent with previous research, the method supports a deeper understanding of patterns, relationships, and gaps within the literature.

Limitations

Several limitations should be acknowledged. First, the review drew on a limited set of databases, meaning that some relevant studies may not have been captured. Second, the dominance of quantitative approaches among the studies assessed restricts understanding of contextual dimensions and social dynamics in Digital HRM implementation. The limited number of studies focusing specifically on border areas also constrains the generalizability of the findings. This is consistent with Green HRM research indicating the importance of context and the continuing scarcity of longitudinal studies. The findings should therefore be interpreted carefully and used as a foundation for further research.

CONCLUSION

This study shows that Digital Human Resource Management (Digital HRM) has evolved into a strategic approach that plays an important role in strengthening organizational capability in the public sector. Based on the synthesis of 30 empirical studies, Digital HRM is not merely an administrative tool but an integrated system connecting human resource management with broader organizational transformation. Its application through e-HRM, HRIS, e-performance, and e-learning produces positive effects on operational efficiency, service quality, employee performance, and employee engagement. Successful implementation is determined by a combination of technological, organizational, human, and institutional factors. Leadership support, organizational readiness, and digital competence are the principal drivers, while resistance to change, inadequate infrastructure, and skills gaps remain major challenges. The findings further show that the effects of Digital HRM on organizational outcomes are not always direct but may operate through mediating factors such as employee engagement and knowledge sharing. A socio-technical perspective is therefore essential for understanding its implementation.

This study contributes a conceptual framework that integrates drivers, barriers, and organizational outcomes into a comprehensive model. It also introduces border areas as a context that enriches the analysis of Digital HRM implementation under resource and infrastructure constraints. Nevertheless, the review is limited by the small number of studies specifically examining border areas and by the dominance of quantitative approaches in the literature. Future research should use longitudinal and mixed-method designs and extend the analysis to remote regions and multiple countries. The integration of artificial intelligence, big data analytics, and digital governance is another important direction. Overall, Digital HRM is a major driver of public-sector organizational change in the digital era. When managed appropriately, it can improve efficiency and performance while strengthening organizational capacity to address the challenges faced in resource-constrained regions, including border areas.

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