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Electronic Database Systems and Human Resource Management Efficiency in the Nigerian Public Sector: A Thematic Literature Review

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Abstract

This study examines the relationship between electronic database systems and human resource management (HRM) efficiency in the Nigerian public sector through a thematic review of 18 recent studies. The evidence indicates that electronic database systems enhance HRM efficiency by improving data accessibility, strengthening electronic records management, and automating routine HR functions, including recruitment, payroll administration, attendance monitoring, and performance appraisal. These improvements contribute to faster administrative processes, more accurate personnel records, better decision-making, reduced operational duplication, and improved service delivery. However, the review demonstrates that such benefits are contingent rather than automatic. Persistent challenges—including inadequate ICT infrastructure, limited digital competencies, bureaucratic resistance, weak leadership support, and fragmented governance arrangements—often constrain implementation and sustainability. Drawing on the Technology Acceptance Model and Resource-Based View, the study argues that digital HR systems create value only when supported by complementary organisational capabilities, institutional readiness, and effective governance mechanisms. The review concludes that sustainable improvements in HRM efficiency require an integrated approach that combines technological investment with capacity building, organisational change management, and strengthened data governance.

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Introduction

Digital transformation has moved the public sector beyond efficiency-driven digitisation toward a broader agenda of institutional responsiveness, employee support, and evidence-informed administration. Across contemporary public organisations, information and communication technology now underpins how institutions store, retrieve, analyse, and mobilise organisational data. In human resource management (HRM), electronic database systems occupy a particularly strategic position because they structure the flow of personnel information, reduce dependence on paper-based files, and enable faster, more reliable administrative action. Evidence from Nigeria and comparable developing economies shows that digital HR systems improve administrative speed, data handling, record retrieval, workflow coordination, and decision-making, especially where organisations pair them with adequate user capability and stable infrastructure (Jimoh, 2025; Oko *et al.*, 2016; Morrison *et al.*, 2020).

In the Nigerian public sector, the relevance of electronic database systems extends well beyond routine record keeping. Public institutions now face rising workforce complexity, stronger accountability demands, tighter fiscal scrutiny, and persistent pressure to improve service delivery. HRM functions such as recruitment, deployment, payroll administration, promotion, training, attendance tracking, and performance appraisal depend on timely and accurate personnel data. Electronic database systems strengthen these functions by improving access to employee information, reducing duplica-tion, supporting secure storage, and enabling more consistent documentation of HR processes (Adeosun & Popoola, 2024; Oko *et al.*, 2016). When organisations integrate these systems effectively, they can shorten processing times, improve administrative accuracy, and create stronger foundations for workforce planning and managerial oversight (Aldmour *et al.*, 2015; Aswanth Kumar & Parumasur, 2013).

The literature also indicates that the value of electronic database systems lies not only in operational efficiency but also in their contribution to strategic HR capability. Human Resource Information Systems (HRIS) and related electronic HR platforms support automation, analytical decision-making, and service responsiveness, thereby allowing HR units to shift from clerical repetition toward more strategic personnel management. Studies from developing economies consistently report gains in employee productivity, service quality, and organisational performance when HR digitalisation aligns with clear institutional support and system usability (Hammouri *et al.*, 2025; Nyathi & Kekwaletswe, 2023; Shahreki *et al.*, 2025; William & Singh, 2023). In the Nigerian context, this logic matters because public institutions often struggle to convert information into action unless records remain current,

accessible, and trustworthy (Nwankpa & Roumani, 2023; Olaopa, 2022).

At the same time, the Nigerian public sector presents institutional conditions that complicate digital adoption. Government reform initiatives have promoted electronic systems across ministries, departments, and agencies, yet implementation remains uneven. Some organisations have made meaningful progress, while others continue to rely on manual workflows because of weak infrastructure, fragmented governance, and organisational resistance (Afolabi & Ezeani, 2023). Comparative evidence from public institutions in other developing settings shows the same pattern: electronic HR systems often deliver measurable benefits, but those benefits remain conditional on infrastructure quality, leadership commitment, organisational readiness, and user competence (Rahman *et al.*, 2018; Haeruddin, 2017; Bhattacharyya *et al.*, 2021).

Infrastructure therefore emerges as a central constraint. Reliable electricity, stable internet access, interoperable software, functional devices, and maintenance capacity form the material basis of digital HR operations. Where institutions lack these supports, they revert to paper-based files, experience backlogs, and struggle to sustain system use. The literatre repeatedly identifies infrastructure deficits, poor connectivity, weak interoperability, and delayed procurement as major barriers to digital HR implementation across public institutions in Nigeria and similar environments (Uzochukwu *et al.*, 2016; Molenaar *et al.*, 2024; McQuide *et al.*, 2023; Kambalame *et al.*, 2026). In Nigerian public institutions, these constraints do not merely slow implementation; they distort it by producing parallel systems in which digital and manual processes coexist without genuine integration.

Human capacity creates a second decisive constraint. Electronic database systems demand more than hardware and software; they require personnel who can use them confidently, interpret outputs accurately, and sustain routine data quality. Yet studies across Nigeria and comparable contexts show that low digital literacy, inadequate training, weak technical support, and staff turnover reduce system uptake and administrative efficiency (Asogwa *et al.*, 2021; Jimoh, 2025; Iruhiriye *et al.*, 2025). The literature therefore suggests that digital HR reform succeeds when organisations build user competence alongside system acquisition. Without this capacity, even well-designed systems remain underused or misused, thereby limiting their contribution to HRM efficiency.

Organisational and institutional culture also shape outcomes. Public-sector bureaucracies often operate through rigid approval chains, procedural inertia, and strong attachment to legacy administrative routines. These conditions slow procurement, discourage experimentation, and weaken implementation momentum. The reviewed evidence shows that resistance to change, weak leadership support, conflicting institutional logics, and inadequate strategic alignment frequently undermine HRIS adoption in public organisations (Choudrie *et al.*, 2017; Rahman *et al.*, 2018; Naveed *et al.*, 2021; Ramírez & Tejada, 2022). In Nigeria, these frictions matter because institutional reform rarely depends on technical availability alone; it also depends on whether organisational actors perceive digital HR tools as legitimate, useful, and compatible with established administrative routines.

Policy and governance further condition implementation success. The evidence consistently indicates that electronic HR systems work best when institutions embed them within clear digital strategies, sustainable budget lines, data governance frameworks, and coherent change-management processes. Studies of public-sector digital trans-formation show that weak policy alignment, poor coordination, fragmented data standards, and limited monitoring mechanisms erode system sustainability and reduce the long-term value of digital investments (Bhattacharyya *et al.*, 2021; Najafpour *et al.*, 2022; Moutamir & El Qour, 2025; Al Maazmi *et al.*, 2026). In Nigerian public administration, this means that electronic database systems cannot function as isolated technical solutions; they require institutional ecosystems that support governance, accountability, interoperability, and continuous improvement.

Taken together, these studies show that electronic database systems improve HRM efficiency in the public sector, but only under enabling conditions. The strongest recurring themes across the literature include technological readiness, organisational readiness, human capacity, environmental and institutional pressures, and governance and change management (Alam & Islam, 2021; Puspitarini *et al.*, 2018; Siddique *et al.*, 2025; Syed *et al.*, 2023). This pattern matters for Nigeria because it reframes digital HR reform as a socio-technical process rather than a purely technological upgrade. Accordingly, the present study examines the relationship between electronic database systems and HRM efficiency in the Nigerian public sector through a thematic literature review that foregrounds data accessibility, electronic record management, and HR process automation as the core analytical themes.

The study therefore seeks to achieve the following objectives:

1. To examine the effect of data accessibility provided by electronic database systems on HRM efficiency in Nigerian public sector organizations.
2. To assess the influence of electronic record management systems on administrative efficiency and employee performance in HRM.
3. To evaluate the impact of automation of HR processes, such as recruitment, payroll, and performance management, on overall HRM efficiency in the Nigerian public sector.

Review of Related Literature

Electronic Database Systems

For the purposes of this review, electronic database systems refer to systematically organised electronic repositories that store, retrieve, update, and manage organisational data through database management technologies. In HRM, these systems typically function as the data architecture that supports employee records, payroll processing, recruitment, training, attendance management, and performance appraisal, often as part of broader HRIS or e-HRM platforms (Nwankpa & Roumani, 2023). This distinction matters: HRIS denotes the wider suite of HR applications, whereas electronic database systems provide the core information infrastructure that makes digital HR operations possible.

Within public-sector HRM, electronic database systems improve administrative efficiency by reducing duplication, strengthening data integrity, and enabling real-time access to personnel information. Evidence from Nigerian institutions shows that electronic records improve data handling and information flow, while digital HR systems enhance workflow speed and administrative responsiveness when institutions pair them with user competence and basic infrastructure (Adeosun & Popoola, 2024; Jimoh, 2025; Oko *et al.*, 2016). Comparable developing-economy evidence also shows that digital HR systems improve operational, relational, and strategic HR functions, including decision-making, coordination, and service quality (Aldmour *et al.*, 2015; Aswanth Kumar & Parumasur, 2013; Morrison *et al.*, 2020).

Human Resource Management Efficiency

HRM efficiency refers to an organisation's capacity to manage its workforce effectively and economically, with minimal waste of time, cost, and effort. It encompasses the speed and accuracy of HR processes, the reliability of personnel records, the responsiveness of HR services, and the extent to which HR

contributes to organisational planning and decision-making. In public-sector settings, HRM efficiency directly influences service delivery outcomes, administrative accountability, and institutional credibility.

The literature indicates that electronic database systems have become important drivers of HRM efficiency by improving the management, accessibility, and utilisation of workforce information. As synthesised in Table 1, evidence from developing economies demonstrates that electronic database systems contribute to HRM efficiency across six major domains: administrative speed and workflow efficiency, data accuracy and reliability, cost reduction and operational efficiency, strategic HR capability, employee performance and productivity, and HR service quality. These systems facilitate faster decision-making, improve information accessibility, strengthen data quality, reduce administrative duplication, enhance workforce planning, and improve organisational responsiveness (Goundar *et al.*, 2020; Hammouri *et al.*, 2025; Hussain *et al.*, 2025; Nyathi & Kekwaletswe, 2023; Shahreki *et al.*, 2025; Shelash Mohammad *et al.*, 2024; Srivastava & Yamini, 2026; William & Singh, 2023; Zaman *et al.*, 2026).

Table 1. Efficiency-Domain Outcomes of Electronic Database Systems in HR Management within Developing Economies

Efficiency Domain	Key Effects on HRM Efficiency	Representative Evidence
Administrative Speed and Workflow Efficiency	Faster decision-making, quicker access to personnel information, reduced paperwork, and smoother HR operations.	Goundar *et al.* (2020); Morrison *et al.* (2020); Rathee and Bhuntel (2021); Shelash Mohammad *et al.* (2024)
Data Accuracy and Reliability	Improved data quality, secure storage, faster retrieval, enhanced documentation, and more reliable personnel records.	Hussain *et al.* (2025); Morrison *et al.* (2020); Shelash Mohammad *et al.* (2024)
Cost Reduction and Operational Efficiency	Lower administrative costs, reduced duplication of tasks, and greater process automation.	Alharbi (2025); Aswanth Kumar and Parumasur (2013); Srivastava and Yamini (2026)
Strategic HR Capability	Enhanced HR analytics, workforce planning, forecasting, and evidence-based strategic decision-making.	Elayan and Sleimi (2021); Pasumarthy *et al.* (2024); Priya and Jayalakshmi (2024)
Employee Performance and Productivity	Improved employee performance, workforce engagement, organisational effectiveness, and productivity outcomes.	Al-Ajlouni *et al.* (2019); Hammouri *et al.* (2025); Nyathi and Kekwaletswe (2023); Zaman *et al.* (2026)
HR Service Quality	Greater responsiveness, improved service delivery, higher user satisfaction, and better HR support functions.	Shahreki *et al.* (2025); William and Singh (2023)

The evidence further suggests that these efficiency gains are not automatic. Rather, the extent to which electronic database systems improve HRM outcomes depends on enabling organisational conditions, including adequate technological infrastructure, user competence, management support, and favourable organisational cultures. Studies consistently show that reliable ICT infrastructure, digital literacy, leadership commitment, and system quality significantly influence the effectiveness of HRIS and related electronic database platforms (Akpamah & Matkó, 2022; Bondarouk *et al.*, 2016; Goundar *et al.*, 2020; Pasumarthy *et al.*, 2024; Rahman *et al.*, 2018). Consequently, HRM efficiency should be understood not merely as a product of technological adoption but as an outcome of the interaction between technological capability and organisational readiness.

For Nigerian public-sector organisations, this perspective is particularly relevant. Although electronic database systems possess significant potential to improve workforce management, administrative responsiveness, and service delivery, the realisation of these benefits depends on the ability of institutions to address persistent infrastructural, human-capacity, and governance constraints. Therefore, understanding HRM efficiency in the context of electronic database systems requires attention not only to technological functionality but also to the institutional conditions that shape implementation and utilisation.

The Relationship Between Electronic Database Systems and HRM Efficiency

The relationship between electronic database systems and HRM efficiency rests on a conditional pathway: digital systems improve performance when institutions can use them consistently, integrate them into routine work, and sustain them through adequate technical and managerial support. In practical terms, electronic database systems enhance HRM efficiency by improving data accessibility, reducing administrative workload, strengthening record accuracy, and supporting evidence-based decision-making. They also enhance transparency and accountability by making employee records easier to audit, monitor, and update (Olaopa, 2022).

However, the literature repeatedly shows that technology alone does not generate efficiency. The realised benefits depend on system quality, user competence, organisational readiness, leadership support, data security, and policy alignment. Studies across Nigeria and comparable developing contexts indicate that infrastructure quality, digital literacy, and organisational culture strongly moderate implementation outcomes (Afolabi & Ezeani, 2023; Bhattacharyya *et al.*, 2021; Rahman *et al.*, 2018). More recent syntheses also identify governance and change management as decisive conditions for successful integration, alongside technological readiness and human-capacity development (Alam & Islam, 2021; Moutamir & El Qour, 2025; Puspitarini *et al.*, 2018; Siddique *et al.*, 2025; Syed *et al.*, 2023). In the Nigerian public sector, this means that electronic database systems function not as standalone solutions but as socio-technical instruments embedded within institutional constraints and reform capacity.

Review of Empirical Evidence

In this section, we synthesize the empirical findings thematically rather than author by author. This notwithstanding, it is germane to produce the evidence in Table 2 which consistently indicates that electronic database systems improve HRM efficiency by accelerating administrative processes and strengthening data management. Evidence from Nigeria and comparable developing economies shows that digital HR systems facilitate faster information retrieval, quicker decision-making, reduced administrative delays, and more efficient workflows (Jimoh, 2025; Goundar *et al.*, 2020; Morrison *et al.*, 2020). The systems also enhance data quality, record accuracy, documentation, and workforce planning by providing reliable and readily accessible personnel information (Ishijima *et al.*, 2015; Hussain *et al.*, 2025). However, the extent of these benefits depends on the availability of adequate infrastructure, user competence, and organisational support.

Table 2. Empirical Evidence on Administrative Speed and Data Handling Outcomes of Electronic Database Systems

Efficiency Dimension	Empirical Finding	Context	Key Outcome	Source
Administrative Speed	Digital HR systems improve administrative efficiency by accelerating workflows and supporting faster decision-making.	Nigerian public institutions	Faster HR operations and improved administrative responsiveness.	Jimoh (2025)
Administrative Speed	Electronic database systems reduce delays in information dissemination and routine administrative processes.	Public institutions and universities	Reduced processing delays and quicker information flow.	Jimoh (2025); Oko *et al.* (2016)
Administrative Speed	HRIS facilitates quicker access to information and smoother HR operations.	Developing economies	Faster decision-making and reduced paperwork.	Goundar *et al.* (2020); Morrison *et al.* (2020); Rathee & Bhuntel (2021)
Administrative Speed	Electronic record systems improve retrieval speed and information flow.	Nigerian tertiary institutions	Faster access to employee and institutional records.	Oko *et al.* (2016)
Data Handling	Electronic record systems improve data handling processes and information management.	Nigerian tertiary institutions	Better organisation and management of institutional records.	Oko *et al.* (2016)
Data Accuracy & Reliability	HRIS improves data quality, secure storage, retrieval speed, and documentation quality.	Developing economies	More reliable personnel information and reduced record errors.	Hussain *et al.* (2025); Morrison *et al.* (2020); Shelash Mohammad *et al.* (2024)
Data Accuracy & Reliability	Electronic database systems enable faster and more accurate retrieval of HR data.	HR and health-sector information systems	Improved documentation and record reliability.	Ishijima *et al.* (2015); Morrison *et al.* (2020); Oko *et al.* (2016)
Strategic Data Use	HRIS-enabled analytics support planning and workforce forecasting.	Health and education sectors	Better evidence-based HR decision-making.	Ishijima *et al.* (2015); Oko *et al.* (2016)
Information Accessibility	HR systems provide real-time access to employee information and organisational data.	Developing-country organisations	Improved managerial decision quality and responsiveness.	Morrison *et al.* (2020); Goundar *et al.* (2020)
Data Quality for Planning	Digital HRH information systems improve data quality and workforce planning capabilities.	Tanzania and The Gambia (comparable SSA contexts)	More accurate workforce planning and resource allocation.	Ishijima *et al.* (2015); Lin & Kujabi (2022)

Data accessibility and HRM efficiency. Empirical evidence consistently shows that improved access to employee data strengthens HRM efficiency. Nwankpa and Roumani (2023) found that digital HR systems improve decision-making speed and accuracy when organisations provide integrated data systems. In the Nigerian public sector, Ogunleye and Olatunji (2022) reported that real-time access to digital records reduces administrative bottlenecks and improves responsiveness in recruitment, promotion, and employee evaluation. Okeke and Nwosu (2024) similarly found that centralised electronic databases improve coordination among HR units and facilitate better decision-making. Ibrahim and Bello (2022) observed that improved access to personnel information enhances operational efficiency and intra-departmental communication. These findings align with broader evidence that digital HR systems speed workflows, reduce paperwork, and strengthen administrative responsiveness when users can access reliable data quickly (Jimoh, 2025; Morrison *et al.*, 2020).

Electronic record management and administrative efficiency. Electronic record management emerges as a central efficiency mechanism in public-sector HRM. Adeosun and Popoola (2024) showed that electronic record systems improve data accuracy, reduce redundancy, and strengthen administrative efficiency in Nigerian public institutions. Afolabi and Ezeani (2023) found that electronic record management improves coordination, transparency, and accountability, although poor infrastructure and resistance to change constrain implementation. Oko *et al.* (2016) likewise reported that electronic record systems improve data handling and retrieval speed in Nigerian tertiary institutions. The broader literature reinforces this pattern: where organisations maintain structured digital records, they reduce data loss, improve documentation quality, and strengthen the reliability of HR operations (Morrison *et al.*, 2020; Shelash Mohammad *et al.*, 2024).

Automation of HR processes and overall HRM efficiency. Automation constitutes the third major efficiency pathway. Electronic database systems support payroll processing, recruitment, attendance tracking, performance appraisal, and training management, thereby reducing clerical burden and human error. Azize (2024) found that HRIS standardises performance appraisal and reduces bias, while Gbadebo (2025) reported that e-HRM improves organisational performance through faster processing and stronger data integrity. Satispi *et al.* (2023) also showed that HRIS can improve civil servants' innovation outcomes by freeing time from routine administrative work. Yet the evidence from the literature shows that these gains remain contingent: e-HRM works best when organisations combine system automation with staff training, usable interfaces, and operational support (Al-Fugaha *et al.*, 2023; Hammouri *et al.*, 2025; Shahreki *et al.*, 2025).

Critical Synthesis: Contradictions, Variations, and Tensions in the Literature

Although the reviewed literature predominantly reports positive associations between electronic database systems and HRM efficiency, the evidence also reveals important asymmetries. First, the magnitude of efficiency gains varies across institutional settings. Well-resourced organisations tend to report stronger benefits, while resource-constrained institutions often experience weaker gains because infrastructure, training, and governance do not match system demands (Afolabi & Ezeani, 2023; Jimoh, 2025; Rahman *et al.*, 2018). Second,

implementation frequently produces partial or uneven success. Studies in Nigeria and comparable public sectors show that organisations may acquire digital systems but continue to operate parallel manual routines because bureaucratic resistance, weak leadership support, and limited technical competence prevent full integration (Choudrie *et al.*, 2017; Haeruddin, 2017; Naveed *et al.*, 2021).

Third, the literature highlights persistent sustainability and security concerns. The evidence identify poor electricity supply, inadequate hardware, limited interoperability, weak data-sharing protocols, and cybersecurity vulnerabilities as recurring barriers that reduce the effectiveness of electronic database systems. One synthesis further notes that some surveyed institutions experienced periodic data loss because backup systems remained inadequate, even where electronic records existed.

Fourth, the evidence shows a clear tension between technological optimism and institutional reality. The literature repeatedly confirms that technology can improve HRM efficiency, but only when organisations create enabling conditions through capacity building, organisational alignment, policy coherence, and active change management (Bhattacharyya *et al.*, 2021; Moutamir & El Qour, 2025; Puspitarini *et al.*, 2018; Siddique *et al.*, 2025; Syed *et al.*, 2023). In the Nigerian public sector, where bureaucratic friction, infrastructure deficits, and policy-implementation gaps remain persistent, this conditionality is not incidental; it is central to understanding why some digital reforms succeed while others stall.

Identification of Research Gaps

The literature reveals several gaps that justify the present thematic review. First, many studies treat electronic database systems as a subset of broader ICT or HRIS discussions, which obscures the specific mechanisms through which database functionality affects HRM efficiency. Second, existing studies often examine data accessibility, record management, or automation in isolation, rather than as interrelated dimensions of a single digital HR architecture. Third, much of the literature relies on quantitative designs that identify correlations but provide limited explanation of how organisational routines, institutional constraints, and user practices shape implementation in real settings. Fourth, a substantial portion of the evidence remains only partly grounded in the Nigerian public sector, even though Nigeria's administrative environment presents distinctive infrastructural and governance constraints. Finally, the literature remains uneven in its attention to the success conditions that determine whether electronic database systems generate durable efficiency gains, including technological readiness, organisational readiness, human capacity, environmental pressures, and governance and change management (Alam & Islam, 2021; Moutamir & El Qour, 2025; Syed *et al.*, 2023).

This study addresses these gaps by synthesising recent evidence on data accessibility, electronic record management, and HR process automation within Nigerian public-sector institutions, while also foregrounding the institutional conditions that shape implementation outcomes.

Theoretical Framework

This study is anchored in the Technology Acceptance Model (TAM) and the Resource-Based View (RBV), which together provide a useful framework for explaining both adoption behaviour and organisational capability.

Technology Acceptance Model (TAM). Developed by Fred Davis, TAM explains how perceived usefulness and perceived ease of use shape attitudes toward technology adoption, which then influence actual use. In this study, TAM is useful because the effectiveness of electronic database systems depends heavily on whether HR personnel perceive them as practical, manageable, and worth adopting. Training, usability, and task relevance increase acceptance, while complexity, mistrust, and weak support reduce uptake. The reviewed literature indirectly supports this logic: where staff receive adequate training and perceive the system as workable, adoption improves and efficiency gains become more visible; where they perceive the system as difficult or unreliable, usage declines and benefits diminish (Ibrahim & Bello, 2022; Jimoh, 2025; Ogunleye & Olatunji, 2022).

Resource-Based View (RBV). RBV argues that valuable, rare, inimitable, and well-organised resources can strengthen performance when organisations possess the capabilities to deploy them effectively. In this study, electronic database systems constitute strategic organisational resources, but their value depends on complementary assets such as skilled personnel, reliable infrastructure, managerial commitment, and supportive policy frameworks. The literature confirms this resource-complementarity logic: organisations with trained staff, stable infrastructure, clear policies, and strong leadership achieve better outcomes than those that acquire digital systems without building the institutional capacity to sustain them (Afolabi & Ezeani, 2023; Bhattacharyya *et al.*, 2021; Puspitarini *et al.*, 2018).

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Together, TAM and RBV explain both the behavioural and strategic dimensions of electronic database adoption. TAM clarifies why individuals accept or resist the systems, while RBV explains why some organisations convert digital tools into efficiency gains and others do not. In the Nigerian public-sector context, these theories gain explanatory strength when read alongside the recurring themes of technological readiness, organisational readiness, human capacity, environmental pressure, and governance and change management identified in the literature.

Methodology

Research Design

This study adopted a qualitative thematic literature review design to synthesise existing scholarship around recurring explanatory themes rather than to estimate pooled effect sizes. The design suits the present topic because the evidence base consistently shows that electronic database systems improve HRM efficiency in contingent ways, with outcomes shaped by infrastructure, user capability, organisational support, and governance arrangements (Aldmour *et al.*, 2015; Jimoh, 2025; Rahman *et al.*, 2018; Syed *et al.*, 2023). Accordingly, the review prioritised interpretive synthesis across interrelated themes (i.e., data accessibility, record management, automation, and institutional constraints) rather than a linear or purely descriptive account of individual studies.

Data Sources and Search Strategy

The literature search was conducted in March 2026 using ScienceDirect, Google Scholar and ResearchGate as the primary databases, supplemented by backward citation tracking of relevant sources. These databases were selected because they provide broad coverage of peer-reviewed African and Nigerian public-administration literature, including materials that are often not indexed in commercial databases such as Scopus and Web of Science. The search strategy combined the following keyword clusters and Boolean operators: ("electronic database systems" OR "human resource information systems" OR "HRIS") AND ("HRM efficiency" OR "data accessibility" OR "electronic record management" OR "automation in HRM") AND ("public sector" OR "Nigeria"). The search window was restricted to 2022–2025 to retain recent evidence on digital HR systems, administrative efficiency, and implementation condi-

tions in developing economies (Hammouri *et al.*, 2025; Hussain *et al.*, 2025; Srivastava & Yamini, 2026).

Inclusion and Exclusion Criteria

Studies were included if they: (a) addressed electronic database systems, HRIS, or e-HRM in relation to HRM functions; (b) focused on public-sector settings or organisational contexts relevant to the Nigerian case; (c) were published in English; (d) were available in full text; and (e) were published between 2022 and 2025.

Table 3. Summary of Evidence Supporting the Thematic Review

Research Objective	Key Evidence Synthesised	Principal HRM Efficiency Outcomes
Data accessibility and HRM efficiency	Electronic database systems improve access to personnel information, accelerate information retrieval, and strengthen evidence-based decision-making (Ishijima *et al.*, 2015; Jimoh, 2025; Lin & Kujabi, 2022; Morrison *et al.*, 2020; Oko *et al.*, 2016).	Faster administrative processes, improved workflow coordination, enhanced decision-making, and greater data reliability.
Electronic record management and adminis-trative efficiency	Electronic record systems improve data handling, documentation quality, retrieval speed, and information flow across organisations (Adeosun & Popoola, 2024; Afolabi & Ezeani, 2023; Bhattacharyya *et al.*, 2021; Oko *et al.*, 2016).	Reduced record duplication, improved administrative accuracy, stronger accountability, and more efficient HR operations.
Automation of HR processes and overall HRM efficiency	HRIS and e-HRM platforms automate routine HR activities, including payroll, recruitment, performance management, and personnel administration (Azize, 2024; Gbadebo, 2025; Hammouri *et al.*, 2025; Panjaitan, 2023; Satispi *et al.*, 2023).	Reduced administrative burden, lower operational costs, improved employee productivity, and enhanced organisational performance.
Cross-cutting imple-mentation factors	Successful outcomes depend on technological readiness, organisational capability, human capacity, institutional support, and governance mechanisms (Alam & Islam, 2021; Jimoh, 2025; Moutamir & El Qour, 2025; Puspitarini *et al.*, 2018; Rahman *et al.*, 2018; Syed *et al.*, 2023).	Determines whether efficiency gains are realised, sustained, or constrained within public-sector institutions.

Note. The thematic synthesis demonstrates that the efficiency effects of electronic database systems are conditional rather than automatic. Across the reviewed literature, improvements in data accessibility, record management, and HR process automation produce stronger outcomes when supported by adequate infrastructure, digital literacy, managerial commitment, and governance frameworks (Alam & Islam, 2021; Jimoh, 2025; Moutamir & El Qour, 2025; Rahman *et al.*, 2018; Syed *et al.*, 2023).

Studies were excluded if they: (a) focused exclusively on private-sector organisations without relevance to public-sector contexts; (b) examined ICT adoption without direct relevance to HRM functions; (c) consisted of editorials, opinion pieces, or non-peer-reviewed materials, except government reports; or (d) lacked sufficient conceptual or empirical detail for thematic synthesis.

The initial search yielded 47 potentially relevant sources. After removing 12 duplicates, 35 titles and abstracts were screened. Ten sources were excluded at that stage because they did not address HRM or the Nigerian public sector. The remaining 25 full-text articles were assessed for eligibility, and 7 were excluded because they focused on private-sector contexts or lacked sufficient empirical content. The final corpus comprised 18 sources for thematic synthesis (Table 3).

Data Extraction and Thematic Analysis

Data extraction followed a structured coding template based on the study objectives. For each source, the researchers recorded the sources' author(s), year, context or location, methodology, key findings, and relevance to the review. The extraction matrix also coded each study according to the main efficiency domain it addressed: administrative speed, data accuracy and reliability, cost reduction, strategic HR capability, employee performance and productivity, or HR service quality. In parallel, studies were coded for institutional conditions such as technological infrastructure, human-capacity constraints, organisational readiness, environmental pressure, and governance or change-management factors (Bhattacharyya *et al.*, 2021; Puspitarini *et al.*, 2018; Moutamir & El Qour, 2025).

Thematic analysis then identified patterns of convergence, variation, and contradiction across the evidence base. Consistent with the evidence, the analysis treated efficiency gains as conditional rather than automatic and interpreted mixed findings as reflections of differing institutional contexts rather than as anomalies to be discarded (Hammouri *et al.*, 2025; Rahman *et al.*, 2018; Syed *et al.*, 2023). No formal quality appraisal tool was applied, which aligns with the logic of thematic review. Instead, the review prioritised peer-reviewed sources, conceptual relevance, and the explanatory value of each study for the Nigerian public-sector context. Evidence that was mixed or contradictory remained in the synthesis because those tensions are analytically important for understanding why digital HR systems succeed in some institutions and stall in others.

Results and Discussion

This section synthesises the findings from the final corpus of 18 sources (Table 3), organised thematically around the three research objectives. Across the evidence base, the review shows a consistent positive relationship between electronic database systems and HRM efficiency, but it also shows that the size and durability of those gains depend on infrastructure, user competence, organisational readiness, and governance conditions (Aldmour *et al.*, 2015; Jimoh, 2025; Rahman *et al.*, 2018; Syed *et al.*, 2023).

Effect of Data Accessibility on HRM Efficiency

The reviewed literature consistently shows that electronic database systems improve HRM efficiency by strengthening data accessibility. Centralised digital databases allow HR personnel to retrieve employee information more quickly and accurately, thereby reducing delays associated with manual files and fragmented record systems. In practical terms, this improves recruitment, promotion, employee evaluation, and workforce planning, while also reducing duplication of effort across HR units and related departments (Ogunleye & Olatunji, 2022; Ibrahim & Bello, 2022; Nwankpa & Roumani, 2023; Jimoh,

2025; Morrison *et al.*, 2020). The broader evidence base converges on the same conclusion: digital HR systems improve administrative efficiency, workflow speed, information accessibility, and decision quality when organisations provide adequate infrastructure and employee digital literacy (Goundar *et al.*, 2020; Ishijima *et al.*, 2015; Jimoh, 2025; Lin & Kujabi, 2022; Morrison *et al.*, 2020; Oko *et al.*, 2016).

The evidence does not indicate any direct contradiction to the benefits of data accessibility. Instead, it shows a clear gradient in outcomes. More digitised institutions with stronger infrastructure realise larger gains, whereas resource-constrained public organisations realise smaller but still meaningful improvements. This pattern suggests that data accessibility is necessary for HRM efficiency, but it is not sufficient on its own; it must operate alongside reliable connectivity, usable systems, and staff competence (Akpamah & Matkó, 2022; Jimoh, 2025; Pasumarthy *et al.*, 2024; Rahman *et al.*, 2018).

Influence of Electronic Record Management on Administrative Efficiency

Electronic record management emerges as the central administrative mechanism through which electronic database systems improve HRM efficiency. Manual record-keeping remains vulnerable to misfiling, duplication, delayed retrieval, and data loss, whereas electronic systems strengthen data integrity, documentation quality, and traceability. In Nigerian public-sector settings, these improvements support accountability, transparency, and more reliable HR control (Adeosun & Popoola, 2024; Afolabi & Ezeani, 2023; Oko *et al.*, 2016). The wider literature reinforces this interpretation by showing that electronic record systems improve data handling, retrieval speed, information flow, and the operational quality of HR functions across developing-country public institutions (Aldmour *et al.*, 2015; Morrison *et al.*, 2020; Oko *et al.*, 2016).

At the same time, the literature shows that record-management gains remain conditional. The evidence identifies weak backup arrangements, poor interoperability, fragmented databases, and limited data-sharing protocols as recurring obstacles that undermine the reliability of electronic systems even after implementation (Bhattacharyya *et al.*, 2021; Kambalame *et al.*, 2026; McQuide *et al.*, 2023; Najafpour *et al.*, 2022). In the Nigerian public sector, this means that electronic record management should be understood not as a technical upgrade alone, but as an institutional practice requiring clear procedures for storage, retrieval, maintenance, interoperability, and data governance.

Impact of Automation of HR Processes on HRM Efficiency

Automation extends the efficiency effects of electronic database systems by reducing the labour intensity of routine HR tasks. The literature shows that automated payroll, recruitment, attendance tracking, performance appraisal, and training manage-ment improve consistency, reduce clerical error, and free HR personnel for more strategic work (Azize, 2024; Gbadebo, 2025; Panjaitan, 2023; Satispi *et al.*, 2023). This finding aligns closely with evidence from developing economies demonstrating that HRIS and e-HRM improve administrative speed, employee productivity, organisational effectiveness, strategic HR capability, and HR service quality (Al-Ajlouni *et al.*, 2019; Elayan & Sleimi, 2021; Goundar *et al.*, 2020; Hammouri *et al.*, 2025; Hussain *et al.*, 2025; Nyathi & Kekwaletswe, 2023; Shahreki *et al.*, 2025; William & Singh, 2023; Zaman *et al.*, 2026).

Yet automation is not self-executing. Its effectiveness depends on system usability, digital literacy, managerial backing, and organisational readiness. Where those conditions are weak, institutions often retain manual routines alongside digital systems, thereby reducing the efficiency benefits of automation (Bondarouk *et al.*, 2016; Bhardwaj *et al.*, 2025; Rahman *et al.*, 2018; Shahreki *et al.*, 2025).

Challenges and Implementation Barriers

The review identifies four interrelated barriers that constrain the effectiveness of electronic database systems in Nigerian public-sector HRM.

Infrastructure constraints. Unstable electricity supply, weak internet connectivity, insufficient hardware, outdated software, and poor interoperability remain persistent obstacles to digital HR implementation (Kambalame *et al.*, 2026; Kanthali *et al.*, 2025; McQuide *et al.*, 2023; Molenaar *et al.*, 2024; Oprea *et al.*, 2024; Salehi *et al.*, 2025; Uzochukwu *et al.*, 2016).

Human-capacity limitations. Low digital literacy, inadequate training, limited technical expertise, and staff turnover constrain effective system utilisation and maintenance (Febrian *et al.*, 2025; Fontaine *et al.*, 2025; Jimoh, 2025; Nogueira *et al.*, 2026; Rana & Kaur, 2024; Zhang *et al.*, 2024).

Bureaucratic and organisational resistance. Public-sector cultures characterised by rigid procedures, attachment to legacy systems, and weak leadership support often slow implementation and produce parallel manual and digital workflows (Chabani, 2020; Harfianto *et al.*, 2022; Naveed *et al.*, 2021; Ramírez & Tejada, 2022; Shafique *et al.*, 2024).

Policy and governance weaknesses. Inadequate budgetary support, fragmented databases, weak coordination mechanisms, poor monitoring systems, and limited strategic alignment undermine the sustainability of digital HR reforms (Bhattacharyya *et al.*, 2021; Khan *et al.*, 2021; Najafpour *et al.*, 2022).

Taken together, these barriers explain why many Nigerian public institutions continue to experience a gap between digital ambition and operational reality. The evidence consistently shows that efficiency gains emerge only when technological readiness, organisational capability, human capacity, and governance arrangements evolve simultaneously (Alam & Islam, 2021; Jimoh, 2025; Moutamir & El Qour, 2025; Puspitarini *et al.*, 2018; Syed *et al.*, 2023).

Revisiting TAM and RBV

The findings provide strong support for both the TAM and the RBV, while simultaneously demonstrating that the relationship between electronic database systems and HRM efficiency is embedded within a broader institutional context. As synthesised in Figure 1, TAM and RBV explain complementary dimensions of the implementation process. TAM illuminates the behavioural foundations of adoption by highlighting the importance of perceived usefulness, perceived ease of use, self-efficacy, and user confidence in shaping the effective utilisation of electronic database systems (Al-Khowaiter *et al.*, 2015; Amoako *et al.*, 2023; Jimoh, 2025). The review findings indicate that positive user perceptions encourage actual system use, thereby enabling organisations to realise the benefits associated with data accessibility, electronic record management, and HR process automation.

RBV, in contrast, explains why some organisations derive greater value from electronic database systems than others. As shown in Figure 1, electronic database systems function as strategic organisational resources whose effectiveness depends on complementary assets, including technological infrastructure, skilled personnel, organisational support, leadership commitment, and governance capability (Alam & Islam, 2021; Bhattacharyya *et al.*, 2021; Puspitarini *et al.*, 2018). Where these supporting resources are present, organisations are better positioned to convert digital HR investments into improvements in administrative efficiency, data quality, decision-making, productivity, and service delivery.

However, the evidence also suggests that neither TAM nor RBV independently provides a sufficient explanation for implementation outcomes in the Nigerian public sector. The thematic

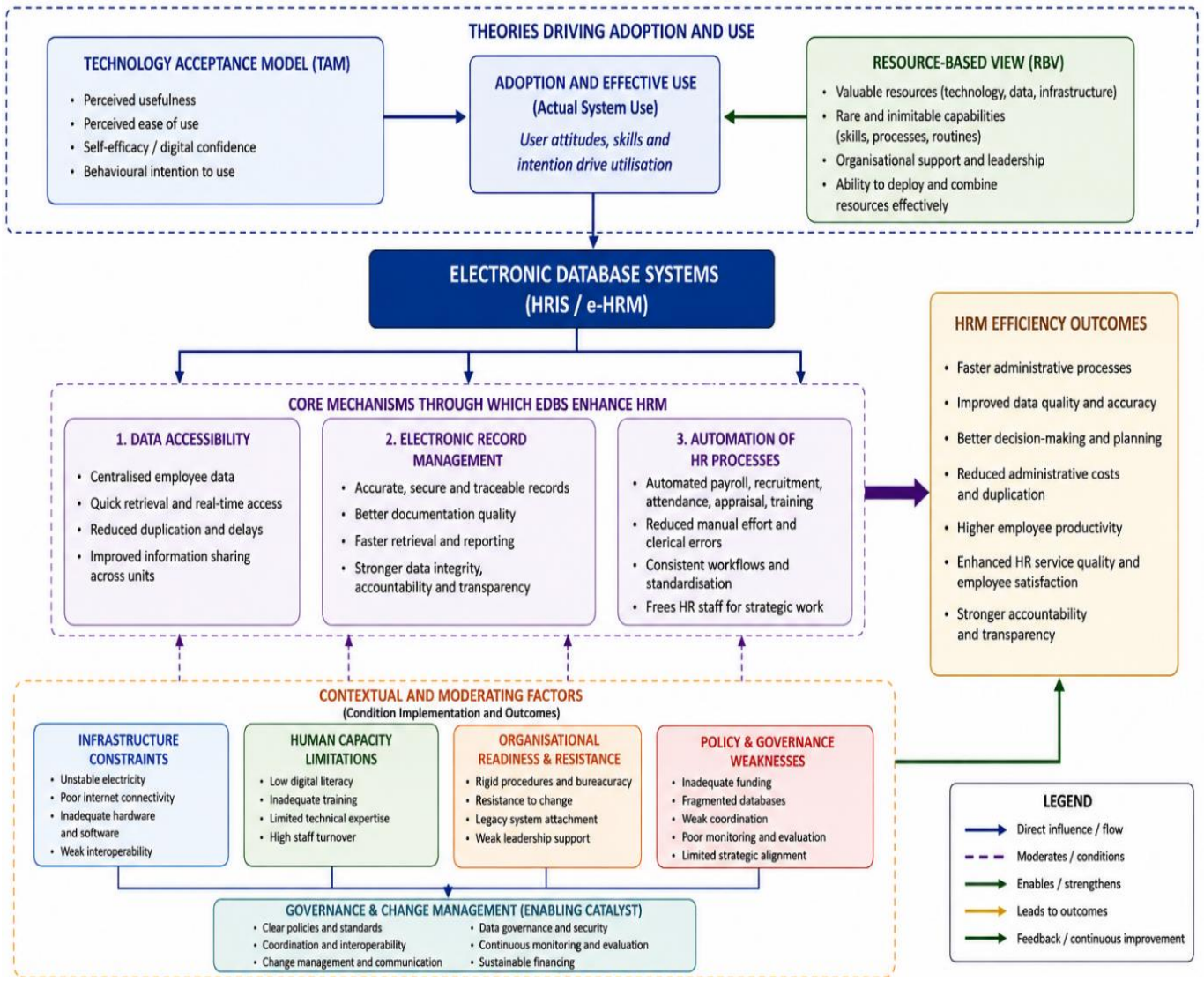

Figure 1. Integrated Socio-Technical Framework of Electronic Database Systems and HRM Efficiency in the Nigerian Public Sector.

review consistently identified infrastructural constraints, human-capacity limitations, organisational resistance, and policy and governance weaknesses as critical factors shaping whether electronic database systems achieve their intended benefits. As reflected in Figure 1, these contextual and moderating factors influence all three efficiency pathways (i.e., data accessibility, electronic record management, and process automation) and help explain the variation in outcomes observed across public institutions.

The findings therefore support a broader socio-technical interpretation of digital HR transformation. Figure 1 integrates TAM and RBV with institutional perspectives by demonstrating that adoption and effective use are necessary but insufficient conditions for HRM efficiency gains. Sustainable improvements emerge only when technological resources, user capabilities, organisational readiness, governance arrangements, and change-management processes evolve in a mutually reinforcing manner. In this regard, governance and change management occupy a particularly important position as enabling catalysts that strengthen coordination, interoperability, data governance, policy alignment, and continuous improvement. Consequently, the study concludes that HRM efficiency in the Nigerian public sector is best understood as the outcome of an integrated socio-technical system in which technological adoption, organisational capabilities, and institutional conditions jointly determine implementation success (Moutamir & El Qour, 2025; Rahman *et al.*, 2018; Syed *et al.*, 2023).

Limitations of the Review

This review has several limitations. First, the search strategy relied primarily on Google Scholar and ResearchGate. Although both platforms provide broad access to African and developing-country scholarship, they do not exhaust the available literature. Studies indexed only in Scopus, Web of Science, JSTOR, or ProQuest may therefore remain outside the corpus.

Second, the evidence base leans toward positive findings. The reviewed literature consistently reports that electronic database systems improve HRM efficiency through enhanced administrative speed, data quality, decision-making, and productivity (Aswanth Kumar & Parumasur, 2013; Goundar *et al.*, 2020; Morrison *et al.*, 2020; Jimoh, 2025). However, the same body of evidence indicates that these benefits are highly contingent upon infrastructure quality, digital literacy, organisational readiness, and governance arrangements (Rahman *et al.*, 2018; Alam & Islam, 2021; Pasumarthy *et al.*, 2024; Siddique *et al.*, 2025). Consequently, studies reporting implementation failures or limited outcomes may be underrepresented.

Third, the review did not apply a formal methodological quality appraisal tool. Although peer-reviewed sources were prioritised, variations in methodological quality may influence the reliability of the synthesized findings.

Fourth, while the study focuses on Nigerian public-sector organisations, some supporting evidence derives from comparable developing-country contexts including Ghana, Bangladesh,

Tanzania, The Gambia, Jordan, Indonesia, and South Africa (Ishijima *et al.*, 2015; Rahman *et al.*, 2018; Morrison *et al.*, 2020; Lin & Kujabi, 2022; Nyathi & Kekwaletswe, 2023). While these contexts offer valuable comparative insights, contextual differences may limit direct generalisation to Nigeria.

Fifth, the 2022–2025 publication window prioritised contemporary evidence but may have excluded earlier foundational studies relevant to understanding HRIS and electronic database system evolution. Finally, as a literature review, this study relies entirely on secondary evidence and does not generate primary empirical data from Nigerian public-sector institutions.

Conclusion

This study examined the relationship between electronic database systems and HRM efficiency in Nigerian public-sector organisations through a qualitative thematic literature review. The evidence demonstrates that electronic database systems improve HRM efficiency primarily by strengthening data accessibility, enhancing electronic records management, and automating routine HR functions. Across the reviewed literature, these systems facilitate faster information processing, improve the accuracy and reliability of employee records, reduce administrative workload, and support more effective decision-making (Oko *et al.*, 2016; Morrison *et al.*, 2020; Goundar *et al.*, 2020; Jimoh, 2025).

The findings further indicate that electronic database systems enhance both operational and strategic HR functions. Beyond reducing paperwork and administrative delays, integrated HRIS platforms contribute to workforce planning, HR analytics, performance management, and organisational responsiveness (Aldmour *et al.*, 2015; Elayan & Sleimi, 2021; Priya & Jayalakshmi, 2024; Pasumarthy *et al.*, 2024). These outcomes position electronic database systems as strategic organisational resources capable of supporting long-term public-sector effectiveness.

However, the review also reveals that these benefits are conditional rather than automatic. The literature consistently identifies infrastructural deficiencies, bureaucratic resistance, limited digital competencies, inadequate leadership support, fragmented governance structures, and weak policy alignment as major constraints to successful implementation (Bhattacharyya *et al.*, 2021; Naveed *et al.*, 2021; Khan *et al.*, 2021; McQuide *et al.*, 2023; Jimoh, 2025). Consequently, technological investments alone cannot guarantee improved HRM efficiency.

The findings align strongly with the TAM and the RBV. Consistent with TAM, perceived usefulness, ease of use, and user competence shape system adoption and utilisation (Al-Khowaiter *et al.*, 2015; Amoako *et al.*, 2023). Consistent with RBV, organisations derive value from electronic database systems only when they successfully combine technological assets with complementary resources such as skilled personnel, institutional support, and organisational capabilities (Elayan & Sleimi, 2021; Siddique *et al.*, 2025).

The study therefore concludes that electronic database systems can substantially improve HRM efficiency within Nigerian public-sector organisations, but sustainable benefits require simultaneous investments in infrastructure, workforce capability, governance mechanisms, and organisational change management. Institutions that address these complementary conditions are more likely to realise the full strategic and operational benefits of digital HR transformation.

Recommendations

Investment in Modern Electronic Database Systems: Public-sector organisations should invest in modern and integrated electronic database systems capable of supporting recruitment, personnel administration, payroll, performance management, and workforce planning. Evidence consistently shows that high-quality HRIS platforms improve administrative efficiency, data accuracy, and strategic decision-making (Aswanth Kumar & Parumasur, 2013; Morrison *et al.*, 2020; Priya & Jayalakshmi, 2024).

Strengthening Digital Literacy and Continuous Capacity Building: Government agencies should institutionalise regular training programmes for HR personnel and ICT staff. Digital literacy, technical competence, and user confidence significantly influence successful adoption and utilisation of electronic HR systems (Jimoh, 2025; Siddique *et al.*, 2025; Shahreki *et al.*, 2025).

Provision of Adequate ICT Infrastructure: Federal and state governments should prioritise investments in reliable electricity supply, internet connectivity, modern hardware, cybersecurity infrastructure, and system maintenance. Persistent infrastructure deficiencies remain among the most significant barriers to digital HR transformation in developing-country public sectors (Uzochukwu *et al.*, 2016; Kanthali *et al.*, 2025; Molenaar *et al.*, 2024).

Adoption of Integrated and Interoperable HR Platforms: Public organisations should replace fragmented databases with interoperable HR systems capable of linking personnel records, payroll administration, recruitment processes, and performance management functions. Integrated systems reduce duplication, minimise errors, and improve organisational coordination (McQuide *et al.*, 2023; Nyathi, 2024).

Strengthening Data Governance, Security, and Privacy: Public institutions should establish robust data governance frameworks incorporating access controls, encryption, backup protocols, cybersecurity safeguards, and compliance with applicable data protection regulations. Effective governance improves data quality, trust, and long-term system sustainability (Najafpour *et al.*, 2022; Siddique *et al.*, 2025).

Institutionalising Change Management and Leadership Support: Electronic database implementation should be treated as an organisational transformation initiative rather than a purely technological project. Strong leadership commitment, stakeholder engagement, communication strategies, and change-management programmes are essential for overcoming bureaucratic resistance and fostering sustained adoption (Puspitarini *et al.*, 2018; Moutamir & El Qour, 2025; Al Maazmi *et al.*, 2026).

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