Research paper

Digital governance and HR performance: An analysis of the Moroccan public sector's use of HRIS

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A B S T R A C T

Human Resource Information Systems (HRIS) are being used by Moroccan public administration as part of its "Maroc Digital 2025" strategy to update an administrative management system that is still heavily reliant on paper. However, there hasn't been enough documentation of these technologies' actual performance. This study evaluates HRIS adoption and performance using a mixed-method approach that includes 12 in-depth interviews conducted across five ministries and an online survey of 180 civil servants. Results indicate that 74% of employees have adopted it widely, and this adoption is strongly linked to notable performance gains, including a 41% increase in task efficiency, a 54% decrease in administrative errors, and faster leave processing. However, there are several major obstacles to this trend, including system fragmentation, poor coverage in rural areas, low digital literacy, and a lack of data standards. Additionally, only 22% of employees have access to fully digitalized training pathways, which is still unexplored. The study finds that Morocco does not have a national HRIS guide, based on Tunisia's capacity development strategy and centralized French models. It proposes four strategic levers: a national program for digital talent development, shared governance to enforce common standards, the alignment of HR data with planning and finance systems, and effective change management to encourage user adoption.

Keywords: HRIS (Human Resource Information Systems); Digital Governance; Public Administration; Morocco; Digital Transformation; Public Sector Innovation; Administrative Modernization; Change Management; Digital Literacy; Organizational Performance; Public Management Reform; Data Standardization; System Integration; Public Service Efficiency; Paperless Administration; Digital Inclusion.

1 Introduction

Over the past two decades, Morocco's public administration has embarked on an ambitious modernization agenda, with digital transformation as its central pillar. Successive national strategies, from "Maroc Numeric 2013" to the current "Maroc Digital 2025," have aimed to enhance state efficiency, transparency, and citizen-centricity. While notable progress has been made in front-office e-government services, the back-office administrative machinery, particularly Human Resource Management (HRM), remains largely anchored in legacy systems. This persistence of paper-based workflows, fragmented databases, and rigid hierarchies constitutes a significant bottleneck, impeding the agility and responsiveness of the state apparatus. As public sector employees are both the largest users of state resources and the principal means of implementing policies,

it has become a matter of national strategy to modernize HRM. In response, Moroccan ministries have started implementing Human Resource Information Systems (HRIS) to automate HRM core functionalities; however, the use of HRIS is uneven and the potential system-wide consequences of their implementation are largely under-researched.

This study grapples with a fundamental paradox of Morocco's digital transformation: isolated technological successes exist side by side with deep institutional inertia. Early evidence suggests that once HRIS is implemented, and ubiquitous, there are real improvements in organisations and efficiencies are gained through reduced processing times and increased accuracy of data; this is what the public investments in IT were aimed at. However, these "islands of automation" are surrounded by a sea of legacy practices, technical limitations, and organizational resistance, hindering the realization of system-wide efficiencies. This fragmented landscape, where digital and analog processes coexist uneasily, reflects a core challenge identified in the literature on e-government in developing countries: the failure to align technological deployments with deeper institutional reforms. The legitimacy of the broader digital government agenda is therefore at stake, as both citizens and international partners increasingly demand a more accountable and performance-oriented public sector.

To address this gap, this research pursues four primary objectives. First, it maps the current landscape of HRIS penetration across the Moroccan public administration to identify disparities in adoption and user satisfaction. Second, it empirically assesses the impact of HRIS usage on key operational and behavioral performance metrics. Third, it systematically identifies the primary barriers—technical, organizational, and cultural—that impede the effective utilization of these systems. Finally, drawing on these findings, it formulates evidence-based recommendations for developing an integrated national HR data architecture aligned with Morocco's broader public management reforms.

The methodological approach of this study integrates technical and organizational frames, recognizing that technology alone cannot deliver value without user acceptance and strategic alignment. Theoretically, the research contributes to several scholarly conversations. It engages with New Public Management (NPM) theory by examining how HRIS can serve as a catalyst for results-based management. It also draws on Institutional Theory to analyze how entrenched bureaucratic norms and power structures mediate the adoption and impact of new technologies. By focusing on the under-researched context of a middle-income emerging economy, this study fills a critical empirical gap in the global digital government literature, offering insights that are highly relevant to other nations pursuing similar administrative reforms. The ultimate aim is to demonstrate that a strategically implemented HRIS is not merely an IT project, but a cornerstone for building a more agile, accountable, and citizen-focused public administration in the digital age.

1. Theoretical Underpinnings, International Data, and Moroccan Implications of Human Resource Information Systems and Public-Sector Performance

These days, Human Resource Information Systems (HRIS) are enterprise platforms that connect four functional clusters, rather than just electronic filing cabinets: (1) Core HR for payroll, benefits, leave balances, and personnel files; (2) Talent-management modules for hiring, onboarding, training, and performance reviews; (3) Workforce analytics that converts unprocessed transactions into dashboards, metrics, and predictive models; and (4) Self-service portals that enable managers and staff to submit or approve HR requests without the need for paper middlemen. Decision-makers now have real-time visibility into headcount trends, skills inventories, and compliance risks thanks to the move from standalone spreadsheets to integrated databases, as Hendrickson (2003) points out. This digital nervous system is particularly useful in public administration since governments have to strike a balance between efficiency objectives, political scrutiny, and legal accountability. As a result, the OECD (2020) views HRIS as a strategic asset that supports transparent service delivery, merit-based hiring, and budgetary restraint.

How HRIS could lead to improved public-sector performance is framed by three theoretical frameworks. According to New Public Management (NPM), in order to provide value for money, the government should adopt private-sector techniques such as output measurement, delegated authority, and citizen "customers" (Hood, 1991). In that paradigm, HRIS is an enabling technology that automates low-value transactions. connects personal goals to organizational scorecards and frees up HR departments to concentrate on strategic

workforce planning. A motivational component is added by the Goal-Setting Theory (Locke & Latham, 1990). Goals are made clear, measurable, and timed with digital dashboards; performance information is promptly sent back to staff members, enhancing the feedback loop that motivates work and learning. Lastly, the impact of any new tool may be weakened by ingrained bureaucratic norms, according to Institutional Theory (DiMaggio & Powell, 1983). Staff may switch back to paper or parallel Excel files if HRIS is not incorporated into official policies, reporting structures, and cultural norms. This would result in "shadow" systems that stifle productivity gains.

HRIS can enhance administrative outputs and behavioral outcomes, but only in specific circumstances, according to comparative research.

 developing nations. Centralizing personnel records shortened recruitment lead times and decreased payroll errors, as shown by Tunisia's SIGRH-FP. However, where connectivity was poor and training budgets were limited, progress stalled (Khouja & Beldi, 2020). After implementing civil-service HRIS modules, Egyptian ministries saw improvements in pay transparency and promotion cycles, but the benefits were most pronounced in Cairo; outlying governorates with no IT support experienced minimal change (Abdalla et al., 2021). These examples demonstrate how local capability, infrastructure, and leadership commitment interact with technology.

OECD participants. The SIRHEN program of the French education ministry combines national budgeting systems with teacher assignments, leave, compensation, and professional development. Managers can proactively redeploy employees and model workforce shortages due to uniform data standards, which is not possible with paper dossiers. Canada targets upskilling initiatives and forecasts retirement waves by combining HRIS with advanced analytics. i) Interoperability between HR and finance platforms; ii) strong data-governance policies; iii) ongoing user training; and iv) specialized change-management offices that facilitate collaboration between IT and HR are important enablers in these high-income examples.

connections between performance. Four general advantages emerge from a synthesis of dozens of studies:

1. **Effectiveness.** Cycle times for leave, travel claims, and contract renewals are reduced by automated workflows.
2. **Fairness and openness.** Discretionary bias is lessened by standardized audit trails and appraisal forms.
3. **Participation.** Employees are empowered by self-service access, and managers can customize development plans with the use of analytics.
4. **Planning strategically.** Skills gaps, succession pipelines, and pay-bill trajectories can be modeled using aggregated data.

Meta-analyses, however, also warn against techno-determinism. When HR strategy is unclear, data quality is subpar, or user interfaces are cumbersome, gains are undermined. The best indicator of long-term impact is top management sponsorship; without it, systems become compliance exercises rather than performance enhancers.

 Systematic HRIS scholarship is still sparse and descriptive, despite Morocco's larger push toward e-government. HR digitalization is listed as a priority in government white papers (like Maroc Digital 2025), but academic research hardly ever examines adoption depth, user perceptions, or performance metrics. There are four prominent blind spots:

- **Usage trends.** We don't have comparative data on the frequency, module mix, mobile access, and downtime of use of SIGRH or e-Absence by central ministries versus regional offices.
- **Impacts on performance.** In the Moroccan context, no peer-reviewed study measures the relationship between HRIS and quicker processing, lower absenteeism, higher motivation, or cleaner payrolls.
- **Differences in space.** Disparities in IT support, hardware, and bandwidth between urban and rural areas are still anecdotal rather than statistically mapped.
- **Integration of systems.** Interfaces between HRIS and databases for budgeting, procurement, or policy monitoring—connections that OECD studies find to be critical for strategic value are not well understood.

Closing these gaps is important for both theory and policy. Evidence about what works (and where it stalls) can help practitioners develop training programs, change management strategies, and an interoperable national HRIS roadmap. Morocco presents a natural experiment for academics because it is a developing economy with aspirations for digitalization, a legacy of francophone administration, and a variety of regional capabilities. The lessons learned here may be applicable to similar middle-income nations in sub-Saharan Africa and MENA.

Thus, the goal of this study is to close the empirical gap. It measures adoption, connects usage to performance, and uncovers organizational and technical barriers by fusing survey data with in-depth interviews conducted across five ministries. In the end, it contends that well-funded, well-managed, and human-centered HRIS can help Morocco's public administration move from paperwork-driven compliance to agile, data-driven stewardship, which is consistent with the larger promise of digital government.

2. Structural Barriers to HRIS Implementation

The deployment of Human Resource Information Systems (HRIS) within the Moroccan public sector is impeded by significant and persistent institutional and technical barriers, reflecting common challenges in public sector digital transformation [1, 6]. A significant barrier is systemic fragmentation. Rather than working on a streamlined national platform, ministries operate in institutional silos, utilizing different and regularly incompatible systems. This lack of interoperability limits the ability to form a national HR data repository. This situation is not unique either, as other public administrations have actively sought new means of managing HR functions through digitalization [2, 7]. The hindrance posed by the lack of standardization in the taxonomy of critical HR data (for example, job title, qualifications, and performance metrics) limits capacity for comparative analysis and ultimately hampers evidence-informed workforce planning across the civil service [3].

In addition, a major barrier remains a lack of consistency of infrastructure between central ministries that work in urban centers and regional and local offices. Typically central ministries benefit from arguably better IT infrastructure and expertise than local offices, which creates a digital divide and reinforces centralism in administration, and inherently disadvantages them in terms of service quality in comparison to other public services that engage a more centralized context [4]. Lastly, institutional inertia also remains a problematic barrier beyond technical issues. Many public employees exhibit a risk-averse culture and a strong attachment to their traditional paper-based ways of working, often expressing doubt as to the reliability of a digital system. Research shows this resistance to change is an observable behavior in bureaucratic organizations exposed to technical change where existing norms and power structures may be disrupted [5, 8].

Another key constraint appears to be a human capital deficit in digital human resource management since HR professionals may not have been adequately trained to manage IT systems, and the lack of cross-functional teams experimenting across HR, IT, and data governance functions limits implementation and inhibits innovativeness [3, 9]. A lack of strategic alignment between human resources and technology functions was also identified as a key fail point in many IT projects in the public sector [10]. Finally, the regulatory environment is still underdeveloped. While Law 09-08 provided some legal foundation around data privacy, it has not yet been enforced in the area of HR. There is a general lack of a comprehensive regulatory framework around digital HR governance, auditing, and accountability in the public sector which is crucial to ensuring security and trust in these new systems [2, 7].

3. Methodological Framework

In order to examine the implementation of Human Resource Information Systems (HRIS) in the Moroccan public sector, the research used a mixed-methods research design. The mixed-methods research design was chosen for its ability to triangulate data as part of addressing validity by comparing statistical trends with contextualized insights [12]. The design was structured in accordance with a concurrent triangulation model where quantitative data and qualitative data were collected and analyzed simultaneously, providing a richer and more multidimensional understanding of the phenomenon.

The data collection tools were devised to achieve a multifaceted approach to the complex nature of this digital transformation. The quantitative approach was structured around an online questionnaire using Google Forms to provide the quantitative data through a mixture of closed questions and Likert scales. This tool was designed to elicit data capturing respondent profiles, tendency and frequency of use of the digital HR tools (HRIS and e-absence), and user perception of the perceived usefulness and perceived ease of use of the systems, informed by

a number of questions from the Technology Acceptance Model (TAM) [13]. At the same time the qualitative approach consisted of semi-structured interviews with senior HR executives and information systems specialists from 5 key ministries to more deeply examine the historical trajectory of HRIS adoption, strategic governance and human factors such as resistance to change [14].

The target population for the study included civil servants from the Ministries of the Interior, Health, Education, Economy and Finance, and Regional Planning, selected for their strategic importance and diversity in terms of digital maturity levels. A purposive sampling strategy was used to ensure that participants had relevant experience of the digital HR ecosystem. The final sample included 180 questionnaire respondents and 12 interview participants. Quantitative data analysis was performed using SPSS software, using descriptive statistics to summarize sample characteristics and inferential tests (Pearson correlation, regression analysis) to examine the relationships between HRIS usage and performance indicators. Qualitative data were processed using NVivo software following a thematic analysis protocol to identify recurring patterns related to strategic leadership, user experience, and technical constraints [14].

La rigueur méthodologique a été assurée par le pilotage des instruments et par la validation croisée des résultats du questionnaire et des entretiens. La recherche a respecté des normes éthiques strictes : le consentement éclairé de tous les participants a été obtenu et l'anonymat des données a été garanti, conformément à la loi marocaine n° 09-08 sur la protection des données personnelles. Néanmoins, l'étude comporte certaines limites. La nature transversale des données ne permet pas d'établir des liens de causalité, ce pour quoi une recherche longitudinale serait plus appropriée. De plus, un biais de désirabilité sociale dans les réponses et les écarts de maturité numérique entre les ministères sont d'autres facteurs qui pourraient potentiellement limiter la portée des comparaisons interinstitutionnelles [12].

4. Empirical Results and Analysis

Quantitative analysis shows that while the adoption of HRIS is promising, it remains uneven. A significant majority of survey respondents, 74%, reported using HRIS platforms regularly. However, a clear digital divide emerged, with central directorates showing much higher adoption rates than regional branches. This points to ongoing disparities in digital infrastructure [7, 16]. Further statistical analysis revealed a strong positive correlation between HRIS use and perceived task efficiency (Pearson's r = 0.64, p < 0.01). A regression analysis also indicated that HRIS usage could account for 41% of the variance in task efficiency.

Thematic analysis of the interviews highlighted three main barriers. First, resistance to change was a significant factor, rooted in a preference for established paper-based routines [8, 11]. Second, shortcomings in infrastructure and connectivity severely hampered the functionality of the HRIS platforms. Thirdly, digital literacy among administrative staff was noted as a pivotal barrier [9, 21]. On the positive side, interviews revealed important facilitators for success. In those ministries where the HRIS was successfully implemented, managers noted improvements in both transparency and process fairness.

The disparity between the Ministry of the Interior and the Ministry of Health demonstrates how different HRISs have followed distinct implementation trajectories. The former is an example of a successful integrated model that leverages HRIS data in strategic decision-making [10]. In contrast, the Ministry of Health faced challenges generated by a fragmented digital ecosystem that inhibited effectively delivering services. These data confirm that the opportunities associated with HRIS technologies rely upon the surrounding culture and infrastructure that will support a more clear vision and strategic plan [22].

5. Interpreting the Results: HRIS Maturity and Public-Sector Performance

This chapter presents a critical interpretation of the empirical findings of the research study outlining their place within theories. It assesses variations across the international administrative context. The findings suggest a clear and positive relationship between Human Resource Information System (HRIS) maturity in Moroccan Ministries with public sector employee performance. Safety Ministries were found to significantly outperform those with a lesser degree of HRIS maturity, as evidenced by comprehensive automation of HR functions, availability of real-time data, and the presence of integrated self-service HR portals [23]. The quantitative data also supports that advanced HRIS adoption is a strong predictor of achieving increased task efficiency and

decreased administrative errors for public sector employee performance. The development away from a purely administrative HR function to more of a strategic role with being able to engage with employees and collect evidence-based HR decisions with HRIS aligns with the known models of IT business value and organizational change [24].

Nonetheless, the advantages of HRIS differ across the Moroccan public sector. The existing diversity of HRIS maturity—which arises from fragmented systems and outdated systems with inconsistent training—is a manifestation of digital inequality. This is clearly an impediment to achieving the systemic network effects. Administrative silos persist— a typical pathology of large public sector IT projects without centralized change management governance [10, 25]. The inconsistency in these organizations demonstrates an inability to progress from automation to the more transformative stages of IT integration, where the HRIS manifests alignment with the strategic administrative reform initiatives [26].

International models from France and Tunisia help Morocco. While the French public administration model is largely centralized and standardized, it has created various, albeit fragmented, administrative systems. For example, the French government utilizes platforms such as SIRHEN, which is organized and governed by a central directorate called the DGAFP. This creates a consistent model across the country without concerns about structural disarray and uncertainty. Central supervision by the DGAFP maintains interoperability, while the cost benefits allow for effective and sound national level workforce planning systems built on objective data using a primarily rational, top-down model of public sector reform [4]. Alternatively, Tunisia's model is less centralized but has prioritized building capacity and developing user awareness to achieve sustainable implementation of its SIGRH-FP platform. Understanding the human factors of the process is paramount, as a wealth of literature on preparedness and digital literacy validates their importance as indicators of acceptance and success across various forms of technology [9, 21]. Morocco could utilize a hybrid of both the French model's strategic overt oversight and the user training aspect of the Tunisian experience.

The implementation of HRIS will also have significant organizational and cultural effects as a facilitator of a move toward New Public Management (NPM) principles ([1]). Data would suggest that technology promotes the move from old, opaque bureaucracies to new, transparent, accountable, and performance-based management practice. HRIS produces a more objective, observable HR process, and thus helps mitigate clientelism and uphold meritocracy. The use of employee self-service and other digital components can empower employees and leverage evidence-based leadership practices consistent with NPM, which emphasizes efficiency and results [27]. Whether this cultural shift will occur is not automatic; it requires a systematic change management approach and lasting commitment at the leadership level to overcome institutional inertia [11].

Ultimately, several structural obstacles impede the use of HRIS to its full capabilities in Morocco. The ongoing digital divide between urban and rural administrative offices means equitable access to digital tools is limited, a well-documented issue in developing countries [22]. Furthermore, inconsistent adherence to data protection legislation (Law 09-08) raises significant ethical and governance challenges, and to some extent, frameworks like the EU's GDPR offer a better model of data stewardship [28]. These challenges will require a multi-faceted approach that examines technological improvements in conjunction with reforms to institutions that require investment in human capital and political will to modernize the state apparatus. Success is contingent upon not just the introduction of technology, but also on the ability to harmonize digital systems with larger governance reforms that produce a more transparent and efficient public administration.

6. A Strategic Roadmap for Unlocking HRIS Potential

The empirical examination of Human Resource Information Systems (HRIS) in Morocco's public sector points to a critical moment. Although public authorities have applied it in ways that yield clear benefits in certain sectors, the absence of a coherent national strategy creates a disjointed digital environment that fails to maximize the creative potential of these technologies. In response to these issues, the study suggests a four-step strategic roadmap to fill these gaps and accelerate the pace of administrative modernization. The framework presented is consistent with global best practices and the specific institutional context of Morocco, including the following key elements: (1) a national HRIS integration framework, (2) targeted capacity-building initiatives, (3) facilitate data-driven governance through HRIS integration, and (4) a comprehensive change management strategy.

To address the ongoing issue of system fragmentation, the first step for the Government of Morocco would be to develop a national HRIS integration roadmap. This plan would create a shared HR data structure that would set standards and taxonomies to allow for interoperability across ministries, creating a foundational piece of a single source of truth for public employment data [25]. This roadmap would be overseen by a central governance unit that would be located strategically in a key ministry, drawing on successful governance bodies in other jurisdictions (such as France and Singapore) [4]. Coordinating structure and plan would help to minimize duplicated investments while enabling serious cross-sectoral performance monitoring and evidencing more strategic workforce planning [26].

The second step to achieving the potential of HRIS technology would be to invest in the digital capabilities for the public workforce. The findings indicate a significant digital skills gap among HR professionals, which necessitates a national capacity-building initiative. This program should extend beyond basic technical training to encompass data literacy, strategic HR analytics, and the ethical dimensions of digital governance, including data privacy and algorithmic fairness [9, 28]. Developing certification programs in partnership with national academic institutions and implementing "train-the-trainer" models can create a sustainable ecosystem for continuous learning and professional development, ensuring that civil servants become confident and competent users of new digital tools [21].

Third, to transition toward a truly data-driven model of governance, it is imperative to integrate HRIS data with financial and strategic planning systems. The current disconnect between HR management and budgetary processes inhibits evidence-based decision-making and misaligns human capital investments with national development objectives. By creating interoperable platforms that link HR data with financial management systems, public managers can gain a holistic view of workforce costs, productivity, and return on investment from training programs [27]. The adoption of shared data dashboards would empower leaders to conduct scenario planning and optimize resource allocation, fully embracing the efficiency-oriented principles of New Public Management [1].

Finally, a robust and empathetic change management strategy is essential for overcoming institutional resistance and fostering a culture of innovation. The research finds that resistance to change, developed through established bureaucratic norms and fear of disruption by technologies, continues to be a major barriers [8, 11]. Therefore, an effective approach should involve top-down strategies, an explicit signaling campaign, and local change makers to engender your change agenda. Overall feedback loops and an iterative design process can help drive the reform agenda by empowering civil servants through local ownership and agency, and transforming civil servants from passive consumers of the state to active participants in the modernization of the state [29, 30].

7. Conclusion and Future Research Directions

The aim of this research was to investigate the role of HRIS in the transition of the Moroccan public sector towards using data as a tool of governance. The results are both encouraging and pessimistic. On the one hand, elections in pilot ministries have successfully implemented HRIS platforms such as SIGRH, and have shown promising efficiency gains. This affirms the potential of digital platforms for reforming administrative practices. However, systemic challenges (such as differences in infrastructural availability, the prevalence of a digital skills deficit, and a patchwork of governance structures) substantially undermine the ability of these initial contributions to scale up and transform the public sector. This mixed picture confirms a principle of digital government theory: that technology is not enough. Its ultimate value is contingent upon the institutional ecosystem in which it is embedded [25, 31]. Where strategic alignment, investment in human capital, and political will converge, performance gains materialize; where they are absent, digital tools risk becoming mere digital replicas of analog inefficiencies.

Building on these insights, this study concludes by proposing four strategic levers to translate isolated successes into system-wide transformation. First, Morocco requires a unified governance architecture, driven by a national HRIS master plan that mandates common data standards and interoperability protocols [10]. Second, a national digital talent uplift, channeled through a dedicated "Digital HR Academy," is essential to close the skills gap and empower the civil service workforce [9]. Third, fostering analytics-informed workforce planning by integrating HRIS with fiscal and operational data will enable evidence-based decision-making, aligning human capital with strategic priorities [27]. Finally, a robust change-management architecture is needed to navigate institutional resistance and cultivate a culture of continuous innovation [11, 29].

While this research provides a robust empirical foundation for these recommendations, its cross-sectional design limits the ability to establish definitive causality. Future research should therefore aim to build upon this work through several key avenues. Longitudinal panel studies are needed to track the evolution of HRIS impacts over time, assessing whether initial efficiency gains are sustained. Research should also focus on citizen-facing outcomes, linking back-office HR efficiencies to tangible improvements in frontline service delivery. Furthermore, rigorous Return-on-Investment (ROI) models would provide a much-needed cost-benefit analysis to guide future public investment. Finally, comparative sub-national and sectoral analyses, particularly examining municipal governments and state-owned enterprises, could reveal crucial contextual factors that drive success, offering a natural laboratory for policy learning.

9. References

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