

Elevating Public Sector HR: A Comprehensive Exploration of E-HRM Adoption Drivers and Impacts

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Abstract - This comprehensive study explores the intricacies of Electronic Human Resource Management (e-HRM) adoption within public sector organizations. Focusing on adoption drivers, e-HRM typologies, and the evolving role of technology, the research uncovers diverse opportunities and challenges faced by government agencies in the digital era. The findings emphasize the potential of e-HRM to enhance both strategic HR functions and operational efficiency. The proposed conceptual model, incorporating organizational, political, legal, social, technological, economic, and environmental perspectives, provides a nuanced understanding of the complexities surrounding e-HRM adoption. By acknowledging the transformative influence of Artificial Intelligence (AI) on HR practices, the study underscores the interconnected nature of HRM effectiveness and organizational outcomes. In conclusion, this research contributes valuable insights for HR practitioners and decision-makers navigating the dynamic landscape of e-HRM adoption in the public sector. It emphasizes that while e-HRM holds great potential for improving organizational functions; its effective deployment requires a customized strategy and a deep understanding of the organizational context. The discussion on technology-driven HR transformations is enriched by insights into the impact of AI on HR practices and the relationship between HRM effectiveness and organizational outcomes. This study serves as a foundation for informed decision-making, practical implications for HR practitioners, and a significant contribution to the ongoing conversation on the future of HR management in the public domain.

Keywords: e-HRM adoption, public sector HR, HR technology, Artificial Intelligence in HR, HRM effectiveness.

I. INTRODUCTION

Over the past few decades, ongoing digitization initiatives have transformed the way organizations function and fulfill their duties. The human resource (HR) department has undergone a significant evolution as part of this broader technological shift [1]. Technology and data analytics have

revolutionized a number of HR functions, such as hiring, training, and pay [2][3].

According to [4], E-HRM is a way to execute HRM policies, practices, and strategies in organizations by purposefully utilizing online and offline technology-based channels with direct support. Although no single, agreed-upon definition exists for e-HRM, using technology to do HR-related duties is common [5].

Electronic human resource management aims to automate specific HR functional tasks. Additionally, the recruitment and retention of talent have been transformed by integrating data analytics and artificial intelligence systems [6]. Using flexible and integrated technology, the implementation of e-HRM constitutes a firm-level approach with the primary objective of coordinating employee behavior with business decisions [7].

A compelling case for the integration of e-HRM systems has been made throughout time. Proponents of e-HRM assert that it can improve customer service, reduce organizational HRM expenses, and increase productivity [7]. Nevertheless, there are regional and organizational variances in the degree of adoption and implementation, with considerable disparities in acceptance rates between the public and private sectors [8]. Researchers looking for insights into the variables impacting the deployment of e-HRM across various countries, industries, and sectors have a problem due to this dispersion.

Most research in the body of current literature concentrates on identifying the factors that influence the adoption of e-HRM in private businesses, with little focus on public sector institutions [9]. Furthermore, industrialized or developed economies have created most of the literature on e-HRM. In [10], they are noteworthy for examining e-HRM within a third-world setting. Low e-HRM penetration and a dearth of published research in these nations were the results of their examination into the variables impacting the deployment of e-HRM in government organizations in developing economies.

The authors hypothesized that the need for more literature on the topic in developing nations could be related to these nations' sluggish adoption of new technologies. Their work

fills a vacuum in the literature by identifying characteristics that influence e-HRM acceptance, but there needs to be more empirical rigor, which hinders e-HRM adoption.

By performing an empirical analysis of the factors influencing the adoption of electronic human resources management (e-HRM) in public sector entities, this research adds to the body of information already in existence. Therefore, this study's central research question is: What factors affect adopting computerized human resources management in government agencies? Gaining a more profound comprehension of the factors influencing the adoption and developing of e-HRM in government agencies would significantly enhance academic research.

This study delves into the adoption of Electronic Human Resource Management (e-HRM) within public sector entities, with a focus on the transformative influence of technology. The paper investigates the various factors that shape the adoption process, delves into different e-HRM typologies, examines how Artificial Intelligence (AI) affects HR practices, and puts forth a conceptual model that considers a range of perspectives. The primary objective of this research is to offer HR practitioners valuable insights into the intricate dynamics of e-HRM adoption and its capacity to improve organizational outcomes.

II. DIGITAL HUMAN RESOURCE MANAGEMENT WITHIN PUBLIC SECTOR ENTITIES

Organizations' functional and operational activities have seen a significant transformation in the last few decades due to technology's broad acceptance and incorporation. Businesses have adapted their processes to keep up with the rapid technological advancements to stay competitive and relevant. Technology adoption gives businesses the tools to run efficiently, impacting every facet of society and industry. The adoption and invention of new technologies have significantly changed how consumers buy and utilize products and services [11].

Technology adoption has an impact on several organizational tasks, including as marketing, finance, operations/production, and HR management [12]. Over the past few decades, the digitization trend—which was first more prevalent in private organizations—has spread to governmental institutions as well. Through their study, which evaluated the efficacy of e-HRM in a public entity, they acknowledged the integration of the e-HRM system in public institutions in [5]. Application of e-HRM and observed HRM efficacy were found to be correlated, according to data analysis of government employees and line managers [13].

Even with the adoption of e-HRM in public institutions, research has shown that organizations require assistance to fully realize the strategic benefits of this technology. There is a difference in the degree of satisfaction between employees and line managers/supervisors about the use of e-HRM. The implementation process is to blame for the difficulties organizations encounter in realizing the advantages of e-HRM. [13].

A cross-sectional study that was carried out in 23 different European nations demonstrates how commonplace e-HRM is in both public and private sector enterprises. The study finds e-HRM adoption facilitators, including organizational size, work nature, and HR configuration. Nevertheless, there are differences in adoption across various organizations in various European nations [14]. These results highlight the disparities in e-HRM acceptance and implementation even among more experienced public sector managers.

Considering the differences, it is imperative that, rather than extrapolating results from industrialized to developing nations, more research be done on the variables impacting the adoption of e-HRM in continents with distinct socioeconomic circumstances. For example, some notable initiatives have started in this approach [10] and used qualitative case study methods to investigate e-HRM in Bangladeshi government agencies. There aren't many studies that look at this phenomenon in developing economies like this one. One common explanation for the dearth of literature on e-HRM in public organizations is that these organizations have adopted technology to a lesser extent. However, Rahman et al.'s analysis shows that e-HRM has recently been used to automate administrative chores; the expected reason for this adoption is the perceived benefits and transparency promise. According to their research, the adoption of e-HRM is still in its infancy within the cycle of technological adoption. [14].

A review of the body of research on e-HRM indicates that public and government organizations, especially those in developing nations, have not given e-HRM enough attention [15].

III. DISCUSSION E-HRM TYPOLOGIES

Frameworks for categorizing and comprehending various e-HRM system types are known as e-HRM typologies. They can be applied to assist companies in evaluating their present e-HRM procedures and pinpointing areas in need of development [16][17]. While there are several e-HRM typologies (Table 1), the Lepak and Snell (1998) typology—which distinguishes between three categories of e-HRM—is one of the most popular.

Table 1: Key Features of Each Type of E-Hrm[18]

E-HRM Type	Focus	Goals	Examples
Operational E-HRM	Automating and streamlining HR processes	Improve efficiency, reduce costs	Payroll, recruitment, benefits administration
Relational E-HRM	Improving communication and collaboration	Enhance employee engagement, satisfaction	Employee self-service portals, social media, performance management systems
Transformational E-HRM	Fundamentally changing how HR is managed	Create a more strategic, value-added HR function	Talent management systems, workforce analytics, e-learning

Organizations can benefit from e-HRM innovation by increasing productivity, efficiency, communication, teamwork, employee engagement, satisfaction, and decision-making. It can also lower expenses and improve flexibility and agility [5]. Table (2) introduces Attributes of the e-HRM Innovation.

Table 2: Attributes of the e-hrm innovation [19][20]

Attribute	Description
Increased efficiency and productivity	Numerous HR functions, including payroll, benefits administration, and hiring, can be automated with e-HRM systems. As a result, HR personnel may have more time to concentrate on more strategic tasks like employee development and talent management.
Improved communication and collaboration	Employees may have one easy-to-access site for HR resources and information thanks to e-HRM solutions. They can also help managers, HR personnel, and employees communicate and work together.
Enhanced employee engagement and satisfaction	e-HRM systems can help employees to feel more connected to their organization and their work. They can also provide employees with more control over their HR information and benefits.
Reduced costs	e-HRM systems can help organizations to reduce costs by automating HR tasks, improving communication and collaboration, and reducing the need for paper and other materials.
Improved decision-making	e-HRM systems can provide HR professionals with data and insights that can help them to make better decisions about their organization's workforce.
Increased agility and adaptability	e-HRM systems can help organizations to be more agile and adaptable by providing them with the tools and resources they need to quickly respond to changes in the business environment or market conditions.

The practice of automating and streamlining HR activities and procedures inside an organization using technology, particularly information technologies, is known as electronic human resource management, or E-HRM [21]. Sustainable competitive advantage is the ability of an organization to outperform competitors over an extended

period of time by creating and maintaining distinctive, valuable, and unique advantages [22].

e-HRM reduces the need for human labour and boosts operational effectiveness by automating some traditional HR functions like payroll processing, benefits administration, and

employee record keeping. HR specialists can now concentrate more on tactical tasks that provide them a competitive advantage. With e-HRM, HR professionals may also access real-time data and analytics, enabling them to make well-informed decisions. HR professionals can find development opportunities and create focused HR plans that support organizational goals by using workforce data analysis. Examining worker performance, attrition rates, and skill gaps are some examples of this [17].

Through the use of application tracking systems, automated screening processes, and online job portals, E-HRM is essential to attracting and retaining top personnel. This is accomplished by multiplying the pool of qualified applicants and quickening the hiring process. Additionally, by encouraging employee involvement and advancement through e-learning platforms, performance management systems, and career development tools, E-HRM raises employee satisfaction and retention rates [17].

As far as data the board, e-HRM empowers the viable sharing, chronicling, and recovery of HR-related information and information. Advantageous admittance to imperative data is guaranteed by focal information bases for staff profiles, preparing materials, approaches, and methodology. Successful information the executives cultivates authoritative learning, advancement, and decision-production to give a persevering through upper hand [16].

Most importantly, strategic alignment between an organization's overall business plan and E-HRM is necessary to establish a sustained competitive advantage. The organization's goals, guiding principles, and competitive stance are in line with HR practices and technology because of this alignment. E-HRM can help organizations create a workforce that is in line with their strategic objectives by influencing strategic decision-making processes. As a result, there is a prolonged competitive advantage [23].

Reasonable advancement is creating and taking on novel thoughts, techniques, items, or administrations that help social, monetary, and ecological maintainability [24]. Through collaborative platforms, E-HRM facilitates idea development and information sharing, which aids organizations in cultivating a creative culture. This fosters innovation, encourages the sharing of creative ideas, and creates an imaginative culture that is appreciated and rewarded by facilitating employee engagement and communication [25].

Furthermore, E-HRM is essential to talent management strategies that support innovation. These tools help find workers who possess creative qualities and competencies. E-HRM tools like competency frameworks, career development platforms, and performance management systems help identify

and develop high-potential employees who could contribute to long-term innovation. E-HRM also facilitates the hiring and selecting of people with creative ideas and skills [22].

In addition, E-HRM makes it simpler for organizations to oversee imaginative ideas and criticism circles. With the utilization of online stages for thought advancement, assessment, and execution coordinated into E-HRM, workers might take part in development driven drives, present their thoughts, and give criticism on the thoughts of others effortlessly. Associations can effectively execute economic development projects by actually catching and evaluating imaginative thoughts through this purposeful way to deal with thought administration [26].

This section, the results of research are explained and at the same time are given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily. The discussion can be made in several sub-chapters. It is strongly suggested that comparison with results from other published articles are provided to give more context and to strengthen the claim of novelty.

IV. ROLE OF AI ON HR PRACTICES

Various industries have witnessed a notable transition in the integration of artificial intelligence (AI), and the domain of human resource management (HRM) is no different. The advent of Industry 4.0 has heightened the demand for HR procedures to embrace automation, digitization, and enhanced agility. AI stands as a transformative force in this sector, offering the potential to revolutionize decision-making, precision, and efficiency across a spectrum of HR operations [27].

The impact of AI on talent acquisition and recruitment stands out as a significant development in Human Resource Management (HRM). The utilization of AI-powered algorithms has the potential to substantially reduce the time and effort required for human screening. By swiftly and accurately scanning resumes and job applications against predetermined criteria, AI ensures the identification of qualified individuals. This automation streamlines the hiring process, ensuring that only the most suitable applicants are considered for available vacancies[28].

Artificial Intelligence (AI) possesses the capacity not only to enhance recruitment but also to contribute to employee engagement and retention. Through the analysis of employee data, AI algorithms can identify patterns and trends indicative of high turnover rates or disengagement. This valuable insight empowers HR managers to proactively address these issues, implementing targeted interventions such as training

initiatives or enhancements to workplace culture. The goal is to foster a more engaged and retained workforce through informed decision-making [29].

The transformation of staff learning and development initiatives is another noteworthy aspect of AI's influence. Artificial Intelligence (AI) systems excel at assessing employee data, identifying knowledge gaps, and recommending training courses to address these gaps. Additionally, AI-powered learning platforms have the capability to customize training based on the specific needs of individual employees. This personalized approach enhances the effectiveness of training programs and contributes to improved learning outcomes[19]. AI's significant impact on performance management is evident in its ability to identify improvement opportunities through the analysis of employee performance data. Leveraging this data, AI systems can generate personalized performance improvement plans for each employee. This approach encourages continuous development, ultimately enhancing overall output and performance levels[5].

In the realm of workplace safety and compliance, AI plays a crucial role. Through the analysis of data from sensors and various devices, artificial intelligence (AI) systems can identify potential safety issues and recommend countermeasures to mitigate them. This proactive approach contributes to fostering a safer and more secure work environment, reducing workplace accidents and injuries, and ensuring adherence to safety requirements[30].

V. CONCEPTUAL MODEL FOR E-HRM IMPLEMENTATION IN THE PUBLIC SECTOR IS SUGGESTED

The authors explore the advantages, challenges, and risks associated with e-HRM from seven distinct perspectives: organizational, political, legal, social, technological, economic, and environmental. The foundational concepts that underlie this research form the basis for a comprehensive examination of e-HRM in relation to these perspectives.

There are several aspects to e-HRM adoption, and these aspects all contribute to its benefits, drawbacks, and possible hazards. From a technology standpoint, e-HRM greatly increases HR departments' productivity through data centralization, HR strategy alignment, and improved IT infrastructure and support [31]. On the other hand, issues with application quality, data privacy, and implementation time may come up. Risks include insufficient funding, problems with training initiatives, and security worries [32].

Reducing paperwork and fostering an environment that is conducive to employee well-being are two aspects of e-HRM's

environmental dimension [33]. Reduced paperwork and more employee involvement are among the benefits; cultural implications and the requirement for manager and staff support are among the obstacles. Potential changes in employee attitudes and their effects on organizational change are among the risks [34].

Benefits of e-HRM from an organizational standpoint include improved IT expertise, communication, dedication to the e-HRM plan, and efficient training. Implementation, however, may be hampered by obstacles like role conflicts, employee opposition, and a lack of system comprehension. Risks include managerial changes, effects on employee motivation and satisfaction, and changes in how employees see their jobs [17].

Political considerations are important when implementing e-HRM, and there are advantages associated with both legal compliance and financial assistance. Power battles and difficulties making decisions can be obstacles, and dangers include political unpredictability, reluctance to change, and declining yearly budgets [35].

Organizations deploy e-HRM with the goal of saving money, achieving a return on investment, and cutting expenses. Notwithstanding, hindrances such as inadequate funding, upkeep expenses, and insufficient proficiency could provide difficulties. Risks include problems with government and software funding [36].

Clear legalization, data acceptance, and management support are among the legal factors in e-HRM. Advantages include support from management and adherence to regulations. Risks include difficulties in conducting fair hiring practices and electronically complying with regulatory obligations, while barriers can include power clashes, privacy issues, and data protection issues [37].

Finally, the social aspect acknowledges that technology in e-HRM influences organizational practices and behaviors. Positive outcomes encompass social responsibility, financial and time savings, and convenient access to government information. However, challenges arise in the form of potential declines in social contact and organizational productivity. Risks are associated with the impact on in-person interactions and the potential influence on jobless rates [38].

VI. THE IMPACT OF HUMAN RESOURCE MANAGEMENT EFFECTIVENESS ON ORGANIZATIONAL RESULTS

A summary of necessary research examining the connection between electronic human resource management (e-HRM) and human resource management (HRM) and their

effects on organizational results is provided in Table (2). The research projects look into various topics, from the fundamentals of HRM systems to how e-HRM contributes to improving HRM efficacy.

With a focus on e-HRM in particular, this compilation gives a thorough overview of the scholarly works that have

substantially contributed to our understanding of how HRM can influence organizational performance and strategic orientation. The knowledge gained from these researches adds to the current conversation on how HRM systems have changed over time and how it has affected organizational management.

Table 3: Studies on HRM Effectiveness and E-HRM Impact

Study	Objectives	Method/Results
Parry & Tyson [39]	Analyze the anticipated enhancements in HRM procedures, service provision, and strategic focus that come with implementing an e-HRM system.	Expected gains from the deployment of e-HRM in terms of service delivery, strategic orientation, and efficiency of HRM procedures.
Nyathi et al. [40]	Divide the HRM system into three categories: philosophy, practices, and policy. "Bundle of HR practices or policies oriented towards some overarching goal" is the definition of the HRM system.	The division of the HRM system into three levels: practices, policies, and philosophy.
Ruël et al. [5]	In keeping with the notion of electronic HRM and the hierarchy of HRM system components (philosophy, policy, and practices).	Compliance with the concept of e-HRM in relation to the classification of HRM system tiers (HRM practices, HRM policy, and HRM philosophy).
Marler & Parry [41]	Computer gear, software, and electronic networking resource setups that simplify HRM tasks are referred to as e-HRM.	Configurations that facilitate HRM activities through data collection, information generation, and communication both within and outside organizational boundaries are referred to as e-HRM configurations.
Bondarouk et al. [8]	HRM effectiveness must be evaluated at every stage of the HRM system in order to ascertain the degree to which e-HRM enhances HRM effectiveness.	According to earlier e-HRM study, HR digitization results in a more strategic HRM by freeing up HR workers and assigning line managers and employees responsibility for HRM.
Kepes & Delery [42]	HRM philosophy can be defined as the tenets that define how employees are valued and treated in a particular HRM system.	Effectiveness of the HRM system is attained when organizational strategy and HRM philosophy and strategy are combined, resulting in coherence and alignment.
Maatman [43]	Emphasize that the efficiency of the HRM system depends on the integration of HRM philosophy and strategy with organizational strategy.	The fit and alignment of the HRM system with the organization's overall strategy is improved by the integration of HRM philosophy and strategy with organizational strategy.
Demo et al. [44]	HRM policy can be defined as a well-articulated organizational proposal that aids HRM functions in achieving targeted outcomes.	HRM policy functions as a framework for reference for HRM proposals, supporting the attainment of organizational objectives and optimizing the impact of the HRM system on

		targeted employee-organizational results.
Bondarouk, Harms, & Lepak [45]	Stress the influence that employees, LMs, and HR professionals have as important HRM users on the uptake and application of e-HRM.	Important HRM users have an impact on how e-HRM is adopted and used throughout active use, which affects how effective it is.
Lengnick-Hall et al. [46]	Discuss how producing strategic contributions (strategic capabilities, human capital contribution, and firm's competitive performance) replaced managing people with the introduction of strategic HRM (SHRM).	After SHRM was introduced, the focus switched from managing people to creating strategic contributions, like the growth of strategic skills, the contribution of human capital, and an improvement in the company's ability to compete.

The studies reviewed present a comprehensive exploration of electronic Human Resource Management (e-HRM) systems, emphasizing their multifaceted impact on HRM procedures, service provision, and strategic orientation. Parry & Tyson [39] underscore the anticipated enhancements arising from e-HRM implementation, ranging from improved service delivery to heightened strategic focus and overall efficiency. Nyathi et al. [40] contribute by categorizing the HRM system into three distinct levels—philosophy, practices, and policies—offering a nuanced perspective on the components integral to effective HRM. Ruël et al. [5] align with the concept of e-HRM, emphasizing compliance with the hierarchical structure of HRM system components, encompassing practices, policies, and philosophy.

The role of technology in HRM is further delineated by Marler & Parry [41], who define e-HRM configurations as computerized setups simplifying HRM tasks through data collection, information generation, and communication. Bondarouk et al. [8] advocate for evaluating HRM effectiveness at each system stage, asserting that HR digitization fosters a more strategic HRM by redistributing responsibilities to line managers and employees. Kepes & Delery [42] and Maatman [43] both emphasize the pivotal role of HRM philosophy, asserting that its integration with organizational strategy results in coherence and alignment, thereby enhancing overall system efficiency.

The studies also delve into specific components of the HRM system, with Demo et al. [44] defining HRM policy as a crucial organizational proposal guiding HRM functions toward targeted outcomes. Bondarouk, Harms, & Lepak [45] highlight the influential role of key HRM users employees, line managers, and HR professionals in the adoption and application of e-HRM, underscoring their impact on its effectiveness.

Lengnick-Hall et al. [46] contribute a strategic perspective, illustrating how the evolution from traditional HRM to strategic HRM (SHRM) has shifted the focus from

mere people management to generating strategic contributions. These contributions encompass enhanced strategic capabilities, increased human capital contribution, and improvements in the firm's competitive performance. In summary, the synthesis of these studies offers a nuanced understanding of the interplay between technology, philosophy, policy, and practices within the HRM system, contributing to a comprehensive discussion on the evolving landscape of HRM in the digital era.

VII. DISCUSSION

This research delves into the complex realm of Electronic Human Resource Management (e-HRM) adoption within public sector organizations. By investigating the factors influencing adoption, e-HRM typologies, and the evolving role of technology, the findings unveil the diverse opportunities and challenges confronted by government agencies in the digital era. The results underscore the potential of e-HRM to enhance both strategic HR functions and operational efficiency. The proposed conceptual model, taking into account organizational, political, legal, social, technological, economic, and environmental perspectives, provides a comprehensive understanding of the complexities surrounding e-HRM adoption. Furthermore, the study highlights the transformative influence of Artificial Intelligence (AI) on HR practices, emphasizing the interconnected nature of HRM effectiveness and organizational outcomes. This in-depth insight aims to serve as a valuable guide for HR practitioners and decision-makers as they navigate the dynamic landscape of e-HRM adoption in the public sector.

VIII. CONCLUSIONS

In conclusion, this study has provided insight into the complex terrain surrounding the implementation of Electronic Human Resource Management (e-HRM) in public sector organizations. After a thorough analysis of adoption determinants, e-HRM typologies, and the changing role of

technology, we have produced conclusions highlighting the particular opportunities and problems that government agencies confront in the digital age. According to the report, e-HRM has great potential to improve strategic HR functions and operational efficiency. However, its effective deployment in the public sector necessitates a customized strategy and a deep comprehension of organizational context. The increasing conversation on technology-driven HR transformations is aided by insights into how AI affects HR practices and how HRM effectiveness relates to organizational outcomes. This research offers a basis for informed decision-making, practical implications for HR practitioners, and a contribution to the larger conversation on the future of HR management in the public domain as public sector organizations negotiate the challenges of e-HRM adoption.

ACKNOWLEDGMENT

The authors would like to thank, Computer Science Department, Collage of Computer Science and Mathematics, University of Mosul, for their support.

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Citation of this Article:

Rana F. Al-Hayani, Auday H. Al-Wattar, "Elevating Public Sector HR: A Comprehensive Exploration of E-HRM Adoption Drivers and Impacts" Published in *International Research Journal of Innovations in Engineering and Technology - IRJIET*, Volume 8, Issue 3, pp 64-73, March 2024. Article DOI <https://doi.org/10.47001/IRJIET/2024.803009>
