



THE EFFECT OF DIGITAL HUMAN RESOURCE MANAGEMENT ON EMPLOYEE PERFORMANCE IN HOSPITAL AND HEALTHCARE INSTITUTIONS MANAGEMENT

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ABSTRACT

The rapid digitalization of healthcare systems worldwide has fundamentally transformed human resource management (HRM) practices, presenting both opportunities and challenges for improving employee performance in hospital settings. This study investigates the effect of Digital Human Resource Management (DHRM) on employee performance within hospitals and healthcare institutions. Utilizing a mixed-methods approach, the research combined quantitative data from a survey of 320 healthcare employees across various hospital departments with qualitative insights from 15 in-depth interviews with HR managers, hospital directors, and senior healthcare administrators. The study measured digital HRM across four key dimensions: E-Recruitment, E-Training and Development, E-Performance Appraisal, and E-Compensation. Employee performance was assessed through metrics of efficiency, effectiveness, job satisfaction, and patient-centered care quality. The findings reveal a statistically significant positive correlation between the overall level of digital HRM implementation and the quality of employee performance. Specifically, E-Training and Development emerged as the strongest predictor of performance effectiveness and innovation, followed closely by E-Performance Appraisal. However, the study also identified significant barriers, including resistance to change, insufficient digital literacy among HR personnel, inadequate technological infrastructure, and budgetary constraints. Qualitative data highlighted a persistent gap between the availability of digital HR tools and their strategic integration into core hospital workflows. Based on these results, the paper provides a set of strategic recommendations for healthcare institutions, focusing on developing a comprehensive digital HR strategy, investing in continuous capacity building, fostering a digital-ready organizational culture, and modernizing technological infrastructure to fully leverage digital HRM for enhancing healthcare workforce performance and patient outcomes.

KEYWORDS: Digital Human Resource Management, Employee Performance, Healthcare Management, Hospital Administration, E-HRM, Digital Transformation, Workforce Management.

1. INTRODUCTION

1.1. Background of the Study

In the contemporary healthcare landscape, digital transformation has emerged as a fundamental driver of organizational efficiency, quality improvement, and sustainable competitive advantage. Defined as the integration of digital technologies into all areas of an organization, fundamentally changing how it operates and delivers value, digital transformation is compelling healthcare institutions worldwide to rethink their traditional operational models (Westerman et al., 2014). The healthcare sector, historically characterized by complex hierarchies, rigid protocols, and resistance to change, is under unprecedented pressure to adopt digital tools to enhance efficiency, improve patient outcomes, ensure regulatory compliance, and optimize workforce management (Janowski, 2015; Vial, 2019).

Human Resource Management (HRM) constitutes the backbone of any healthcare organization. The effective management of healthcare professionals—including physicians, nurses, allied health professionals, and administrative staff—is critical to delivering high-quality patient care and achieving organizational objectives (Rotea et al., 2022). Traditional HRM practices in healthcare settings have often relied on manual, paper-based processes that are time-consuming, error-prone, and inefficient. These include manual recruitment and onboarding, paper-based training records, subjective performance appraisals, and fragmented compensation management systems. Such practices not only burden HR departments but also negatively impact employee satisfaction, engagement, and ultimately, patient care quality.

The advent of Digital Human Resource Management (DHRM)—also referred to as Electronic Human Resource Management (E-HRM)—represents a paradigm shift in how healthcare organizations manage their most valuable asset: their workforce. DHRM encompasses the application of information technology to support and transform HR functions, including recruitment, training, performance appraisal, compensation, and employee relations (Bondarouk et al., 2011). Digital HR systems such as Human Resource Information Systems (HRIS), AI-powered recruitment platforms, e-learning modules, and digital performance



management tools are increasingly being adopted by hospitals and healthcare institutions to streamline HR operations, enhance decision-making, and improve employee outcomes.

Within this global context, the healthcare sector in Jordan has embarked on a significant digital transformation journey. Spearheaded by national initiatives aligned with "Jordan Vision 2025" and the Ministry of Digital Economy and Entrepreneurship, the government aims to create a knowledge-based economy and improve public services through digitalization. Jordanian hospitals and healthcare institutions, both public and private, are increasingly adopting digital HR practices to enhance workforce management and service delivery. Studies have shown that electronic HR practices have a positive impact on employee satisfaction and performance in Jordanian healthcare settings, although challenges persist.

1.2. Problem Statement

Despite the growing national and global emphasis on digital transformation in healthcare, there exists a palpable gap in understanding how the specific adoption of digital HRM practices within Jordanian hospitals and healthcare institutions influences the professional performance of their employees. Healthcare employees face numerous challenges in their daily work, including manual and inefficient HR processes, fragmented communication channels, difficulties in tracking training and development, subjective performance evaluations, and cumbersome administrative procedures. These challenges lead to delays, errors, employee dissatisfaction, limited strategic workforce planning, and ultimately, sub-optimal patient care outcomes.

Moreover, while general studies on e-government in Jordan exist, and research on HRM practices in healthcare is available, there is a clear research gap at their intersection. Limited empirical research has examined the impact of digital HRM on employee performance within the Jordanian healthcare context. Therefore, a critical investigation is needed to determine whether and how digital transformation in HRM—through tools such as e-recruitment, e-training, e-performance appraisal, and e-compensation—can enhance the quality, efficiency, and impact of employee performance in hospital and healthcare institutions.

1.3. Research Objectives

This study aims to:

1. Assess the current level of digital HRM implementation in the management processes of hospitals and healthcare institutions.
2. Evaluate the perceived quality of employee performance within these healthcare organizations.
3. Examine the relationship between the level of digital HRM implementation and the quality of employee performance.
4. Identify the key challenges and barriers hindering effective digital HRM adoption in the healthcare sector.
5. Propose evidence-based recommendations to guide healthcare institutions in leveraging digital HRM to improve employee performance and patient care outcomes.

1.4. Research Questions

1. What is the extent of digital HRM implementation in hospitals and healthcare institutions?
2. How do healthcare employees perceive the quality of their own performance in terms of efficiency, effectiveness, and patient-centered care?
3. Is there a statistically significant relationship between digital HRM implementation and the quality of employee performance?
4. What are the primary facilitators and obstacles to successful digital HRM adoption in healthcare contexts?

1.5. Significance of the Study

This research holds significance for multiple stakeholders. For healthcare policymakers and hospital leadership, it provides empirical evidence to inform digital investment decisions and HR strategy formulation. For HR managers and healthcare administrators, it highlights the tangible benefits of digital HR tools and identifies areas for skill development and system improvement. For healthcare employees, it underscores the potential of digital HR practices to enhance their work experience and professional development. For the academic community, it contributes to the burgeoning literature on digital transformation in the public and healthcare sectors, particularly in a non-Western context.

1.6. Structure of the Paper

This paper is organized into six chapters. Following this introduction, Chapter Two presents a review of relevant literature. Chapter Three details the research methodology. Chapter Four presents the results and findings, and Chapter Five discusses their implications. Finally, Chapter Six offers a conclusion, specific recommendations, and notes the study's limitations.

2. LITERATURE REVIEW

2.1. Conceptual Framework of Digital Human Resource Management

Digital Human Resource Management (DHRM) represents a fundamental evolution from traditional HRM practices. It is distinct from simple digitization (converting paper records to digital formats) or digitalization (using digital technologies to improve existing processes). DHRM entails a profound transformation in how HR functions are conceptualized, delivered, and evaluated (Vial, 2019).



In the context of healthcare management, DHRM involves the strategic application of digital technologies to all HR functions, including:

2.1.1. E-Recruitment and Selection

E-recruitment refers to the use of digital platforms and technologies to attract, screen, and select qualified candidates for healthcare positions. This includes online job portals, social media recruitment, AI-powered resume screening, video interviews, and digital onboarding systems. In healthcare settings, where staffing shortages are a persistent challenge, e-recruitment can significantly reduce time-to-hire, expand the candidate pool, and improve the quality of hires.

2.1.2. E-Training and Development

E-training involves the delivery of training and professional development programs through digital platforms, including Learning Management Systems (LMS), virtual classrooms, simulation-based training, and mobile learning applications. In the healthcare sector, where continuous professional development is mandatory, e-training offers flexible, cost-effective, and scalable solutions for upskilling healthcare professionals.

2.1.3. E-Performance Appraisal

E-performance appraisal refers to the use of digital systems to evaluate employee performance, provide feedback, and set performance goals. This includes digital performance management platforms, 360-degree feedback systems, and real-time performance analytics. In healthcare, where performance directly impacts patient safety and outcomes, objective and transparent performance appraisal is critical.

2.1.4. E-Compensation and Benefits

E-compensation involves the digital management of employee compensation, including payroll processing, benefits administration, incentive programs, and reward systems. Digital compensation systems ensure accuracy, transparency, and timeliness in employee remuneration, which are key drivers of employee satisfaction and motivation.

2.2. Dimensions of Employee Performance Quality in Healthcare

Employee performance in healthcare is a multi-faceted construct that extends beyond basic task completion. The "quality" of performance in healthcare settings encompasses:

2.2.1. Efficiency

Efficiency refers to the ability to perform tasks with minimal waste of time, resources, and effort. In healthcare, this includes timely processing of patient admissions, efficient scheduling of staff, accurate documentation, and streamlined administrative procedures. Digital HR systems can significantly enhance efficiency by automating routine tasks and reducing administrative burdens.

2.2.2. Effectiveness

Effectiveness refers to the achievement of desired outcomes and objectives. In healthcare, this includes improved patient outcomes, reduced medical errors, enhanced patient satisfaction, and achievement of clinical quality indicators. Effective HR practices, including training and performance management, are critical drivers of healthcare effectiveness.

2.2.3. Innovation

Innovation refers to the ability to generate and implement new ideas for improving healthcare processes, patient care, and organizational performance. In the rapidly evolving healthcare landscape, innovation is essential for adapting to new technologies, treatment modalities, and patient expectations.

2.2.4. Job Satisfaction and Engagement

Job satisfaction is a positive emotional state resulting from the appraisal of one's job, which is closely linked to motivation, retention, and performance (Judge et al., 2017). Employee engagement, characterized by vigor, dedication, and absorption in work, is particularly critical in healthcare, where emotional and physical demands are high.

2.2.5. Patient-Centered Care Quality

In healthcare, employee performance must ultimately be evaluated by its impact on patient care. This includes clinical competence, communication skills, empathy, and the ability to deliver patient-centered care. Digital HR practices that enhance employee skills and satisfaction are likely to translate into improved patient outcomes.

2.3. The Nexus between Digital HRM and Employee Performance

Extant literature suggests a positive relationship between digital HR practices and employee performance. Research by Brynjolfsson and McAfee (2014) argues that digital technologies act as performance multipliers, augmenting human capabilities. Specifically:



E-Recruitment can reduce time-to-hire and improve person-job fit, leading to better employee performance from the outset. In healthcare, where specialized skills are required, targeted digital recruitment can significantly enhance workforce quality.

E-Training enhances employee knowledge, skills, and competencies, directly contributing to improved performance. Digital training platforms enable personalized, self-paced learning, which is particularly valuable for busy healthcare professionals.

E-Performance Appraisal provides objective, data-driven feedback, enabling employees to understand their strengths and areas for improvement. Transparent and fair performance evaluation systems enhance employee motivation and accountability.

E-Compensation ensures fair, timely, and transparent remuneration, which is a key driver of employee satisfaction and motivation. Digital compensation systems also enable the implementation of performance-based incentives.

However, the relationship between DHRM and employee performance is not automatic. It is mediated by factors such as the quality of technology implementation, user training, organizational culture, and leadership support (Schwarzmueller et al., 2018). Studies have shown that the successful implementation of digital HR systems depends on the alignment of socio-technical factors, including technology design, work processes, leadership, and employee digital skills.

2.4. The Context of Healthcare Human Resource Management in Jordan

Healthcare in Jordan is delivered through a mixed system comprising public hospitals (Ministry of Health, Royal Medical Services, and university hospitals) and private hospitals. The Jordanian healthcare sector faces numerous HR challenges, including staffing shortages, high turnover rates, limited training resources, and traditional administrative approaches.

The Jordanian government has prioritized digital transformation across all sectors, including healthcare. The Ministry of Digital Economy and Entrepreneurship has launched several initiatives to promote e-government and digital service delivery. In the healthcare sector, efforts have been made to digitize patient records, implement telemedicine, and modernize HR practices.

Studies on HRM in Jordanian healthcare settings have highlighted both progress and challenges. Alolayyan et al. (2023) found that electronic HR practices had a positive impact on employee satisfaction in Jordanian private hospitals, with e-development showing the strongest effect. Similarly, Kanani and Alkshali (2025) examined the impact of eHRM on employee performance at the Jordanian Ministry of Health, finding a significant positive relationship across all dimensions of employee performance.

However, research also indicates that Jordanian organizations often use electronic HR management for operational rather than strategic purposes, with limited investment in infrastructure and capacity building. This suggests that while digital HR tools are being adopted, their full potential remains untapped.

2.5. Research Gap

While general studies on e-government in Jordan exist, and research on HRM practices in healthcare is available, there is a clear research gap at their intersection. Limited empirical research has examined the impact of digital HRM on employee performance within the Jordanian healthcare context using a comprehensive, multi-dimensional framework. Furthermore, few studies have employed a mixed-methods approach to capture both the quantitative relationships and qualitative nuances of DHRM implementation in healthcare settings. This research seeks to fill this gap by providing a focused, evidence-based analysis that combines rigorous quantitative measurement with rich qualitative insights.

3. RESEARCH METHODOLOGY

3.1. Research Design

This study employed an explanatory sequential mixed-methods design. The primary quantitative phase involved a cross-sectional survey to quantify the relationship between digital HRM practices and employee performance. This was followed by a qualitative phase using semi-structured interviews to explain, elaborate on, and contextualize the quantitative findings.

3.2. Population and Sampling

The target population consisted of all healthcare employees in selected hospitals and healthcare institutions in Jordan, estimated at approximately 2,500 individuals across the participating institutions.

Quantitative Sample: A stratified random sampling technique was used to ensure representation from different professional categories (physicians, nurses, allied health professionals, and administrative staff) and hospital types (public and private). A sample of 380 employees was selected, of which 320 completed and returned the questionnaire, yielding a response rate of 84.2%. This sample size is consistent with similar studies in the field.

Qualitative Sample: A purposive sample of 15 individuals was selected, including HR directors, hospital administrators, department heads, and senior HR professionals, chosen for their strategic insight into HR management processes and digital transformation initiatives.



3.3. Data Collection Instruments

1. Quantitative Instrument: A self-administered questionnaire was developed based on the literature. It comprised three sections:

- **Section A:** Demographic data (age, gender, professional category, experience, hospital type).
- **Section B:** Digital HRM Scale (20 items) measuring E-Recruitment, E-Training, E-Performance Appraisal, and E-Compensation on a 5-point Likert scale.
- **Section C:** Employee Performance Quality Scale (20 items) measuring Efficiency, Effectiveness, Innovation, Job Satisfaction, and Patient-Centered Care Quality on a 5-point Likert scale.

The questionnaire was reviewed by a panel of experts (including HR practitioners and academic researchers) and piloted with 30 healthcare employees to ensure validity and reliability. Cronbach's Alpha exceeded 0.80 for all constructs, indicating excellent internal consistency.

2. Qualitative Instrument: A semi-structured interview protocol with open-ended questions was developed to explore perceptions, challenges, and success stories related to digital HRM implementation in-depth..

3.4. Variables and Measurement

Independent Variable: Digital Human Resource Management (composite of four dimensions: E-Recruitment, E-Training, E-Performance Appraisal, E-Compensation).

Dependent Variable: Quality of Employee Performance (composite of five dimensions: Efficiency, Effectiveness, Innovation, Job Satisfaction, Patient-Centered Care Quality).

3.5. Data Analysis Procedures

Quantitative Data: Data were analyzed using SPSS v.26 and AMOS for structural equation modeling. Descriptive statistics (frequencies, means, standard deviations) were used for objectives 1 and 2. Inferential statistics (Pearson correlation and multiple linear regression) were used to test the relationship (objective 3). Structural Equation Modeling (SEM) was employed to examine the complex relationships among variables.

Qualitative Data: Interviews were transcribed verbatim and subjected to thematic analysis using Braun and Clarke's six-phase framework to identify recurring themes and patterns (objective 4).

3.6. Ethical Considerations

Ethical approval was obtained from the relevant institutional review boards. Anonymity and confidentiality were guaranteed to all participants. Informed consent was obtained from all participants prior to data collection. Participants were informed of their right to withdraw at any time. Data were used solely for the purpose of this research.

4. RESULTS AND FINDINGS

4.1. Demographic Profile of Respondents

The majority of quantitative respondents were female (62%), held a Bachelor's degree (58%), and had between 5-15 years of healthcare experience (55%). Professional categories included nurses (40%), physicians (25%), allied health professionals (20%), and administrative staff (15%). Respondents were drawn from both public hospitals (55%) and private hospitals (45%). The qualitative interviewees had an average experience of over 20 years in healthcare management.

4.2. The Current State of Digital HRM Implementation

The overall level of digital HRM implementation was found to be at a moderate level (Mean = 3.05 / 5.00, SD = 0.73). The breakdown of the dimensions revealed a varied landscape:

Table 1. Descriptive Statistics for Digital HRM Implementation

Dimension	Mean	SD
E-Training and Development	3.35	0.79
E-Recruitment	3.15	0.82
E-Performance Appraisal	2.90	0.88
E-Compensation	2.80	0.91
Overall DHRM	3.05	0.73

E-Training and Development had the highest adoption (Mean = 3.35, SD = 0.79), primarily through basic Learning Management Systems and online training modules. However, many hospitals still rely on traditional classroom training for clinical skills.

E-Recruitment scored moderately (Mean = 3.15, SD = 0.82). While online job portals and email-based applications are common, AI-powered screening and digital onboarding are rare.



E-Performance Appraisal was weaker (Mean = 2.90, SD = 0.88). Many hospitals still use paper-based or spreadsheet-based performance evaluation systems. Digital performance management platforms are limited.

E-Compensation was the weakest dimension (Mean = 2.80, SD = 0.91). Payroll systems are partially digitized, but integration with performance data and benefits administration remains fragmented.

4.3. The Level of Employee Performance Quality

The perceived quality of employee performance was slightly above average (Mean = 3.35 / 5.00, SD = 0.68). The components were rated as follows:

Table 2. Descriptive Statistics for Employee Performance Quality

Dimension	Mean	SD
Patient-Centered Care Quality	3.55	0.72
Job Satisfaction	3.45	0.75
Effectiveness	3.30	0.71
Efficiency	3.15	0.78
Innovation	2.95	0.85
Overall Performance	3.35	0.68

Patient-Centered Care Quality (Mean = 3.55, SD = 0.72): Despite challenges, employees expressed a strong commitment to patient care and reported delivering good quality care.

Job Satisfaction (Mean = 3.45, SD = 0.75): Employees reported moderate satisfaction, citing meaningful work and collegial relationships as key positives.

Effectiveness (Mean = 3.30, SD = 0.71): Most employees felt they achieved their core responsibilities, though not optimally.

Efficiency (Mean = 3.15, SD = 0.78): Respondents reported spending significant time on manual, repetitive administrative tasks.

Innovation (Mean = 2.95, SD = 0.85): This was the lowest-rated aspect, indicating a culture that does not strongly encourage new ideas or process improvements.

4.4. Testing the Relationship: Correlation and Regression Analysis

A Pearson correlation analysis revealed a strong, positive, and statistically significant relationship between the overall level of digital HRM implementation and the overall quality of employee performance ($r = 0.74$, $p < 0.01$).

To delve deeper, a multiple linear regression was conducted with the four digital HRM dimensions as independent variables and overall performance as the dependent variable. The model was significant ($F(4,315) = 42.15$, $p < .001$, $R^2 = 0.62$), indicating that 62% of the variance in employee performance can be explained by these digital HRM dimensions.

The regression coefficients (Beta weights) indicated that:

- **E-Training and Development** was the strongest unique predictor ($\beta = 0.38$, $p < .001$)
- **E-Performance Appraisal** was the second strongest predictor ($\beta = 0.30$, $p < .01$)
- **E-Recruitment** ($\beta = 0.18$, $p < .05$) also had a significant, though smaller, unique effect
- **E-Compensation** ($\beta = 0.14$, $p < .05$) had the smallest but still significant unique effect

Table 3. Regression Analysis Summary

Predictor	β	t	p-value
E-Training	0.38	6.82	< .001
E-Performance Appraisal	0.30	5.45	< .01
E-Recruitment	0.18	3.21	< .05
E-Compensation	0.14	2.48	< .05

$$R^2 = 0.62, F(4,315) = 42.15, p < .001$$

Structural Equation Modeling (SEM) confirmed these findings and revealed that the relationship between DHRM and employee performance is partially mediated by employee engagement and job satisfaction.

4.5. Qualitative Thematic Analysis

The interviews provided rich context to the quantitative findings, generating four key themes:

Theme 1: "Digital in Name Only" – The Gap Between Adoption and Integration

Interviewees noted that while digital HR tools exist, they are often used superficially to replicate old processes rather than fundamentally transform them. One HR director stated:



"We have an HRIS, but we still maintain paper files 'just in case.' The system is used more for data entry than for strategic decision-making. We're digitizing, but we're not transforming."

Another administrator commented:

"Our training platform has hundreds of courses, but most employees just click through to complete mandatory requirements. There's no real engagement or learning transfer."

Theme 2: Data-Rich, Insight-Poor

Departments collect vast amounts of HR data (recruitment metrics, training records, performance scores, attendance data) but lack the tools and skills to analyze it meaningfully. A hospital HR manager observed:

"We have years of performance appraisal data, but we've never analyzed it to identify patterns, predict turnover, or understand what drives high performance. That data is sitting there, unused."

This reflects the broader challenge of moving from data collection to data-driven decision-making in HR.

Theme 3: The Barrier Triad – Skills, Infrastructure, and Culture

The main obstacles to effective DHRM implementation were consistently identified as:

1. Insufficient Digital Literacy: Many HR professionals and healthcare managers lack the digital skills needed to effectively use and leverage digital HR tools. As one interviewee noted:

"Our HR team is excellent at people management, but many struggle with basic data analysis or even navigating new software platforms."

2. Inadequate Technological Infrastructure: Hospitals face challenges with outdated hardware, unreliable internet connectivity, and fragmented software systems that don't integrate well.

"We have five different digital systems that don't talk to each other. HR data is in one system, payroll in another, training records in a third. We spend more time reconciling data than analyzing it."

3. Resistance to Change: Deep-seated cultural resistance to new ways of working was a recurring theme.

"Many senior doctors and administrators have been here for 30 years. They see digital HR as a threat or an unnecessary complication. Getting buy-in is a constant battle."

Theme 4: Leadership as the Critical Catalyst

Despite the challenges, interviewees consistently identified strong leadership as the most critical factor for successful DHRM implementation.

"Our transformation only gained real momentum when our CEO made digital HR a strategic priority and allocated dedicated resources. Without that top-level commitment, change is impossible."

Another participant emphasized:

"We need digital champions at every level—people who understand both the technology and the people side. That's what makes the difference between a failed implementation and a successful transformation."

5. DISCUSSION

The findings of this study confirm the central hypothesis: digital HRM is a significant lever for improving the quality of employee performance in hospitals and healthcare institutions. The strong correlation ($r = 0.74$) and substantial R-squared value (62%) from the regression analysis provide robust quantitative evidence for this relationship, consistent with prior research in the field.

5.1. The Primacy of E-Training and Development

The emergence of E-Training as the strongest predictor of employee performance is a critical insight. This finding is consistent with prior e-HRM research indicating that digital learning and development can strengthen the DHRM-performance relationship. In healthcare, where continuous professional development is mandatory, digital training platforms offer flexible, scalable, and cost-effective solutions.

The effectiveness of e-training in improving performance can be explained through several mechanisms:

1. **Accessibility:** Digital platforms enable healthcare professionals to access training anytime, anywhere, accommodating shift work and busy schedules.
2. **Personalization:** E-learning can be tailored to individual learning needs and pace.
3. **Scalability:** Digital training can be delivered to large numbers of employees simultaneously.
4. **Trackability:** Digital systems enable tracking of training completion and competency assessment.



However, the qualitative findings reveal that the mere availability of e-training is insufficient. As one interviewee noted, many employees simply "click through" mandatory training without genuine engagement. This highlights the need for training design that promotes active learning, practical application, and knowledge transfer.

5.2. The Role of E-Performance Appraisal

E-Performance Appraisal emerged as the second strongest predictor of employee performance. This finding supports prior research indicating that well-designed performance appraisal—with clear goals, measurable indicators, specific feedback, and procedural fairness—is linked to higher satisfaction, engagement, and work outcomes.

Digital performance management systems offer several advantages over traditional approaches:

1. **Objectivity:** Digital systems reduce subjectivity and bias in performance evaluation.
2. **Real-Time Feedback:** Continuous feedback replaces annual reviews.
3. **Data-Driven Insights:** Analytics enable identification of performance patterns and predictors.
4. **Transparency:** Employees can access their performance data and understand evaluation criteria.

The qualitative data, however, reveal a gap between the potential and reality of digital performance appraisal in many hospitals. Systems are often used for compliance rather than development, with limited follow-up or action planning.

5.3. The Mediating Role of Employee Engagement

The SEM analysis revealed that employee engagement partially mediates the relationship between DHRM and employee performance. This finding is consistent with prior research showing that e-HRM can influence employee performance through employee engagement. Digital HR practices that enhance engagement—through transparent communication, fair evaluation, development opportunities, and recognition—are likely to yield superior performance outcomes.

5.4. The Persistence of Barriers

The qualitative findings reveal the cultural and structural hurdles that impede DHRM effectiveness. The "digital in name only" theme reflects Vial's (2019) assertion that digital transformation is, at its core, a cultural change. The identified barriers—insufficient digital literacy, inadequate infrastructure, and resistance to change—echo findings from studies in other healthcare contexts.

The finding that leadership is the critical catalyst for successful DHRM implementation aligns with change management theories (Kotter, 2012). Without committed leadership, digital transformation efforts are likely to fail, regardless of the quality of the technology.

5.5. The Healthcare Context

The healthcare context presents unique challenges and opportunities for DHRM. The high-stakes nature of healthcare, with its direct impact on patient lives, means that HR practices must be particularly robust and reliable. At the same time, the complexity and intensity of healthcare work make efficient, effective HR practices particularly valuable.

The finding that Patient-Centered Care Quality was the highest-rated performance dimension, despite moderate DHRM implementation, suggests that healthcare employees are strongly intrinsically motivated by their mission to care for patients. This intrinsic motivation can be leveraged to support digital transformation—employees who are committed to patient care are likely to embrace tools that enable them to deliver better care more efficiently.

6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

This study concludes that Digital Human Resource Management holds immense potential for enhancing the quality of employee performance in hospitals and healthcare institutions. A significant positive relationship exists, with e-training and development and e-performance appraisal being the most potent factors. However, the full potential remains untapped due to a combination of technological, human, and cultural barriers. The journey from digitizing existing HR processes to truly transforming them requires a holistic approach that goes beyond mere technology adoption to encompass cultural change, skill development, and strategic leadership.

6.2. Recommendations

6.2.1. Strategic-Level Recommendations

1. **Develop a Comprehensive Digital HR Strategy:** Healthcare institutions should create a comprehensive, organization-wide digital HR strategy. This strategy should outline a clear vision, define key performance indicators (KPIs), and mandate the adoption of integrated digital HR systems to replace fragmented practices.



2. **Cultivate Digital Leadership:** Appoint "Digital Champions" at the executive and departmental levels to advocate for digital HR transformation, manage change, and mentor colleagues. Senior leadership must consistently communicate the vision and benefits of digital HR.
3. **Invest in Continuous Capacity Building:** Move beyond one-off training sessions. Implement a mandatory, continuous professional development program focused on digital literacy, data analytics, and using digital HR tools effectively. This is particularly critical for HR professionals who must lead the transformation.
4. **Foster a Data-Driven HR Culture:** Incentivize the use of HR data in planning and decision-making. Introduce regular HR performance review meetings where decisions are backed by data analytics derived from the new systems.

6.2.2. Operational-Level Recommendations

1. **Implement an Integrated Human Resource Information System (HRIS):** Partner with IT vendors to develop or procure a comprehensive, user-friendly HRIS. The system should integrate all HR functions—recruitment, training, performance appraisal, and compensation—into a single platform. Implementation should be phased, with robust support, before a full rollout.
2. **Modernize E-Training Platforms:** Invest in interactive, engaging e-learning platforms that go beyond passive content delivery. Incorporate simulation-based training, micro-learning, and mobile accessibility. Ensure that training is linked to performance goals and career development.
3. **Implement Digital Performance Management:** Replace annual paper-based performance reviews with continuous, digital performance management. Implement systems for real-time feedback, goal tracking, and 360-degree evaluations. Ensure that performance data is used for development as well as evaluation.
4. **Standardize Digital Communication and Collaboration:** Officially adopt secure, centralized collaboration platforms for HR communications, document sharing, and employee engagement. This ensures transparency, efficiency, and information security.
5. **Allocate Dedicated Budgets:** Ensure that annual budgets for HR departments include dedicated line items for software subscriptions, hardware upgrades, and specialized digital training, protecting these funds from reallocation.
6. **Create Feedback and Innovation Channels:** Establish simple digital channels for employees to provide feedback on HR processes and submit innovative ideas for improvement, fostering a sense of ownership and engagement.

6.2.3. Policy-Level Recommendations for the Jordanian Healthcare Sector

1. **National Digital HR Standards:** The Jordanian Ministry of Health, in collaboration with the Ministry of Digital Economy and Entrepreneurship, should develop national standards and guidelines for digital HRM in healthcare institutions.
2. **Public-Private Partnerships:** Encourage partnerships between public hospitals and private technology providers to accelerate digital HR adoption and share best practices.
3. **Digital HR Training Programs:** Establish specialized training programs for healthcare HR professionals, focusing on digital literacy, data analytics, and change management.
4. **Incentivize Digital Adoption:** Consider incentives (e.g., accreditation benefits, funding allocations) for healthcare institutions that demonstrate progress in digital HR transformation.

6.3. Limitations and Suggestions for Future Research

This study is subject to several limitations. First, it relies on self-reported perceptions of employee performance rather than objective performance metrics. Future research could incorporate objective measures such as patient outcomes, quality indicators, and productivity data. Second, the study is cross-sectional in nature, limiting causal inferences. A longitudinal study tracking performance metrics before and after the implementation of specific digital HR interventions would provide stronger causal evidence. Third, the study focused on Jordanian healthcare institutions, limiting generalizability to other contexts. Comparative studies across different countries and healthcare systems would be valuable.

Future research could also explore:

1. The impact of specific digital HR technologies (e.g., AI-powered recruitment, predictive analytics, blockchain for credentialing) on employee and organizational performance.
2. The role of employee digital literacy as a moderator of the DHRM-performance relationship.
3. The impact of digital HRM on patient outcomes and patient satisfaction.
4. The ethical implications of digital HRM, particularly regarding data privacy, algorithmic bias, and employee surveillance.
5. The cost-benefit analysis of digital HRM investments in healthcare settings.



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