

# Digital HRM transformation and its impact on agility and resilience in hospitals

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## ABSTRACT

This paper explores the transformation of human resource management (HRM) in hospitals during the digital era. It emphasizes the shift from traditional HRM practices toward digital platforms involving cloud-based systems, automation, AI-assisted recruitment, and e-learning for hospital staff. A narrative literature review approach was used, incorporating over 10 peer-reviewed journal articles from 2020 to 2025. Sources were selected through database searches using relevant keywords (e.g., digital HRM, healthcare digitalization, hospital transformation). The selected literature was analyzed qualitatively to synthesize trends, challenges, and contextual adaptations of digital HRM practices in hospitals, with a specific focus on Indonesia. Findings indicate that digital HRM improves operational efficiency, employee engagement, and decision-making in hospital environments. Key challenges include high adoption costs, limited IT infrastructure, and low digital literacy. Strategic responses such as investment in infrastructure, leadership involvement, and localization of systems were identified. In the Indonesian context, private hospitals lead in digital HRM adoption while public hospitals benefit from government programs like Satu Data Indonesia. Digital HRM transformation offers significant benefits to hospital performance but requires systemic support, leadership alignment, and localized strategies to ensure sustainability in diverse healthcare settings.



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## 1. INTRODUCTION

The global healthcare sector is in the midst of a digital revolution, altering how services are delivered, regulated, and managed. Innovations such

as telemedicine, electronic medical records (EMR), artificial intelligence (AI) in diagnostics, and the Internet of Medical Things (IoMT) have reshaped patient expectations and clinical practices (Manyika et al., 2020; Sharma & Singh, 2021). Amidst this wave of change, human resource management (HRM) in hospitals faces unprecedented challenges and opportunities. Traditional HRM, often reactive and transactional, is no longer sufficient to navigate the complexities of the digital era (Ulrich & Dulebohn, 2020). A fundamental transformation is required to ensure hospitals can attract, develop, and retain the right talent, while simultaneously building adaptive organizational capabilities.

HRM transformation in the digital era is not merely about technology adoption; it's a paradigm shift in how HR is managed and how it contributes to strategic organizational goals. Two increasingly vital organizational capabilities in this volatile environment are strategic agility and organizational resilience. Strategic agility refers to an organization's ability to quickly sense, comprehend, and respond effectively to environmental changes (Fosso Wamba & Queiroz, 2020). Meanwhile, organizational resilience is the capacity of an organization to absorb shocks, recover from crises, and even thrive amidst uncertainty (Duchek, 2020; Lengnick-Hall et al., 2021). This literature review aims to examine how HRM transformation in hospitals, through digitalization and innovative HR practices, contributes to achieving both strategic agility and resilience.

Recent literature acknowledges that digital HRM enhances operational efficiency, decision-making, and employee satisfaction. Most of the previous literature has primarily focused on the general benefits of digitalizing human resource management (such as efficiency, paperless systems, and online training). However, few studies have explored how digital HRM transformation in hospitals can enhance the strategic agility and resilience of healthcare workers, particularly in facing disruptive events such as the COVID-19 pandemic, natural disasters, or healthcare workforce shortages. However, specific strategies and adaptations are needed in countries like Indonesia, where hospital infrastructure varies widely. This review synthesizes existing studies to explore the strategic application of digital HRM in hospitals and contextualizes global innovations for local implementation.

This study therefore aims to narratively review the literature on digital HRM transformation in hospitals and analyze its impact on the strategic agility and organizational resilience of healthcare workers. The primary research question is:

“How does digital HRM transformation in hospitals contribute to enhancing the strategic agility and organizational resilience of healthcare professionals in times of disruption?”

## 2. LITERATURE REVIEW

### *Digital Transformation in Human Resource Management*

Digital transformation in human resource management (HRM) incorporates a range of innovations, including automation, cloud-based platforms, AI-assisted recruitment, and real-time performance monitoring. According to Zhang & Chen (2023), five digital forces—customer demand, innovation, competition, digital governance, and evolving employee expectations—are driving the transformation of HR functions in hospitals.

Ma (2025) emphasized that digital HRM significantly increases responsiveness, resource efficiency, and employee satisfaction within hospital settings. These changes are realized through enhanced e-recruitment, e-learning, digital payroll systems, and performance-based dashboards. Moreover, the work of Fathima et al. (2023) highlights that digital systems lead to cost reduction and improved HR reporting accuracy. In the Indonesian context, Indroputri & Sanjaya (2024) presented how digital HRM supports the career development of younger generations in healthcare institutions, especially through flexible online training models. Nawaz & Gomes (2020) further noted that the success of HR Information Systems (HRIS) is strongly correlated with employee satisfaction and digital familiarity.

Additional studies by Ningrum & Kusnandar (2024) in RSUD Bandung found that digital platforms not only reduced administrative workloads but also facilitated better compliance with regulatory reporting. Similarly, data presented in the Petra Business Studies (2024) demonstrate the alignment between digital HRM implementation and improved employee engagement metrics. Despite the evident advantages, implementation is not without challenges. Issues such as limited IT infrastructure, resistance to change, and inadequate digital literacy among hospital staff are frequently reported (Janani & Rebecca, 2025; Nong & Li, 2024). Therefore, leadership, change management strategies, and contextual adaptation are crucial to ensure sustainable transformation. These studies collectively support the notion that digital HRM has the potential to strengthen hospital management capabilities and patient-centered workforce delivery when properly integrated.

HRM transformation in the digital era involves integrating digital technologies into all aspects of HR functions, from recruitment to retirement, as well as shifts in the roles and competencies of HR professionals. The key pillars of this transformation include:

- **Digitalization of HR Processes (HR Digitalization):** This encompasses the automation of routine administrative tasks like payroll, leave management, and employee data through Human Resource Information Systems (HRIS) or Human Capital Management (HCM) systems. The goal is to enhance efficiency, accuracy, and data accessibility (Bondar et al., 2021). In hospitals, digitalization can expedite the onboarding process for new medical staff, manage licenses and certifications, and facilitate complex shift scheduling.
- **Adoption of HR Technologies (HR Technology Adoption):** Beyond mere automation, this involves leveraging advanced technologies such as artificial intelligence (AI) for predictive recruitment, chatbots for employee services, data analytics for evidence-based decision-making, and blockchain for credential verification (Dery et al., 2020). In the hospital context, AI can be used to analyze nurse and doctor performance data, identify burnout risks, or personalize training programs.
- **Shifting HR Roles and Competencies:** HR professionals are transitioning from transactional roles to strategic partners who use data and insights to guide business decisions. They need to develop competencies in data analytics, employee experience design, change management, and technological literacy (Ulrich & Dulebohn, 2020).
- **Focus on Employee Experience:** In the digital era, employees expect a seamless, personalized, and engaging experience from the technology they use, similar to consumer experiences. This prompts HR to design employee-centric solutions, foster a collaborative culture, and ensure employee well-being (Deloitte, 2021). In hospitals, this is particularly critical given the high pressure and potential for burnout faced by healthcare professionals.

### ***Organization Strategic Agility***

Strategic agility is an organization's ability to quickly sense, explore, and adapt to changing market conditions and new opportunities (Fossum et al., 2021). In the context of hospitals, this means the ability to rapidly respond to new disease outbreaks, adopt innovative medical procedures, adjust care

models based on patient data, and dynamically recruit talent with relevant skills. HRM transformation plays a crucial role in building agility in several ways:

- **Data-Driven Decision Making:** HR digitalization and HR analytics enable hospitals to collect and analyze data on employee performance, turnover rates, available skills, and training needs (Bondar et al., 2021). These insights empower management to make faster and more informed recruitment decisions, identify skill gaps that need addressing, and design development programs responsive to evolving healthcare needs. For instance, real-time data on specialist nurse availability can allow a hospital to quickly open a new intensive care unit.
- **Workforce and Organizational Structure Flexibility:** HR technology facilitates more flexible workforce management, including hybrid work models, the gig economy for specialist medical staff, and dynamic scheduling systems (Dery et al., 2020). This allows hospitals to adjust staff capacity to fluctuating patient demand or urgent needs, such as during a pandemic. Digital HR can manage internal and external talent pools more efficiently.
- **Continuous Learning and Development:** Digital learning platforms and microlearning enable hospital employees to rapidly acquire new skills relevant to medical innovations or new technologies (Deloitte, 2021). HR can quickly launch training programs for new equipment usage or emergency care protocols, ensuring healthcare professionals are prepared for evolving challenges.
- **Culture of Innovation and Adaptability:** HR transformation focusing on employee experience and individual empowerment can foster a culture where change is viewed as an opportunity. HR can promote experimentation, continuous feedback, and cross-functional collaboration, all hallmarks of an agile organization (Ulrich & Dulebohn, 2020).

### ***Organizational Resilience***

Organizational resilience is the capacity of an organization to absorb disturbances, recover from crises, and adapt to thrive under new conditions (Duchek, 2020). Hospitals are inherently vulnerable to various shocks, ranging from disease outbreaks, natural disasters, staff shortages, to financial pressures. HRM transformation plays a crucial role in building resilience through:

- **Workforce Risk Management:** Predictive analytics in HR can help hospitals identify potential risks such as high employee turnover, critical skill shortages, or potential burnout in specific staff groups (Bondar et al., 2021). By anticipating these risks, HR can take proactive steps like retention programs, retraining, or emergency recruitment strategies.
- **Employee Well-being and Psychological Support:** Amidst crises, the physical and mental well-being of healthcare professionals is paramount to maintaining hospital operations. Digital HR can facilitate easy access to mental health resources, psychological support programs, and effective communication channels to reduce stress and anxiety (Mohammad et al., 2021). Digitalized HR systems can monitor well-being indicators and trigger early interventions.
- **Crisis Communication and Information Dissemination:** Digital HR communication platforms enable rapid and accurate information dissemination to all staff during a crisis, ensuring everyone has a shared understanding of the situation and procedures to follow (Deloitte, 2021). This is vital in emergency situations within hospitals.
- **Talent Management and Succession:** HR transformation ensures a strong talent pipeline and effective succession planning for key positions. This minimizes the impact of sudden loss of critical staff (Ulrich & Dulebohn, 2020). In hospitals, the loss of a specialist doctor or head nurse can have a significant impact, making robust succession planning essential.
- **Adaptive Culture and Learning from Crises:** HR can foster a culture where failures are viewed as learning opportunities. After a crisis, HR can facilitate debriefing and post-mortem analyses to identify crucial lessons and strengthen the organization's capacity to face future challenges (Lengnick-Hall et al., 2021).

### 3. METHODS

In this narrative literature review, reference databases were sourced from Scopus, ScienceDirect, Web of Science, and Google Scholar using the following Boolean keywords:

("digital HRM" OR "e-HRM" OR "digital human resource management") AND ("resilience" OR "agility") AND ("hospital" OR "healthcare").



The inclusion criteria for this study are as follows:

- Publication year: 2020–2025
- Type: Peer-reviewed journal articles
- Language: English and Indonesian
- Relevance: Focus on digital HRM and the agility/resilience of healthcare professionals.

#### 4. RESULTS AND DISCUSSION

The review of ten international studies published between 2020 and 2025 reveals that digital HRM (Human Resource Management) transformation significantly contributes to enhancing both strategic agility and organizational resilience among healthcare professionals, especially during times of disruption such as the COVID-19 pandemic or digital transitions. These contributions can be categorized into three major dimensions:

##### 1. Strategic Agility Through Digital Capabilities

Digital HRM practices, such as e-recruitment, e-performance management, AI-based HR tools, and real-time workforce analytics, have allowed hospitals to respond more swiftly to external changes. Several studies (e.g., Van de Wetering & Versendaal, 2021; Alqarni et al., 2023) emphasized that IT ambidexterity and digital dynamic capabilities empower healthcare institutions to allocate resources rapidly, realign staff roles, and implement new strategies without structural delays.

For instance, hospitals that utilized cloud-based HR platforms were able to reassign medical staff across departments within hours, rather than days, based on real-time patient inflow. This level of agility, supported by digital infrastructure, allowed healthcare organizations to stay competitive and service-ready even during public health emergencies.

##### 2. Organizational Resilience Through Workforce Adaptability

Digital HRM also supports resilience by fostering adaptability, mental preparedness, and employee engagement in uncertain environments. Research (e.g., Karim & Islam, 2024; Adikaram et al., 2023) shows that flexible

scheduling, remote work enablement, and digital learning platforms helped reduce burnout, maintained work-life balance, and improved psychological well-being among healthcare workers.

In times of disruption, such as the COVID-19 pandemic, digital HRM enabled hospitals to rapidly shift to output-based performance models, ensuring that staff could continue to contribute without physical presence, while still receiving support and recognition from HR departments.

### 3. Leadership, Culture, and Continuous Learning

Strategic agility and resilience are not only technical outcomes but are also deeply influenced by organizational culture. Digital HRM systems play a crucial role in building a culture of continuous learning and rapid upskilling. Findings across studies (e.g., Sani et al., 2024; Subariyanti et al., 2025) suggest that digital HRM fosters a proactive mindset by enabling microlearning, virtual mentoring, and cross-functional collaboration through internal communication platforms.

This cultural shift enhances resilience by equipping healthcare professionals with problem-solving and cross-disciplinary competencies, enabling them to remain effective even when traditional structures are disrupted.

**Table 1. Summary of Contributions**

Contribution Area	Digital HRM Mechanism	Impact on Agility/Resilience
Workforce Flexibility	E-rosters, mobile HR apps	Faster reallocation and shift response
Learning & Development	Online training, LMS	Continuous skills adaptation
Decision-Making	Real-time HR analytics	Data-driven, agile staffing
Well-being Support	Digital mental health tools	Reduced burnout, better morale
Leadership Engagement	Virtual town halls, feedback apps	Reinforced trust and clarity in crises

Source: Secondary data processed, 2025

The importance of these findings lies in their illustration that digital HRM is not merely an operational upgrade, but a strategic enabler in healthcare management. By embedding agility and resilience into HR systems, hospitals position themselves to withstand future disruptions—be they pandemics, workforce shortages, or technological shifts.



Moreover, these findings challenge conventional HR models in healthcare, which traditionally emphasize administrative compliance over adaptability. The transition to digitally empowered, human-centric HR suggests a paradigm shift where HR is both a stabilizer and a catalyst in crisis response.

### ***Implications and Overarching Discussion***

The transformation of human resource management (HRM) in hospitals through digital technologies has emerged not only as an operational necessity but as a strategic imperative. The reviewed literature highlights that digital HRM significantly strengthens both strategic agility and organizational resilience, which are critical for healthcare institutions navigating volatile and disruptive environments.

#### **1. Theoretical Implications**

From a theoretical perspective, the findings contribute to the growing discourse on dynamic capabilities theory, particularly within the healthcare context. Digital HRM systems function as enablers of organizational sensing, seizing, and transforming abilities—core elements of strategic agility. By supporting real-time data analytics, decentralized decision-making, and rapid workforce redeployment, digital HRM aligns with the dynamic capabilities needed for hospitals to adapt to changing demands.

Moreover, the concept of resilience in healthcare is traditionally framed around clinical infrastructure and supply chains. This study reframes resilience as a people-centered capability, emphasizing the role of psychological safety, digital literacy, and continuous learning—areas heavily influenced by HR practices. Thus, it expands the theoretical foundation of resilience to incorporate digital HRM as a resilience driver.

#### **2. Managerial and Practical Implications**

At the managerial level, the transformation of HRM presents clear directives for hospital leadership:

- Invest in scalable and integrated digital HR platforms that support recruitment, performance evaluation, and workforce planning in real time.
- Develop digital competencies among HR personnel and clinical staff, ensuring all employees can engage with and benefit from HR digitalization.
- Foster a digitally supported culture of adaptability, where learning, feedback, and collaboration are embedded in everyday HR interactions.

Furthermore, the findings suggest that hospitals should shift from reactive HR models to proactive, predictive HR strategies, leveraging AI and analytics to anticipate talent gaps, burnout risks, and workforce needs before they escalate into crises.

### 3. Policy and Organizational Development Implications

For healthcare policy-makers and hospital administrators, the implications extend to long-term workforce planning and digital health strategies. Embedding digital HRM into broader hospital digital transformation roadmaps ensures that human resource functions are aligned with clinical and operational innovations. In regions where resource constraints are prevalent, even low-cost digital HRM solutions (e.g., cloud-based rostering, mobile training apps) can yield significant agility gains.

In addition, regulatory bodies and accreditation institutions may need to update HRM quality standards, integrating digital readiness and employee resilience as key performance indicators in hospital assessments.

### 4. Overarching Discussion: Digital HRM as a Catalyst for Future-Ready Healthcare

Ultimately, digital HRM emerges as a strategic bridge between technology and human adaptability in hospitals. Its contribution goes beyond administrative efficiency—serving as a resilience amplifier and an agility enabler in times of disruption.

The COVID-19 pandemic was a catalyst, revealing the fragility of traditional HR systems and the urgent need for transformation. However, the current discourse indicates a more enduring shift, where HR functions evolve into strategic partners in innovation, well-being, and sustainability.

Future disruptions—whether technological, epidemiological, or geopolitical—will continue to test hospital systems. Institutions that embrace digital HRM transformation now will be better positioned not just to survive but to thrive under uncertainty, ensuring healthcare professionals are empowered, engaged, and prepared to lead in any crisis.

## 5. CONCLUSION

This literature review has explored the transformative role of digital human resource management (HRM) in enhancing the strategic agility and

organizational resilience of healthcare professionals, particularly within hospital settings during periods of disruption. Across the reviewed studies, it is evident that digital HRM systems—ranging from e-recruitment platforms to AI-driven analytics—have enabled healthcare organizations to become more adaptive, responsive, and resilient. Digital HRM contributes to strategic agility by supporting rapid decision-making, flexible workforce deployment, and continuous organizational learning. Simultaneously, it enhances resilience by improving employee engagement, mental well-being, and the overall capacity of healthcare professionals to navigate uncertainty. These outcomes are especially critical in a sector as complex and high-stakes as healthcare, where operational continuity and human capital stability are essential. The findings also underscore that digital transformation in HR is not merely a technical change, but a strategic reorientation—positioning HR as a central driver of innovation, crisis preparedness, and sustainable performance in hospitals. As the healthcare landscape continues to face future disruptions, hospitals that embed digital HRM into their organizational DNA will be better equipped to ensure service quality, workforce adaptability, and long-term resilience. In conclusion, the integration of digital HRM within hospital systems represents a vital step toward building future-ready healthcare institutions, where technology and people strategies are harmonized to meet the demands of a rapidly evolving world.

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