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Review

Exploration of Reconceptualization of Hospital Human Resource Management Thinking and Management Models in the Digital Age

Mengjie Zhou*

The Management Department, Chongqing College Of International Business And Economics, Chongqing 401520, China.

Abstract

WIn an era of rapid digital development, the established structures of various industries are being reshaped with unprecedented force. As a key institution safeguarding public health and well-being, hospitals are likewise experiencing profound changes in their human resource management (HRM) domain. This paper conducts an in-depth analysis of the multifaceted impacts that the digital age brings to hospital HRM, emphasizing the necessity, direction, and implementation pathways for reconstructing management mindsets. Simultaneously, it introduces innovative strategies for adapting management models to these new demands, aiming to provide practical and comprehensive recommendations for hospitals to optimize HRM and strengthen overall competitiveness in the wake of digital transformation.

Keywords: Digital age; hospital; human resource management; mindset reconstruction; management model

1 Introduction

In the digital age, information technology has permeated every facet of social life, and the healthcare industry is no exception. From the widespread adoption of electronic medical records (EMRs) in clinical settings, to the rapid rise of telemedicine, and the initial forays of artificial intelligence (AI) in disease diagnosis, digital technologies are irreversibly reshaping hospital operations and service delivery. As a crucial component of the hospital management system, human resource management directly influences medical quality, service efficiency, and the institution's overall developmental trajectory. However, under the overarching backdrop of digitalization, traditional HRM models reveal many shortcomings — such as an inability to accurately match diverse talent needs, cumbersome workflows leading to low efficiency, and a lack of effective incentives to fully unleash staff potential. Therefore, hospital HRM must keep pace with the times by actively promoting the reconstruction of managerial mindsets and the innovation of management models, so as to better align with the developmental requirements of the digital era and deliver higher-quality, more efficient healthcare services to patients.

***Correspondence**
Mengjie Zhou
The Management Department, Chongqing College Of International Business And Economics, Chongqing 401520, China.
E-mail:swsm2534@163.com

2 New Requirements for Hospital Human Resource Management in the Digital Age

2.1 Dual Emphasis on Diversified and Specialized Talent Demand

In the midst of the digital wave, hospitals' requirements for talent exhibit pronounced characteristics of both diversification and specialization. On one hand, beyond traditional medical professionals — such as physicians and nurses — there is explosive growth in demand for interdisciplinary talent possessing both medical expertise and information technology (IT) capabilities. As hospitals deepen their information system implementations, digital healthcare systems such as EMRs, Hospital Information Systems (HIS), and Picture Archiving and Communication Systems (PACS) become increasingly pervasive. Ensuring these systems' stable operation and data security demands dedicated professionals for routine maintenance, periodic upgrades, and continuous optimization [1]. Concurrently, as telemedicine emerges as a novel healthcare service model, its development similarly relies on experts adept in medical knowledge who

can also proficiently operate telemedicine equipment and master network communication technologies to guarantee seamless remote care delivery.

On the other hand, within the hospital itself, the professional requirements for various departments and positions become ever more refined. Specifically, in the realm of medical research, there is a pressing need for researchers with solid disciplinary foundations and outstanding research capabilities, enabling them to engage in cutting-edge medical studies and drive the hospital's academic progress. For positions dedicated to medical quality management, practitioners must be well-versed in both clinical operations and quality management theories and methodologies. Such specialists can formulate scientifically grounded quality standards and continuously monitor and improve healthcare quality. This coexistence of diversified and specialized talent demands imposes higher requirements on the hospital's HRM department: it must broaden its talent horizons and refine its talent screening capabilities, recruiting and attracting various types of specialized personnel in alignment with the hospital's strategic objectives and actual needs [2].

2.2 Dual Enhancement of Work Efficiency and Quality

Digital technologies introduce more efficient and convenient tools and methods to hospital HRM, while simultaneously raising expectations for both work efficiency and quality. Regarding efficiency, traditional HRM tasks — such as employee record management, payroll calculations, and attendance tracking — have previously consumed substantial human and temporal resources and were prone to errors caused by manual handling. By implementing a Human Resource Information System (HRIS), these tasks can be automated, significantly improving operational efficiency. For instance, employee information can be updated and queried in real time within the system; payroll can be generated automatically according to predefined rules; and attendance data can be collected and aggregated automatically through card swipes or fingerprint recognition technologies, greatly reducing manual intervention and enhancing data accuracy and timeliness.

From the work quality perspective, digital technologies offer robust support for precise performance evaluation, enabling hospitals to promptly identify staff shortcomings and provide targeted training and development opportunities. Hospitals can establish a scientifically rigorous performance appraisal index system and employ data analytics tools to conduct comprehensive, objective, and impartial assessments of employee performance. Consequently, appraisal outcomes serve as key references for decisions regarding promotions, salary adjustments, and training program design. Moreover, by longitudinally tracking and analyzing performance data, hospitals can discern individual employees' strengths and weaknesses in their career development and tailor personalized career development plans accordingly. This approach not only facilitates employee growth and improvement but also raises overall work quality and drives enhanced organizational performance.

2.3 Personalization and Autonomy in Employee Development

Under the digital age's backdrop, employees increasingly expect personalized and autonomous career development paths. They no longer settle for traditional, standardized progression models; rather, they aspire to flexible, diversified opportunities that align with their personal interests, competencies, and career aspirations. The hospital's HRM department should integrate these individualized needs into its strategic considerations, crafting bespoke training plans, promotion pathways, and career development roadmaps for each employee. For example, for those employees with strong research interests and demonstrable potential, the hospital can provide abundant research resources, access to authoritative academic exchange platforms, and streamlined promotion channels to encourage their achievements in academic work. Conversely, for employees who excel in clinical practice, more clinical skill workshops, case-study seminars, and one-on-one mentoring by senior specialists can be offered to help them advance their clinical competencies.

In addition, the digital era opens up more avenues for autonomous learning and self-improvement. Employees can leverage online learning platforms, professional forums, and academic databases to transcend spatial and temporal constraints, accessing cutting-edge medical knowledge and advanced technical information at any time to develop their capabilities. Hospitals should actively encourage such self-directed learning by providing necessary support and resources — such as reimbursing relevant learning expenses or allocating dedicated study time — to fully stimulate employees' enthusiasm and initiative for learning [3].

2.4 Data-Driven Decision-Making and Refined Management

The digital age is characterized by a data explosion. When conducting HRM, hospitals generate massive amounts of data, including basic employee profiles, attendance records, performance metrics, training histories, and turnover information. Embedded within these data are valuable insights that, through in-depth analysis and mining, can provide robust support for HRM decision-making and advance management towards greater precision.

In the recruitment phase, analyzing historical recruitment data enables hospitals to identify trends in demand for various positions, evaluate the effectiveness of different recruitment channels, and trace root causes of talent attrition. Based on these insights, recruitment strategies can be optimized to enhance both efficiency and quality. For example, if analysis reveals high attrition in a particular role, further investigation might uncover reasons such as uncompetitive compensation, excessive work pressure, or unclear career prospects. Targeted measures can then be implemented to address these issues.

Within performance management, leveraging data analytics can expose variations in work performance across departments or roles and pinpoint key factors influencing outcomes, thereby informing resource allocation and compensation decisions. For instance, if a department's overall performance is markedly low, deeper analysis might reveal managerial inefficiencies, misaligned task distribution, or insufficient individual competencies. Subsequently, targeted interventions can be designed to rectify these shortcomings.

In training decisions, analyzing training-related data helps understand employees' training needs and the effectiveness of existing programs, facilitating iterative optimization. For example, by examining employees' participation rates and feedback on various courses, hospitals can identify preferred content and delivery methods, adjusting course offerings accordingly. Comparing performance indicators before and after training further enables objective evaluation of training outcomes, guiding future program enhancements.

3 Necessity and Direction of Mindset Reconstruction in Hospital Human Resource Management

3.1 Necessity of Mindset Reconstruction

3.1.1 Urgent Need to Adapt to External Environmental Changes

With continuous advancements in digital technologies, competition in the healthcare market has intensified, and patients' demands for medical services have become more diversified and personalized. Beyond expecting high-quality clinical care, patients now pay close attention to a hospital's degree of informatization, the convenience of care pathways, and the overall service experience. Meanwhile, policy environments are continuously evolving — such as ongoing optimization of medical insurance policies and deeper implementation of hierarchical diagnosis and treatment systems — presenting new operational challenges for hospitals [4]. To remain competitive, hospitals must possess highly efficient operational management systems and outstanding talent pools. Traditional HRM philosophies struggle to respond rapidly to these external changes and cannot offer robust talent support or strategic guarantees. Therefore, reconstructing HRM mindsets is crucial for hospitals to adapt to shifting external environments.

3.1.2 Key Strategy to Strengthen Core Competitiveness

Talent is a core component of a hospital's competitiveness. In the digital age, a hospital's core strengths are determined not only by its medical technologies and equipment but also by its HRM capabilities. Outstanding HRM can attract, cultivate, and retain top-tier talent, boosting employee satisfaction and performance, thereby enhancing overall institutional competitiveness. By reconstructing HRM mindsets and innovating management models, hospitals can build rational and scientific systems for talent selection, development, motivation, and evaluation, fully tapping into staff potential and fueling strong momentum for growth.

3.1.3 Intrinsic Requirement for Sustainable Development

While the digital age offers new development opportunities, it also brings challenges. To achieve sustainable growth, hospitals need forward-looking HRM strategies. Traditional HRM mindsets often focus on short-term gains but neglect employees' long-term development and the institution's sustainability. By reconstructing HRM mindsets to align employees' career growth with the hospital's strategic objectives, hospitals can cultivate a stable, long-term talent pool, enhancing employee loyalty and sense of belonging.

3.2 Direction of Mindset Reconstruction

3.2.1 From Traditional Personnel Management to Strategic Human Resource Management

Traditional personnel management focuses primarily on day-to-day administrative tasks — such as recruitment, payroll processing, and record-keeping — without closely aligning with the hospital's strategic goals. In the digital age, HRM must ascend to a strategic level, deeply integrating with overall hospital strategy [5]. HRM departments should actively participate in strategic planning, define HR requirements based on institutional objectives, and develop corresponding HR strategies and plans to provide solid talent support for achieving those objectives. For instance, if a hospital's strategic aim is to become a regional medical center, the HRM department must align its work with this goal by formulating talent recruitment plans to attract high-caliber medical and administrative experts; designing talent development programs to enhance employees' professional skills and comprehensive competencies; and establishing performance management policies that incentivize staff to fully commit to the hospital's strategic mission.

3.2.2 From Task-Centered to People-Centered

Traditional HRM often revolves around work tasks and emphasizes controlling and managing employees. In the digital era, employees have become a hospital's most valuable resource. HRM should shift its focus toward staff needs and development, adhering to a people-centered philosophy. This entails respecting individual differences in personality and ability, creating supportive work environments, and offering diversified development opportunities to fully mobilize employees' enthusiasm and creativity, thereby achieving mutual growth for both staff and the hospital. In practice, this requires building channels for employee feedback to promptly understand their work demands and suggestions, and adjusting management strategies based on that feedback. Conducting employee satisfaction surveys and addressing identified areas of dissatisfaction are also essential for improving job satisfaction and fostering a sense of belonging.

3.2.3 From Experience-Based to Scientific Management

Traditional HRM largely relies on managers' personal experience and subjective judgment, lacking systematic, science-based tools and methods. In the digital era, hospitals can leverage big data, AI, and other advanced technologies to achieve scientific and refined HRM. Using data analytics, they can gain deep insights into employees' behavioral patterns and needs, offering solid evidence for HRM decision-making and enhancing decision-making accuracy and effectiveness. For example, employing data analysis tools to mine performance data allows identification of core factors influencing outcomes, paving the way for targeted improvement strategies. AI algorithms can also be used to predict employees' career potential and provide individualized career development recommendations [6].

3.2.4 From Closed Management to Open Management

In the digital age, information disseminates rapidly, and hospitals interact with external environments more frequently. HRM can no longer remain confined within the institution; rather, it must embrace an open management approach that actively fosters communication and collaboration with external entities. Establishing partnerships with universities, research institutes, and other hospitals to undertake talent exchanges, joint training programs, and diverse cooperative activities can expand talent acquisition channels and elevate overall HRM levels. For instance, collaborating with academic institutions to conduct targeted training initiatives can secure a pipeline of specialized talent in advance; cooperating with peer hospitals on talent exchange and joint study programs enables learning from advanced management philosophies and technical methods.

4 Exploration of Hospital Human Resource Management Models in the Digital Age

4.1 Innovation in Talent Recruitment and Selection Models

4.1.1 Expanding Diversified Recruitment Channels

With the explosive development of digital technologies, hospitals must leverage internet platforms and social media to conduct recruitment activities. In addition to traditional job portals and campus recruitment, hospitals can publish vacancy announcements on their official websites, WeChat public accounts, Weibo, and other channels to attract a wider pool of potential candidates. On the hospital's official website, a dedicated "Careers" or "Recruitment" section can provide comprehensive information about the institution, detailed job descriptions, and qualification requirements, alongside an online résumé submission feature. WeChat public accounts and Weibo profiles can periodically disseminate recruitment notices and institutional news, thereby enhancing the

hospital's visibility and influence. Furthermore, specialized professional networking platforms — such as LinkedIn — can be utilized to identify candidates with specific skill sets and experience. LinkedIn aggregates vast quantities of professional profiles, enabling hospitals to conduct precise searches based on job requirements and proactively reach out to promising individuals, thus improving both the accuracy and efficiency of the recruitment process.

4.1.2 Utilizing Digital Assessment Tools

During the selection phase, hospitals should actively employ digital assessment tools such as online tests and video interviews. Online assessments can comprehensively evaluate candidates' professional knowledge, skill levels, personality traits, and overall capabilities, providing objective benchmarks for interviewers. For instance, for physician roles, an online test battery might include modules on medical theory, clinical reasoning, and communication competency, thus enabling evaluators to gauge both the candidate's technical expertise and interpersonal skills. Video interviews, meanwhile, break through geographic constraints, reducing recruitment costs and time investments while accelerating the pace of hiring. Through real-time video interaction, interviewers can observe candidates' verbal articulation, demeanor, and professional presence. Beyond these digital techniques, big data analytics can be applied to résumés, assessment scores, and other candidate data to predict job fit and support hiring decisions [7]. For example, by analyzing a candidate's work history, educational background, and certifications in conjunction with specific job requirements, a compatibility score can be generated, offering hiring managers a data-driven reference point.

4.1.3 Establishing a Digital Talent Pool

Hospitals should proactively create a digital talent pool that records information on candidates who express interest but do not yet meet current job requirements. Periodic tracking and communication with individuals in this repository will help maintain awareness of their evolving career trajectories. When suitable vacancies arise, the hospital can prioritize candidates from this pool, thereby increasing recruitment efficiency and quality. The talent pool should be organized by specialty area, job category, educational level, and other relevant criteria to facilitate quick searches and deployment. Additionally, hospitals can use email newsletters or SMS notifications to inform talent-pool members of the latest job openings and professional development opportunities, thus sustaining engagement and interest.

4.2 Optimization of Training and Development Models

4.2.1 Designing Personalized Training Plans

Based on each employee's job requirements, career objectives, and existing competencies, hospitals should craft customized training programs. Leveraging digital technologies, HR can analyze employees' training needs by examining records from online learning platforms, performance appraisal results, and self-assessment feedback. This analysis allows for pinpointing specific knowledge or skill gaps and subsequently recommending targeted courses and learning resources that align with individual learning goals. For example, newly onboarded employees might receive orientation training to familiarize them with hospital regulations, organizational culture, and workflow processes; meanwhile, experienced staff can be offered advanced courses in specialty skills or leadership development that correspond with their job demands and career aspirations. Moreover, a mechanism for tracking training outcomes must be established: regularly evaluate the effectiveness of training through assessments and apply these findings to continually refine the curriculum, thereby ensuring training efficacy and relevance.

4.2.2 Implementing Blended (Online–Offline) Training

Combining online and offline training modalities leverages the advantages of both approaches. Online training offers flexibility and diverse resources, allowing employees to learn at their own pace. Hospitals can build an online learning platform that hosts video lectures, digital reading materials, and case analyses to facilitate anytime, anywhere learning. This platform may also include collaborative features — such as discussion forums — where staff can share insights, discuss questions, and foster knowledge exchange. Offline training, on the other hand, emphasizes interactivity and hands-on practice. Through face-to-face workshops, case-based seminars, simulation exercises, and site visits, employees can deepen their understanding and mastery of skills. For example, skills that require practical demonstration — such as surgical techniques or advanced nursing procedures — are best taught in an offline environment, where experienced instructors can provide real-time guidance. Technologies such as virtual reality (VR) and augmented reality (AR) can further enrich offline sessions: using VR to simulate an operating room environment, for instance, enables surgeons to practice procedures in a lifelike virtual setting, thereby enhancing their technical proficien-

cy and preparedness for unexpected scenarios.

4.2.3 Establishing a Training Effectiveness Evaluation and Feedback Mechanism

A comprehensive system for evaluating training effectiveness should be built, relying on digital technologies to track and assess outcomes in real time. First, use online quizzes, project-based assignments, and trainee feedback to gauge both mastery of course content and the extent to which training enhances on-the-job performance. Online quizzes can be administered immediately after course completion to quickly verify learning gains; project-based tasks require employees to apply new knowledge in practical contexts, and the quality of their work serves as an indicator of training impact; trainee feedback — collected through surveys or focus-group interviews — captures subjective evaluations of course content, instructor performance, and logistical arrangements. Second, adjust training programs and content in a timely manner based on evaluation results to improve overall quality. Finally, link training outcomes to performance appraisals and promotion opportunities to incentivize participation: for employees who excel in training, award bonus points in performance evaluations and consider them first for advancement opportunities.

4.3 Innovation in Performance Management Models

4.3.1 Constructing a Diversified Performance Indicator System

In the digital age, hospital performance management indicators should become more diversified, encompassing not only quantifiable work outputs but also factors such as work attitude, innovation capacity, and teamwork [8]. For each role, establish a scientifically grounded and fair set of metrics. For example, in addition to quantifying a physician's patient volume and surgical caseload, appraisal criteria should include patient satisfaction ratings, clinical quality measures (e.g., diagnostic accuracy rate, cure rate, complication rate), research output (e.g., number of publications, research awards), and educational contributions (e.g., teaching hours). For nursing staff, performance metrics might cover nursing-quality indicators (e.g., incidence of nursing errors, patient pressure ulcer rates), patient care satisfaction, procedural skill proficiency, and collaboration within the care team. Administrative personnel might be evaluated based on task completion rates, work efficiency, service quality, and the extent of support provided to clinical departments. A diversified indicator system enables a comprehensive and unbiased appraisal of employee performance.

4.3.2 Real-Time Performance Feedback and Communication

By utilizing a digital performance management system, hospitals can implement real-time feedback mechanisms. Managers can continuously record and evaluate employees' work behaviors and immediately relay feedback through the system. Simultaneously, employees can access their performance data and feedback in real time, facilitating ongoing dialogue with supervisors. This instantaneous feedback loop allows employees to understand their performance status, identify areas for improvement, and promptly adjust their work approaches, while also fostering stronger trust and engagement between staff and leadership. For instance, if a manager observes a deficiency in an employee's performance, they can document the issue and provide constructive guidance through the system. When an employee completes a significant project, they can upload their deliverables for instantaneous manager review and feedback [9]. Additionally, the performance management system can be configured to send automated reminders if performance indicators deviate from expected thresholds or as appraisal deadlines approach, ensuring both managers and employees remain aware of critical performance milestones.

4.3.3 Expanding Application of Performance Outcomes

To fully leverage the motivational impact of performance management, hospitals should tightly integrate performance results with salary adjustments, promotions, and professional development opportunities. Beyond conventional monetary rewards, employees with outstanding performance can be granted expanded career opportunities — such as participation in strategic projects, appointment to leadership positions, or sponsorship for advanced studies. Furthermore, performance data analytics can uncover systemic issues within hospital management and operations, providing insights to inform strategic planning and process optimization. For example, if performance analysis reveals that a particular department consistently underperforms, a deeper investigation might expose management gaps, suboptimal staffing allocations, or inequitable resource distribution; targeted corrective actions can then be implemented. Additionally, integrate performance metrics into the compensation structure by designing a well-balanced salary adjustment framework in which compensation levels correspond to employees' performance ratings and contributions.

4.4 Transformation of Compensation and Benefits Management Models

4.4.1 Designing Personalized Compensation Packages

Based on employees' individual needs and contributions, hospitals should design tailored compensation schemes. In addition to base salary and performance-based pay, diversified forms of remuneration — such as equity incentives, project-based bonuses, and skill allowances — can be introduced. Core talent and key positions require more competitive compensation to attract and retain top performers. Specifically, for departmental leads and senior technical experts, hospitals might offer equity-sharing plans so that these individuals can participate in the institution's growth dividends, thereby strengthening their sense of belonging and mission. For staff involved in major research initiatives, project bonuses can be allocated based on project complexity and individual contributions. Employees who hold specialized certifications or possess uncommon skills may receive skill-based allowances, incentivizing continuous professional development. Moreover, consider employees' personal circumstances and long-term career trajectories by providing flexible benefits packages — such as cafeteria-style benefit plans — allowing staff to select offerings that best meet their needs (e.g., supplementary commercial insurance, child-education subsidies, housing stipends, and paid leave).

4.4.2 Linking Compensation Closely with Performance

Develop a rational and transparent performance-linked compensation framework that ensures employees' remuneration aligns precisely with their work performance [10]. Based on performance appraisal outcomes, specify salary adjustment ranges and bonus disbursement amounts. High-performing employees should receive significant salary increases and larger bonuses, whereas individuals whose performance falls short of expectations should be subject to proportionate pay adjustments and offered targeted training or coaching. When formulating the performance-pay linkage plan, emphasize the characteristics of different roles and maintain fairness in appraisal procedures. For instance, frontline clinical positions — characterized by high workload and elevated risk — should receive proportionally greater consideration in salary adjustments and bonus allocations. Performance indicators must be quantifiable, objective, and free from excessive subjectivity. Periodically evaluate and optimize the performance-pay linkage mechanism by collecting hospital-wide data and employee feedback to continuously enhance its incentivizing effectiveness.

4.4.3 Implementing a Digital Compensation Management Platform

A digital compensation management platform can automate and digitalize salary calculation, disbursement, and inquiry processes. This platform should integrate seamlessly with the hospital's HRIS and financial systems, automatically retrieving employee data to calculate compensation accurately and efficiently. For example, the system can aggregate data on attendance, performance evaluation results, and job grade to compute employees' base salary, performance pay, and bonuses, then generate detailed compensation reports. Through a mobile app or web portal, employees can conveniently view their salary breakdowns and benefit details at any time, thereby increasing transparency and satisfaction with the compensation process. Additionally, the platform can provide compensation analytics, enabling managers to monitor total payroll expenditure and assess the reasonableness of compensation structures, thus supplying precise data references for compensation planning and budget management.

4.5 Innovation in Employee Relations Management Models

4.5.1 Building a Digital Communication Platform

Establish a digital communication ecosystem by adopting tools such as Enterprise WeChat or DingTalk to strengthen interactions between the hospital and its workforce. Through these platforms, the hospital can disseminate policy updates, work assignments, and training notifications in a timely manner, while employees can provide feedback or submit questions at any time. Specifically, management can broadcast important announcements via Enterprise WeChat or DingTalk, ensuring that all staff receive and can review critical information immediately. Should employees encounter issues or wish to propose suggestions regarding hospital management, they can submit their input to supervisors or relevant departments through the platform. Furthermore, an employee forum or community space can be established to encourage staff to share work-related achievements, life experiences, and industry insights, thereby fostering collaboration and reinforcing a sense of team cohesion [11].

4.5.2 Digitizing Employee Well-Being Initiatives

The HR department should leverage digital technologies to advance employee well-being programs,

thereby enhancing both the precision and impact of these initiatives. For example, through the HRIS, key personal milestones — such as birthdays and work anniversaries — can be recorded, allowing the system to automatically send electronic greeting cards or congratulatory messages at appropriate times. A dedicated employee health management platform can offer diversified services, including online medical consultations, health checkup appointment scheduling, and personal health record management, reflecting concern for employees' physical and mental well-being. By integrating the health management platform with the hospital's physical examination center and health management department, employees can view their exam results and health indicators directly through the system, as well as receive professional health advice. Based on aggregated health data, the hospital can organize targeted interventions — such as wellness lectures or fitness activities — to elevate employees' health awareness and overall wellness. Additionally, digital platforms can facilitate psychological support services, offering online counseling and mental health assessments to help employees manage stress and maintain a positive psychological state.

4.5.3 Optimizing Employee Complaint and Dispute Resolution Mechanisms

Establish a digitalized complaint and dispute resolution model to ensure that employee grievances are addressed promptly and effectively. Employees can submit detailed complaints through an online channel, providing information on the issue's nature, timing, location, and any supporting documentation [12]. Responsible departments receive immediate notifications, enabling them to investigate and respond within prescribed timeframes. Digital complaint platforms also allow for systematic categorization and in-depth analysis of grievances, thereby uncovering root causes and implementing targeted remedies to prevent recurrence. For instance, if a particular department generates a high volume of complaints, an in-depth review of its management approach, work environment, and employee relations should be conducted to identify underlying issues, and corrective actions must be enforced. Furthermore, the digital system can track resolution progress, maintain transparency throughout the process, and ensure accountability among all parties involved, thereby enhancing trust and organizational fairness.

5 Measures to Ensure the Implementation of HRM Models in Hospitals during the Digital Age

5.1 Strengthening Organizational Leadership and Strategic Planning

Hospital senior leadership must fully recognize the innovation and implementation of human resource management (HRM) models suited to the digital era, treating them as a pivotal component of the institution's overall development strategy. First, a dedicated leadership committee for HRM innovation should be established. The hospital director should serve as committee chair, with the vice president responsible for HRM serving as deputy chair. Committee membership ought to include the director of the HR department, department heads from each clinical and administrative unit, and representatives from information technology and finance. This leadership committee will be responsible for comprehensive planning and coordinated advancement of all HRM initiatives, defining strategic objectives and an implementation roadmap for the digital transformation of the hospital's HRM systems.

Second, clearly delineate the roles and responsibilities of each department within the HRM framework and strengthen interdepartmental communication and collaboration to forge a unified implementation effort. For example, the HR department is charged with formulating detailed HRM policies and regulations, organizing and executing all HR-related activities, and monitoring compliance. The information technology department must provide technical support, ensuring the stable operation of digital HR information systems. Department chiefs are responsible for the day-to-day management of their respective staff — including daily supervision, performance evaluations, and facilitating professional development opportunities. By clarifying these responsibilities and promoting cross-functional collaboration, the hospital can align resources more effectively and drive the digitization of HR processes with greater cohesion and accountability.

5.2 Enhancing the Competencies and Capacities of HR Managers

In the digital era, hospitals demand entirely new and higher proficiency levels from HR managers. To meet these requirements, hospitals must invest in robust training programs that develop HR professionals' abilities in digital technology application, data analytics, and

strategic planning. First, design a detailed training curriculum and periodically organize targeted workshops, seminars, and academic forums. For instance, invite seasoned experts in digital HRM to deliver specialized training sessions — covering the latest digital tools, real-world case studies, and best practices in digital transformation. Host learning visits to healthcare organizations or other enterprises renowned for their advanced digital management to observe and study successful implementation models.

Second, encourage HR managers to pursue self-directed learning by providing access to up-to-date learning materials (e.g., online courses, professional journals) and allocating dedicated time for study. Hospitals can subsidize participation in external conferences or certifications in areas such as data analytics, information security, and digital project management. Finally, recruit new talent possessing both a digital-technology background and solid HRM experience to bolster the HR function's capabilities and optimize personnel structure. By integrating digitally proficient professionals into the HR team, hospitals can accelerate the design and deployment of innovative, technology-driven HR solutions [13].

5.3 Improving Institutional Frameworks and Optimizing Processes

Develop a set of rules, regulations, and standard operating procedures (SOPs) that align with the HRM model required in the digital age. First, establish policies governing the use of the digital HR information system, specifying operational protocols, data-entry requirements, data security measures, and access controls to ensure the system's safe and reliable operation. Second, refine existing policies on performance appraisal, compensation and benefits, training and development, and other HR-related domains to ensure they are compatible with a digital management approach. For example, revise the performance-evaluation policy to incorporate real-time data feeds from the digital performance management platform, and update training regulations to mandate digital learning modules as part of continuing education requirements. These updates will create a cohesive institutional framework that facilitates smooth execution of the digital HRM model.

From a process optimization standpoint, conduct a comprehensive review of all HR workflows — such as recruitment, onboarding, offboarding, promotions, and transfers — to identify and eliminate redundant or non-value-adding steps. Introduce digital platforms to enable online approval flows and automated data exchange, thereby reducing waiting times and physical handoffs. For instance, digitize the employee entry and exit procedures by integrating e-forms for document submission, automated background checks, and electronic sign-offs, minimizing manual paperwork and accelerating turnaround. Such process reengineering will significantly enhance workflow efficiency and reduce administrative burdens, allowing HR teams to focus more on strategic activities rather than routine clerical tasks.

5.4 Ensuring Information Security and Privacy Protection

In the digital era, HRM in hospitals manages vast amounts of sensitive employee data — including personal identifiers, salary details, and health records — making information security paramount [14]. Hospitals must establish a robust information security framework by deploying firewalls, encryption technologies, and role-based access controls to safeguard the HR information system against unauthorized access or data breaches. Regular vulnerability assessments and security audits should be conducted to detect and remediate any system weaknesses, thereby preventing hacker infiltration and data leakage.

Additionally, it is essential to provide mandatory information-security training for all staff — particularly HR personnel — so they understand best practices for data handling. Policies should clearly outline acceptable behavior, such as strict safeguards for passwords (e.g., not sharing credentials, using strong, unique passwords) and prohibitions on processing sensitive data over unsecured public networks.

With respect to privacy protection, hospitals must comply fully with relevant laws and regulations governing employee data — such as personal data protection statutes and healthcare privacy standards. Explicit rules should define how employee information is collected, used, stored, and shared. For example, before collecting employee health data, the hospital must obtain informed consent and ensure secure storage with limited access. Any data transfers — whether for payroll processing or benefits administration — must occur over encrypted channels, with detailed audit trails to demonstrate compliance. By prioritizing both security and privacy, hospitals can build trust with employees and mitigate legal and reputational risks.

5.5 Cultivating a Digital-Ready Organizational Culture

Fostering a positive digital culture within the hospital is an effective measure to facilitate HRM model innovation. Use awareness campaigns, training lectures, and internal communications to explain to all employees the strategic value and significance of digital-era HRM, thereby increasing their understanding and willingness to embrace digital practices [15]. Encourage staff at every level to participate in digital-management pilots or innovation workshops, soliciting their ideas and feedback.

For example, establish a "Digital HR Innovation Fund" that awards grants or recognition to employees and teams who propose and implement outstanding digital HRM initiatives — such as developing a new data dashboard for workforce planning or designing an AI-driven candidate-matching algorithm. Senior management must lead by example, actively using digital tools in their own day-to-day workflows and openly sharing success stories to demonstrate benefits. By embedding digital thinking into the organizational ethos, hospitals can motivate employees to become co-creators of change, ensuring that digital HRM transformations gain traction throughout the institution.

6 Conclusion

In summary, the digital-era wave is ushering in unprecedented changes and challenges for hospital human resource management. Traditional, manual, and rule-driven HR practices are gradually giving way to diversified, intelligent, and data-driven methods. To navigate this shifting landscape, hospitals must adapt by transitioning from conventional personnel administration to strategic HRM — emphasizing both talent diversification and specialization, bolstering operational efficiency and quality, and addressing employees' desires for personalized and autonomous growth. At the same time, hospitals should actively embrace digital technologies — leveraging big data for evidence-based decision-making and implementing refined, systematic management approaches.

Looking ahead, HRM in hospitals should continuously innovate by advancing research and development in digital technologies, nurturing talent equipped with digital competencies, and refining relevant policies and regulations. Through these efforts, the institution will be better positioned to sustain long-term development, enhance organizational competitiveness, and deliver high-quality medical services to patients. Ultimately, a digitally empowered HRM framework will serve as a cornerstone for hospitals' sustainable growth and improved patient outcomes.

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