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Impact of Digital HRM on Patient Satisfaction: The Mediating Roles of Employee Engagement and Service Quality

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Abstract

Purpose: This study examines the impact of Digital Human Resource Management (DHRM) on patient satisfaction in healthcare institutions. It specifically investigates the mediating roles of service quality and employee engagement in explaining how digital HRM practices improve patient-centered outcomes.

Design/methodology/approach: A quantitative research design based on positivist philosophy and a deductive approach was used. Data were collected from healthcare employees (doctors, nurses, paramedical and administrative staff) and patients discharged from public hospitals in Punjab, Pakistan. A total of 347 responses were analyzed using regression and mediation analysis through Hayes PROCESS Macro (Model 4).

Findings: The results reveal that DHRM has a significant positive effect on patient satisfaction. Service quality and employee engagement both significantly mediate this relationship, indicating that digital HRM improves patient satisfaction through enhanced service delivery and increased employee involvement.

Practical implications: The findings suggest that healthcare organizations should focus not only on adopting digital HR systems but also on leveraging these systems to improve service quality and employee engagement to enhance patient outcomes.

Originality/value: This study contributes to the literature by explaining the underlying mechanisms through which digital HRM influences patient satisfaction, particularly in the context of public healthcare institutions in developing countries.

Keywords: Digital HRM; Patient Satisfaction; Service Quality; Employee Engagement; Healthcare Management; Mediation

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Introduction

In contemporary healthcare systems, patient satisfaction has emerged as a central indicator of service effectiveness, organizational performance, and overall quality of care. In addition to clinical performance, patients are beginning to compare healthcare facilities with their service experience, such as responsiveness, communication, empathy, and efficiency. With the ever-increasing complexity and competitiveness of healthcare settings, there is an escalated pressure on organizations to embrace new managerial and technology-based approaches that will improve service delivery and patient-centered outcomes. Digital transformation, especially in human resource management, has become a hot topic in this respect as a contributing factor to healthcare performance (Stachova et al., 2024; Kanwar, 2025). Digital human resource management (DHRM) is the process of incorporating the latest digital tools into the human resource operations, including human resource information systems (HRIS), artificial intelligence, e-learning platforms, and data analytics into the recruitment, training, communication, and performance management processes. With such digital systems, organizations can simplify the HR processes, decision-making, and the experience of the employees. DHRM is especially important in enhancing operational efficiency and service delivery in a healthcare setting with employees whose performance has a direct impact on the patient outcomes (Alsalman, 2025; Parry and Strohmeier, 2023).

The recent research has emphasized that digital HRM practices can greatly enhance employee-related outcomes, including satisfaction, engagement, and productivity by decreasing the administrative load and providing real-time communication and learning opportunities (Stachova et al., 2024; Kanwar, 2025). Nevertheless, regardless of these benefits, the direct effect of DHRM on patient satisfaction is inconsistent among healthcare institutions. Whereas there are reports of better patient experiences in organizations that underwent digital transformation, others do not record better results even after spending a lot of money in acquiring digital systems. This contradiction is an indication that the correlation between DHRM and patient satisfaction is indirect but is mediated by the behavioral and service-related mechanisms. In order to appreciate this complexity, it is critical to look at the mediating processes that DHRM has on patient satisfaction. Service quality is one of the most instant factors of patient satisfaction in the context of healthcare. Service quality describes the perceptions of patients regarding the quality of healthcare services in terms of reliability, responsiveness, assurance, empathy, and general care experiences. The studies state that the effectiveness of service delivery processes, communication, and responsiveness positively influence patient perceptions and satisfaction rates (Keelson, 2024).

DHRM is capable of enhancing the quality of the services provided by helping to manage the workforce effectively, improving the skills of the staff and coordinating the activities of the healthcare professionals. As an example, electronic booking programs optimize human resource, thus, minimizing waiting time and responsiveness. On the same note, online learning can be used to promote lifelong learning, support technical and interpersonal competence development in employees.

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These enhancements have a direct impact on the perceptions that patients have of the quality of services that they experience, which make them experience increased levels of satisfaction. Besides the quality of services, worker engagement is also another important mechanism by which DHRM can impact patient satisfaction. Employee engagement can be defined as the degree to which employees are emotionally, cognitively and behaviorally engaged in their work. Involved employees are more motivated, committed and proactive which are all necessary in providing quality healthcare services. According to recent evidence, digital transformation of HR practices can greatly improve employee engagement through the provision of improved communication tools, flexible work arrangements, and ongoing learning opportunities (Kanwar, 2025; South Florida Publishing, 2025).

The significance of employee engagement in healthcare facilities is not new. Research indicates that involved healthcare workers are more understanding, sensitive, and responsive to patient needs, resulting in the enhancement of the quality of services and experiences of patients. On the contrary, disengaged employees can deliver technically sufficient care but in most cases, they lack emotional and interpersonal attributes to interact with the patient positively (Perceptyx, 2025; HR Web, 2025). Employee engagement, therefore, is an important behavioral tool whereby organizational practices, such as digital HRM are converted into patient-centered outcomes.

Theoretically, social exchange theory (SET) and job demands-resources (JD-R) model can be used to explain the relationship between DHRM, employee engagement, service quality, and patient satisfaction. In the case of SET, employees pay back with greater engagement and performance when organizations offer supportive systems and resources, which in this case, are digital HR tools. In the same vein, the JD-R model implies that organizational resources such as digital HR systems assist employees to cope better with job demands, which in turn boosts motivation and diminishes burnout. In this respect, DHRM can be viewed as a strategic organizational tool that will enhance the level of employee engagement as well as the enhanced service delivery processes. Although there has been increasing literature on the topic of digital transformation in healthcare, there are still some gaps that are significant. First, the majority of the current research pays attention to the immediate impact of digital HRM on the organizational results, but does not concentrate on the mechanisms behind the realization of the latter. Second, previous studies tend to focus on the quality of services and employee engagement separately, but not in terms of their interaction and mediation in a single framework. Third, there is a limited amount of empirical evidence on the topic further developed countries, especially where the healthcare systems are challenged with limited resources, technological constraints, and workforce issues.

Addressing these gaps, the present study develops a mediation model in which digital HRM influences patient satisfaction through two parallel pathways: service quality and employee engagement. By integrating these mechanisms, the study provides a more comprehensive understanding of how digital HR practices translate into improved patient outcomes. Furthermore, by focusing on public sector hospitals in

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Pakistan, the study offers context-specific insights into the role of digital transformation in resource-constrained healthcare environments. The healthcare management literature receives a new contribution through this research because it shows that digital HRM systems produce their impacts through specific processes which need to be studied. The research demonstrates that successful digital transformation needs both technology implementation and improved service delivery together with increased staff motivation. The research presents both theoretical and practical solutions which help modern healthcare systems increase their patient satisfaction rates.

Hypothesized Literature

Patient Satisfaction and Digital HRM

Digital Human Resource Management (DHRM) is the adoption of digital technologies in human resource functions like human resource information systems (HRIS), artificial intelligence, analytics and e-learning platform to improve organizational efficiency and employee performance. DHRM has become a strategic instrument to enhance the effectiveness of the operations and patient-centered outcomes in healthcare environments, where service delivery highly relies on the competence, coordination, and responsiveness of the employees (Stachová et al., 2024; Kanwar, 2025). Resource-based view (RBV) is an approach that might regard DHRM as a desirable organizational ability that boosts the efficiency of human capital and establishes a competitive edge due to enhanced workforce management (Barney et al., 2021; Sikalgar et al., 2025). Digital HR systems in hospitals allow them to schedule more effectively, ease the administrative load, and enhance communication in real-time, which increases responsiveness in the provision of services and minimizes delays in patient care. Equally, online learning solutions improve the skills and competencies of employees, which are essential in provision of precise and compassionate healthcare services.

Recent empirical studies indicate that healthcare organizations implementing the digital HR practices report enhanced efficiency of their services, employee productivity, and patient experience indicators (Alsalman, 2025; Malik et al., 2024). The above aspects are of particular importance in healthcare settings where prompt service provision, communication, and coordinated care play a significant role in the perception of patients. With patients becoming more demanding in their expectations of healthcare services, considering their experience with the services rather than the clinical outcomes alone, efficient HR systems are becoming crucial in determining the level of satisfaction. Furthermore, DHRM promotes accountability and transparency with the help of digital performance management, which allows tracking and feedback on a regular basis. This will lead to enhanced employee performance, which ultimately reflects in terms of improved service delivery and patient satisfaction (Parry & Strohmeier, 2023). Thus, patient satisfaction in healthcare facilities is likely to be positively and directly impacted by digital HRM.

H1: There is a positive and significant relationship between patient satisfaction and digital HRM.

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Mediating of Role of Service Quality

Service quality is the rating given by patients on the healthcare services according to the dimensions of reliability, responsiveness, assurance, empathy, and tangibility. Service quality on healthcare is a well-known determinant of patient satisfaction since patients evaluate their experiences based more on service delivery than on clinical outcomes (Keelson, 2024; Nguyen et al., 2023). The mediating effect of the service quality between DHRM and patient satisfaction can be elaborated by the theory of socio-technical systems that underline the co-optimization of technological systems and human processes. This school of thought argues that the usefulness of digital HR systems will be determined by the efficiency with which they improve service delivery procedures and employee relations with patients (Stachová et al., 2024). DHRM in healthcare, in turn, helps to enhance the quality of services by enhancing the levels of coordination, error reduction, and communication among employees.

As an example, computerized scheduling systems maintain the right level of staffing, and it lessens the time spent waiting and enhances responsiveness. On the same note, online training programs improve the technical and interpersonal competencies of employees making them provide more credible and compassionate services. Moreover, the digital performance management systems enable healthcare managers to detect service gaps and take corrective measures to enhance the overall quality of services. Empirical evidence suggests that digital transformation in healthcare has a profound positive impact on service delivery processes, which subsequently leads to patient satisfaction (Malik et al., 2024; Thanh et al., 2022). These results imply that the DHRM effect on patient satisfaction is not direct only, but mostly spread through the quality of services. That is, DHRM ensures that it provides the environment in which the delivery of better services is achievable and the end result is patient satisfaction. Thus, the quality of service could be a crucial tool where digital HRM can have an impact on patient outcomes.

H2: Digital HRM is mediated by the role of service quality in relation to patient satisfaction.

Mediating role of employee engagement

Employee engagement is a positive, satisfying work related condition that is full of vigor, commitment, and absorption, which is the degree of emotional, cognitive and behavioral involvement of the employee in the work roles provided. Employee engagement is especially relevant in healthcare settings since frontline employees directly communicate with patients and largely affect their experiences (Schaufeli et al., 2002; Giallouros et al., 2024). Social exchange theory (SET) and the job demands-resources (JD-R) model can be used to explain the relationship between DHRM and employee engagement. SET states that employees respond by delivering more commitment and engagement when organizations offer supportive resources and systems, like digital HR tools (Cropanzano and Mitchell, 2005). On the same note, the JD-R model indicates that organizational resources such as digital HR practices can assist the employees to handle job demands in a better way, thus increasing motivation and decreasing burnout.

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The DHRM ensures employee engagement through effective communication systems, flexible working arrangements and life-long learning. To illustrate, digital learning systems enhance employee competencies and performance management systems offer a timely feedback and recognition that enhance motivation and engagement in work roles. Moreover, routine work automation eliminates the workload pressure, and employees can concentrate on more meaningful and patient-centered work. According to recent research, digital HR practices can significantly enhance the engagement of employees by increasing their efficiency at work, their autonomy, and their access to resources (Kanwar, 2025; South Florida Publishing, 2025). Engaged employees in healthcare are more responsive, proactive, and empathetic to patient needs in healthcare, which translates directly to better service experiences and satisfaction levels.

Employee engagement and patient satisfaction have a long history of correlation in the medical field. Involved healthcare providers are more caring, communicative, and responsive, resulting in improved patient perceptions and experiences (Perceptyx, 2025). Thus, employee engagement is a behavioral and psychological process with the help of which DHRM is converted into better patient outcomes. Therefore, it is reasonable to expect that digital HRM has an indirect effect on patient satisfaction, which is improved through employee engagement.

H3: Digital HRM is mediated by employee engagement in the relationship with patient satisfaction.

Framework

The conceptual framework proposes that Digital HRM (independent variable) directly influences patient satisfaction (dependent variable). Additionally, service quality and employee engagement act as parallel mediators, transmitting the effect of Digital HRM on patient satisfaction.

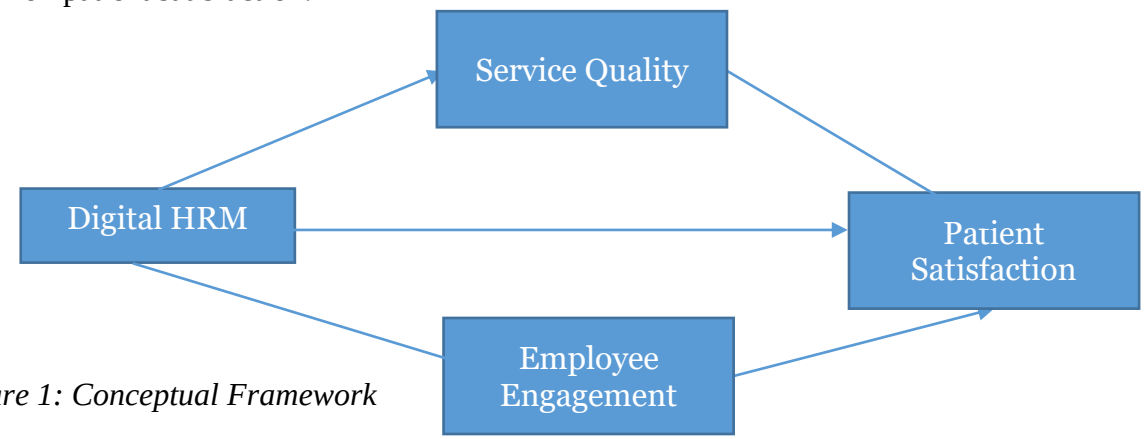

Figure 1: Conceptual Framework

Methods

Research Design

The research study used a quantitative research design which combines positivist research philosophy and deductive research method to analyze how digital human resource management (DHRM) affects service quality and employee engagement and

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patient satisfaction. The positivist paradigm is appropriate as the study aims to test theoretically developed hypotheses using empirical data. The deductive approach enables researchers to confirm existing relationships which exist between existing theories and previous research findings. Researchers used a cross-sectional research design to gather data at a specific moment. The design establishes itself as a standard method which researchers employ to study variable connections in both healthcare and organizational studies. Cross-sectional studies lack the ability to establish causal relationships yet they serve as valid methods to examine mediation models in studies involving human behavior research settings.

Population, Sample, and Sampling Technique

The target population of this study consists of healthcare employees and patients from public sector hospitals located in major cities of Punjab, Pakistan, including Lahore, Faisalabad, Rawalpindi, Gujranwala, and Gujrat. The research team employed a multi-source data collection method to achieve comprehensive model understanding while eliminating common method bias. The research team collected digital HRM data and employee engagement data from healthcare employees who worked as doctors nurses paramedical staff and administrative personnel. The researchers collected service quality data and patient satisfaction data from patients who had been discharged from the hospital. The research method establishes higher research validity by collecting data from both service providers and service recipients. Researchers selected convenience sampling method because it allowed them to easily access respondents who worked in hospitals that experienced continuous patient and staff movement. The study achieved a sample size of 347 respondents which provides sufficient data for both regression analysis and mediation analysis according to established standards used in quantitative research.

Measurement of Variables

All constructs in this study were measured using **adapted and validated scales** from prior research, ensuring content validity and reliability. The questionnaire items were slightly modified to fit the healthcare context of the study. Responses were recorded using a **five-point Likert scale**, ranging from 1 (strongly disagree) to 5 (strongly agree).

Digital Human Resource Management (DHRM) was measured using **10 items** adapted to capture the extent of digitalization in HR practices, including HR analytics, digital communication, e-learning, performance monitoring, and e-recruitment systems. These items reflect how digital technologies are integrated into HR functions to enhance efficiency and transparency.

Employee Engagement (EE) was measured using **9 items**, capturing employees' emotional, cognitive, and behavioral involvement in their work roles. The scale reflects key dimensions such as enthusiasm, energy, dedication, and involvement in organizational activities.

Service Quality (SQ) was measured using **10 items**, representing patients' perceptions of healthcare service delivery. The scale includes key dimensions such as responsiveness, reliability, empathy, assurance, communication, and overall service effectiveness.

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Patient Satisfaction (PS) was measured using **10 items**, reflecting patients' overall evaluation of their healthcare experience, including quality of services, communication, respect, waiting time, and willingness to recommend the hospital.

Table 3.1: Summary of survey items and sources

Variable	Code	No. of Items	Source
Digital Human Resource Management (DHRM)	DHRM1–DHRM10	10	Adapted from Strohmeier & Parry (2023); Malik et al. (2024)
Employee Engagement (EE)	EE1–EE9	9	Adapted from Schaufeli et al. (2002); Giallouros et al. (2024)
Service Quality (SQ)	SQ1–SQ10	10	Adapted from Nguyen et al. (2023); Thanh et al. (2022)
Patient Satisfaction (PS)	PS1–PS10	10	Adapted from Keelson (2024); Nguyen et al. (2023)

Data Analysis Techniques

Data analysis was conducted using **Statistical Package for the Social Sciences (SPSS)** along with mediation analysis procedures. Initially, **reliability analysis** was performed using Cronbach's alpha to assess the internal consistency of the measurement scales, where values above 0.70 were considered acceptable. The researchers utilized descriptive statistics to present demographic information about the study participants. Pearson correlation analysis examined the relationships among various variables in the research study. The researchers used regression analysis to test the H1 hypothesis which states that digital HRM directly affects patient satisfaction. The researchers used the bootstrapping method through the Hayes PROCESS macro (Model 4) to test how service quality and employee engagement (H2 and H3) function as mediators in their study. The researchers assessed indirect effects according to confidence intervals which included LLCI and ULCI, and they verified mediation when the confidence interval excluded zero.

Ethical Considerations

The research maintained complete adherence to ethical standards throughout its entire duration. The researchers provided information about the study's goals to participants who chose to take part in the research. The study established measures to protect participants' personal information which included both their identities and their private details. The researchers restricted their use of gathered information to academic research purposes only.

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Table 3.2: Demographic Profile of participants

Variable	Category	Frequency	Percentage (%)
Gender	Male	198	57.1
	Female	149	42.9
Age	Less than 30 years	112	32.3
	31–40 years	128	36.9
	41–50 years	71	20.5
	Above 50 years	36	10.3
Education Level	Diploma/Certificate	68	19.6
	Bachelor's Degree	154	44.4
	Master's Degree or above	125	36.0
Work Experience	Less than 5 years	121	34.9
	5–10 years	136	39.2
	More than 10 years	90	25.9

The demographic profile of respondents shows that most participants were male at 57.1% while females made up 42.9% of the study group. The age distribution shows that most respondents belonged to the 31 to 40 age group (36.9%) while the second largest group included respondents who were younger than 30 years (32.3%). The sample mostly represents a young workforce because the healthcare sector workforce. The educational background of the sample shows that most respondents held a bachelor's degree (44.4%) while 36.0% of respondents earned a master's degree or higher. The majority of respondents had work experience that ranged from 5 to 10 years (39.2%) while 34.9% of respondents had less than 5 years of experience which showed that the study included both entry-level and seasoned healthcare workers.

Results

Reliability Analysis

Table 4.1: Summary of Reliability statistics

Variables	Names	Items	Alpha
Independent Variable	Digital HRM	10	0.821
Dependent Variable	Patient Satisfaction	10	0.907
Mediator 1	Service Quality	10	0.834
Mediator 2	Employee Engagement	9	0.915

This study used reliability analysis to examine how consistently the measurement scales performed by applying Cronbach's alpha method. The results in Table 4.1 show that all constructs demonstrated high reliability because their Cronbach's alpha values exceeded the 0.70 threshold which researchers consider acceptable. The measurement areas of digital human resource management ($\alpha = 0.821$), service quality ($\alpha = 0.834$), employee engagement ($\alpha = 0.915$), and patient satisfaction ($\alpha = 0.907$) show strong

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internal consistency. The study results show that all measurement items from this research maintain reliability which allows their use in upcoming statistical tests.

Sample adequacy

Table 4.2: Summary of KMO and Bartlett's Test

Variables	Name of Variables	KMO values	BTS values
Independent	Digital HRM	0.912	0.000
Dependent	Patient Satisfaction	0.901	0.000
Mediator 1	Service Quality	0.925	0.000
Mediator 2	Employee Engagement	0.918	0.000

The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were conducted to assess the adequacy of the sample and the suitability of the data for factor analysis. The KMO values from Table 4.2 show that all values exceed the 0.70 threshold which demonstrates excellent sampling adequacy. The KMO values for digital HRM (0.912), service quality (0.925), employee engagement (0.918), and patient satisfaction (0.901) show that the data set meets the requirements for further analysis. The results of Bartlett's Test of Sphericity show that all variables reach significance level because the correlation matrices do not contain identity matrices and the items show enough correlation between them. The results show that the dataset meets requirements for conducting all statistical analyses which include regression and mediation testing.

Correlation Analysis

Table 4.3: Summary of correlation analysis

Variables	DHRM	SQ	EE	PS
Digital HRM (DHRM)	1			
Service Quality (SQ)	0.642**	1		
Employee Engagement (EE)	0.598**	0.671**	1	
Patient Satisfaction (PS)	0.615**	0.734**	0.689**	1

Note: p < 0.01

The Pearson correlation analysis was conducted to examine the relationships among digital HRM, service quality, employee engagement, and patient satisfaction. The results in Table 4.3 demonstrate that all variables establish positive relationships which reach statistical significance at the 0.01 level. Digital HRM shows a strong positive correlation with service quality ($r = 0.642$, $p < 0.01$) and employee engagement ($r = 0.598$, $p < 0.01$), indicating that the implementation of digital HR practices is associated with improvements in both service delivery and employee involvement. The digital HRM implementation shows a positive relationship with patient satisfaction ($r = 0.615$, $p < 0.01$), which establishes initial evidence for the proposed direct relationship. Service quality exhibits the strongest relationship with patient satisfaction ($r = 0.734$, $p < 0.01$), suggesting that patients' perceptions of

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service delivery play a crucial role in determining their overall satisfaction. The patient satisfaction results show a strong relationship with employee engagement because engaged employees create better patient experiences. Overall, the results confirm that all variables are significantly related in the expected direction, supporting the suitability of proceeding with regression and mediation analyses.

Hypotheses Testing

Table 4.4: Summary of Regression test *(Digital HRM → Patient Satisfaction)*

Values	**Coefficients**
Unstandardized Beta (B)	0.615
Std. Error	0.048
t-value	12.812
p-value	0.000
Durbin-Watson	1.874

R^2 = 0.378

Regression analysis was conducted to examine the direct effect of digital human resource management (DHRM) on patient satisfaction. As shown in Table 4.4, digital HRM has a significant positive effect on patient satisfaction ($\beta = 0.615$, $t = 12.812$, $p < 0.001$), indicating that higher levels of digitalization in HR practices lead to improved patient satisfaction. The coefficient of determination ($R^2 = 0.378$) suggests that digital HRM explains 37.8% of the variance in patient satisfaction, which reflects a substantial explanatory power in the healthcare context. Additionally, the Durbin-Watson value of 1.874 indicates no issue of autocorrelation in the data, confirming the reliability of the regression results. Based on these findings, **hypothesis 1 is supported**, confirming that digital HRM positively and significantly influences patient satisfaction.

Mediation Analysis

Table 4.5: Summary of mediation analysis *(Digital HRM → Service Quality → Patient Satisfaction)*

Paths		**Unstandardized Coeff**		**t**	**p**
DHRM → Service Quality		0.642		14.215	0.000
Service Quality → Patient Satisfaction		0.521		11.684	0.000
DHRM → Patient Satisfaction (Direct)		0.281		6.237	0.000
Effect	**Value**	**t-value**	**p-value**	**LLCI**	**ULCI**
Total Effect	0.615	12.812	0.000	0.521	0.709
Direct Effect	0.281	6.237	0.000	0.192	0.370
Indirect Effect	0.334	—	—	0.248	0.426

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Sobel Test (z): 8.91 (p < 0.001)

Mediation analysis was conducted using the bootstrapping method (PROCESS Model 4) to examine the mediating role of service quality in the relationship between digital HRM and patient satisfaction. As shown in Table 4.5, digital HRM has a significant positive effect on service quality (β = 0.642, p < 0.001), and service quality, in turn, significantly influences patient satisfaction (β = 0.521, p < 0.001). The total effect of digital HRM on patient satisfaction is significant (β = 0.615, p < 0.001). When service quality is included as a mediator, the direct effect of digital HRM on patient satisfaction decreases but remains significant (β = 0.281, p < 0.001), indicating **partial mediation**. Furthermore, the indirect effect is significant (β = 0.334), and the bootstrapping confidence interval (LLCI = 0.248, ULCI = 0.426) does not include zero, confirming the presence of mediation. The Sobel test (z = 8.91, p < 0.001) further supports the mediating role of service quality. These findings suggest that digital HRM enhances patient satisfaction not only directly but also indirectly through improvements in service quality. Therefore, **Hypothesis 2 is supported.**

Table 4.6: Summary of mediation analysis *(Digital HRM → Employee Engagement → Patient Satisfaction)*

Paths		**Unstandardized Coeff**		**t**	**p**
DHRM → Employee Engagement		0.598		13.102	0.000
Employee Engagement → Patient Satisfaction		0.462		10.874	0.000
DHRM → Patient Satisfaction (Direct)		0.338		7.215	0.000
Effect	**Value**	**t-value**	**p-value**	**LLCI**	**ULCI**
Total Effect	0.615	12.812	0.000	0.521	0.709
Direct Effect	0.338	7.215	0.000	0.246	0.430
Indirect Effect	0.277	—	—	0.198	0.362

Sobel Test (z): 7.96 (p < 0.001)

Mediation analysis was conducted to examine the mediating role of employee engagement in the relationship between digital HRM and patient satisfaction. The research demonstrates that digital HRM brings about a substantial positive impact on employee engagement which demonstrates statistical significance (β = 0.598, p < 0.001) while employee engagement demonstrates statistical significance in its impact on patient satisfaction (β = 0.462, p < 0.001). The total effect of digital HRM on patient satisfaction is significant (β = 0.615, p < 0.001). The introduction of employee engagement as a mediating factor reduces the direct relationship between digital HRM and patient satisfaction to a lower level which still maintains statistical significance (β = 0.338, p < 0.001). The indirect effect (β = 0.277) is significant, and the bootstrapping confidence interval (LLCI = 0.198, ULCI = 0.362) does not include zero, confirming the mediating role of employee engagement. The Sobel test (z = 7.96, p < 0.001) further validates the mediation effect. The evidence demonstrates that

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digital HRM directly improves patient satisfaction while it also creates an indirect improvement through its positive impact on employee engagement. Therefore,

Hypothesis 3 is supported.

Conclusion and Implications

This study examined the impact of Digital Human Resource Management (DHRM) on patient satisfaction in healthcare institutions, with service quality and employee engagement as mediating variables. Drawing on Social Exchange Theory (SET) and the Job Demands-Resources (JD-R) model, the study proposed that digital HR practices enhance patient outcomes by improving service delivery processes and employee work engagement. The empirical findings support all proposed hypotheses. The results show that DHRM which stands for Direct Health Resource Management system delivers its most substantial positive effect on patient satisfaction. The relationship between DHRM and patient satisfaction exists because service delivery improvements and employee dedication enhancements serve as links between these two factors. The research results demonstrate that DHRM functions as a technological tool which businesses can use to improve their operational performance and employee work performance. The improved service quality which healthcare facilities provide operates as the main method through which digital HR spending results in enhanced patient experiences. The study found that increased employee engagement enables staff members to develop better motivation skills which lead to improved organizational response and healthcare commitment. The study shows that healthcare organizations need to use digital HR systems together with their service quality programs and employee engagement initiatives to achieve better patient satisfaction results.

Theoretical Implications

The research creates several important new findings which contribute to existing academic research. First, it extends social exchange theory (SET) and job demands/resources (JD-R) model research by applying these theories to digital HRM and healthcare outcome studies. The research confirms that the theoretical bridge which links technological resources to behavioral results exists because digital HR practices function as organizational assets which enhance employee engagement and service delivery standards. The paper advances digital transformation research by demonstrating that its effects operate through particular mechanisms instead of direct channels. The study shows how digital HRM affects organizational outcomes through two new mediators which include service quality and employee engagement as complementary factors that create detailed understanding about digital HRM impact on patient satisfaction. Third, the research makes a contribution to the healthcare management literature in that it combines the HR digitalization with patient-centered outcomes. The study fills a gap that is extremely important in the understanding of healthcare performance because it has connected internal organizational practices (DHRM) with external outcomes (patient satisfaction).

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Practical Implications

Healthcare administrators and policymakers and hospital management will find this research study to be extremely beneficial. The research findings demonstrate that hospitals need to implement complete digital HR systems because digital HR systems do not improve patient satisfaction by themselves. The healthcare institutions need to ensure that their systems create positive effects on service quality and employee participation because these factors serve as essential pathways which lead to patient satisfaction. The hospital management needs to establish digital training channels and e-learning platforms to provide employees with ongoing skill development opportunities which focus on communication and empathy and patient interaction. These competencies represent essential requirements which healthcare providers need to achieve excellence in service delivery and improve patient experience. The research paper establishes that employee participation directly impacts patient treatment results. Healthcare organizations should create work environments that support employees and deliver immediate performance evaluations and recognition of their work. Policymakers should promote digital transformation initiatives at public healthcare facilities which serve developing countries that face resource-based service delivery challenges. Hospitals can improve their operations and patient contentment by integrating digital human resource management systems with their operational activities.

Limitations and Future Research Directions

The study presents various contributions yet it contains multiple limitations which need to be acknowledged. The research design which the researchers selected uses cross sectional methods to study variables without establishing any causal connections between them. Future research should use longitudinal research designs to study the changing effects which digital HRM systems have over time. The researchers used convenience sampling methods which will limit their ability to generalize their results to a wider population. Future research should implement probability sampling methods to enhance external validity according to the study. The research focuses on public hospitals located in Pakistan's Punjab region which restricts the ability to apply results to different regions and healthcare systems. The model can be replicated in future studies in private hospitals or in other countries to increase the generalizability. The research studied two main mediators but it failed to investigate other mediators which included organizational culture and leadership style and technological readiness. Future research can create a more comprehensive model through additional variable testing which will lead to better model understanding. The research will use contextual factors as leadership and organizational support to determine which situations will lead to digital HRM implementation success in increasing patient satisfaction.

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