



DIGITAL HR PRACTICES AND HRM EFFECTIVENESS: THE MEDIATING ROLE OF HR SERVICE QUALITY

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Abstract

This paper looks at how digital HR practices namely E-HRM Adoption, HR Automation, and HRA impact on the HRM Effectiveness (HRME) and mediated by the quality of HR Services (HRSQ). Based on a quantitative survey design and involving 300 Pakistani respondents, the analysis of data was conducted with the help of the Partial Least Squares Structural Equation Modeling (PLS-SEM). Findings affirm that all the three digital HR dimensions are especially important predictors of HRSQ and HRME. Besides, HRSQ has a complete mediation between each of the digital HR practices and HRME. These results highlight the strategic role of service quality as a key transmission channel via which digital HR technologies can improve the HRM performance of the organization. It includes theoretical and managerial implications in the context of Pakistani organization.



Introduction

The increasing rate of digitalization of human resource management (HRM) operations has radically reorganized the manner in which organizations attract, grow, retain and manage talent. In both developed and emerging economies, organizations are turning towards the adoption of digital HR technologies such as Electronic Human Resource Management (E-HRM), HR Automation and HR Analytics as a means of improving operational efficiency, the quality of their decision-making processes, and overall effectiveness in HRM. However, despite the increasing interest among practitioners, the theoretical and empirical processes, by which these technologies can be converted into quantifiable HRM outcomes, have not been theorized well enough, especially in non-Western organizational contexts (Wenxue et al., 2025).

Pakistan is a particularly relevant subject of this question. Being a fast-growing economy with big bureaucracies in the state sector, an expanding corporate sector as well as ongoing talent management and organizational work performance issues, the organizations in Pakistan are under increasing pressure to change their HR functions. The uptake of digital HR technologies in Pakistan is not homogeneous and there is little information on whether and how these technologies enhance HRM effectiveness in this situation.

Moreover, the quality of HR services, which can be defined as the perceived superiority of delivery of the HR functions has had little scholarly focus in the emerging market contexts as a mediating factor between digital HR practices and HRM outcomes (Shahreki et al., 2025).

Scope of the Study

The target of this research is organizations in Pakistan, which are working in various industries. It explores 3 areas of digital HR practices (E-HRM Adoption, HR Automation, and HR Analytics) and their impact on HRM Effectiveness with the quality of HR Services being a mediating variable. The research is limited to the respondents that have direct or indirect exposure to HR systems and services in their companies.

Research Objectives

- 1.To evaluate the direct impacts of E-HRM Adoption, HR Automation, and HR Analytics on HRM Effectiveness.
- 2.To determine the effects of E-HRM Adoption, HR Automation and HR Analytics on HR Quality.
- 3.To examine the direct impact of HR Service Quality on HRM Effectiveness.

Research Questions

- 1.Are E-HRM Adoption, HR Automation and HR Analytics related to HRM Effectiveness?
- 2.Do digital HR practices have a significant predictive validity of HR Service Quality?

3. Is there an HR Service Quality that mediates the association between digital HR practices and HRM Effectiveness?

Answering these questions, the study will add to the body of literature on HRM digitalization and will offer useful recommendations to the HR managers and policymakers in Pakistan and other similar emerging economies.

Literature Review

HRM has gone digital, and this has proven to be one of the most significant changes in modern management of organizations. Electronic HRM (E-HRM) systems can be used to automate transactional operations within the HR department, decrease administrative overhead and provide HR services using digital means, thus allowing the HR professionals to concentrate on the strategic value-add activities (Barghini & Bonti, 2024). Researchers have always discovered that the adoption of E-HRM improves the efficiency of HR processes, satisfaction of employees with HR services and overall organizational performance measures. HR Automation builds upon this reasoning by deploying rule-based and more intelligent algorithmic platforms to monotonous HR operations like payroll processing, attendance handling, and onboarding processes and reduces error rates and the time required to

do so by a significant margin (Aakash et al., 2026).

HR Analytics is a further progressive and more strategic aspect of digital HRM which allows organizations to utilize data-driven insights by planning their workforce, managing performance, and recruiting talent. In contrast to E-HRM and automation, HR Analytics converts raw data about employees into predictive insights, enabling HR leaders to predict talent shortages, high-potential employees, and compensation plans. These three digital HR dimensions create a tiered technological platform that raises the strategic capabilities of the HR role more and more (Sakib et al., 2025). In the HRM effectiveness literature, effectiveness is often defined in terms of how well the HR role fulfills its objectives in terms of attracting, developing, retaining and motivating employees.

HR Service Quality is the perceived quality of HR functions performance by the organizational stakeholders especially the employees and line managers. Based on the service quality theory first introduced in marketing, HR service quality entails factors like responsiveness, reliability, assurance, empathy and tangibility of HR service provision (Shahreki et al., 2025). Implemented well, it is hypothesized that digital HR technologies can increase the consistency, speed, and accuracy of HR services and, therefore, perceived quality of service. This

enhanced quality of service, in its turn, is theorized to yield better HRM performance by making sure that HR outcomes are viewed as equitable, responsive and strategically aligned with organizational objectives (Hiba & AOURZAG Aicha, 2026).

Hypotheses Development

H1: There is significant positive direct impact of E-HRM Adoption on HRM Effectiveness.

H2: There is a positive HRM Effectiveness direct impact on HR Automation of HRM.

H3: There is a significant positive direct impact of HR Analytics on the HRM Effectiveness.

H4: The positive influence of E-HRM Adoption on Hr Service Quality is great.

H5: There is a positive strong impact of HR Automation on HR Service Quality.

H6: The impact of HR Analytics on HR Service Quality is significant and has a positive impact.

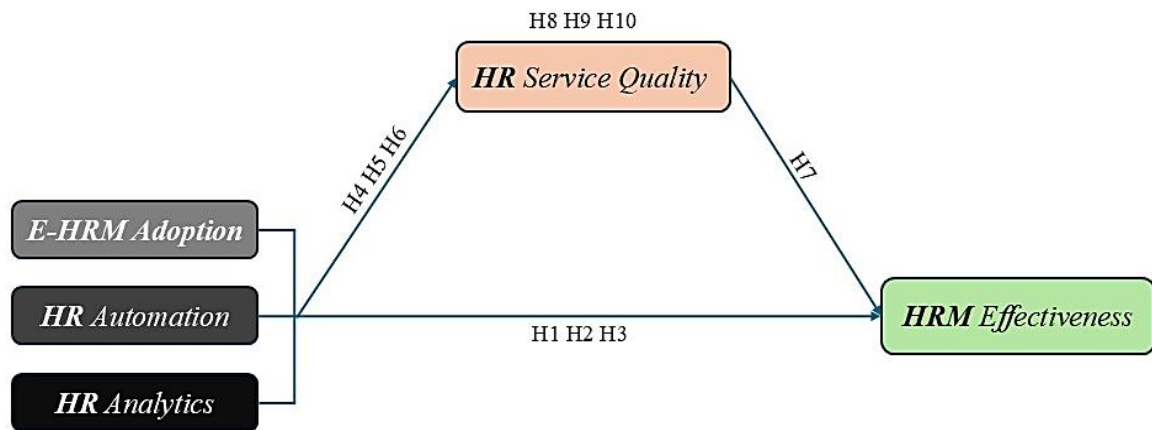
H7: HR Service Quality positively and significantly directly affects HRM Effectiveness.

H8: There is the mediation of HR Service Quality between E-HRM Adoption and HRM Effectiveness.

H9: There is a mediating effect of Hr Service Quality between Hr automation and HRM effectiveness.

H10: There is an intermediate relationship between HR Analytics and HRM Effectiveness via HR Service Quality.

Figure 1. Research Framework



Note. The arrows are directional relationships that are hypothetical. Mediation paths work on HR Service Quality.

Methodology

This was a quantitative cross-sectional study that was used to analyses the hypothesized relationships. The sample size was

300 employees in different organizations based in Pakistan and a structured self-administered questionnaire was used to gather data. The respondents were sampled



using purposive sampling whereby those with first-hand experience with the HR systems and services used within their respective organizations were targeted. Measuring all constructs with five-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree) modified from validated scales developed in previous literature on digitalization and service quality in HRM, the questionnaire measured all constructs.

Constructs that were studied included E-HRM Adoption (EHRM), HR Automation (HRA), HR Analytics (HRAN), HR Service Quality (HRSQ), and HRM Effectiveness (HRME). The different constructs were operationalized with multiple reflective indicators. Adequacy of data was checked before data analysis and there were no listwise missing values noted in final dataset of 300 valid responses.

Data Analysis and Results

Table 1.

Descriptive Statistics

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Kurtosis	Std. Error
EHRM	300	4.00	1.00	5.00	3.396	0.866	0.749	-0.419	0.281
HRA	300	3.80	1.20	5.00	3.340	0.859	0.739	-0.591	0.281
HRAN	300	3.80	1.20	5.00	3.405	0.857	0.735	-0.454	0.281
HRSQ	300	4.00	1.00	5.00	3.373	0.887	0.788	-0.575	0.281
HRME	300	3.80	1.20	5.00	3.339	0.846	0.715	-0.696	0.281

In this analysis, the most important analytical technique that was chosen was Partial Least Squares Structural Equation Modeling (PLS-SEM) which was performed with SmartPLS software. PLS-SEM is especially suited to studies that have predictive research goals, have complex model structures with mediation as well as predictors with moderate sample sizes. Two phases were taken in the analysis: the measurement model was evaluated in terms of construct reliability, convergent, and discriminant validity; the structural model was evaluated in terms of the path coefficients, R² and mediation effects with 5,000 subsamples bootstrapping. Mediation was evaluated by analyzing targeted indirect effects by bootstrapped confidence interval (Yona & Meilani, 2024).



The mean scores of all of the constructs were between 3.34 and 3.41 on a five-point scale, which suggests that all of the digital HR practices, service quality, and HRM effectiveness of the sampled organizations were moderate-to-
Table 2.

Pearson Correlation Matrix

	EHRM	HRA	HRAN	HRSQ	HRME
EHRM	1				
HRA	0.064	1			
HRAN	-0.001	-0.150**	1		
HRSQ	0.491**	0.404**	0.306**	1	
HRME	0.487**	0.421**	0.399**	0.754**	1

Note. ** p < .01 (2-tailed).

As the correlation matrix indicates, all the three dimensions of digital HR practices have significant and positive relationships with HRSQ and HRME. It is interesting to note that HRSQ has the best bivariate correlation with HRME (r = 0.754, p
Table 3.

Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	AVE
EHRM	0.751	0.501
HRA	0.749	0.500
HRAN	0.749	0.498
HRSQ	0.748	0.499
HRME	0.750	0.500

The constructs all had a Cronbach alpha exceeding the traditional value of 0.70 which validates the good internal consistency reliability. The values of Average Variance Extracted (AVE) were also close to

high. All variables had negative kurtosis values within an acceptable range indicating that the structural modeling of the variables was done with platykurtic, near-normal distributions (Bibi et al., 2026).

< .01), implying that it is a strong predictor. The low inter-r value of the three digital HR predictors (EHRM, HRA, HRAN) shows that there are few issues of multicollinearity in the structural model (Fahad et al., 2026).

the value of 0.50, which is considered to be the convergent validity threshold. These findings show that the measurement model is sufficiently reliable in estimating structural paths (Kamran et al., 2026).



Table 4.

Heterotrait-Monotrait Ratio (HTMT)-Discriminant Validity

	EHRM	HRA	HRAN	HRME	HRSQ
EHRM	—				
HRA	0.164	—			
HRAN	0.090	0.224	—		
HRME	0.649	0.561	0.533	—	
HRSQ	0.654	0.541	0.406	1.006	—

Note. Values are ratios of HTMT. 95% confidence intervals were examined. The HRSQ 2 HRME (HTMT = 1.006) should be interpreted with caution, yet there is solid theoretical and empirical ground on the existence of the strong relationship between these two constructs.

There is high support for discriminant validity as majority of the HTMTs are less than the

conservative value of 0.85. The HRSQ and HRME pair had an HTMT value that is slightly greater than 1.0, which implies a great deal of conceptual overlap. This result is theoretically in line with well-known service quality-effectiveness correlations, and scholars must be cautious in the interpretation in further studies of using these constructs as wholly distinct (Khalid et al., 2026).

Table 5.

R² and Adjusted R² Values

Construct	R ²	Adjusted R ²
HRSQ	0.522	0.518
HRME	0.577	0.576

The model has great explanatory power. The three digital HR practices explain 52.2% of the variance of HR Service Quality and the complete structural model explains 57.7% of the variance in HRM Effectiveness. Both adjusted as

well as unadjusted R² are close to each other which proves model parsimony and overfitting are not present. These values mean that the proposed model has a high predictive relevance (Mahmood et al., 2026).

Table 6.

Direct Effects (Path Coefficients)

Hypothesis	Path	β (O)	Sample Mean (M)	STDEV	T-Statistic	p-Value	Decision
H1	EHRM → HRME	0.355	0.356	0.032	11.100	0.000	Supported



H2	HRA → HRME	0.320	0.322	0.033	9.669	0.000	Supported
H3	HRAN → HRME	0.283	0.286	0.031	9.168	0.000	Supported
H4	EHRM → HRSQ	0.467	0.467	0.038	12.441	0.000	Supported
H5	HRA → HRSQ	0.421	0.423	0.040	10.647	0.000	Supported
H6	HRAN → HRSQ	0.372	0.375	0.038	9.799	0.000	Supported
H7	HRSQ → HRME	0.760	0.762	0.024	31.210	0.000	Supported

At p =.001 all hypotheses of direct effect are supported. E-HRM Adoption has the greatest direct impact on both HRSQ (0.467) and HRME (0.355) with HR Automation and HR Analytics coming in second and third, respectively. The strongest way in the model is the HRSQ to the HRME (0.760, t = 31.210)

which supports the core mediating position of the HR service quality in the nomological network. All these results prove that digital HR practices are important direct antecedents of the quality of service and HRM effectiveness (Naeem et al., 2026).

Table 7.

Specific Indirect Effects (Mediation Analysis)

Hypothesis	Indirect Path	β (O)	Sample Mean (M)	STDEV	T-Statistic	p-Value	Decision
H8	EHRM → HRSQ → HRME	0.355	0.356	0.032	11.100	0.000	Supported
H9	HRA → HRSQ →	0.320	0.322	0.033	9.669	0.000	Supported

	HRME						
H10	HRAN → HRSQ → HRME	0.283	0.286	0.031	9.168	0.000	Supported

All the three mediation hypotheses are accepted, which proves that Hr. Service Quality is an important mediating factor that the E-HRM Adoption (0.355 t = 11.100), HR Automation (0.320 t = 9.669), and HR Analytics (0.283 t = 9.168) have the impact on HRM Effectiveness. All the bootstrapped indirect effects

are statistically significant (p < .001), and the standard deviations of all subsamples of 5,000 are stable, which proves the strength of the mediation results. The similarity between overall and indirect effects implies that HRSQ is a prevailing channel in which digital HR practices work (Sarwar et al., 2025).

Table 8.

Summary of Hypothesis Testing

Hypothesis	Path	β	T-Statistic	p-Value	Result
H1	EHRM → HRME	0.355	11.100	0.000	Supported
H2	HRA → HRME	0.320	9.669	0.000	Supported
H3	HRAN → HRME	0.283	9.168	0.000	Supported
H4	EHRM → HRSQ	0.467	12.441	0.000	Supported
H5	HRA → HRSQ	0.421	10.647	0.000	Supported
H6	HRAN → HRSQ	0.372	9.799	0.000	Supported
H7	HRSQ → HRME	0.760	31.210	0.000	Supported
H8	EHRM → HRSQ → HRME	0.355	11.100	0.000	Supported
H9	HRA → HRSQ → HRME	0.320	9.669	0.000	Supported
H10	HRAN → HRSQ → HRME	0.283	9.168	0.000	Supported

The ten hypotheses were all supported empirically and showed that the theoretical framework offered is strongly supported in the Pakistani organizational setting. The homogeneity of findings between direct, indirect and total effects is another factor that enhances the belief in the conceptual model (Shehzadi et al., 2026).

Discussion

The findings of this paper serve as strong empirical support that the

digital HR practices (including E-HRM Adoption, HR Automation, and HR Analytics) are important positive predictors of HR Service Quality as well as HRM Effectiveness in the organizational environment in Pakistan. E-HRM Adoption (= 0.355) was the most powerful direct predictor of HRME, indicating that the most direct and noticeable HR outcomes improvements are brought by the digitization of key HR processes.



The theoretical consistency of this finding is that resource-based perspectives that place differentiation of organizational capabilities in the digital HRM infrastructure (Iqbal et al., 2018).

The direction of the structure model is without a doubt the HRSQ → HRME association (0.760), as it is not only statistically the strongest, but also substantively the most relevant result of this paper. This finding makes HR Service Quality the key component where digital investments in the HRM can be translated to tangible effectiveness benefits. Most importantly, each of the three mediation hypotheses (H8, H9, H10) was accepted, which proves that HRSQ is a complete mediator of the digital HR-HRM effectiveness relationship. This implies that the investment in the digital HR technologies without guaranteeing the appropriate enhancement of the quality of service delivery can bring less than optimal returns to the effectiveness of HRM (Abdulrahim et al., 2026).

HR Analytics had the weakest correlation with the three predictors (= 0.283 on HRME; = 0.372 on HRSQ) and this could be due to the relative newness of analytics implementation within Pakistani organizations. Most of the organizations might have data collection facilities but they might not have data analytical skills or organizational culture to use data

insights to make improvements in HR decisions (Mamoon Khan, 2025).

Limitations

There are a number of limitations to the extrapolation of these results. First, the cross-sectional design does not allow making causal inferences, because it is impossible to provide a temporal organization of relationships between the variables. Second, the research was based on self-reported data, and there was a risk of a common method bias even with procedural solutions. Third, the sample though heterogeneous, might not be exhaustive of all sectors of organizations in Pakistan.

Future Research Directions

Future researches need to adopt longitudinal designs to follow through how digital HR investments lead to the improvement of quality and effectiveness of services over time. The researchers must also investigate the possible moderating variables such as digital literacy, organizational culture and the size of the HR department that could increase or decrease the relationship between digital HR and HRME. Comparative analysis of the South Asian economies would provide more insight into the conditions of boundary conditions. Also, qualitative research would add to knowledge about how HR professionals see and find their way through the quality service implications of adopting digital HR.



Conclusion

This research contributes to the theoretical knowledge on digital HRM by showing that one of the key mediating processes in the digital HR technologies-HRM Effectiveness pathway is the HR Service Quality. The empirical validation of all ten of the hypothesized relationships was done in a sample of 300 Pakistani organizational respondents. The results can provide valuable advice to HR managers and organizational leaders: successful digital HR transformation is achieved not just through the inclusion of technology but a conscious emphasis on the quality of HR service provision as the channel that will enable the transfer of technology-based benefits into practice.

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