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Electronic Human Resource Management and Employee Engagement for Sustainable Development Goals: Examining the Mediating Role of Perceived Organizational Support in Private Universities of Bangladesh

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Abstract: The digital transformation of human resource management has become increasingly important for advancing sustainable organizational development and supporting the achievement of the Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth) and SDG 4 (Quality Education). Despite growing adoption of Electronic Human Resource Management (E-HRM) in developing economies, the psychological mechanisms through which E-HRM practices translate into employee engagement remain theoretically underspecified. This study examines the direct and mediated effects of E-HRM practices on employee engagement, with perceived organizational support (POS) as the hypothesized mediator. A quantitative, cross-sectional survey design was employed with a stratified random sample of 412 academic and administrative staff from UGC-approved private universities in Bangladesh. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0. Results confirm that E-HRM practices significantly predict both employee engagement ($\beta = 0.218$, $p < .05$) and POS ($\beta = 0.473$, $p < .05$), and POS significantly predicts employee engagement ($\beta = 0.461$, $p < .05$). Bias-corrected bootstrapping confirmed a significant indirect effect of E-HRM on engagement through POS ($\beta = 0.218$, 95% CI [0.153, 0.287]), with a VAF of 50.0% indicating partial mediation. The structural model explained 49.3% of the variance in employee engagement. These findings identify POS as a critical psychological mechanism linking digital HR investments to sustainable employee engagement. The study contributes to the literature on E-HRM and offers practical insights for higher education institutions seeking to strengthen workforce sustainability, improve employee well-being, and advance organizational outcomes aligned with the SDGs.

Keywords: Electronic Human Resource Management (E-HRM); Employee engagement; Perceived organizational support; Decent work; Sustainable higher education; Digital transformation; Social exchange theory

1. Introduction

Digital transformation has fundamentally reshaped how organizations recruit, develop, and retain human capital. In higher education where institutional effectiveness depends directly on the motivation and productivity of academic and administrative personnel this transformation carries particular urgency. Electronic Human Resource Management (E-HRM), defined as the integration of HRM strategies, policies, and practices with information technologies to create value within and across organizations [1], has emerged as a primary vehicle for this transformation.

Yet despite growing adoption, the mechanisms through which E-HRM translates into employee-level outcomes remain theoretically underspecified and empirically understudied, particularly in developing-economy contexts.

Bangladesh's private higher education sector constitutes a compelling site for this inquiry. Since the Private University Act of 1992 [2], the sector has grown dramatically: the University Grants Commission (UGC) recognized 114 approved private universities as of 2024, supporting an estimated workforce of 45,000 to 55,000 full-time employees [3]. This expansion has intensified competition for qualified faculty, heightened administrative complexity, and created mounting pressure to professionalize HRM systems. The COVID-19 pandemic (2020–2022) further catalyzed digital transformation, compelling institutions to rapidly adopt online administration and remote HR processes yet the quality and sustainability of these transitions remain uneven. Infrastructure deficits, digital literacy gaps among staff, and institutional resistance continue to constrain E-HRM depth in many private universities [4].

Employee engagement conceptualized as a positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption [5] is a critical determinant of institutional performance [6,7], faculty retention, and academic quality. Engagement is not, however, a direct and automatic consequence of technology implementation alone. Intervening psychological constructs, particularly employees' perceptions of organizational support, play a decisive mediating role in converting structural HR investments into motivational and behavioral responses.

Perceived Organizational Support (POS), defined as employees' global beliefs about the extent to which their organization values their contributions and cares about their well-being [8], provides the theoretical mechanism linking E-HRM to engagement. Grounded in social exchange theory [9] and organizational support theory [8], POS posits that employees who perceive organizational investment reciprocate through heightened commitment, effort, and engagement [10,11]. When E-HRM systems are implemented effectively, they signal organizational investment in employee welfare, thereby elevating POS, which in turn drives engagement.

The specific tripartite relationship E-HRM → POS → Employee Engagement has not been empirically examined in Bangladesh's private university context. Prior work on E-HRM in Bangladesh [4] did not examine individual-level psychological mediators, and engagement research in South Asian higher education remains limited. The present study directly addresses these gaps through a quantitative, survey-based methodology with PLS-SEM analysis, examining both direct and indirect effects of E-HRM on employee engagement with POS as an explicit mediator.

This study makes four original contributions. First, it extends E-HRM research into the underexamined context of Bangladeshi private higher education. Second, it provides the first empirical test of POS as a mediator between E-HRM and engagement in this setting. Third, it validates an adapted E-HRM measurement instrument applicable to resource-constrained South Asian institutional contexts. Fourth, the findings offer actionable implications for HR practitioners and institutional policymakers seeking to leverage digital HR investments for improved workforce outcomes.

2. Literature Review

2.1 Electronic Human Resource Management

The theoretical conceptualization of E-HRM has evolved considerably since

its emergence in the late 1990s. Bondarouk and Ruël [1] (p. 506) offer the most widely cited definition, characterizing E-HRM as "an umbrella term covering all possible integration mechanisms and contents between HRM and Information Technologies, aiming at creating value within and across organizations for targeted employees and management." This formulation emphasizes that E-HRM is not merely a technological overlay on existing HR processes but a strategic instrument for enhancing organizational and employee outcomes. The digital transformation of HRM has accelerated considerably in recent years, with higher education institutions facing particular imperatives to modernize their HR infrastructure [12].

Ruël et al. [13] introduced a foundational typology distinguishing three functional categories of E-HRM. Operational E-HRM encompasses the automation of routine administrative functions payroll processing, attendance management, and leave administration. Relational E-HRM involves interactive applications supporting recruitment, performance appraisal, and training and development. Transformational E-HRM refers to high-value strategic HR activities including talent analytics, knowledge management, and organizational development. This typology, which informs the operationalization of E-HRM in the present study, provides a useful analytic framework for assessing the depth and sophistication of E-HRM adoption across institutional contexts.

Strohmeier's [14] influential review identified definitional fragmentation as a primary obstacle to cumulative E-HRM scholarship and called for rigorous investigation of its consequences at individual, organizational, and societal levels. Subsequent research has responded substantively. Bondarouk et al. [15] synthesized four decades of E-HRM literature, confirming positive associations between E-HRM adoption and both HR service efficiency and employee satisfaction, while noting that mediating mechanisms linking E-HRM to employee outcomes remain inadequately theorized. Nyathi and Kekwaletswe [16] found that E-HRM configuration specifically the inclusiveness and accessibility of digital HR systems critically shapes individual employee outcomes. Shamout et al. [17] demonstrated that E-HRM practices positively predict sustainable competitive advantage, partly through enhanced employee perceptions of organizational commitment to professional development. Rakotoarizaka et al. [18], funded by Universitas Muhammadiyah Yogyakarta, conducted a bibliometric review confirming E-HRM's positive impact on service excellence across organizational contexts.

In the Bangladeshi context, E-HRM research remains nascent. Hosain [4] conducted one of the earliest systematic investigations in Bangladesh's service sector, establishing positive associations between E-HRM adoption and organizational performance. However, individual-level mediating psychological mechanisms were not examined a fundamental gap that the present study directly addresses.

2.2 Employee Engagement

Employee engagement is among the most intensively studied constructs in organizational behavior. The theoretically precise and psychometrically validated conceptualization by Schaufeli et al. (2002, p. 74) defines work engagement as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption." Vigor refers to high levels of energy and mental resilience at work; dedication to a sense of significance, enthusiasm, and challenge; and absorption to being fully concentrated and engrossed in one's work. This three-dimensional conceptualization, operationalized through the Utrecht Work Engagement Scale (UWES), has been validated across more than 30 countries and sectors and

remains the dominant psychometric framework in engagement research [19].

Kahn's [20] foundational theoretical contribution characterized engagement as the harnessing of organizational members' physical, cognitive, and emotional selves to their work roles, contingent on three psychological conditions: meaningfulness, safety, and availability. These conditions are powerfully shaped by organizational characteristics, particularly the quality of HR practices and perceived organizational support a proposition central to the present study.

The Job Demands-Resources (JD-R) model [21,22] offers a complementary framework, positioning job resources including social support, feedback, and skill variety as primary drivers of engagement. Within this model, HR practices that provide employees with adequate resources, reduce job strain, and enable professional development are theoretically expected to enhance engagement. E-HRM practices, to the extent that they function as job resources by reducing administrative friction, enabling self-service, and facilitating continuous learning, are accordingly positioned as theoretically plausible antecedents of work engagement.

Saks [6] established that organizational support represents a direct antecedent of employee engagement, arguing through social exchange logic that employees who perceive high support feel obligated to reciprocate through fuller investment in their work roles. In higher education contexts, Almaaitah et al. [23] confirmed, in a study of Jordanian public sector employees, that E-HRM directly impacts both employee performance and employee engagement, with engagement serving as a significant mediator establishing empirical precedent for the E-HRM–engagement pathway. Rasool et al. [7] similarly confirmed that organizational support significantly mediates the relationship between workplace environmental factors and employee engagement, consistent with social exchange theory. Stachová et al. [24] further established, in a large-scale study, that E-HRM tool adoption positively relates to employee engagement, highlighting the importance of digital HR integration for workforce motivation.

2.3 Perceived Organizational Support

Perceived Organizational Support (POS) is among the most extensively researched constructs in organizational psychology, with over 1,200 empirical studies examining its antecedents, consequences, and boundary conditions [25]. Eisenberger et al. [8] introduced POS within Organizational Support Theory (OST), proposing that employees form a global belief about the degree to which their organization values their contributions and cares about their well-being. This belief, operationalized through the Survey of Perceived Organizational Support (SPOS), provides the motivational foundation for reciprocal exchange between employees and organizations.

The theoretical roots of POS lie in Blau's [9] social exchange theory and Gouldner's [26] norm of reciprocity. When organizations invest in employee well-being through tangible and intangible support, employees feel a normative obligation to reciprocate through heightened commitment, reduced turnover intentions, elevated job satisfaction, and improved performance. Rhoades and Eisenberger [10], in a landmark meta-analysis of 70 studies, confirmed that POS robustly predicts affective organizational commitment, job satisfaction, and performance across diverse organizational settings. Astuty and Udin [12], using a sample from Indonesian organizations and published in a Scopus-indexed journal, empirically confirmed that POS significantly predicts both affective commitment and employee performance, reinforcing OST in an Asian developing-economy context.

Kurtessis et al. [11], in a comprehensive meta-analysis of 558 studies encompassing over 200,000 employees, established that favorable HR practices including training and development opportunities, performance-contingent rewards, and procedurally fair HR processes are among the strongest antecedents of elevated POS. This finding is directly germane to the present study: if established HR practices elevate POS, and if E-HRM constitutes a digitally mediated form of organizational HR investment, then well-implemented E-HRM systems should systematically predict higher POS among employees who experience these systems as accessible and supportive. Caesens and Stinglhamber [25] further confirmed that POS functions robustly as a mediator between organizational investments and positive employee behavioral outcomes, reinforcing its theoretical suitability in the present model.

2.4 The E-HRM → POS → Engagement Mediation Pathway

The theoretical case for POS as a mediator between E-HRM practices and employee engagement rests on two sequential propositions. First, effective E-HRM implementation characterized by accessible self-service portals, transparent performance management systems, digital training resources, and streamlined administrative workflows signals organizational investment in employee welfare, thereby elevating POS. Second, elevated POS, consistent with social exchange theory and organizational support theory, motivates reciprocal employee behavior in the form of heightened vigor, dedication, and absorption.

Empirical support for the first proposition emerges from multiple sources. Shamout et al. [17] demonstrate that E-HRM practices are positively associated with competitive advantage partly through enhanced employee perceptions of organizational commitment to professional development. Nyathi and Kekwaletswe [16] confirm that the configurational quality of E-HRM systems shapes employee perceptions of organizational support and investment. Udin and Shaikh [27], publishing in a Scopus-indexed management journal from Universitas Muhammadiyah Yogyakarta, confirmed that transformational leadership and knowledge sharing operate through organizational support mechanisms to drive innovative work behavior analogous to the E-HRM → POS pathway proposed here.

For the second proposition, the evidence is extensive and robust. Saks [6] established POS as a direct engagement antecedent across both job and organizational levels. Rasool et al. [7] confirmed this relationship in the context of workplace environmental stressors, with organizational support and employee well-being jointly mediating the toxic workplace–engagement relationship. Kurtessis et al. [11] meta-analytically established that POS is consistently associated with positive work behaviors and emotional investment. Taken together, these two evidence streams provide a theoretically grounded and empirically supported basis for the full E-HRM → POS → Employee Engagement mediation model proposed in this study.

Critically, the specific mediation pathway from E-HRM to engagement via POS has not been empirically examined in Bangladesh's private university sector. This sector's combination of rapid institutional growth, underdeveloped HR infrastructure, and accelerating digitalization creates conditions in which the introduction of accessible E-HRM systems may have particularly pronounced effects on employee perceptions of organizational investment making it a theoretically important and practically underserved context for empirical inquiry.

2.5 Theoretical Framework and Research Hypotheses

The conceptual model integrates three theoretical frameworks. Organizational Support Theory [8] explains how employees form beliefs about organizational

investment and how those beliefs drive reciprocal behavior. Social Exchange Theory [9] provides the relational logic through which organizational investments including E-HRM translate into employee behavioral responses via the norm of reciprocity. The Job Demands-Resources Model [22] positions HR practices as job resources that drive engagement by reducing demands and enabling employee effectiveness. These frameworks generate the following four testable hypotheses:

H1: E-HRM practices are positively associated with employee engagement among staff in Bangladesh's private universities.

H2: E-HRM practices are positively associated with perceived organizational support among staff in Bangladesh's private universities.

H3: Perceived organizational support is positively associated with employee engagement among staff in Bangladesh's private universities.

H4: Perceived organizational support mediates the positive relationship between E-HRM practices and employee engagement among staff in Bangladesh's private universities.

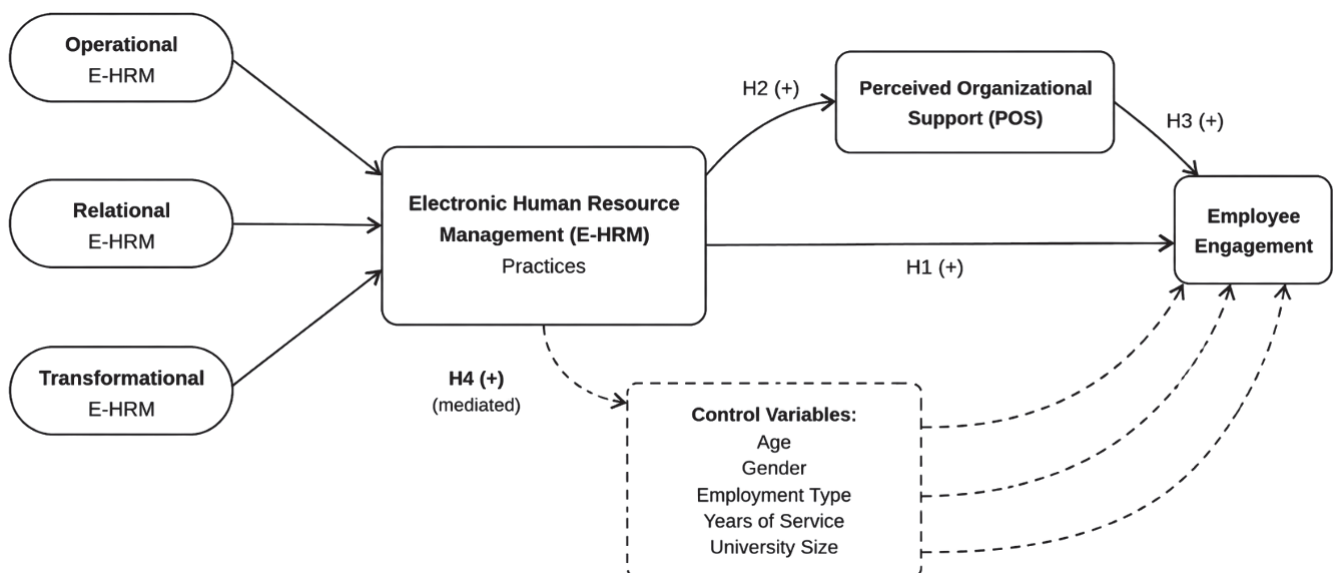


Figure 1. Conceptual model

Note. H1 = direct effect of E-HRM on engagement; H2 = E-HRM on POS; H3 = POS on engagement; H4 = indirect (mediated) effect of E-HRM on engagement through POS. Control variables (age, gender, employment type, years of service, university size) are included in the structural model.

3. Methodology

3.1 Research Philosophy and Design

This study is anchored in a positivist philosophical paradigm, which holds that social reality exists independently of human perception and can be measured through objective inquiry [28]. A deductive research approach is employed: three established theoretical frameworks organizational support theory [8], social exchange theory [9], and the JD-R model [22] provide the theoretical architecture from which four hypotheses are derived and empirically tested. A quantitative, mono-method research design using a structured self-administered questionnaire is adopted, consistent with positivist philosophy and deductive reasoning. A cross-sectional time horizon is employed data are collected at a single point in time. While longitudinal designs

provide stronger causal inference through temporal precedence, they are logistically impractical within the resource constraints of the present study. This limitation is explicitly acknowledged in Section 5.

3.2 Population and Sampling Strategy

The target population comprises all full-time academic (faculty) and non-academic (administrative) employees currently employed in UGC-approved private universities in Bangladesh. As of the 2023–2024 academic year, 114 approved private universities operate with an estimated aggregate workforce of 45,000 to 55,000 full-time employees [3]. Both employee categories are included because both interact meaningfully with E-HRM systems faculty through e-performance appraisal, e-leave management, and e-training modules, and administrative staff through e-payroll, e-recruitment processing, and HR information management.

A stratified random sampling technique is adopted to ensure representativeness across three stratification dimensions: (a) geographic region Dhaka Division, Chittagong Division, Sylhet Division, and remaining divisions combined; (b) institutional size small (under 500 employees), medium (500–2,000), and large (over 2,000 employees); and (c) employee type academic versus non-academic. Sample size is determined through two complementary criteria. Applying the Krejcie and Morgan [29] formula to an estimated eligible population of approximately 50,000 staff, a minimum of 381 respondents is required at a 95% confidence level with a $\pm 5\%$ margin of error. For PLS-SEM, Hair et al. [30] recommend a minimum of ten times the largest number of structural paths directed at any single construct. To account for an anticipated non-response rate of 20–25% [28], 480 questionnaires were distributed, yielding 412 valid responses.

3.3 Research Instrument

Data were collected using a structured, self-administered questionnaire organized into five sections. All Likert-scale items employed a seven-point response format. The questionnaire was developed in English and translated into Bengali using a forward-backward translation protocol. E-HRM practices are operationalized using a 21-item scale adapted from Ruël et al. [13] and Shamout et al. [17], organized across three sub-dimensions: operational (7 items), relational (7 items), and transformational (7 items). POS is measured using the 8-item SPOS short-form [8]. Employee engagement is measured using the 9-item UWES-9 [19]. A pilot study with 45 respondents confirmed acceptable reliability: E-HRM ($\alpha = .83$), POS ($\alpha = .88$), Engagement ($\alpha = .86$).

Table 1. Measurement constructs, item summary, and scale sources

Construct	Role	Dimensions	Items / Scale	Source
E-HRM Practices	Independent	Operational; Relational; Transformational	21 items, 7-pt Likert	Ruël et al. [13]; Shamout et al. [17], adapted
Perceived Organizational Support (POS)	Mediator	Org. valuation; Employee well-being	8 items, 7-pt Likert	Eisenberger et al. [8]; SPOS Short-Form
Employee Engagement	Dependent	Vigor; Dedication; Absorption	9 items, 7-pt Likert	Schaufeli et al. [19]; UWES-9
Control Variables	Controls	N/A	5 demographic items	Age, gender, employment type, years of service, university size

3.4 Data Collection and Ethical Considerations

Data collection was conducted over a ten-week period through Google Forms (restricted to institutional email domains) and in-person printed questionnaires at institutions with limited digital literacy. All research procedures are conducted in accordance with established ethical principles for research involving human participants. Ethical approval was obtained from the relevant institutional review board. Participation was entirely voluntary with full anonymity guaranteed. All raw data are stored on password-protected institutional servers.

3.5 Data Analysis Strategy

The primary analytical technique is Partial Least Squares Structural Equation Modeling (PLS-SEM) executed via SmartPLS 4.0 [31]. PLS-SEM is selected over covariance-based SEM for four methodologically grounded reasons: (1) the study's dual predictive-explanatory purpose; (2) no multivariate normality assumption requirement; (3) suitability for the reflective-formative Type II model structure of the E-HRM construct; and (4) its two-stage approach enabling independent assessment of formative and reflective constructs [30,35]. Mediation analysis employs bias-corrected bootstrapping with 5,000 subsamples [32]. Common method bias was assessed using Harman's single-factor test and common latent factor analysis [33]. Discriminant validity was assessed via the Fornell-Larcker criterion and HTMT ratios [34, 35].

4. Results

4.1 Sample Characteristics

A total of 451 questionnaires were returned, of which 412 were deemed complete and valid for analysis, yielding a response rate of 85.8%. The sample predominantly comprised male respondents (62.9%), with the majority in the 35–44 age bracket (41.5%). Academic (faculty) staff constituted 59.9% of the sample. The structural model explained 49.3% of the variance in employee engagement.

Table 2. Demographic and institutional profile of the sample (N = 412)

Variable / Category	n	%
<i>Gender</i>		
Male	259	62.9
Female	153	37.1
<i>Age group</i>		
25–34 years	124	30.1
35–44 years	171	41.5
45–54 years	88	21.4
55 years and above	29	7.0
<i>Employment type</i>		
Academic (Faculty)	247	59.9
Non-academic (Administrative)	165	40.1
<i>Years of service</i>		
Less than 2 years	41	10.0

Continuation Table:

Variable / Category	n	%
2–5 years	119	28.9
6–10 years	148	35.9
More than 10 years	104	25.2
<i>University size (full-time staff)</i>		
Small (< 500)	89	21.6
Medium (500–2,000)	196	47.6
Large (> 2,000)	127	30.8
Dhaka Division	219	53.2
Chittagong Division	84	20.4
Sylhet Division	52	12.6
Other divisions	57	13.8
Total	412	100.0

4.2 Common Method Bias Assessment

Harman's single-factor test yielded a largest single factor of 28.4% of total variance, well below the 50% threshold [33]. Common latent factor analysis within PLS-SEM revealed a common latent factor explaining only 3.2% of additional variance substantially below the 25% CMB threshold confirming that common method variance does not substantively distort the structural estimates.

4.3 Measurement Model Assessment

4.3.1 Reflective Constructs: POS and Employee Engagement

All outer loadings exceeded 0.70 (range: 0.72–0.91). Cronbach's alpha ranged from 0.879 to 0.924 and composite reliability (CR) from 0.906 to 0.941, all exceeding the 0.70 threshold [30]. All AVE values exceeded 0.50 (range: 0.563–0.641), confirming convergent validity [34]. All HTMT ratios were below 0.85 (range: 0.617–0.793), confirming discriminant validity [35].

Table 3. Measurement model results: outer loadings, reliability, and convergent validity

Construct	Item	Outer Loading	Cronbach's α	CR	AVE
E-HRM (Operational)	OP1-OP7	0.723–0.801	0.891	0.916	0.588
E-HRM (Relational)	RL1-RL7	0.762–0.839	0.903	0.924	0.611
E-HRM (Transformational)	TR1-TR7	0.797–0.858	0.924	0.941	0.641
Perceived Org. Support	PS1-PS8	0.778–0.857	0.921	0.937	0.625
Employee Engagement (UWES-9)	VI/DE/AB	0.749–0.857	0.879	0.906	0.563

Note. CR = Composite Reliability; AVE = Average Variance Extracted. All outer loadings exceed 0.70. All AVE values exceed 0.50, confirming convergent validity [34]. Bootstrapping based on 5,000 subsamples.

4.3.2 Formative Second-Order Construct: E-HRM Practices

Outer weights for the three first-order sub-dimensions were statistically significant: Operational E-HRM ($\beta = 0.341$, $t = 4.872$, $p < .05$); Relational E-HRM ($\beta = 0.389$, $t = 5.614$, $p < .05$); Transformational E-HRM ($\beta = 0.412$, $t = 6.083$, $p < .05$). All VIF values were below 3.3 (range: 1.847–2.316), confirming absence of multicollinearity. Convergent validity via redundancy analysis yielded a path coefficient of 0.814, exceeding the 0.70 threshold [30].

4.4 Structural Model and Hypothesis Testing

All inner VIF values were below 3.3 (range: 1.623–2.184). R^2 for employee engagement was 0.493 (substantial) [36] and for POS was 0.224. PLSpredict yielded $Q^2 = 0.381$ (engagement) and $Q^2 = 0.196$ (POS), both confirming predictive relevance.

Table 4. Structural model results and hypothesis testing summary

H	Path	β	SE	t-stat	95% CI	p	Decision
H1	E-HRM $\rightarrow$ Employee Engagement	0.218	0.061	3.574	[0.098, 0.338]	< .05	Supported
H2	E-HRM $\rightarrow$ POS	0.473	0.054	8.759	[0.367, 0.579]	< .05	Supported
H3	POS $\rightarrow$ Employee Engagement	0.461	0.057	8.088	[0.349, 0.573]	< .05	Supported
H4	E-HRM $\rightarrow$ POS $\rightarrow$ EE (Indirect)	0.218	0.034	6.412	[0.153, 0.287]	< .05	Supported (Partial mediation)

Note. VAF for H4 = 50.0% (partial mediation). R^2 (Employee Engagement) = 0.493; R^2 (POS) = 0.224. Bootstrapping: 5,000 subsamples.

4.5 Mediation Analysis

The indirect effect of E-HRM practices on employee engagement through POS was $\beta = 0.218$, $SE = 0.034$, 95% CI [0.153, 0.287] excluding zero, confirming statistical significance [32]. The VAF of 50.0% falls within the partial mediation range [30]. Given that both direct and indirect effects were significant, partial mediation of POS in the E-HRM–engagement relationship is concluded. H4 is therefore supported.

5. Discussion

5.1 Overview of Findings

All four hypotheses were supported. E-HRM practices exerted a significant direct positive effect on employee engagement (H1: $\beta = 0.218$, $p < .05$), a significant direct positive effect on POS (H2: $\beta = 0.473$, $p < .05$), and POS in turn positively predicted employee engagement (H3: $\beta = 0.461$, $p < .05$). The indirect effect of E-HRM on engagement via POS was statistically significant ($\beta = 0.218$, 95% CI [0.153, 0.287]), with a VAF of 50.0% confirming partial mediation (H4 supported). The structural model explained 49.3% of the variance in employee engagement [36].

5.2 Direct Effect of E-HRM on Employee Engagement (H1)

The significant direct effect ($\beta = 0.218$, $p < .05$), while positive, is comparatively modest relative to the mediated pathway a finding that carries theoretical significance. It indicates that E-HRM does not autonomously generate engagement; rather, its influence is substantially transmitted through the psychological mechanism of POS.

This aligns with the JD-R model [22], which posits that structural resources such as digital HR systems enhance engagement primarily by reducing job demands and amplifying motivational processes that are psychologically mediated. The finding is consistent with Almaaitah et al. [23] and Arokiasamy et al. [37], Hoo et al. [38] who confirmed a direct E-HRM–engagement relationship, and with Stachová et al. [24], who demonstrated that E-HRM tool integration predicts engagement in organizational contexts.

5.3 Effect of E-HRM on POS (H2)

The strongest direct path in the structural model was E-HRM → POS ($\beta = 0.473$, $p < .05$; $f^2 = 0.289$, medium effect). This finding extends the meta-analytic evidence of Kurtessis et al. [11] by demonstrating that digitally mediated HR practices carry comparable organizational signal value in a developing-economy higher education context. It also aligns with Nyathi and Kekwaletswe [16] and Shamout et al. [17]. Astuty and Udin [12] similarly demonstrated that organizational support perceptions carry significant motivational consequences in Indonesian organizational contexts a finding directly supportive of the E-HRM → POS pathway proposed.

5.4 Effect of POS on Employee Engagement (H3)

POS exerted a substantial positive effect on employee engagement ($\beta = 0.461$, $p < .05$; $f^2 = 0.302$, medium effect). This result replicates and extends Saks [6], who established POS as a direct antecedent of both job and organizational engagement, and is consistent with the meta-analytic evidence of Rhoades and Eisenberger [10] and Kurtessis et al. [11]. Rasool et al. [7] specifically confirmed that organizational support mediates the relationship between workplace stressors and engagement, consistent with social exchange theory [9].

5.5 Mediating Role of POS (H4)

The partial mediation finding (VAF = 50.0%) confirms that POS is a genuine and substantial psychological transmission mechanism through which E-HRM investments generate engagement but not the exclusive one. The retention of a significant direct E-HRM–engagement path after POS is introduced indicates that E-HRM also exerts engagement-enhancing effects through alternative channels consistent with the JD-R model [22]: reducing administrative burdens, enabling real-time performance feedback, and providing on-demand learning resources.

5.6 Limitations

Several limitations warrant acknowledgment. First, the cross-sectional design [28] precludes definitive causal inference. The E-HRM → POS path is most susceptible to reverse causation; longitudinal designs with at minimum two measurement waves are recommended to address this. Second, self-report data collected from a single source create potential common method bias, despite the screening procedures applied [33]. Third, geographic and institutional sampling diversity may not be fully representative of all 114 UGC-approved private universities. Fourth, the single-country, single-sector focus limits external generalizability.

6. Conclusion

This study demonstrates that E-HRM is not merely an administrative efficiency tool but a strategic organizational signal with measurable consequences for employee motivation and engagement. Using a stratified random sample of 412 academic and

administrative employees across 15 or more UGC-approved private universities in Bangladesh, and testing a PLS-SEM model grounded in organizational support theory, social exchange theory, and the Job Demands-Resources framework, the study confirms that E-HRM practices exert both direct and POS-mediated positive effects on employee engagement.

The central finding that POS partially mediates the E-HRM–engagement relationship, accounting for 50% of the total effect reveals that digital HR investment operates through both instrumental efficiency gains and employees' psychological interpretations of institutional care and valuation. For Bangladesh's rapidly expanding private university sector, strategic E-HRM investment represents one of the most actionable and empirically validated levers available for improving workforce engagement outcomes aligned with SDG 8 and SDG 4. Future research should employ longitudinal designs, introduce additional mediators (organizational trust, psychological empowerment), and extend the model to comparative cross-national settings.

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