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Unlocking Employee Performance Through Digital Human Resource Management: The Mediating Role of Employee Engagement

Mira Labi Bandhaso[1*], Carolus Askikarno Pala'langan[2]
Universitas Kristen Indonesia Paulus, Makassar, Indonesia[1,2]
mirabandhaso115@gmail.com[1]*

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Abstract
Purpose: This study aims to investigate the effect of Digital Human Resource Management (DHRM) on employee performance, with employee engagement serving as a mediating mechanism, within organizations operating in an emerging economy context.
Research Methodology: A quantitative research design was applied using a cross-sectional survey of employees working in organizations that have implemented digital HR practices in Makassar, Indonesia. Data were collected through a structured questionnaire and analyzed using PLS-SEM to examine both direct and indirect relationships among the study variables.
Results: The findings reveal that DHRM has a positive and significant effect on employee performance and employee engagement. Employee engagement also demonstrates a positive and significant effect on employee performance and partially mediates the relationship between DHRM and performance. These results indicate that digital HR practices enhance performance not only through improvements in operational efficiency but also by strengthening employees' psychological engagement with their work.
Conclusions: The study concludes that DHRM functions as a critical organizational resource that supports employee engagement and performance. Digital HR transformation is more effective when it is implemented in ways that promote employees' motivational and psychological investment in their work roles.
Limitations: This study is limited by its cross-sectional design, reliance on self-reported measures, and focus on a single regional context, which may limit causal inference and generalizability.
Contributions: This research contributes to the Digital HRM literature by offering a mechanism-based explanation of the DHRM–performance relationship through employee engagement and by providing empirical evidence from a secondary metropolitan area in an emerging economy.

Keywords: *Digital Human Resource Management, Employee Engagement, Employee Performance, Emerging Economy, Job Demands–Resources Theory*

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1. Introduction

Digital transformation has become a defining feature of contemporary organizations, reshaping how work is designed, coordinated, and evaluated through increasingly data driven and technology-enabled processes (Akbar, Abdurahman, Nursanto, & Hartati, 2025; Hajar, 2024; Strohmeier, 2020). Human

Resource Management is among the organizational functions most affected by this shift, as recruitment, selection, onboarding, training, performance management, and employee communications are progressively supported by digital platforms and HR information systems (Yulianah, 2024). This development has stimulated growing scholarly interest in Digital Human Resource Management (Digital HRM/DHRM), understood as a set of technology enabled HR practices intended to improve HR service quality, speed, and strategic value, while simultaneously altering employees' everyday experience at work (Bajraliu & Qorraj, 2023; Zhang & Chen, 2025). In parallel, organizations face intensified pressure to sustain employee performance amid rapid change, new skill demands, and evolving expectations for flexibility and responsiveness, particularly in emerging economy settings (Virmani, Sinha, & Gupta, 2025).

Within this context, employee engagement has emerged as a key psychological mechanism that may explain how Digital HRM influences performance. Engagement reflects the extent to which employees invest their physical, cognitive, and emotional energies into role performance and is associated with higher task performance and discretionary effort (Kahn, 1990; Saks, 2006). Foundational work conceptualizes engagement as the harnessing of organization members' selves to their work roles, emphasizing psychological conditions that enable people to bring their full selves to work (Kahn, 1990). Subsequent studies show that engaged employees tend to exhibit stronger in role and extra role performance, supporting the view that engagement is a critical driver of individual effectiveness (Saks, 2006; Zhang & Chen, 2025). The Job Demands Resources (JDR) perspective further suggests that employees are more likely to be engaged when they have adequate resources such as supportive systems, feedback, autonomy, and learning opportunities which then promote better performance (Bakker & Demerouti, 2007, 2017). In this sense, Digital HRM can function as an enabling resource by improving access to information, clarifying goals, personalizing learning, and providing timely performance feedback, but it may also introduce new demands (e.g., information overload, technostress) that can undermine engagement if not managed properly (Akbar et al., 2025; Bajraliu & Qorraj, 2023; Hajar, 2024).

The relevance of this topic is particularly evident in emerging economies where digital adoption is accelerating while organizational readiness and HR infrastructure remain uneven (Bajraliu & Qorraj, 2023; Virmani et al., 2025). Indonesia provides a timely setting, as internet penetration and digital participation have expanded rapidly, with national data indicating that internet users exceeded 220 million people and penetration approached 80% in 2024 (APJII, 2024). This broader digital environment is mirrored in organizational settings, where firms and public institutions increasingly adopt HR information systems, e learning platforms, digital performance appraisal tools, and app based HR services as part of their transformation agendas (Akbar et al., 2025; Hajar, 2024; Yulianah, 2024). Yet, digital transformation in HR is not merely a technical project; it changes communication patterns, expectations of responsiveness, and the quality of the employee experience factors closely linked with engagement and performance (Bakker & Demerouti, 2007; Hunitie, 2023; Zhang & Chen, 2025). For cities outside the capital region, local organizational contexts may shape implementation outcomes differently due to variations in industry composition, managerial capability, and talent availability (Bajraliu & Qorraj, 2023; Virmani et al., 2025).

Makassar, as a major economic hub in Eastern Indonesia, offers a relevant empirical context for examining Digital HRM and employee outcomes. Local evidence indicates that organizations connected to Makassar have begun to implement HR digitalization initiatives that enhance transparency and performance tracking, reflecting a growing reliance on digital HR tools in managing people and processes (Rostini, Anwar, & Yusuf, 2024). However, empirical studies from such contexts often remain fragmented and focus on descriptive assessments of digitalization rather than on testing mechanism based models that connect Digital HRM to individual performance through psychological states such as engagement (Hunitie, 2023; Virmani et al., 2025; Zhang & Chen, 2025). This gap matters because HR technology investments can underdeliver when human and behavioral pathways are overlooked, particularly in environments where digital capabilities and organizational systems are still developing (Akbar et al., 2025; Bakker & Demerouti, 2007).

In the context of Makassar, Indonesia, the role of Digital Human Resource Management (DHRM) is increasingly evident as organizations adapt to regional economic growth and digital transformation initiatives. As one of the primary economic hubs in Eastern Indonesia, Makassar has experienced rapid expansion in sectors such as services, trade, and logistics, which require more agile and technology-driven HR practices. The adoption of digital HR systems such as online recruitment platforms, e-learning systems, and digital performance management tools has enabled organizations to enhance workforce efficiency, transparency, and decision-making quality (Rostini, Anwar, & Yusuf, 2024). Moreover, national-level digitalization policies and increasing internet penetration have accelerated the integration of digital technologies into organizational processes, including HR functions. However, the implementation of DHRM in Makassar also faces contextual challenges, such as varying levels of digital literacy, organizational readiness, and infrastructure disparities across sectors. These conditions make Makassar a relevant and unique empirical setting to examine how DHRM contributes to employee engagement and performance, particularly in non-capital urban environments within emerging economies.

Despite rapid growth in Digital HRM research globally, several research gaps remain. First, much of the literature reports positive associations between digital HR practices and organizational outcomes, yet is less consistent in explaining how these effects occur at the individual level, often treating digital HR as a "bundle" directly linked to performance without unpacking the employee level mechanisms involved (Hajar, 2024; Hunitie, 2023; Strohmeier, 2020). Second, while engagement is widely theorized as a driver of performance, empirical studies that explicitly test Digital HRM → engagement → employee performance are still relatively limited, and many existing studies originate from institutional environments, digital maturities, and HR governance systems that differ from Indonesia (Bajraliu & Qorraj, 2023; Virmani et al., 2025; Zhang & Chen, 2025). Third, there is a need for more evidence from secondary cities and diverse regional labor markets, where digital infrastructure and organizational capabilities may not mirror conditions typically studied in large metropolitan settings (Bajraliu & Qorraj, 2023; Rostini et al., 2024). Finally, the practical problem faced by organizations is not simply whether to digitalize HR, but how to do so in ways that build, rather than erode, employee engagement especially during periods of change when uncertainty, workload, and technology related stress can rise (Akbar et al., 2025; Bakker & Demerouti, 2007).

This study offers novelty by advancing a mechanism based explanation of how Digital Human Resource Management translates into employee performance through the mediating role of employee engagement, rather than treating digital HR practices as purely technical or administrative innovations (Hunitie, 2023; Virmani et al., 2025; Zhang & Chen, 2025). Unlike prior work that predominantly examines direct relationships between e HRM or HR digitalization and performance outcomes, this research explicitly integrates engagement as a psychological conduit, grounded in engagement theory and the JD–R framework (Bakker & Demerouti, 2007, 2017; Kahn, 1990). Furthermore, the study contributes contextual novelty by providing empirical evidence from organizations in Makassar, a secondary metropolitan area in an emerging economy that remains underrepresented in international Digital HRM literature, thereby capturing organizational realities beyond capital centric settings (Bajraliu & Qorraj, 2023; Rostini et al., 2024). Collectively, these contributions extend the Digital HRM literature by linking technological transformation, employee engagement, and performance within a single empirical model that is relevant to both scholars and practitioners in Indonesia and comparable emerging market contexts (Virmani et al., 2025; Zhang & Chen, 2025).

2. Literature Review and Hypotheses Development

The rapid advancement of digital technologies has fundamentally reshaped organizational structures, work processes, and managerial practices. Within this transformation, Human Resource Management has experienced a significant shift from traditional, administratively oriented functions toward technology-enabled and strategically integrated practices. This shift has given rise to Digital Human Resource Management (DHRM), which broadly refers to the use of digital technologies such as human resource information systems (Hair et al., 2022), e-recruitment platforms, e-learning systems, digital performance management tools, and HR analytics to design, deliver, and manage HR practices more effectively (Srour, 2023; Zhou, Xiong, Wang, Huang, & Zhong, 2025). Recent empirical work shows

that digital-intelligent HRM and HR digital tools can enhance decision quality, support real-time analytics, and strengthen HR's strategic role in organizations (Liu, Zhang, & Chen, 2025; Zhang & Chen, 2025). Unlike early forms of e HRM that primarily emphasized efficiency and cost reduction, contemporary DHRM increasingly focuses on enhancing employee experience, supporting strategic decision-making, and enabling organizational agility by integrating AI-powered performance management, self-service platforms, and data-driven workforce planning (Bos-Nehles, Bondarouk, & Labrenz, 2023; Kamal, 2025).

From a theoretical standpoint, DHRM can be conceptualized as an organizational capability that enhances the quality and accessibility of HR services while simultaneously shaping how employees interact with HR systems and managerial processes. Digital HR platforms allow employees to access HR services autonomously, receive timely feedback, and engage in continuous learning, thereby potentially strengthening motivation and performance (Lavianti, Munir, Dirgantari, Rasim, & Mahphoth, 2025; Srour, 2023). Empirical evidence indicates that digital HR practices such as e-learning, self-service HR portals, and digital performance dashboards improve process transparency and reduce administrative friction, which in turn can support higher job performance and HR effectiveness (Lavianti et al., 2025; Tritisari, Eliyana, & Kalis, 2026). However, scholars also caution that the benefits of DHRM are not automatic; the effectiveness of digital HR systems depends on usability, perceived fairness, alignment with HR strategy, and the extent to which digitalization is accompanied by adequate change management and employee support (Bos-Nehles et al., 2023; Sakib, Ullah, & Rahman, 2025; Zhou et al., 2025). As a result, recent studies call for research that goes beyond technical adoption and examines the human and behavioral consequences of DHRM implementation, including how employees perceive digital-intelligent HRM change and how these perceptions translate into attitudes and behaviors.

Employee engagement has emerged as a central construct in organizational behavior and HRM literature due to its strong association with individual and organizational outcomes. Engagement was originally conceptualized as the degree to which individuals express themselves physically, cognitively, and emotionally in their work roles (Kahn, 1990). This conceptualization emphasizes that engagement is not merely an attitude but a holistic psychological state that influences how employees invest effort, attention, and emotional energy in their tasks. Subsequent empirical research has consistently linked higher levels of engagement to positive outcomes, including improved job performance, discretionary effort, and reduced withdrawal behaviors (Bakker & Demerouti, 2007, 2017; Saks, 2006). Recent reviews show that engagement remains a dominant focus in contemporary HRM research, particularly in studies involving digital work contexts, hybrid work arrangements, and technology-enabled HR practices (Trisanti & Silalahi, 2026; Wijaya, Rahardjo, Abdillah, & Riza, 2025).

In contemporary organizations, engagement is increasingly shaped by employees' experiences with organizational systems and practices, including HRM. Digital HR systems, in particular, play a critical role in shaping employees' daily interactions with the organization by influencing communication quality, feedback timeliness, learning opportunities, and perceptions of organizational support. Evidence from recent empirical studies suggests that digital HR tools and redefined HR strategies in remote and hybrid work environments can enhance engagement by improving communication, enabling flexibility, and supporting work–life balance (Kamal, 2025; Syed, N, Dyageti, Parnea, & Pothireddy, 2025). When digital HR tools are perceived as enabling and supportive, they may enhance employees' sense of meaningfulness and availability at work, thereby fostering engagement; conversely, when digital systems are perceived as controlling, complex, or intrusive, they may undermine engagement by increasing stress or reducing psychological safety (Lavianti et al., 2025; Srour, 2023). These contrasting possibilities highlight the importance of examining engagement as a mediating mechanism rather than assuming a uniformly positive effect of digital HR practices.

To explain how DHRM influences engagement and performance, this study draws on Job Demands–Resources (JD–R) Theory, one of the most widely used frameworks in work and organizational psychology. JD–R theory posits that every job is characterized by a combination of job demands (e.g., workload, time pressure, emotional demands) and job resources (e.g., autonomy, feedback, support,

learning opportunities), with job resources playing a central role in fostering motivation and engagement, which in turn lead to improved performance outcomes (Bakker & Demerouti, 2007, 2017). Recent research in digital work settings supports this logic, indicating that digital HR practices and IT-enabled work environments can function as job resources that enhance engagement and performance when they provide autonomy, competence support, and meaningful feedback (Lavianti et al., 2025; Zhou et al., 2025). Within this framework, DHRM can be interpreted as a job resource when it facilitates access to information, enhances transparency, supports skill development, and improves communication between employees and the organization. Digital HR platforms may reduce administrative burdens, provide real-time feedback, and enable personalized learning paths, all of which can strengthen engagement; at the same time, poorly implemented digital systems may function as additional job demands by increasing monitoring pressure or technology-related stress (Lavianti et al., 2025; Tritisari et al., 2026). JD–R theory therefore provides a robust theoretical foundation for examining both the direct effect of DHRM on employee performance and its indirect effect through employee engagement as a motivational pathway.

Empirical research examining the relationship between digital HR practices and performance has grown rapidly in recent years. Several studies report that e HRM and DHRM practices are positively associated with employee performance, often attributing these effects to improved efficiency, better decision-making, and enhanced HR service quality (Thu, Pham, & Luc, 2025; Tritisari et al., 2026). For instance, survey-based studies in various sectors show that digital HR systems contribute to improved individual and organizational performance by streamlining HR processes, enabling data-driven management, and supporting real-time monitoring of HR metrics (Alrifae, Mahmoud, Al Zumot, Ali, & AlZubi, 2026; Lavianti et al., 2025). Research has also begun to explore the relationship between digital HR practices and employee engagement. Findings generally suggest that digital HR tools can enhance engagement by improving employee experiences, increasing perceived organizational support, and facilitating communication and learning (Kamal, 2025; Srour, 2023; Syed et al., 2025). Studies conducted in different institutional contexts indicate that when employees perceive digital HR systems as fair, user-friendly, and supportive, engagement levels tend to be higher (Bos-Nehles et al., 2023; Liu et al., 2025; Zhou et al., 2025).

Importantly, an emerging stream of research explicitly examines engagement as a mediating variable between digital HR practices and performance-related outcomes. Empirical work in both developed and emerging contexts shows that work engagement can mediate the relationship between digital HR or IT-enabled practices and individual performance, suggesting that digitalization affects performance partly through its impact on employees' motivational states (Lavianti et al., 2025; Tritisari et al., 2026). Nevertheless, the strength and consistency of these relationships vary across contexts, and many existing studies are conducted in specific industries, large metropolitan areas, or advanced economies, raising questions about the generalizability of findings to emerging economies and secondary cities (Thu et al., 2025; Zhou et al., 2025). Moreover, several studies rely on cross-sectional designs and focus primarily on direct relationships, leaving the underlying motivational processes underexplored, particularly in non-capital urban regions and diverse labor markets.

Despite the growing body of literature, notable gaps remain. First, much of the existing research treats DHRM as a homogeneous construct and focuses on direct performance outcomes, without sufficiently examining employee-level psychological mechanisms such as engagement and proactive behavior (Srour, 2023; Zhou et al., 2025). Second, empirical studies are disproportionately concentrated in capital cities and developed regions, while secondary metropolitan areas in emerging economies remain underrepresented; recent work in Vietnam and other developing contexts underscores the need to broaden empirical settings (Thu et al., 2025).

Third, prior studies often emphasize technological adoption rather than the quality of implementation and its implications for engagement and performance, even though evidence shows that usability, support, and alignment with employee needs critically shape outcomes (Syed et al., 2025; Trisanti & Silalahi, 2026). Indonesia, with its rapid digitalization and diverse regional labor markets, provides a particularly relevant context for addressing these gaps. While national-level digital adoption has

increased substantially, organizational readiness and HR digital maturity vary across regions, making secondary metropolitan areas such as Makassar important sites for extending DHRM research and enhancing its external validity.

2.1 Hypotheses Development

From the perspective of JD–R theory, organizational practices that enhance employees' access to resources are expected to improve work outcomes by enabling more effective task execution and reducing unnecessary constraints (Bakker & Demerouti, 2007, 2017). Digital Human Resource Management (DHRM) represents such a resource by streamlining HR processes, improving transparency, and providing timely access to performance-related information. Digital HR systems facilitate clearer performance expectations, faster feedback cycles, and greater autonomy in managing HR-related tasks, all of which can enhance employees' ability to perform effectively (Lavianti et al., 2025; Tritisari et al., 2026). Empirical studies report positive associations between e HRM or DHRM practices and employee performance, indicating that digital HR tools can support higher productivity and work quality when properly implemented (Alrifae et al., 2026; Thu et al., 2025). Based on this theoretical reasoning and prior evidence, DHRM is expected to have a positive effect on employee performance.

H_1: Digital Human Resource Management has a positive and significant effect on employee performance

Engagement theory posits that employees are more likely to become engaged when work environments provide psychological meaningfulness, safety, and availability (Kahn, 1990). Within this framework, DHRM can contribute to engagement by improving employees' experiences with HR processes, enhancing perceived organizational support, and enabling participation and learning. From a JD–R perspective, digital HR practices function as job resources that foster motivation by reducing administrative burdens and facilitating access to developmental opportunities (Bakker & Demerouti, 2007; Lavianti et al., 2025). Empirical research supports this view, showing that employees tend to report higher engagement levels when digital HR systems are perceived as user-friendly, fair, and supportive (Kamal, 2025; Srour, 2023; Zhou et al., 2025). These findings suggest that DHRM influences not only structural HR efficiency but also employees' psychological investment in their work roles. Therefore, it is hypothesized that DHRM positively affects employee engagement.

H_2: Digital Human Resource Management has a positive and significant effect on employee engagement

Employee engagement is widely recognized as a critical driver of individual performance because engaged employees are more likely to invest physical, cognitive, and emotional energy into their work roles (Kahn, 1990; Saks, 2006). According to engagement theory, such investment enhances focus, persistence, and discretionary effort, which are essential for high-quality performance. Consistent with this theoretical logic, numerous empirical studies have demonstrated a positive relationship between engagement and performance outcomes, including task performance and contextual performance (Bakker & Demerouti, 2007, 2017; Saks, 2006). Recent research in technology-intensive and digitally mediated work environments also finds that higher levels of engagement are associated with better individual outcomes, such as productivity, innovation, and proactive behavior (Lavianti et al., 2025; Zhou et al., 2025). Based on these theoretical arguments and empirical findings, higher levels of employee engagement are expected to lead to better performance.

H_3: Employee engagement has a positive and significant effect on employee performance

Integrating JD–R theory with engagement research suggests a motivational pathway in which job resources enhance engagement, which subsequently drives performance outcomes (Bakker & Demerouti, 2007, 2017). In this study, DHRM is conceptualized as a job resource that improves employees' work experiences and access to support, thereby fostering engagement. Engagement, in turn, translates these positive experiences into higher levels of effort and effectiveness at work. Prior empirical studies provide initial support for this mediating mechanism, indicating that employee engagement mediates the relationship between digital or IT-enabled HR practices and performance-related outcomes (Lavianti et al., 2025; Syed et al., 2025; Tritisari et al., 2026). However, evidence

remains limited, particularly in emerging economy contexts and non-capital urban regions, where digital infrastructure and organizational capabilities differ from those in large metropolitan areas (Thu et al., 2025; Zhou et al., 2025). Building on this theoretical and empirical foundation, this study proposes that employee engagement serves as a key mechanism through which DHRM influences employee performance.

H_4: Employee engagement mediates the relationship between Digital Human Resource Management and employee performance

3. Methodology

This study employed a quantitative research design with a cross-sectional survey approach to examine the relationships among Digital Human Resource Management (DHRM), employee engagement, and employee performance. A quantitative approach was considered appropriate because the study aims to test theoretically grounded hypotheses and assess causal relationships among latent variables using empirical data (Creswell & Creswell, 2018; Hair et al., 2022). Such a design enables systematic measurement of perceptions related to digital HR practices, engagement, and performance, and facilitates statistical analysis to evaluate both direct and indirect effects, which is consistent with recent DHRM and engagement studies using variance-based structural models (Thu et al., 2025; Zhang & Chen, 2025). The study was conducted in Makassar, Indonesia, a major economic center in Eastern Indonesia characterized by increasing digital adoption across private and public organizations, aligning with recent evidence on the diffusion of digital HR practices in emerging economies. Makassar provides a relevant empirical context for examining Digital HRM, as organizations in this region are actively adopting digital HR systems while operating within diverse institutional and infrastructural conditions typical of emerging markets (Rostini et al., 2024; Virmani et al., 2025).

The study population consisted of employees working in organizations that have implemented digital HR practices, such as HR information systems, digital performance management tools, e-learning platforms, or online HR services. A purposive sampling technique was used to ensure that respondents had sufficient exposure to digital HR systems and were therefore capable of evaluating DHRM practices meaningfully. This sampling strategy is commonly applied in organizational research when specific respondent characteristics are required, particularly in studies focusing on digital HR, engagement, and related HR practices (Hair et al., 2022; Hajar, 2024; Hunitie, 2023). Data were collected through a self-administered questionnaire distributed both online and offline, in line with current practice in HRM and digital transformation research. A total of [N] usable responses were obtained and included in the final analysis; this sample size meets the minimum requirements for variance-based structural equation modeling and provides adequate statistical power for hypothesis testing in models with mediation and multiple constructs (Gudergan, Moisescu, Radomir, Ringle, & Sarstedt, 2025; Hair et al., 2022).

All study variables were measured using multi-item scales adapted from established literature to ensure content validity. The questionnaire items were translated into Indonesian using a back-translation procedure to maintain conceptual equivalence and clarity for respondents (Brislin, 1980), a procedure still recommended in recent cross-cultural HRM research. Responses were recorded on a five-point Likert scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”), consistent with contemporary HRM and engagement studies in Indonesia and other emerging contexts (Akbar et al., 2025; Yadnya & Khamiliyah, 2024). Digital Human Resource Management (DHRM) was measured by capturing employees’ perceptions of the extent to which HR functions are supported by digital technologies, including digital recruitment, training, performance appraisal, communication, and HR services. Measurement items were adapted from prior studies on e HRM and digital HR practices that operationalize digital HR as a multi-dimensional construct (Hajar, 2024; Thu et al., 2025; Virmani et al., 2025).

Employee engagement was measured as a positive and active psychological state characterized by energy, involvement, and absorption in work. The scale reflects employees’ cognitive, emotional, and behavioral investment in their roles and was adapted from widely used engagement measures in organizational research (Kahn, 1990; Saks, 2006), which continue to inform recent engagement studies in digital and sustainability-oriented HRM (Hunitie, 2023; Puspitasari & Aulia, 2025). Employee

performance was measured using self-reported indicators capturing task performance and work effectiveness, a strategy that remains common in HRM research when anonymity is assured and items are behaviorally specific (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Thu et al., 2025). Self-rated performance measures have been shown to provide reliable assessments in survey-based HRM and digital HR studies when common method bias is mitigated through procedural remedies.

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS SEM). This technique was selected because it is suitable for predictive research models, mediation analysis, and studies involving latent constructs measured with multiple indicators (Hair et al., 2022; Ringle, Sarstedt, Mitchell, & Gudergan, 2020). PLS SEM is also appropriate when the research objective emphasizes theory development and explanation rather than strict model confirmation and when samples are moderate in size, as is typical in recent HRM and DHRM research in emerging markets (Thu et al., 2025; Tritisari et al., 2026). The analysis followed a two-stage procedure.

First, the measurement model was assessed to evaluate indicator reliability, internal consistency reliability, convergent validity, and discriminant validity, in line with current PLS SEM guidelines (Hair et al., 2022; Sarstedt, Hair, Nitzl, Ringle, & Howard, 2020). Indicator reliability was examined through outer loadings, while construct reliability was assessed using Cronbach's alpha and composite reliability values. Convergent validity was evaluated using the average variance extracted (AVE), and discriminant validity was assessed using the Fornell–Larcker criterion and cross-loadings, as recommended in recent methodological and applied PLS SEM literature. Second, the structural model was evaluated to test the hypothesized relationships among constructs. Path coefficients, coefficient of determination (R^2), and effect sizes (f^2) were examined to assess the explanatory power of the model, which is standard practice in PLS SEM applications in HRM and engagement research (Akbar et al., 2025; Gudergan et al., 2025).

Hypothesis testing was conducted using a bootstrapping procedure with a recommended number of resamples to obtain robust estimates of standard errors and significance levels (GmbH, 2019; Hair et al., 2022). The mediating role of employee engagement in the relationship between DHRM and employee performance was tested using the bootstrapping method, which is considered more robust than traditional causal-step approaches for mediation analysis in PLS SEM (Hair et al., 2022; Sarstedt et al., 2020). Mediation was confirmed when the indirect effect of DHRM on employee performance through employee engagement was statistically significant, and the pattern of direct and indirect paths was consistent with partial or full mediation criteria. This approach aligns with contemporary best practices in mediation testing within organizational research and has been widely applied in recent HRM and Goodwood-based studies that examine engagement or satisfaction as mediators (Hunitie, 2023; Larasandi & Satrya, 2025; Virmani et al., 2025).

4. Results and Discussions

4.1 Results

A total of [N] valid questionnaires was collected from employees working in organizations that have implemented digital HR practices in Makassar, Indonesia. The respondents represented diverse organizational backgrounds, including private companies and public institutions. Most respondents had sufficient work experience and direct exposure to digital HR systems, ensuring the relevance and reliability of their responses for evaluating Digital Human Resource Management, employee engagement, and employee performance.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	108	51.4
	Female	102	48.6
Age	≤ 30 years	62	29.5
	31–40 years	88	41.9

	> 40 years	60	28.6
Work Experience	≤ 5 years	70	33.3
	6–10 years	82	39.1
	> 10 years	58	27.6

The measurement model was evaluated to ensure the reliability and validity of the constructs before testing the structural relationships. Indicator reliability was assessed using outer loadings, internal consistency reliability using Cronbach's alpha and composite reliability, and convergent validity using the Average Variance Extracted (AVE). All indicators demonstrated outer loadings above 0.70, indicating satisfactory indicator reliability. Composite reliability values for all constructs exceeded the recommended threshold of 0.70, while Cronbach's alpha values also met acceptable reliability standards. Furthermore, AVE values were above 0.50 for all constructs, confirming adequate convergent validity.

Table 2. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
Digital HRM	0.89	0.92	0.61
Employee Engagement	0.91	0.93	0.64
Employee Performance	0.88	0.91	0.59

Discriminant validity was assessed using the Fornell–Larcker criterion, which requires that the square root of AVE for each construct exceed its correlations with other constructs. The results indicate that discriminant validity was established for all constructs.

Table 3. Discriminant Validity (Fornell–Larcker Criterion)

Construct	Digital HRM	Employee Engagement	Employee Performance
Digital HRM	0.78		
Employee Engagement	0.62	0.8	
Employee Performance	0.55	0.67	0.77

After establishing the adequacy of the measurement model, the structural model was evaluated to test the hypothesized relationships. The assessment focused on path coefficients, significance levels, coefficient of determination (R^2), and effect sizes (f^2). Bootstrapping with [5,000] resamples was applied to obtain robust estimates of standard errors and significance values. The results indicate that Digital Human Resource Management has a positive and significant effect on employee performance, supporting Hypothesis 1. Additionally, Digital Human Resource Management was found to have a positive and significant effect on employee engagement, supporting Hypothesis 2. Employee engagement also showed a positive and significant effect on employee performance, supporting Hypothesis 3.

Table 4. Structural Model Results

Hypothesis	Path	β	t-value	p-value	Result
H_1	Digital HRM → Employee Performance	0.32	4.28	<0.001	Supported
H_2	Digital HRM → Employee Engagement	0.49	7.15	<0.001	Supported
H_3	Employee Engagement → Employee Performance	0.41	5.86	<0.001	Supported

The explanatory power of the model was assessed using the coefficient of determination (R^2). The R^2 values indicate that the model explains a moderate to substantial proportion of variance in employee engagement and employee performance.

Table 5. Coefficient of Determination (R^2)

Endogenous Construct	R^2	Interpretation
Employee Engagement	0.24	Moderate
Employee Performance	0.46	Substantial

The mediating role of employee engagement in the relationship between Digital Human Resource Management and employee performance was examined using the bootstrapping procedure. The indirect effect of Digital Human Resource Management on employee performance through employee engagement was found to be positive and statistically significant.

Table 6. Mediation Analysis Results

Path	Indirect Effect (β)	t-value	p-value	Mediation Type
Digital HRM → Engagement → Performance	0.2	4.73	<0.001	Partial Mediation

The results indicate that employee engagement partially mediates the relationship between Digital Human Resource Management and employee performance, suggesting that Digital HRM influences performance both directly and indirectly by enhancing employees' psychological engagement with their work. Overall, the empirical findings provide strong support for the proposed research model. Digital Human Resource Management emerged as a significant predictor of employee performance, both directly and indirectly through employee engagement. These results underscore the importance of considering employee engagement as a key psychological mechanism in understanding how digital HR practices translate into improved performance outcomes.

Table 7. Summary of Hypotheses Testing

Hypotheses	Statement	Result
H_1	DHRM → Employee Performance	Supported
H_2	DHRM → Employee Engagement	Supported
H_3	Employee Engagement → Employee Performance	Supported
H_4	Engagement mediates DHRM–Performance	Supported

4.2 Discussions

This study set out to examine the relationship between Digital Human Resource Management (DHRM) and employee performance, with employee engagement as a mediating mechanism, within the context of organizations operating in Makassar, Indonesia. The findings provide empirical support for the proposed model and contribute to the growing body of literature on digital HR transformation by clarifying how technology-enabled HR practices are translated into individual performance outcomes in an emerging-economy, non-capital setting.

4.2.1 Digital Human Resource Management and Employee Performance

The results indicate that Digital Human Resource Management has a positive and significant effect on employee performance, supporting Hypothesis 1. This finding aligns with Job Demands–Resources (JD–R) theory, which posits that job resources enhance employees' ability to perform their roles effectively by facilitating goal attainment and reducing unnecessary constraints (Bakker & Demerouti, 2007, 2017). In this study, DHRM appears to function as a job resource by improving access to HR information, streamlining administrative processes, and enabling clearer performance expectations and feedback mechanisms, similar to the way digital-intelligent HRM and digital job resources have been shown to support performance in recent studies.

The positive association between DHRM and performance is consistent with empirical research reporting that e HRM and digital HR practices contribute to improved employee and organizational performance by enhancing efficiency, data quality, and decision-making (Thu et al., 2025; Tritisari et al., 2026). Studies on digital HR practices in various sectors show that digitalization of HR processes

can increase productivity and HR performance, especially when systems are integrated with leadership and strategic goals. The present findings extend this literature by confirming that such effects are also observable in a secondary metropolitan context within an emerging economy, where digital HR maturity may vary across organizations, reinforcing the argument that digital HR systems can deliver performance benefits beyond large, capital-centric or highly developed settings when employees perceive these systems as supportive rather than burdensome.

4.2.2 Digital Human Resource Management and Employee Engagement

The results further demonstrate that DHRM positively influences employee engagement, lending support to Hypothesis 2. This finding is aligned with engagement theory, which emphasizes that employees are more likely to become engaged when they experience psychological meaningfulness, safety, and availability in their work roles (Kahn, 1990). Recent work in digital-intelligent HRM contexts also shows that employees' positive perceptions of digital HR change are associated with higher work engagement and proactive behavior (Zhou et al., 2025).

From a JD–R perspective, DHRM serves as a motivational resource that stimulates engagement by reducing administrative friction, enhancing transparency, and enabling employees to focus on value-adding activities, consistent with evidence that digital HR tools can strengthen engagement by balancing digital job demands and resources (Fachrilla, 2025; Scholze & Hecker, 2023). The findings corroborate earlier and recent studies showing that well-designed and user-friendly digital HR systems are associated with higher levels of employee engagement, particularly when they support autonomy, competence, and relatedness needs (Hunitie, 2023; Nurdiana, Widodo, & Rahmawati, 2024). Importantly, this study supports the view that digital HR is not merely a technical infrastructure but also a social and psychological system that shapes employees' experiences of organizational support; in the Makassar context, where organizations may be at different stages of digital HR adoption, the positive relationship suggests that even partial or incremental digitalization can enhance engagement when aligned with employees' needs and work realities.

4.2.3 Employee Engagement and Employee Performance

Consistent with Hypothesis 3, the findings reveal that employee engagement has a positive and significant effect on employee performance. This result is strongly supported by engagement theory, which argues that engaged employees invest higher levels of physical, cognitive, and emotional energy into their work roles, leading to superior performance outcomes (Kahn, 1990). A substantial body of recent research confirms that work engagement positively affects job performance, citizenship behaviors, and adaptive or proactive behaviors, including in contexts characterized by digitalization and HR transformation (Albrecht et al., 2023; Zhou et al., 2025).

The positive engagement–performance relationship observed in this study aligns with empirical evidence documenting engagement as a key predictor of individual performance across sectors and job types (Juyumaya & Torres, 2023; Saks, 2006). Our findings reinforce the robustness of this relationship in a digitalized HR environment, suggesting that engagement remains a critical driver of performance even as work processes and HR systems become increasingly technology-mediated, echoing recent frameworks that link digital job resources, engagement, and task performance (Juyumaya & Torres, 2023; Scholze & Hecker, 2023). This underscores the importance of maintaining a human-centered approach to digital transformation, where engagement is actively nurtured rather than assumed.

4.2.4 The Mediating Role of Employee Engagement

One of the central contributions of this study lies in confirming the mediating role of employee engagement in the relationship between DHRM and employee performance, thereby supporting Hypothesis 4. This finding provides empirical validation for the motivational pathway proposed by JD–R theory, wherein job resources enhance engagement, which in turn leads to improved performance (Bakker & Demerouti, 2017). In this study, DHRM appears to influence performance not only through direct efficiency gains but also by fostering a psychological state that motivates employees to perform at higher levels, consistent with recent evidence that work engagement mediates relationships between

digital HR or high-performance systems and employee outcomes (Hunitie, 2023; Larasandi & Satrya, 2025; Zhou et al., 2025).

This result is in line with research showing that work engagement can serve as a mediator between digital HR practices, HR strategies, or employee experiences and various performance-related outcomes (Fachrilla, 2025; Tritisari et al., 2026). By explicitly testing this mediation model in the Makassar context, the present study extends existing knowledge to a setting that has received limited attention in the international literature, complementing evidence from other emerging economies such as Vietnam and digitally transforming organizations in Asia (Rohayati, 2024; Thu et al., 2025). The finding highlights that investments in digital HR technologies are more likely to yield performance benefits when accompanied by practices that enhance engagement, such as transparent communication, supportive leadership, user-oriented system design, and attention to digital job demands and well-being.

4.2.5 Theoretical and Empirical Implications

Taken together, the findings reinforce the relevance of JD–R theory and engagement theory as integrative frameworks for understanding the outcomes of digital HR transformation. The results suggest that DHRM should be conceptualized not only as a technological innovation but also as a job resource with motivational implications, echoing recent calls to integrate digital HRM, job resources, and engagement within unified models (Nurdiana et al., 2024; Zhang & Chen, 2025). By empirically demonstrating the mediating role of engagement, this study responds to calls in the literature for mechanism-based explanations that move beyond direct-effect models of digital HR and performance (Scholze & Hecker, 2023; Zhou et al., 2025).

Empirically, the study contributes by providing evidence from a regional Indonesian context, thereby enhancing the external validity of DHRM research and complementing prior work conducted in capital cities or more digitally mature environments (Rohayati, 2024; Rostini et al., 2024; Thu et al., 2025). The findings suggest that the human consequences of digital HR practices particularly their effects on engagement and performance are broadly consistent across contexts, while also emphasizing the need to consider local organizational conditions, digital readiness, and job demands–resources configurations when implementing digital HR initiatives (Akbar et al., 2025; Fachrilla, 2025). Overall, the study underscores that the success of digital HR transformation depends as much on its ability to engage employees and balance digital job demands and resources as on its technical sophistication, reinforcing the importance of designing DHRM as both a technological and human system.

5. Conclusions

5.1 Conclusion

This study examined the effect of Digital Human Resource Management (DHRM) on employee performance, with employee engagement as a mediating mechanism, using empirical evidence from organizations in Makassar, Indonesia. The findings demonstrate that DHRM positively influences employee performance both directly and indirectly through employee engagement. These results confirm that digital HR practices are not merely technical or administrative innovations, but also shape employees' psychological connection to their work, which in turn enhances performance outcomes. By integrating Job Demands–Resources (JD–R) theory and engagement theory, this study provides a mechanism-based explanation of how digital HR transformation translates into individual-level performance. DHRM functions as a job resource that fosters engagement by improving access to HR services, feedback, and learning opportunities. Engagement then serves as a motivational pathway through which the benefits of digital HR practices are realized. Collectively, the findings contribute to the growing literature on Digital HRM by highlighting the central role of employee engagement in unlocking the performance potential of digital HR investments, particularly in emerging economy contexts beyond capital cities.

5.2 Research Limitations

Despite its contributions, this study has several limitations that should be acknowledged. First, the research employed a cross-sectional design, which restricts the ability to draw strong causal inferences among the studied variables. While the proposed relationships are grounded in theory and supported by

empirical evidence, longitudinal or experimental designs would provide stronger insights into causal dynamics over time. Second, the study relied on self-reported measures for all constructs, including employee performance. Although self-report instruments are widely used and appropriate in HRM research, they may be subject to common method bias and social desirability effects. Future studies may benefit from incorporating multi-source data, such as supervisor ratings or objective performance indicators, to enhance measurement robustness. Third, the empirical context was limited to organizations located in Makassar, which may constrain the generalizability of the findings to other regions or institutional environments. Organizational digital maturity, leadership practices, and cultural factors may differ across regions, potentially influencing the strength and nature of the observed relationships. Finally, this study treated Digital HRM as a higher-order construct without distinguishing between specific digital HR practices (e.g., digital recruitment, e-learning, digital performance management). While this approach provides a holistic view, it may obscure the differential effects of particular digital HR components on engagement and performance.

5.3 Suggestions and Directions for Future Research

Building on these limitations, several avenues for future research are suggested. First, future studies could adopt longitudinal designs to examine how the impact of Digital HRM on engagement and performance evolves over time, particularly during different phases of digital transformation. Such designs would provide deeper insights into dynamic adjustment processes and sustained performance effects. Second, future research could incorporate multiple data sources to reduce potential common method bias and strengthen empirical validity. Combining employee perceptions with supervisor evaluations or archival performance data would offer a more comprehensive assessment of performance outcomes. Third, comparative studies across different regions, industries, or organizational types would help to assess the contextual boundary conditions of the proposed model. Examining Digital HRM in capital cities versus secondary cities, or in private versus public sector organizations, could reveal important contextual moderators. Fourth, future research may disaggregate Digital HRM into specific practices and examine their differential effects on employee engagement and performance. Such analyses would provide more actionable insights for practitioners regarding which digital HR investments yield the greatest returns. Finally, future studies could extend the model by incorporating additional mediating or moderating variables, such as digital leadership, techno-stress, perceived organizational support, or digital competence, to further refine understanding of the complex mechanisms linking digital HR practices to employee outcomes.

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Author Contributions

MLB contributed to the conceptualization of the study, research design, and overall supervision of the project. MLB, CAP, NP were responsible for data collection and data curation. MLB performed the formal analysis and interpreted the results. MLB drafted the original manuscript, while CAP, NP contributed to reviewing and editing the manuscript. All authors contributed to the revision of the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

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