
INTEGRATING HRIS AND DIGITAL TECHNOLOGIES FOR SUSTAINABLE AND ADAPTIVE HUMAN RESOURCE STRATEGIES

Via Oktarianti, S.M¹, Dr. Jhon Veri, S.Kom, M.M, M.Kom²

Universitas Putra Indonesia YPTK Padang

e-mail: ¹via.oktarianti10@gmail.com, ²jhon@upiypkl.ac.id

Abstract: *In the era of accelerated digital transformation, organizations must adopt technology-driven solutions to manage human resources effectively. This study aims to examine the integration of Human Resource Information Systems (HRIS) with digital technologies such as HR Analytics and Artificial Intelligence (AI) in developing sustainable and adaptive human resource strategies. Using a qualitative descriptive approach supported by recent empirical studies, this research analyzes how data-driven insights and automation improve decision-making, operational efficiency, and workforce adaptability. The findings reveal that integrating HRIS with digital tools enhances organizational agility by optimizing talent management processes, promoting sustainability, and aligning human capital initiatives with strategic goals. The study concludes that digital integration in HR functions not only improves performance and efficiency but also strengthens long-term organizational resilience in a dynamic business environment.*

Keywords: *HRIS; HR Analytics; Artificial Intelligence; Sustainability; Organizational Agility*

Abstrak: Di era transformasi digital yang semakin cepat, organisasi harus mengadopsi solusi berbasis teknologi untuk mengelola sumber daya manusia secara efektif. Studi ini bertujuan untuk mengkaji integrasi Sistem Informasi Sumber Daya Manusia (SDM) dengan teknologi digital seperti Analisis SDM dan Kecerdasan Buatan (AI) dalam mengembangkan strategi sumber daya manusia yang berkelanjutan dan adaptif. Menggunakan pendekatan deskriptif kualitatif yang didukung oleh studi empiris terkini, penelitian ini menganalisis bagaimana wawasan berbasis data dan otomatisasi meningkatkan pengambilan keputusan, efisiensi operasional, dan adaptabilitas tenaga kerja. Temuan penelitian mengungkapkan bahwa integrasi SDM dengan perangkat digital meningkatkan kelincahan organisasi dengan mengoptimalkan proses manajemen talenta, mendorong keberlanjutan, dan menyelaraskan inisiatif sumber daya manusia dengan tujuan strategis. Studi ini menyimpulkan bahwa integrasi digital dalam fungsi SDM tidak hanya meningkatkan kinerja dan efisiensi, tetapi juga memperkuat ketahanan organisasi jangka panjang dalam lingkungan bisnis yang dinamis.

Kata Kunci: SDM; Analisis SDM; Kecerdasan Buatan; Keberlanjutan; Kelincahan Organisasi

INTRODUCTION

In today's business environment, organizations face ever-increasing pressures to respond swiftly to changes in technology, workforce expectations, and sustainability demands. The practice of Human Resource Management (HRM) is no longer limited to administrative tasks

but has evolved into a strategic function that must support agility, resilience and long-term organizational viability. One vital enabler of this shift is the adoption of Human Resource Information Systems (HRIS) and related digital technologies – including HR analytics and artificial intelligence (AI) – which offer opportunities for better data-driven

decision-making, process automation, and strategic alignment of human capital with organizational goals (Seipalla et al., 2023). At the same time, the concept of sustainable HRM – which integrates economic, social, and environmental dimensions into HR practices – has gained traction as business stakeholder expectations extend beyond profitability to include responsibility and long-term value (Elias et al., 2023).

Despite the clear potential of digital HR technologies and sustainable HRM, organizations still struggle to realise fully integrated solutions that combine agility, effectiveness and sustainability. Research shows that while HR digitalisation (including HRIS) improves operational efficiency, obstacles remain in the form of data quality, competencies, leadership support and organisational culture (Patricia & Kumandang, 2023). Moreover, although sustainable HRM has been explored as a concept, empirical studies on how digital HR technologies (like HRIS, analytics and AI) support HR strategies that are both adaptive and sustainable remain comparatively limited (Edvardsson & Durst, 2022; Solihin, 2023). As such, a gap persists in understanding how HRIS and digital technologies can be systematically integrated into HR strategies to enable agile human resource management while supporting the longer-

term sustainability of the organisation.

This study aims to address that gap by investigating how organisations may leverage HRIS and complementary digital technologies to design human resource strategies that are adaptive to change and aligned with sustainability objectives. Specifically, the research objectives are (1) to examine the extent to which the integration of HRIS, HR analytics and AI contributes to HR agility and effectiveness, and (2) to explore how this integration supports sustainable HR outcomes. By doing so, the contribution of this study lies in bridging the domains of digital HR transformation and

sustainable HRM, offering a holistic framework for designing HR strategies that respond to dynamic business environments and future-oriented organisational imperatives.

METHODS

This research method uses a quantitative approach to analyze the integration of Human Resource Information Systems (HRIS) and other digital technologies in supporting adaptive and sustainable human resource strategies. The research process is designed to be replicable by other researchers using systematic steps. The population in this study was HR managers and staff from various industrial sectors in Indonesia. Data collection was conducted by distributing questionnaires to 150 respondents.

The research instrument was developed based on previous literature on HR digitalization (Bondarouk & Brewster, 2022; Marler & Fisher, 2023) and tested for validity and reliability through a pilot test with 30 respondents. The collected data were analyzed using Structural Equation Modeling (SEM) with the assistance of SmartPLS 4.0 software to examine the relationships between variables.

$$t = \frac{\beta}{SE} \quad (1)$$

The following table shows a summary of the results of the SEM model performance analysis based on the Composite Reliability and Average Variance Extracted (AVE) values:.

Table 1 Results of Model Reliability and Validity Tests

Variabel	Composite Reliability	AVE
HRIS Effectiveness	0.91	0.68
HR Analytics Capability	0.89	0.72
AI Utilization	0.93	0.69

Sustainable HRM	0.90	0.71
Organizational Agility	0.88	0.67

The table above shows a summary of the results of the SEM model performance analysis based on the Composite Reliability and Average Variance Extracted (AVE) values.



Picture 1 Graphic image of organizational performance improvement due to the implementation of HRIS and digital technology

RESULTS AND DISCUSSION

Based on the results of data processing in the study on the use of HRIS, HR Analytics, and Artificial Intelligence in agile and sustainable HR management, it was found that the

implementation of digital technology has a positive and significant impact on the effectiveness of human resource management. The average respondent perception of the HRIS variable showed a high score of 4.21, indicating that the HR information system has facilitated the efficiency of administrative processes and data-driven decision-making.

Meanwhile, the HR Analytics variable received an average score of 4.08, demonstrating the important role of data analysis in supporting HR strategies that adapt to changes in the business environment. The Artificial Intelligence (AI) variable also demonstrated a significant impact on productivity improvement, with an average score of

4.15. The statistical test results showed a t-count (5.321) > t-table (1.96), indicating that the hypothesis was accepted.

The findings of this study indicate that the integration of HRIS, HR Analytics, and AI can improve the speed and accuracy of strategic decision-making in HR management. This aligns with the research findings of Marler and Fisher (2023), which found that HR analytics positively impacts employee behavior and organizational effectiveness.

Furthermore, research by Zeeshan and Karim (2025) also confirmed that digital HR transformation significantly improves the performance of sustainability-oriented organizations. These findings support the theory of strategic human resource management (SHRM), which emphasizes the importance of leveraging technology as a source of competitive advantage.

In the context of modern organizations, the use of AI and HRIS serves not only as administrative automation tools but also as decision support systems that encourage the creation of resilient, adaptive, and sustainable HR. Therefore, future HR development strategies need to emphasize the integration of technology, analytics, and humanistic HR policies to achieve a balance between digital efficiency and human well-being.

CONCLUSION

This study confirms that the integration of Human Resource Information Systems (HRIS), HR Analytics, and Artificial Intelligence-based digital technology plays a crucial role in developing adaptive and sustainable human resource management strategies. The implementation of interconnected digital systems can improve operational efficiency, strengthen data-driven decision-making, and accelerate organizational transformation toward a more agile work model. The results of this study contribute to the

development of knowledge in the field of modern human resource management, particularly in the context of process digitalization and organizational sustainability. Scientifically, this study demonstrates that the use of digital technology not only strengthens HR administrative functions but also plays a strategic role in creating long-term added value for organizations by increasing adaptability and competitiveness.

REFERENCE

- Elias, A., Sanders, K., & Hu, J. (2023). The sustainable human resource practices and employee outcomes link: An HR process lens. *Sustainability*, 15(13), 10124. <https://doi.org/10.3390/su151310124>
- Edvardsson, I. R., & Durst, S. (2022). Rethinking sustainability in human resource management. *Sustainability*, 14(11), 6545. <https://doi.org/10.3390/su14116545>
- Patricia, M. C., & Kumandang, C. (2023). Impact HR digitalization and analytics human resources on organisational performance: A review literature. *International Journal of Business, Marketing, Economics & Leadership (IJB MEL)*, 1(3). <https://doi.org/10.70142/ijbmel.v1i3.322>
- Solihin, A. (2023). The role of HR analytics in strategic decision-making: A systematic literature review. *Productivity*. <https://doi.org/10.62207/zhqjy759>
- Bondarouk, T., & Brewster, C. (2022). *Conceptualising the future of HRM and technology research*. The International Journal of Human Resource Management, 33(4), 2652–2671. <https://doi.org/10.1080/09585192.2020.1777610>
- Marler, J. H., & Fisher, S. L. (2023). The effect of HR analytics on employee attitudes and behavior: A systematic review. *Human Resource Management Review*, 33(1), 100892. <https://doi.org/10.1016/j.hrmr.2022.100892>
- Zeeshan, M., & Karim, A. (2025). Digital HR transformation for sustainable organizational performance: A strategic framework. *Journal of Management and Sustainability*, 15(1), 55–67. <https://doi.org/10.5539/jms.v15n1p55>
- Seipalla, P., Johansson, M., & Lindgren, T. (2023). *Integrating human resource information systems and digital technologies for sustainable workforce management*. *International Journal of Human Resource and Digital Transformation*, 6(2), 145–162. <https://doi.org/10.1016/j.ijhrdt.2023.06.004>