

OPTIMIZING THE ROLE OF ARTIFICIAL INTELLIGENCE IN ENHANCING EFFECTIVENESS OF HUMAN RESOURCE MANAGEMENT IN THE HYBRID WORK ERA

Rifki Arohman¹, Abd. Rasyid Syamsuri²

¹Bachelor of Management Program

²Faculty of Economics and Business, Riau University, Pekanbaru, Indonesia

Article Information	Abstract
Received: 20 July 2025 Accepted: 22 July 2025 Published: 23 July 2025	Artificial Intelligence (AI) is emerging as a strategic instrument in enhancing the effectiveness of human resource management (HRM), especially in the increasingly relevant context of hybrid work. This article presents a conceptual literature study aimed at expanding theoretical and practical understanding of the role of AI in supporting HR functions such as recruitment, performance evaluation, talent development, and employee retention. Various national and international literature sources are referenced, including findings from Indonesian organizations that have begun integrating AI technologies into HRM systems. The study shows that the use of AI improves the speed and accuracy of HR decision-making, supports more objective evaluations, and enables personalized development pathways for employees in hybrid settings. However, the analysis also reveals several critical challenges such as digital inequality, resistance to technology, and ethical issues related to data privacy and algorithmic bias. These findings suggest that AI optimization in HRM must be supported by organizational readiness, ethical policies, and a human-centered design to ensure sustainable implementation. Therefore, the role of AI should be seen not as a replacement for human judgment, but as a complementary tool that enhances strategic HRM functions in digital era.
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Correspondence author: rifkiarohman7@gmail.com	

INTRODUCTION

The global transformation of the work landscape driven by technological advancements and the post COVID-19 pandemic period in recent years has accelerated the adoption of hybrid work model in various sectors. This model, which combines the flexibility of remote and in person work, requires new adaptations in organizational governance, especially in the field of human resource management (HRM). In this context, the role of Artificial Intelligence (AI) has become increasingly significant in managing complexity, enhancing efficiency, and optimizing human

potential to align with the dynamics of the digital era. AI offers substantial opportunities in automating administrative processes, optimizing recruitment, improving employee experience, and supporting data driven decision making. HRM is no longer just an administrative function but a strategic domain requiring high responsiveness to external changes. Research by Hadjri and Arifin (2023) indicates that strengthening dynamic capabilities and human capital competencies directly influences innovation performance, which is a critical prerequisite for organizational success in facing global disruptions, including in Indonesia's halal industry. This finding affirms that the adaptive and innovative capabilities of human resources can be enhanced through digital technologies, including AI, as a key enabler in HRM transformation.

The implementation of AI in HRM encompasses a wide range of applications, from machine learning based recruitment systems capable of objectively and quickly screening candidates to chatbots that deliver personalized information services to employees. However, integrating these technologies also demands organizational readiness in terms of structure, culture, and human resource competencies. According to Affandi (2025), the effectiveness of HRM in private higher education institutions remains hindered by weak internal motivation and suboptimal use of information technology. Therefore, the presence of AI not only modernizes processes but also encourages a shift in work culture toward efficiency and data driven autonomy. As dependence on digital systems increases, both the public and private sectors must strengthen HR governance to uphold the principles of transparency, accountability, and participation. Yanuarizki (2017) argued that the implementation of good university governance at Gadjah Mada University has illustrated the importance of integrating technology and HRM in supporting excellent public services. Similarly, Zaenab and Anwar (2015) highlight the same principle in managing human resources in early childhood education institutions, emphasizing the importance of data based planning and evaluation to enhance the professionalism of educators.

In the context of hybrid work, HR management does not only rely on employees' physical presence but on the effectiveness of communication and coordination in digital platforms. Ricardianto and Siregar (2020) noted that the digitalization of national port services requires technologically resilient human resources capable of operating automation systems that form the basis of the smart port concept. This reflects that the success of hybrid work cannot be separated from the readiness of human resources to adopt and adapt to new technologies inclusively. Beyond technical preparedness, strengthening ethics and values must also be considered in optimizing AI technology within HRM. According to Jaelani (2015), prophetic values such as honesty, integrity, and accountability, when integrated into HR training and education, have proven effective in developing innovative, productive, and resilient workers in the face of change. This approach is essential to ensure that AI is not merely viewed as a mechanistic tool but as a medium to reinforce human values in digital work environments.

Another challenge arises in terms of organizational effectiveness. Research by Rosalina (2019) at PT Dirgantara Indonesia found that employee performance is influenced by internal factors such as motivation, individual capabilities, and

discipline, all of which can be measured and analyzed in real time with the help of digital technology. This opens up significant opportunities for implementing AI in performance indicator based evaluation systems, thereby supporting more objective decision making. The application of AI in HRM can also enhance work efficiency. A study by Damayanti (2015) at the Indonesia University of Education revealed that the effectiveness of dynamic records management systems significantly contributes to employee work efficiency. Such systems can be expanded through AI to manage employee data, attendance, and performance reporting in an integrated and automated manner. Finally, it is essential to emphasize that optimizing AI in HRM in the hybrid work era must be conducted comprehensively, including infrastructure, competencies, and organizational values. Sholihah's (2020) research on library ROI in HR development at PT Pos Indonesia found that investment in information systems and knowledge management has long term impacts on employee competency development. Thus, AI should be positioned as a strategic organizational investment in building an adaptive, intelligent, and sustainable work ecosystem.

LITERATURE REVIEW

1. ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) refers to technological systems designed to emulate human cognitive processes such as learning, decision making, natural language understanding, and pattern recognition. In modern organizational contexts, AI has evolved into a strategic tool that automates various work functions and enhances the accuracy of data driven processes. In Indonesia, the increasing trend of organizational digitalization demands the application of AI across various sectors, including human resource management (HRM). AI is utilized to perform repetitive administrative tasks, accelerate real time data based decision making, and automate strategic processes such as recruitment, training, and employee performance management. Hadjri and Arifin (2023) emphasize that an organization's ability to respond to industry dynamics greatly depends on how it leverages dynamic capabilities and human capital competencies supported by digital technologies such as AI. In the halal industry, AI serves as a pillar for analyzing market trends, designing training based on actual needs, and adapting management strategies to the rapidly changing and complex global landscape. Furthermore, AI plays a crucial role in simplifying decision making processes through predictive analytics, which uses historical data to forecast future HR needs and in developing real-time performance appraisal systems based on output rather than physical presence.

Ricardianto and Siregar (2020), in their study on smart ports in Indonesia, highlighted that AI technology directly transforms the competency landscape in the logistics sector. Employees are no longer expected to only master manual skills but must also be capable of adapting to digital systems, utilizing AI for monitoring logistics traffic, and managing data efficiently. In this context, AI has become a transformational force impacting work models, organizational structures, and workplace culture. However, the adoption of AI faces significant challenges.

Damayanti (2015) noted that digital information management remains suboptimal in many public and private institutions due to infrastructure limitations and low levels of digital literacy among human resources. Another challenge lies in resistance to change, notably from older generations who was unfamiliar with using technology in daily tasks. Therefore, AI based digital transformation must be accompanied by effective change communication strategies, digital literacy training, and reliable management information system infrastructure support.

2. HUMAN RESOURCE MANAGEMENT IN THE HYBRID WORK ERA

The hybrid work model, which combines remote working and on site working, has gained popularity in the post COVID-19 era. This model not only transforms working patterns but also requires a shift in human resource management practices, particularly in performance supervision, training, organizational communication, and work life balance. In Indonesia, many organizations, including educational institutions and public sector companies, have adopted the hybrid system to increase flexibility, reduce operational costs, and respond to the lifestyle and preferences of the younger generation. In this context, Yanuarizki (2017) asserts that effective human resource management depends greatly on the implementation of participatory systems, transparent decision making processes, and performance measurement based on results. He emphasizes the importance of good university governance, which can also be applied in other sectors, especially where hybrid work requires performance monitoring based on key performance indicators rather than physical working hours. This is crucial for maintaining objectivity in evaluating employees working from different locations.

Affandi (2025) highlights the importance of individual autonomy and responsibility in flexible work systems. In the context of private medical education, he argues that human resources with strong self motivation and independence are better equipped to adapt within models that involve minimal direct supervision. This implies that hybrid work must be accompanied by management approaches that promote employee trust and empowerment. Rosalina (2019) emphasizes that successful performance management in the hybrid era requires a strong understanding of work discipline, organizational support, and the adaptability of employees to dynamic work systems. Her study at PT Dirgantara Indonesia found that digital evaluation systems using quantitative indicators help organizations assess performance objectively, particularly in indirect work contexts. This is essential for avoiding supervisor bias and ensuring fairness in distributing incentives and promotions. Zaenab and Anwar (2015), in their study of early childhood education institutions, underscore that comprehensive human resource planning is a key determinant of organizational effectiveness, including under the hybrid model. Every phase, from recruitment and training to evaluation which must be conducted systematically and based on data, and the hybrid model requires the digitalization of all these phases to maintain overall effectiveness.

3. OPTIMIZING ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT IN THE HYBRID WORK ERA

The optimization of AI in hybrid HRM can be achieved through the integration of technology into various HR processes, including recruitment, training,

supervision, and performance evaluation. In recruitment, AI can automatically analyze thousands of applicant profiles, screen candidates based on matching algorithms, and recommend individuals with the highest probability of success. AI can also be used in digital interviews to analyze facial expressions and speech patterns, aiming to detect honesty and emotional stability. This technology provides high efficiency in mass recruitment processes and reduces potential human bias. In HR training and development, AI enables adaptive learning systems that tailor training materials based on previous evaluations, learning preferences, and the competencies required by each work unit. Sholihah (2020) demonstrated that ROI based information systems in corporate libraries can be adopted to evaluate AI-based HR training effectiveness. These systems offer quantitative feedback that is useful for designing more targeted HR development strategies.

Damayanti (2015) showed that AI enhanced digital archiving systems can significantly accelerate managerial processes such as employee data processing, training documentation, and administrative evaluations. AI also supports data based performance monitoring through real time dashboards that analyze KPIs, virtual attendance, productivity, and team interactions. This allows managers to promptly intervene with underperforming teams. Nevertheless, AI implementation must be accompanied by ethical responsibility. Jaelani (2015) warns that prophetic values such as honesty, trustworthiness, and accountability must underpin AI usage, to ensure the technology does not become a dehumanizing control tool. AI should serve as an enabler of human empowerment rather than a total replacement, and decision making should continue to involve human judgment in assessing social, cultural, and psychological contexts. Overall, optimizing AI in hybrid HRM requires three key prerequisites: readiness in digital infrastructure, organizational culture alignment, and internal policies that uphold ethics and transparency. Without these elements, AI risks becoming an exclusive and counterproductive system against humanistic values in the workplace. Therefore, AI optimization strategies must be holistic and supported by a roadmap encompassing technological, human, and value based aspects.

RESEARCH METHOD

This study adopts a literature review method, which involves the examination of various written sources relevant to the topic of the role of Artificial Intelligence (AI) in enhancing the effectiveness of human resource management (HRM) in the hybrid work era. This research does not involve the collection of primary data, but rather focuses on gathering information from secondary sources such as scholarly journal articles, books, research reports, and policy documents. The selection of literature was based on relevance, recency, and the credibility of the sources, particularly publications from the past ten years that discuss the application of AI in HR functions such as recruitment, training, performance evaluation, and employee retention. The analysis was conducted descriptively to present concepts, findings, and challenges related to the implementation of AI in HRM. This approach aims to provide a more in depth and comprehensive understanding of how AI can be optimized to support HRM within organizations, especially in the context of hybrid work.

RESULT AND DISCUSSION

The findings of this study reveal that the utilization of Artificial Intelligence (AI) in human resource management (HRM) within Indonesia's hybrid work environment remains sporadic and lacks standardization. The application of AI technology in both public and private organizations often depends on internal policies, the availability of digital infrastructure, and the existing capacity of human resources. This disparity indicates the absence of a formal national framework that encourages the systemic integration of AI into hybrid-based HRM. In many organizations, recruitment systems, performance evaluations, training, and employee retention still rely on manual or semi-digital approaches, even though AI holds considerable potential to automate and personalize all of these processes. Research by Hadjri and Arifin (2023) suggests that organizations with dynamic capabilities in adopting digital technologies, including AI, tend to experience improvements in HR innovation, operational efficiency, and adaptability to shifting work patterns during and after the pandemic.

However, these findings are still limited to specific sectors, such as the halal industry, and have yet to reach labor intensive sectors that are vulnerable to digital exclusion. The uneven implementation of AI in HRM is also documented by Ricardianto and Siregar (2020) in the context of smart ports. They noted that while AI has succeeded in increasing productivity and managing technical human resources at ports, implementation in non-metropolitan areas is still hindered by the lack of integrated cross-sector data systems. This implies that AI, as a strategic tool in hybrid work, is not yet a normative practice in organizations but is mostly adopted by entities with pre-existing technological advantages. Furthermore, Sholihah's (2020) study at PT Pos Indonesia found that investment in information systems, including AI for knowledge management (e.g., internal digital library collections), significantly impacts the effectiveness of human capital development. However, such systems still face cultural resistance, as many organizations have not fully embraced digital automation. This resistance often stems from middle and senior managers who are less familiar with algorithm based decision making. This observation is reinforced by Zaenab and Anwar (2015), who assert that the effectiveness of HRM strongly depends on integrated systems of recruitment, training, and evaluation systems when combined with AI, can accelerate processes and improve workforce planning accuracy.

Further, Rosalina (2019), in her study at PT Dirgantara Indonesia, found that performance indicators such as motivation, discipline, and technical ability can be translated into AI based evaluation systems. This allows for objective and timely performance assessments, particularly in hybrid models where direct supervision is limited. AI can be utilized in these systems to generate real time reports, monitor employee engagement through digital platforms, and detect signs of burnout or declining performance via behavioral analytics. Moreover, AI based HRM increases administrative efficiency. As noted by Damayanti (2015), digital archiving systems supported by AI can reduce document processing time by up to 60%, accelerate decision-making, and enhance operational efficiency. The application of AI in training and development has also shown significant results. Through AI-based

adaptive learning approaches, employee training becomes personalized according to individual needs and performance levels. This is evident in Sholihah's (2020) study, which used corporate library information systems to evaluate ROI in digital competency development. These systems not only improved efficiency but also training accuracy by identifying the most relevant content for specific users.

The transformation brought by AI in Indonesia's hybrid work context also faces regulatory and ethical challenges. To date, there is no national guideline that comprehensively regulates the use of AI in HRM. Although Law No. 27 of 2022 concerning Personal Data Protection has been enacted, its understanding at the operational level remains limited. This raises concerns about potential violations of employee privacy and data misuse, especially within AI systems that monitor digital behavior. Consequently, many researchers and practitioners have called for the development of internal policies that emphasize algorithmic transparency, data security, and human oversight in AI-based decision-making. The digitalization of HRM has introduced a new paradigm in organizational practices, particularly within hybrid work environments. AI is not merely a technical tool, it also redefines how organizations conduct recruitment, performance evaluation, and employee well-being management. In hybrid settings, AI plays a crucial role in bridging communication and coordination gaps that arise due to reduced physical interaction.

Chamorro Premuzic (2020) found that AI enhances recruitment accuracy by reducing cognitive biases often present in manual selection. AI employs data driven algorithms based on historical patterns and competency requirements to assess candidate suitability. This is especially valuable in hybrid work environments where recruitment processes are conducted online and time for candidate evaluation is limited. Predictive models used by AI systems have proven effective in estimating future performance more objectively and efficiently. In the service sector, the implementation of AI in HRM systems has also shown positive impacts on employee retention and productivity. Connelly (2021) noted that AI-powered performance management systems can analyze employee feedback in real-time and provide personalized recommendations, such as additional training, workload adjustments, or reward strategies. This supports the increasing relevance of personalized HRM approaches in hybrid work, where employee experiences are no longer uniform.

Beyond performance evaluation, AI also contributes to job satisfaction through administrative automation. A study by Putra and Sari (2022) in Indonesia's private sector found that AI-based HR chatbots reduced administrative service time by up to 60% and improved access to information regarding employee rights and responsibilities in hybrid work. These chatbots operate around the clock, responding to queries related to leave, salary, work policies, and even sending reminders about administrative deadlines. However, the effectiveness of AI in supporting HRM depends heavily on the quality of data organizations possess. Tursunbayeva et al. (2021) cautioned that many organizations tend to use historical data that fails to reflect social diversity and perpetuates cultural biases, causing AI systems to replicate systemic discrimination. In hybrid work, where non verbal communication and social context are difficult to capture, algorithmic bias can significantly affect fairness in HR decision-making.

AI also supports workload management. For example, Alowibdi et al. (2022) demonstrated how AI systems integrated into hospitals can predict medical staff workload based on patient history, individual preferences, and rotation schedules. This not only reduces fatigue but also improves work life balance whis it is a key concern in hybrid work. Similar models could be adopted across other sectors to develop more humane and data driven scheduling systems. Ethical considerations are also crucial in AI implementation in HR. Floridi and Cowls (2019) stressed that AI systems monitoring employee behavior must be accompanied by clear and accountable privacy policies. They advocate for transparency, fairness, and human oversight in all AI systems to prevent the misuse of technology in coercive or oppressive ways. In hybrid work settings, where work activities are often monitored digitally, the risk of privacy violations increases without strong ethical safeguards.

Employee experience has also been significantly reshaped by AI. AI systems that analyze employee preferences, interests, and working styles can foster personalized and psychologically supportive work environments. In hybrid models, where social interaction is limited, AI can function as a digital bridge between employees and organizations to maintain engagement and loyalty. On the other hand, AI also facilitates merit based decision making. AI driven evaluations can assess employee contributions not only based on attendance, but also on work output, collaborative input, and peer feedback. These systems are designed to reduce subjectivity in promotion and incentive processes, which remain a challenge in conventional HR systems. In terms of training, AI offers adaptive learning models that adjust content based on individual needs and learning styles. Setyowati et al. (2021) reported that companies implementing AI based training systems succeeded in reducing training costs by up to 40% while achieving higher retention rates compared to conventional methods. These systems use performance evaluations and competency needs to design relevant training curricula for each employee.

The optimization of AI in hybrid work is also supported by its integration into collaborative platforms such as Microsoft Teams, Slack, and Notion. Research by Wibowo and Rahman (2023) found that AI embedded in these platforms can automatically generate insights during online discussions, suggest follow up scheduling, and summarize meeting outcomes into automated reports. This enhances work efficiency and accelerates decision making in a team, which is essential in geographically dispersed hybrid work environments. Nevertheless, Widodo (2023) warned that excessive reliance on AI in HRM risks diminishing managers' emotional sensitivity toward employee psychological needs. If AI is used solely as a control mechanism, work relationships may become mechanical, overlooking human aspects. Therefore, AI must be positioned as a collaborative partner, not a substitute for human empathy in managerial processes.

CONCLUSION

The digital transformation triggered by shifts in work models following the pandemic has driven organizations to adapt their human resource management (HRM) systems with more adaptive, flexible, and technology based approaches. Artificial Intelligence (AI), as a key innovation of the Fourth Industrial Revolution, demonstrates significant potential in enhancing HRM effectiveness, particularly

within the hybrid work context that has become the new norm in various sectors in Indonesia. Based on conceptual analysis and literature review, it can be concluded that the use of AI in HRM positively impacts administrative efficiency, recruitment fastly, performance evaluation accuracy, as well as the quality of employee training and retention. However, optimize AI implementation requires not only technological infrastructure but also organizational culture readiness, digital competency among personnel, and ethical and transparent internal regulations.

Partial and administratively focused adoption of AI without integration into the strategic functions of HRM who will only lead to short term efficiency gains. Therefore, a comprehensive approach is necessary, including digital literacy training at all organizational levels, the formulation of strong personal data protection policies, and the reinforcement of AI's role as a partner in value driven and fair decision making. In hybrid work settings, the successful utilization of AI largely depends on an organization's ability to balance the demand for work flexibility with objective and adaptive performance management systems. AI should be leveraged to promote transparency, strengthen employee engagement, and foster a productive and human centered work environment. Thus, optimizing the role of AI in HRM is not solely about digital transformation but also about transforming organizational work culture. This change requires visionary leadership, accountable technology governance, and the courage to innovate continuously. When used wisely and ethically, AI can serve as an accelerator for building a fairer, more efficient, and human centered work system in the hybrid era.

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