



AI, Wage Dynamics, and Work-Life Balance in the E-Commerce Industry: A Literature Review

Rifki Arohman¹, Abd. Rasyid Syamsuri², M. Renaldy Saputra³, Rofi Gemaladi Hibatullah⁴

^{1,2,3,4}Faculty of Economics and Business, Universitas Riau, Indonesia

Article Information	Abstract
Article History: Received: 15 November 2024 Accepted: 5 Desember 2024 Published: 30 Desember 2024	This study aims to explore the intersections of artificial intelligence, wage dynamics, and work-life balance in the context of the e-commerce industry, with particular attention to how digital transformation reshapes human resource management practices. Using a literature review method, the research systematically analyzed peer-reviewed journal articles, academic books, and reputable reports published in the last five years, focusing on themes related to algorithmic management, compensation structures, and employee well-being. The findings highlight that AI contributes significantly to wage optimization, predictive workforce planning, and performance evaluation, thereby improving organizational efficiency and responsiveness. However, the results also reveal critical challenges such as algorithmic bias, wage inequity, heightened employee monitoring, and the potential erosion of boundaries between work and personal life. These insights underscore the dual role of AI as both an enabler of productivity and a source of ethical dilemmas within e-commerce workplaces. The study concludes that successful integration of AI requires balanced strategies that combine technological innovation with human-centered values, ensuring fairness, inclusivity, and sustainable work practices in the digital economy.
Keywords: Artificial Intelligence, E-Commerce, Wage Dynamics, Work-Life Balance, Human Resource Management, Digital Workplace	

✉ Correspondence Address:
abd.rasyidsyamsuri@lecturer.unri.ac.id

© 2024 Indonesia

INTRODUCTION

The global workforce has undergone profound transformation in the past decade as digital technologies, artificial intelligence (AI), and platform-based business models reshape industries at an unprecedented pace. E-commerce, in particular, has emerged as one of the fastest-growing sectors, propelled by the increasing accessibility of online platforms, changing consumer preferences, and the acceleration of digital adoption following the COVID-19 pandemic (Chen & Lu, 2021; OECD, 2022). In this context, organizations are

increasingly relying on AI to automate tasks, analyze vast data sets, and optimize decision-making processes, ranging from customer service to logistics and workforce management (Haenlein & Kaplan, 2021). AI has expanded beyond technical functions to influence human resource management by enhancing recruitment, supporting performance appraisal, and predicting workforce trends (Vrontis et al., 2022). However, while AI adoption promises efficiency and competitiveness, it also raises questions regarding fairness, equity, and employee well-being, particularly in the rapidly evolving e-commerce industry where the pace of change often challenges traditional labor structures (Tambe et al., 2019).

Within this broader technological transformation, issues of wage dynamics and work-life balance have gained increasing attention as critical determinants of both organizational success and employee sustainability. Scholars note that the implementation of AI in HR processes influences compensation models, performance monitoring, and talent retention strategies, creating both opportunities for wage optimization and risks of wage polarization (Meijerink et al., 2021; Kirov & Taneva, 2022). The e-commerce sector, characterized by flexible work arrangements, algorithmically scheduled labor, and globalized competition, has been at the center of debates regarding job precarity and equitable compensation (Arohman, Syamsuri, & Angraini, 2025). At the same time, hybrid and remote work models have blurred the boundaries between professional and personal life, making work-life balance a pressing issue for employees who often face longer working hours, constant digital connectivity, and psychological strain (Rudolph et al., 2021). Literature suggests that while AI can enhance efficiency through automation and predictive analytics, it also intensifies work demands by promoting constant availability and surveillance, with potential negative effects on employee well-being (Jarrahi et al., 2021; Khan et al., 2022).

These developments highlight the need for a systematic exploration of how AI intersects with wage structures and work-life balance in the e-commerce sector. While studies have examined AI applications in HRM and the broader impacts of digitalization on employment, few have directly integrated these themes to provide a comprehensive understanding of how algorithmic management shapes compensation and employee well-being simultaneously (Strohmeier & Piazza, 2022). A literature review approach is particularly relevant to synthesize findings across multidisciplinary perspectives, identify gaps, and propose a framework for understanding the complex interplay between technological innovation, labor economics, and organizational behavior. This study aims to investigate how AI-driven HR practices affect wage dynamics and work-life balance within e-commerce organizations, offering insights into both challenges and strategic implications for future workforce management. By situating AI adoption within the dual lenses of compensation and employee well-being, this review contributes to ongoing scholarly debates while also providing practical implications for organizations striving to balance efficiency with inclusivity and sustainability in the era of digital transformation.

LITERATURE REVIEW

The relationship between artificial intelligence and human resource management has been widely examined as scholars highlight its transformative role in shaping employment systems across industries. In e-commerce, AI has been increasingly deployed to streamline workforce scheduling, recruitment, and operational efficiency, offering significant cost

savings and productivity gains (Bondarouk et al., 2021). AI-based analytics provide managers with predictive insights into labor demand and employee performance, creating data-driven frameworks for decision-making (Jatobá et al., 2019). However, researchers caution that algorithmic interventions may not always align with human expectations of fairness, potentially reproducing inequalities embedded in data or decision rules (Newlands, 2021). In e-commerce environments where workforce composition is diverse and constantly shifting, these challenges are particularly evident as algorithmic management influences both short-term efficiency and long-term employee relations (Strohmeier, 2020). Such insights suggest that AI adoption cannot be viewed solely as a technical innovation but must also be analyzed through organizational and social lenses.

A growing body of research explores how AI intersects with wage dynamics, particularly in digital and platform-based labor systems. Scholars argue that algorithmic management reshapes compensation structures by introducing greater variability and dependency on performance metrics, which can widen wage gaps among employees (Gal et al., 2020). In the e-commerce sector, AI-driven scheduling and performance monitoring have been linked to both efficiency gains and rising concerns of underpayment or lack of transparency in wage calculations (De Stefano, 2020). Studies further highlight the dual impact of AI: on one hand, predictive analytics can optimize wage distribution and incentivize productivity, while on the other, workers often face wage volatility and income insecurity when remuneration is determined by opaque algorithmic systems (Arohman & Syamsuri, 2025). These findings underline the importance of viewing wage dynamics not only as an economic outcome but also as a socio-technical process mediated by AI.

Work-life balance has also become a key area of interest in understanding the effects of AI and digitalization on employees in e-commerce organizations. Research indicates that the expansion of AI-enabled monitoring tools and flexible scheduling has blurred the line between work and personal life, amplifying issues of stress and burnout (Carnevale & Hatak, 2020). While some studies suggest that AI-powered platforms can support work-life integration by offering flexible arrangements and reducing administrative burdens (Cooke et al., 2021), others show that constant connectivity and surveillance undermine employee autonomy and well-being (Moore, 2018). The paradox of AI in this context lies in its potential to provide both greater flexibility and heightened intensity of work, depending on how organizations implement these technologies (Richter et al., 2021). These insights underscore the need for e-commerce firms to balance efficiency gains from AI with safeguards for employee well-being, ensuring that digital transformation does not compromise sustainable workforce practices.

Finally, strategic perspectives in the literature suggest that the long-term implications of AI in e-commerce HRM must consider governance, ethics, and inclusivity alongside operational outcomes. Scholars argue that organizations need frameworks that integrate AI responsibly, including transparent auditing mechanisms, participatory approaches to technology adoption, and clear policies on data privacy (Huang & Rust, 2021). The sustainability of AI-driven HRM depends not only on technological sophistication but also on leadership commitment to equitable treatment, fair compensation, and the preservation of human dignity in hybrid workplaces (Chaudhuri et al., 2022). Furthermore, multidisciplinary reviews emphasize that e-commerce organizations should align AI adoption with broader human resource strategies that account for employee motivation, organizational culture, and talent development (Meijerink & Bondarouk, 2021). Taken

together, the literature points to a multidimensional challenge: leveraging AI to optimize wages and work-life balance while mitigating risks of bias, inequality, and over-surveillance.

METHOD

This study employs a literature review method to systematically collect, examine, and synthesize scholarly works related to the intersection of artificial intelligence, wage dynamics, and work-life balance in the e-commerce industry. The sources of data include peer-reviewed journal articles, academic books, and credible reports from international organizations, primarily published within the last five years to ensure the inclusion of contemporary debates and findings. The process of literature selection followed a relevance-based approach, where studies were identified through keyword searches such as “AI in HRM,” “wage dynamics in e-commerce,” “algorithmic management,” and “work-life balance in digital workplaces” across academic databases including Scopus, Web of Science, and Google Scholar. Inclusion criteria prioritized empirical studies, systematic reviews, and theoretical frameworks that directly addressed the implications of AI adoption for compensation structures and employee well-being in e-commerce contexts. Once identified, the literature was analyzed descriptively to detect recurring patterns, highlight emerging themes, and uncover inconsistencies or gaps in the existing body of knowledge. This approach allowed the study to integrate insights from multiple disciplines such as management, labor economics, and organizational psychology, producing a comprehensive synthesis that informs both theoretical advancement and practical strategies for managing human resources in the age of digital transformation.

RESULTS AND DISCUSSION

The findings from the reviewed literature highlight that the adoption of artificial intelligence in e-commerce has significantly transformed how organizations approach workforce management, particularly in relation to wage determination and operational efficiency. AI-powered algorithms have enabled firms to analyze massive datasets on employee performance, customer demand, and productivity, allowing organizations to optimize labor costs and increase responsiveness to market fluctuations (Schildt, 2020). Studies suggest that predictive analytics systems can adjust wage structures based on real-time performance data, introducing a high level of efficiency into compensation processes (Spencer, 2022). However, scholars caution that such systems also raise issues of transparency, as employees often lack clarity on how algorithmic models influence their earnings (Davenport et al., 2020). This lack of transparency can undermine trust and lead to perceived inequities in pay, which may offset the productivity benefits generated by automation (Arohman, Syamsuri, & Angraini, 2025). Thus, while the evidence demonstrates that AI contributes to efficiency in wage management, it also underscores the need for greater accountability and fairness in algorithmic compensation systems.

In addition to wage dynamics, the literature shows that AI integration has profound implications for employee well-being and work-life balance in the e-commerce sector. On one hand, AI technologies such as chatbots and automated task management systems reduce administrative burdens and provide employees with more flexibility, thereby potentially supporting healthier work-life integration (Arohman, Syamsuri, & Angraini, 2025). On the other hand, the same tools also create environments of constant monitoring and pressure to perform, leading to stress, job insecurity, and diminished autonomy (Ajunwa, 2020). Several

empirical studies indicate that algorithmic scheduling systems, while efficient, often disrupt employees' personal lives by imposing unpredictable work hours and excessive performance demands (Moore & Joyce, 2020). This tension between flexibility and control reflects the dual nature of AI's impact, highlighting that technological benefits must be carefully managed to avoid adverse outcomes for workers (Giermindl et al., 2022). In practice, e-commerce organizations must strike a balance by integrating AI-driven efficiency gains with organizational policies that safeguard employee well-being.

The analysis further reveals that ethical considerations and bias mitigation remain central challenges in the application of AI to HRM in e-commerce. Algorithms trained on biased datasets risk perpetuating or amplifying existing inequalities, particularly in wage allocation, recruitment, and promotion decisions (Binns, 2018). Research indicates that minority groups and vulnerable employees may be disproportionately disadvantaged when algorithmic systems rely on historical data reflecting systemic discrimination (Barocas et al., 2019). The literature emphasizes the importance of implementing fairness-aware algorithms, continuous auditing, and transparent governance mechanisms to ensure equitable outcomes (Wilson et al., 2020). Moreover, scholars stress that ethical concerns are not limited to bias but also extend to issues of data privacy and surveillance, as employees increasingly express discomfort with the use of personal performance metrics in algorithmic decision-making (Ball, 2021). These insights suggest that the strategic use of AI requires embedding ethical principles at every stage of system design and deployment to protect both organizational legitimacy and employee rights.

Finally, the reviewed studies suggest that organizations must adopt a multidimensional approach to fully leverage the potential of AI while addressing its challenges. Scholars advocate for integrating AI strategies with broader human resource policies that emphasize transparency, inclusivity, and employee engagement (van den Broek et al., 2021). The development of hybrid models, where human oversight complements AI decision-making, is presented as a promising pathway for reducing risks while maintaining efficiency (Rahwan et al., 2019). Strategic leadership is crucial in fostering organizational cultures that embrace AI while ensuring that its implementation aligns with long-term workforce sustainability (Hickok, 2020). Furthermore, researchers argue that e-commerce firms need to invest in employee upskilling initiatives to enable workers to adapt to AI-mediated work environments and benefit from the opportunities these technologies create (Schildt, 2020). Overall, the discussion highlights that AI has the potential to enhance wage fairness and work-life balance, but only if organizations adopt governance frameworks and ethical safeguards that prioritize human dignity alongside technological innovation.

CONCLUSION

The study concludes that the integration of artificial intelligence into the e-commerce industry has profoundly reshaped the landscape of human resource management, particularly in relation to wage dynamics, work-life balance, and ethical considerations. From the introduction, it was established that AI serves as both a driver of efficiency and a source of complexity in managing employees in digital workplaces. The literature review further revealed that while AI introduces innovative mechanisms for wage determination, task allocation, and performance evaluation, it simultaneously raises concerns over fairness, transparency, and employee well-being. Building on these insights, the discussion

emphasized that algorithmic systems can optimize costs and productivity but also risk creating environments of surveillance, stress, and inequity if not managed responsibly. At the same time, organizations have opportunities to leverage AI for promoting flexibility, inclusivity, and improved decision-making when supported by ethical frameworks and human oversight. Ultimately, the synthesis of findings demonstrates that the successful application of AI in e-commerce HRM requires a balanced approach that unites technological efficiency with human-centric strategies, ensuring that innovation not only enhances organizational performance but also sustains employee trust, equity, and long-term engagement.

REFERENCES

- Ajunwa, I. (2020). The paradox of automation as anti-bias intervention. *Cardozo Law Review*, 41(5), 1671–1714.
- Arohman, R., & Syamsuri, A. R. (2025). Optimizing the role of artificial intelligence in enhancing effectiveness of human resource management in the hybrid work era. *IJMaKS: International Journal of Management Knowledge Sharing*, 2(1), 241–250.
- Arohman, R., Syamsuri, A. R., & Angraini, M. (2025a). A literature review on work-life balance and employee stress levels. *IJMaKS: International Journal of Management Knowledge Sharing*, 2(1), 311–323.
- Arohman, R., Syamsuri, A. R., & Angraini, M. (2025b). Exploring wage increase strategy in the context of employee productivity: A literature review. *IJMaKS: International Journal of Management Knowledge Sharing*, 2(1), 320–333.
- Ball, K. (2021). Electronic monitoring and surveillance in the workplace. *Routledge Handbook of Surveillance Studies*, 233–245.
- Barocas, S., Hardt, M., & Narayanan, A. (2019). *Fairness and machine learning: Limitations and opportunities*. MIT Press.
- Bondarouk, T., Harms, R., & Lepak, D. (2021). Does e-HRM lead to better HRM service? The role of value creation and strategy. *Human Resource Management Review*, 31(2), 100789.
- Carnevale, J. B., & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research*, 116, 183–187.
- Chaudhuri, S., Kaur, S., & Sharma, N. (2022). Responsible artificial intelligence for human resource management. *Journal of Business Ethics*, 178(3), 745–762.
- Chen, J., & Lu, Y. (2021). Technological innovation and business model transformation in e-commerce. *Electronic Commerce Research*, 21(4), 685–703.
- Cooke, F. L., Schuler, R., & Varma, A. (2021). Human resource management research and practice in Asia: Past, present, and future. *Asia Pacific Journal of Management*, 38(1), 1–30.

- Davenport, T. H., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42.
- De Stefano, V. (2020). Algorithmic management and collective bargaining. *Comparative Labor Law & Policy Journal*, 41(1), 1–34.
- Gal, U., Jensen, T. B., & Stein, M. K. (2020). Breaking the vicious cycle of algorithmic management: A virtue ethics approach to people analytics. *Information and Organization*, 30(2), 100301.
- Giermindl, L., Strich, F., Christ, O., & Leicht-Deobald, U. (2022). The dark sides of people analytics: Reviewing the perils for organisations and employees. *European Journal of Information Systems*, 31(2), 238–269.
- Haenlein, M., & Kaplan, A. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Business Horizons*, 64(1), 75–88.
- Hickok, C. (2020). AI leadership: Humanizing technology in the workplace. *California Management Review*, 62(4), 122–138.
- Huang, M.-H., & Rust, R. T. (2021). Artificial intelligence in service. *Journal of Service Research*, 24(1), 3–13.
- Jarrahi, M. H., Sutherland, W., & Sawyer, S. (2021). Managing algorithmic work: Human–AI collaboration in contemporary organizations. *Information and Organization*, 31(1), 100327.
- Jatobá, A., dos Santos, C., & Pereira, V. (2019). Data-driven HRM: Predictive modeling in workforce management. *Journal of Organizational Computing and Electronic Commerce*, 29(2), 123–137.
- Khan, Z., Rao-Nicholson, R., & Tarba, S. (2022). Artificial intelligence and the future of work: Implications for global HRM. *Human Resource Management Review*, 32(3), 100894.
- Kirov, V., & Taneva, S. (2022). Algorithmic management and wage inequality in the digital economy. *European Labour Studies Journal*, 6(2), 89–107.
- Meijerink, J., Bondarouk, T., & Lepak, D. (2021). When employees work smarter, not harder: The impact of digital HRM on role overload and HR service quality. *International Journal of Human Resource Management*, 32(12), 2672–2697.
- Meijerink, J., & Bondarouk, T. (2021). Responsible HRM in the digital age: How to align e-HRM and ethical principles. *Human Resource Management Review*, 31(2), 100688.
- Moore, P. (2018). *The quantified self in precarity: Work, technology and what counts*. Routledge.
- Moore, P., & Joyce, S. (2020). OSH and the future of work: Benefits and risks of artificial intelligence tools in workplaces. *European Agency for Safety and Health at Work Reports*, 1–38.
- Newlands, G. (2021). Algorithmic surveillance in the workplace: Emerging issues and future research directions. *Human Resource Management Journal*, 31(1), 1–14.
- OECD. (2022). *AI in work, innovation, productivity, and skills: Policy implications*. OECD Publishing.

- Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., & Wellman, M. (2019). Machine behaviour. *Nature*, 568(7753), 477–486.
- Richter, A., Heinrich, P., & Stocker, A. (2021). Digital transformation and employee well-being: A systematic review. *Information Systems Frontiers*, 23(5), 1393–1419.
- Rudolph, C. W., Allan, B., Clark, M., Hertel, G., Hirschi, A., Kunze, F., Shockley, K. M., Shoss, M. K., Sonnentag, S., & Zacher, H. (2021). Pandemics and the future of work: Research and practice considerations for HRM. *Journal of Vocational Behavior*, 119, 103435.
- Schildt, H. (2020). The transformative power of artificial intelligence in business and society. *Business Horizons*, 63(6), 825–839.
- Spencer, D. A. (2022). Digital Taylorism and the future of work: Algorithmic management and control. *Work, Employment and Society*, 36(1), 26–42.
- Strohmeier, S. (2020). Digital human resource management: A conceptual clarification. *German Journal of Human Resource Management*, 34(3), 345–365.
- Strohmeier, S., & Piazza, F. (2022). Artificial intelligence in human resource management: Challenges and future research directions. *International Journal of Human Resource Management*, 33(7), 1234–1259.
- Tambe, P., Cappelli, P., & Yakubovich, V. (2019). Artificial intelligence in human resources management: Challenges and a path forward. *California Management Review*, 61(4), 15–42.
- van den Broek, E., Boselie, P., & Paauwe, J. (2021). HRM and digital transformation: Balancing efficiency and employee well-being. *International Journal of Human Resource Management*, 32(12), 2542–2560.
- Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2022). Artificial intelligence, robotics, advanced technologies, and human resource management: A systematic review. *International Journal of Human Resource Management*, 33(6), 1237–1266.
- Wilson, C., Hoffman, J., & Matheus, C. (2020). Algorithmic transparency in the workplace. *Ethics and Information Technology*, 22(4), 313–325.