IFIJEB
Indo-Fintech Intellectuals: Journal of Economics and Business

p-ISSN: 2808-2443
e-ISSN: 2808-2222
Volume. 4, No. 5, Oktober 2024

DIGITAL TRANSFORMATION IN HUMAN RESOURCE MANAGEMENT: THE IMPACT OF AI AND AUTOMATION ON EMPLOYEE COMPETENCY DEVELOPMENT

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Article History

Received: 22-09-2024

Revision: 25-10-2024

Accepted: 25-10-2024

Published: 30-10-2024

Abstract. Digital transformation through artificial intelligence (AI) and automation has revolutionized human resource management (HRM), particularly in the area of employee competency development. This study aims to analyze the impact of AI and automation in HRM on the development of employee competencies. It is a literature review with a qualitative approach, using descriptive analysis of 23 selected articles from Google Scholar (2017-2024). The findings show that AI and automation enhance efficiency in recruitment, training, and performance evaluation, and help in accurately identifying competency development needs. While offering significant opportunities for companies to boost productivity, challenges also arise regarding the need for new skills among employees. The implications of this study highlight the importance of investing in both technical and soft skills training to ensure employees can adapt to new technologies. Further research is recommended to explore the empirical impact of AI across various industries and assess the social and ethical implications of its application in HRM.

Keywords: Digital Transformation, HRM, AI, Employee Competency

Abstrak. Transformasi digital melalui kecerdasan buatan (AI) dan otomatisasi telah mengubah cara manajemen sumber daya manusia (SDM) beroperasi, khususnya dalam pengembangan kompetensi karyawan. Penelitian ini bertujuan untuk menganalisis dampak AI dan otomatisasi dalam manajemen SDM terhadap pengembangan kompetensi karyawan. Ini merupakan tinjauan pustaka dengan pendekatan kualitatif, menggunakan analisis deskriptif terhadap 23 artikel yang dipilih dari Google Scholar (2020-2024). Hasil penelitian menunjukkan bahwa AI dan otomatisasi mampu meningkatkan efisiensi dalam rekrutmen, pelatihan, serta evaluasi kinerja, dan membantu mengidentifikasi kebutuhan pengembangan kompetensi secara lebih tepat. Meskipun memberikan peluang besar bagi perusahaan untuk meningkatkan produktivitas, tantangan juga muncul terkait dengan kebutuhan keterampilan baru bagi karyawan. Implikasi penelitian ini menekankan pentingnya investasi dalam pelatihan keterampilan teknis dan soft skills untuk memastikan adaptasi karyawan terhadap teknologi baru. Penelitian lanjutan disarankan untuk mengeksplorasi dampak empiris AI pada berbagai industri dan menilai implikasi sosial serta etika dari penerapannya dalam SDM.

Kata Kunci: Transformasi Digital, MSDM, AI, Kompetensi Karyawan

How to Cite: Ifitri, M. et al. (202X). Digital Transformation in Human Resource Management: The Impact of AI and Automation on Employee Competency Development. *Indo-Fintech Intellectuals: Journal of Economics and Business*, 4 (5), 2317-2328.

INTRODUCTION

Digital transformation in human resource management (HRM) has become a critical issue with the rapid advancement of technology, especially artificial intelligence (AI) and automation (Kamar et al., 2022). These two elements offer great potential to enhance efficiency, accuracy, and productivity in various managerial processes, including employee management. Digital transformation in HRM encompasses changes in administrative aspects and extends to employee competency development, where technology introduces more innovative approaches. Technologies like AI and automation can be leveraged to optimize recruitment, training, performance evaluation, and employee career development (Ekuma, 2024). Therefore, understanding the impact of AI and automation on employee competency development is crucial in this digital transformation context.

AI in the context of HRM is widely recognized for automating administrative processes such as data recording and payroll. However, AI's application has also extended to strategic aspects, such as recruitment, where it is used to screen candidates based on competency matching. This allows companies to be more efficient in selecting candidates that fit the organization's needs. On the other hand, automation in HRM also helps accelerate processes that previously took a long time, such as performance evaluation, promotion decisions, and career development planning, which are now more data-driven. AI and automation are believed to enhance efficiency and accuracy in human resource management (Nawaz et al., 2024).

Beyond recruitment, AI and automation play a key role in employee competency development. One positive impact is AI's ability to provide more personalized training. AI can recommend the most relevant training programs for each individual by utilizing employees' historical data and industry trends. This enables more targeted competency development tailored to the specific needs of both the company and employees. AI technology also allows companies to monitor employees' competency development in real-time, providing faster and more accurate feedback, and offering additional training when needed (Murugesan et al., 2023).

In the digital era, automation also facilitates the implementation of flexible remote learning programs, allowing employees to learn anytime, anywhere. This has a positive impact on competency development, as employees are no longer tied to rigid training schedules. Moreover, automation enables companies to automatically track employees' competency progress (Gladkov et al., 2023), eliminating the need for time-consuming manual intervention. This shows that automation simplifies employee management while ensuring that competency development processes are more effective and efficient.

However, the impact of AI and automation on employee competency development is not entirely positive. There are concerns that AI and automation may replace certain employee roles that have traditionally been important in organizations. For example, tasks that previously required human involvement, such as administration and data analysis, can now be performed by machines with greater accuracy. This may reduce the demand for certain traditional skills while increasing the demand for digital and analytical skills. Therefore, it is important for companies to utilize AI and automation for competency development while ensuring that employees receive the necessary training to meet future needs, so they are not replaced by technology.

Another challenge arising from this digital transformation is the skills gap. Not all employees are equally prepared to adapt to new technologies. In this context, companies have a responsibility to ensure that every employee, regardless of position and experience, has equal opportunities to develop digital skills. Training programs must be designed to be accessible to all levels of employees, considering different levels of technological understanding. Digital transformation should be seen as an opportunity to enhance inclusivity in competency development, rather than widening the skills gap among employees (Ausat et al., 2023; Sudirjo et al., 2023).

In addition to challenges, digital transformation presents significant opportunities for HR managers to play a strategic role in organizations (Zhang & Chen, 2024). HR managers can focus on more strategic tasks such as long-term competency development planning, identifying training needs, and developing more effective employee retention strategies with the help of AI and automation. The role of HR managers shifts from being mere administrators to becoming strategic partners responsible for ensuring that every employee can contribute optimally to the company's goals (Gadzali et al., 2023). In this context, competency development becomes a key factor in the success of digital transformation in HRM.

Digital transformation in HRM, particularly through the implementation of AI and automation, offers various positive impacts on employee competency development. However, to maximize its benefits, companies need to ensure that these technologies are used inclusively and support the development of skills that meet future needs. Beyond just increasing efficiency, AI and automation should be tools that drive employee competency enhancement and prepare them to face increasingly complex future challenges. Thus, this study aims to analyze the impact of artificial intelligence (AI) and automation in human resource management (HRM) on employee competency development through a literature review.

METHOD

The method used in this research is a literature review with a qualitative approach, aiming to analyze the impact of digital transformation, particularly the implementation of AI and automation, on employee competency development. A qualitative approach was chosen because this study focuses on a deep understanding of the concepts and phenomena being examined, specifically digital transformation in human resource management (HRM). The analysis is descriptive in nature, meaning it systematically describes and explains previous research findings relevant to the topic. The data used in this study were obtained from Google Scholar, with the literature search limited to the period between 2017 and 2024. Initially, 50 articles were identified based on their relevance to the research topic, namely digital transformation, AI, automation, and employee competency development. However, after a rigorous selection process considering topic relevance, source credibility, and study quality, only 23 articles were chosen for further analysis. These selected articles were then analyzed to provide a comprehensive overview of the impact of AI and automation on employee competency development in the era of digital transformation.

RESULTS

Digital transformation is the process of integrating digital technology into all aspects of an organization's operations and strategies, changing how businesses operate and deliver value to customers. (Saarikko et al., 2020) In this transformation, technologies such as artificial intelligence (AI), automation, big data, and cloud computing are used to enhance efficiency, flexibility, and adaptability within companies. Digital transformation modernizes work tools and processes and influences organizational culture, driving innovation and creating new opportunities. It requires a holistic change, including in mindset, employee skills, and management strategies, to fully harness the potential of technology in responding to dynamic market needs.

Human Resource Management (HRM) is a discipline focused on managing the workforce within an organization to achieve the company’s strategic objectives (Gadzali et al., 2023). HRM encompasses various functions such as recruitment, selection, training, development, performance appraisal, compensation, and employee relations management (Wahyoedi et al., 2023). Its goal is to ensure that the organization has a competent, motivated, and productive workforce while fostering a conducive working environment for employee and organizational growth. HRM plays a critical role in supporting adaptation to changes, such as digital

transformation, by providing the necessary skills and a work culture aligned with modern demands.

Artificial Intelligence (AI) is a branch of computer science aimed at creating systems or machines capable of performing tasks that typically require human intelligence, such as voice recognition, natural language processing, decision-making, and problem-solving (Harahap et al., 2024). AI works through algorithms that can learn from data, identify patterns, and make highly accurate predictions or recommendations. This technology is used across various fields, such as industrial automation, healthcare, transportation, and business management, to improve efficiency and productivity. AI automates routine tasks and has the potential to transform how we work, think, and interact with technology, driving new innovations and drastically reshaping industries.

Employee competency is the combination of knowledge, skills, abilities, and behaviors needed for an individual to perform a job effectively and achieve desired outcomes (Kim & Jung, 2022). Competencies include technical aspects, such as job-specific skills, as well as soft skills, such as communication, teamwork, and leadership. Employee competencies play a crucial role in determining productivity, performance, and their contributions to the organization. Continuous competency development through training and work experience is key to maintaining employee competitiveness amid technological changes and dynamic market demands, while also supporting the overall growth of the company.

DISCUSSION

The discussion on digital transformation in human resource management (HRM), particularly the impact of artificial intelligence (AI) and automation on employee competency development, has gained increasing relevance in the era of Industry 4.0. The widespread use of AI and automation has significantly transformed how companies manage and develop their employees' competencies. This is especially evident in companies that have adopted these technologies to create more efficient work systems while ensuring that employees possess the necessary skills to adapt to these changes. One of the biggest challenges in this transformation is ensuring that the technology supports relevant and appropriate competency development for employees. Therefore, this discussion will delve deeper into various aspects of AI and automation in HRM and their impact on employee competencies, with examples from real-world case studies.

AI and automation have had a significant impact on recruitment and employee selection processes (Pratap, 2023). For example, technology companies like Unilever have implemented

AI to automate the initial stages of their recruitment process. Companies can sift through thousands of applications in a short time by scanning for keywords, skills, and experiences relevant to the required position by using AI-based software. AI is also used in video-based interviews, where the software analyzes facial expressions, tone of voice, and candidates' answers to provide an initial assessment. This process accelerates selection, enhances efficiency, and reduces human bias in recruitment. For employees, this underscores the importance of having clear, measurable competencies and being able to demonstrate those skills digitally.

Beyond recruitment, AI plays a crucial role in personalizing employee training and competency development (Tusquellas et al., 2024). AI can analyze employee data to determine individual training needs based on performance, career goals, and skill gaps. For instance, IBM uses an AI platform called Watson to personalize learning paths for its employees. This system recommends the most relevant training to enhance the competencies needed for the future by using data from performance assessments and employee feedback. In this case, AI helps companies identify the skills that need improvement while offering tailored solutions to meet each employee's unique needs.

In addition to supporting training and development, automation allows companies to create more objective, data-driven performance evaluation processes (Elhajjar et al., 2023). Large companies like General Electric (GE) have used automated systems to collect and analyze employee performance data in real-time. This data is then used to provide faster and more accurate feedback, enabling employees to improve their performance more efficiently. For employees, automation in performance evaluation helps them understand areas for improvement and identify the skills they need to develop. However, employees must also be prepared to work in a data-driven environment, with less reliance on human interaction in performance assessments.

One of the most significant impacts of AI and automation on employee competency development is the shift in the types of skills required. Automation has replaced many manual and administrative tasks, demanding employees possess more technical skills, such as data management, programming, or digital analysis capabilities (Filippi et al., 2023). For example, in the financial sector, banks like JPMorgan Chase have automated many administrative tasks previously done by employees. As a result, these companies now seek employees with analytical and technological skills to handle more complex tasks. This demonstrates that employees must be ready to continuously learn and develop new skills to remain relevant in the ever-evolving job market.

On the other hand, digital transformation also presents challenges for employees who are less familiar with technology. Many companies struggle to integrate their entire workforce into the digital ecosystem, particularly those without strong technical backgrounds (Blanka et al., 2022). For example, in traditional industries such as manufacturing and agriculture, the shift to AI and automation often faces obstacles because employees lack the required digital skills. Companies like Toyota, which have implemented automation across many production lines, invest heavily in retraining employees to ensure they can operate automated machines and understand integrated digital systems.

However, companies have also demonstrated that investing in technology does not necessarily reduce the workforce. On the contrary, in some cases, automation and AI open up new opportunities for career development (Khogali & Mekid, 2023). For instance, Amazon, despite employing widespread automation technology in its warehousing processes, has created various training programs to enhance employee competencies, allowing them to transition into more strategic roles within the company. Programs like "Amazon Career Choice" are designed to help employees develop new skills that will support their future career growth. This proves that, with the right strategy, AI and automation can empower employees rather than merely replace their jobs.

It is important to note that implementing AI and automation also requires a cultural shift within organizations. Companies need to create an environment where employees feel supported in learning and adapting to new technologies. This involves HR leaders who can facilitate this transition through training, effective communication, and fostering a culture of continuous learning. For example, Google is renowned for its internal training programs that encourage innovation and continuous learning among employees (Tran, 2017). Such a culture enables employees to develop not only technical skills but also adaptability and innovation, which are crucial in the digital transformation era.

In addition to developing technical competencies, AI and automation also play a role in enhancing employees' soft skills. While automation can replace certain technical tasks, skills such as collaboration, leadership, and creative problem-solving remain highly important (Zirar et al., 2023). For instance, Microsoft has launched various training programs to improve employees' soft skills, as the company believes that these skills will continue to be relevant even as technology advances. This holistic competency development is crucial to ensure that employees can adapt to more dynamic and complex roles in the future.

The impact of AI and automation on employee competency development is not limited to high-tech sectors. Industries such as retail and hospitality are also beginning to use AI to

improve customer experience and operational efficiency, which affects the skills required of employees. For example, Sephora, a beauty retail company, uses AI to provide personalized product recommendations to customers. This requires employees to understand the technology and how they can leverage AI-generated data to provide better customer service. Therefore, employees in these sectors must develop data analytics and customer technology skills to remain competitive.

Digital transformation also influences how companies deliver training to employees. With the advancement of e-learning technology, companies can now offer more flexible and effective training programs (Ganeshan & Vethirajan, 2022). AI can be used to personalize learning experiences, allowing employees to learn at a time and place that suits them. For example, e-learning platforms like Coursera and Udemy have enabled companies to provide training that employees can access anytime and anywhere. This increases the efficiency of training while ensuring that employees can continuously develop their competencies without being bound by rigid schedules.

Finally, it is important to remember that digital transformation is not an instant process. It requires time, resources, and strong commitment from companies to ensure that employees can adapt to these changes. Companies can leverage AI and automation to create a more dynamic, innovative, and productive work environment by making competency development a top priority. Ultimately, digital transformation should be seen as an opportunity to strengthen a company's human resources, not just as a means to replace existing jobs.

CONCLUSION

Digital transformation, particularly the implementation of artificial intelligence (AI) and automation, has significantly reshaped human resource management (HRM), especially in terms of employee competency development. AI and automation have proven to enhance efficiency in various aspects such as recruitment, training, performance evaluation, and personalized competency development. Companies can accurately identify training needs and provide more relevant training to employees with these technologies. Additionally, AI enables companies to create more objective, data-driven processes, helping employees better understand their strengths and weaknesses. However, this technological shift also requires the development of new skills, particularly technical and digital skills, among employees.

In terms of implications, digital transformation presents a major opportunity for companies to empower their employees through more efficient and relevant training. Companies that successfully integrate AI and automation into HRM will be able to boost productivity, create a

more adaptive workforce, and remain competitive in the market. For employees, this means they must be prepared to continuously learn and develop new skills to stay relevant in a technology-driven workplace. The implementation of AI and automation also has implications for organizational culture, as companies need to create an environment that supports continuous learning and technological adaptation.

RECOMMENDATIONS

In addressing these rapid technological changes, companies must take a proactive approach in preparing their employees. Investing in reskilling and skill development is crucial to ensure that employees can adapt to the demands of new technologies. Companies are advised to focus not only on technical skills development but also on soft skills that remain relevant, such as leadership, collaboration, and innovation. Moreover, effective communication between management and employees about technological changes is essential to reduce uncertainty and encourage acceptance of digital transformation. In the process of adopting AI and automation, it is important for companies to consider the impact on employees and ensure that these technologies are used to empower rather than replace their roles.

This research has several limitations that should be noted. First, as this is a literature review, no empirical data was directly collected from companies or employees. Therefore, the conclusions drawn are based on findings from previous studies and may not fully reflect the current on-the-ground situation. Second, the scope of the research is limited to literature available from 2017 to early 2024, so there may be recent developments not covered in this review. Additionally, the impact of AI and automation on employee competency development may vary depending on the industry sector, company size, and different levels of technological readiness, which may not be fully represented in this study.

Future research could further analyze the impact of digital transformation on HRM through empirical research using data from companies that have adopted AI and automation in their HR management. Future studies could also explore the specific effects of AI across various industry sectors, such as manufacturing, retail, and services, to understand the differences in technology implementation across contexts. Moreover, research on how AI can assist in the deeper development of soft skills is needed, as these skills remain essential in an increasingly digitalized workplace. Future research could also explore the ethical and social aspects of AI implementation in HRM, including how these technologies may affect employee well-being and future work structures.

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