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HOW IS ARTIFICIAL INTELLIGENCE CHANGING HR? ADAPTIVE MANAGEMENT FOR THE NEW ENVIRONMENT

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Abstract. The integration of artificial intelligence (AI) into human resource management (HRM) is a pivotal factor in the transformation of conventional HR practices. The increasing complexity of HR processes, in conjunction with the mounting necessity for personalisation, efficiency and adaptability, underscores the importance of leveraging AI-based solutions within contemporary organisations. The objective of this research is to explore the role of AI in HRM, analyse its impact on adaptive management approaches, and identify key factors that impact the successful implementation of AI in HR processes. The study uses a mixed approach, combining literature review, empirical data collection based on interviews with companies of different sizes, and correlation analysis. The analysis focuses on the adaptability of AI-based HR systems, their impact on employee engagement, productivity and decision-making processes. Special attention is paid to ethical issues such as algorithmic bias and transparency, as well as organisational barriers that may prevent the implementation of AI. The findings of the research demonstrate that the implementation of AI technology has the potential to enhance the efficiency of HR management practices. This enhancement is achieved through the optimisation of recruitment processes, the creation of personalised learning pathways, the facilitation of real-time performance evaluation, and the cultivation of a culture that fosters proactive career development. Adaptive AI-powered HR systems enable organisations to respond expeditiously to market changes, optimise talent management, and minimise operational risks. The study demonstrates that, while SMEs exhibit greater flexibility in implementing AI solutions, large corporations encounter structural and managerial challenges that necessitate strategic adjustments to facilitate effective integration of AI. The practical significance of the study lies in its recommendations for organisations seeking to implement adaptive AI-based HR models. It provides insights on how to optimise the use of AI for talent management, improve HR efficiency and address ethical considerations.

Keywords: adaptive HR management, artificial intelligence, digital transformation, organisational flexibility, recruitment efficiency.

JEL Classifications: M12, O15, O32

1. Introduction

In the context of ongoing digital transformation, human resource management (HRM) is evolving into a new dimension. The advent of artificial intelligence (AI) has not only led to the development of a technological apparatus but also the conceptualisation of a strategic asset that has the capacity to enhance process efficiency, personalise employee training and improve organisational practices. The utilisation of AI in HRM is of particular significance, as this domain serves as the foundation for organisations to adapt to evolving market conditions (Kaur & Gandolfi, 2023; Bohmer & Schinnenburg, 2023; Budhwar et al., 2022). AI technologies are transforming recruitment processes by automating the search, screening, and selection of candidates (Einola & Khoreva, 2023; Owais, 2018). Tian et al. (2020) emphasise the efficacy of machine learning algorithms in optimising recruitment outcomes through the augmentation of data processing capabilities, which may result in enhanced candidate-job alignment. In a similar vein, Malik et al. (2020) explore the active utilisation of AI-powered chatbots

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that optimise recruitment tasks, thereby enhancing cost efficiency and personalising the employee experience (Malik et al., 2020). Ganatra (2023) emphasises the transformative impact of AI on recruitment, noting that AI-based solutions are increasingly being used to optimise talent acquisition strategies. This development has the dual benefits of enhancing efficiency and enabling human resources professionals to allocate their time and expertise towards more strategic aspects of talent management. In the context of economies experiencing a paucity of human talent, attributable to factors such as low birth rates, or other causes, including wars and natural disasters, which result in a shortage of candidates, the optimisation of HR processes with AI emerges as a pivotal strategy for ensuring a sufficient workforce.

2. Literature Review and Hypotheses Development

2.1. AI in HR: Potential, Adaptive Approaches and the Need for Ethical Regulation

As demonstrated by Malik et al. (2022), the utilisation of artificial intelligence (AI) within human resources (HR) ecosystems has been shown to yield exceptional employee experiences, which are imperative in enhancing levels of engagement. Integrating AI into HR practices, as posited by Baki (2023), has the potential to facilitate personalised interactions and feedback mechanisms, thereby enhancing employee satisfaction and staff retention. Furthermore, He et al. (2023) posit that leaders who effectively signify AI can encourage employees' proactive job search behaviour, thereby fostering a culture of engagement and innovation. As posited by Deepa et al. (2024), the implementation of predictive models within the field of human resources has been demonstrated to engender an enhancement in productivity, concomitant with the cultivation of heightened employee engagement. This is achieved by the facilitation of adaptive training programmes and the establishment of individual development pathways. Concurrently, Nimmagadda et al. (2024) have demonstrated that virtual AI assistants can facilitate effective collaboration through the creation of a digital environment.

Additionally, AI is a key factor in the evolution of performance management systems. Conventional performance evaluation metrics are being superseded by dynamic real-time feedback mechanisms supported by AI technologies (Nyathani, 2023). These changes facilitate a more precise evaluation of employee performance and developmental requirements. Wuisan (2023) emphasises that the role of AI in performance management is twofold. Firstly, it improves assessment processes. Secondly, it contributes to the overall effectiveness of the organisation by aligning employee goals with strategic objectives (Wuisan, 2023).

However, the majority of studies focus on analysing isolated aspects of AI implementation in HR, ignoring a systemic management approach based on adaptability (Fenwick et al., 2024). In light of the challenges posed by rapid change, skills shortages and the need for cost optimisation that are characteristic of the current market, there is an evident necessity to develop novel theoretical approaches that involve the integrated use of AI in HR management (Alnsour et al., 2024).

The concept of AI-based adaptive HRM aims to integrate advanced AI tools with the principles of flexible and personalised HR management. Consequently, AI-based adaptive HRM not only facilitates responsiveness to market fluctuations, but also fosters the establishment of ethical and transparent HR management practices. This is particularly pertinent during periods of organisational instability, when entities are required to swiftly adapt to external changes while concurrently maintaining high productivity levels and retaining valuable talent. In this context, adaptability enables organisations to respond effectively to change, anticipate possible scenarios and mitigate operational risks.

Despite the obvious benefits, the academic community faces a number of challenges in integrating AI into HR. One of the most critical challenges is to ensure that AI algorithms are transparent and avoid bias in hiring and employee evaluation. According to Budvar et al. (2023), although AI technologies can significantly improve the objectivity of decision making, there is a risk of algorithmic bias that can negatively affect morale in an organisation. Furthermore, Owais (2018) emphasises that a lack of clarity surrounding the functionality of algorithms can result in a diminution of employee trust and the erosion of critical ethical components within the field of HR. As Hunkenschroer and Luetge (2022) emphasise, it is imperative to subject algorithmic bias in hiring processes to critical review, and to underscore the significance of accountability in AI-assisted decisions. Furthermore, Roche et al. (2022) discuss the ethical implications of AI policies and the need for diversity in AI initiatives to mitigate possible biases. These considerations underscore the necessity of establishing an ethical framework to guide the implementation of AI in HR practices.

A further significant challenge pertains to infrastructure gaps, which are impeding the comprehensive integration of AI within the domain of human resources. As Xiao and Hou (2024) found, companies of different sizes demonstrate varying degrees of readiness to adopt AI in HR practices. SMEs have been shown to be capable of rapid adaptation to innovative technologies; however, large enterprises encounter greater challenges due to the complexity of

their structure and the limited resources available to optimise all HR processes concurrently.

In light of these factors, it is imperative that existing theoretical foundations are enhanced to facilitate a comprehensive evaluation of the role of AI in adaptive HR management. The proposed theory of AI-based adaptive HR management aims to address these gaps by proposing a framework incorporating the principles of adaptability, individualisation and ethics for the effective use of AI in HR. In contradistinction to prevailing theoretical models, this theory places emphasis on the integrated use of AI to predict performance, create personalised training programmes, minimise bias and support adaptive structures in different business environments.

The primary objective of this study is to empirically validate the theory of AI-based adaptive management by analysing the utilisation of AI in the context of HR management within companies of varying sizes. The objective of this study is to ascertain which aspects of adaptive management are most in demand among large, medium and small companies. Furthermore, the study seeks to identify which components of the theory's hypotheses have been confirmed and which require further elaboration. The objective of the present study is to formulate practical recommendations for companies seeking effective ways to adapt HR processes to new market conditions through the implementation of AI.

2.2. Theories of HRM and the Relevance of AI-Based Adaptive Management

The development of HRM has been characterised by several seminal stages, with each contributing to the evolution of novel management concepts and laying the foundation for contemporary theories. Taylor's scientific management was among the earliest theories, emphasising task standardisation to maximise productivity. However, it was criticised for its rigidity and lack of consideration for individual employee needs (Taylor, 1911). Mayo's human relations theory acknowledged the significance of social and psychological factors, emphasising that employee involvement and satisfaction can substantially enhance productivity (Mayo, 1933; Kaur & Gandolfi, 2023). These early theories established the foundation for more flexible approaches to human resource management.

In the 1960s, McGregor proposed a differentiated approach in his X and Y theories, arguing for an authoritarian (Theory X) or democratic style (Theory Y) depending on the level of autonomy and motivation of employees. This formed the basis for the subsequent development of more adaptable management models that take into account individual employee characteristics (McGregor, 1960). Subsequently, Fiedler's contingency theory emphasised the significance of adapting management style to particular situational factors, underscoring adaptability as a pivotal component for success (Fiedler, 1967). This notion was further reinforced by the organisational learning theories propounded by Argyris and Schön (1978), which advocated for ongoing improvement within an organisation.

The resource-based approach conceives of human resources as a strategic asset, and Penrose's research emphasises that human resources can provide long-term competitive advantage and should be optimised with a focus on flexibility and individuality (Penrose, 1959). In light of these findings, recent studies underscore the transformational potential of AI in HRM. Budhwar et al. (2023) posit that AI facilitates more accurate recruitment, thereby enabling organisations to adapt to market changes. In contrast, Owais (2018) asserts that AI-based recruitment automation reduces subjectivity.

The integration of AI in HRM has the potential to engender significant changes, which will have consequences for a number of HRM practices and theories. The implementation of AI in HRM is contingent on factors such as organisational readiness and management support. Agustono et al. (2023) have noted the importance of technical competence and a deep understanding of business processes among HR professionals. As emphasised by Chen et al. (2020), top management plays a pivotal role in facilitating the adoption of artificial intelligence (AI) by aligning organisational resources with the strategic direction of the enterprise. Similarly, Baabdullah et al. (2021) underscore the potential of AI-driven practices to catalyse innovation and streamline decision-making processes within organisations.

Furthermore, the advent of artificial intelligence has precipitated a paradigm shift in the realm of performance management, with the potential to facilitate more personalised and dynamic appraisal methodologies. Indrasari (2023) hypothesises that AI can provide insight into enhancing employee performance, while Bonsu et al. (2023) posit that AI integration can lead to substantial improvements in management performance. In a similar vein, Sabeel (2023) advances the argument for the utilisation of AI-based strategies to enhance the efficacy of HR management practices, thereby reflecting the prevailing trend towards data-driven decision-making.

In the area of employee engagement, Malik et al. (2020) show that AI applications can provide individualised experiences, improving engagement and cost-effectiveness. Research by Nankervis et al. (2019) suggests that AI can revolutionise HRM, particularly in the context of the Fourth Industrial Revolution, which requires new engagement strategies. The literature suggests that AI promotes

personalised HR approaches, which in turn increases employee satisfaction and retention.

The ethical implications of AI in HRM, particularly concerning bias and accountability, are also crucial. As Tambe et al. (2019) emphasise, it is imperative to address the issue of algorithmic bias. In addition, Alsaif and Aksoy (2023) provide a detailed discussion of the ethical implications of AI use in HR, underscoring the necessity for guidelines to govern its implementation. The establishment of ethical frameworks is imperative to ensure the responsible implementation of AI.

The integration of AI in HRM necessitates a reevaluation of extant HR theories. In their 2022 study, Johnson et al. posit that artificial intelligence (AI) and big data are reshaping human resources management (HRM) applications in public administration. In contrast, Panda (2023) contends that AI enhances HR resiliency, urging organisations to adapt HR strategies to leverage AI's potential. The extant literature suggests that future research should focus on frameworks that balance technological innovation with ethical considerations.

As such, the integration of AI is transforming HRM on many levels, including recruitment, performance management and employee engagement. While the benefits of AI are clear, addressing ethical issues is critical. Future studies should further explore the

Table 1
Hypotheses of the study

N	Hypothesis name	Literature background
H1	Artificial intelligence in recruitment processes improves the efficiency of HR, reducing time and costs	According to Alnsour et al. (2024), AI in recruitment allows for automation of processes, which leads to cost and time savings in candidate search, thereby increasing the efficiency and productivity of HR processes. This is in line with our view that AI-based tools can make HR management more responsive and adaptive to the needs of the organisation.
H2	Integration of AI for personalised learning drives employee engagement and productivity	According to a study by Kaur & Gandolfi (2023), AI helps to tailor individual development trajectories for employees, increasing their motivation and engagement. This allows for a more targeted approach to professional development, increasing productivity and job satisfaction.
H3	Predictive AI models in HR management increase organisational adaptability	Deepa et al. (2024) point out that AI predictive models, especially in the field of human resources, can be used to analyse and predict future staffing needs, which will allow timely adjustments to human resources strategies and increase the organisation's adaptability. This hypothesis is in line with the basic principle of adaptability and proactive resource management using AI tools.
H4	AI reduce bias in HR processes and increase decision-making transparency	Budhwar et al. (2023) emphasise that AI algorithms can minimise bias in recruitment processes, ensuring a fairer and more transparent selection of candidates. This supports the view that AI can help maintain ethical standards in management and ensure transparency in HR decisions.
H5	AI assistants (e.g., ChatGPT) improve communication and support for employees, promoting employee engagement	The research by Sakib et al. (2024) shows that chatbots such as ChatGPT can provide 24/7 support to employees by answering their questions and offering personalised recommendations, which improves their engagement and productivity.
H6	Using AI to enhance HRM sustainability contributes to employee engagement and productivity improvement	Xiao and Hou (2024) explore the concept of AI-based sustainable HRM that affects employee engagement and productivity using the AMO (Ability-Motivation-Opportunity) model and the Person-Organisation Fit (P-O Fit) theory. This study demonstrates that AI-based sustainable HRM practices increase employee engagement and productivity, especially for conscientious employees.
H7	AI-powered chatbots increase employee engagement by creating a digital environment and improving the quality of work life	According to Nimmagadda et al. (2024), the use of chatbots for employee engagement has become necessary to improve the quality of work life and maintain engagement through the digital transformation of HR. This hypothesis is based on the idea that chatbots integrated into workflows can create a continuous digital environment to engage employees and increase their satisfaction.
H8	Implementation of AI in management processes increases productivity and reduces the subjective factor in assessments	Owais (2018) suggests that AI can significantly reduce subjectivity in performance management processes, increasing the objectivity of assessments and the accuracy of decisions. This contributes to increased productivity and reduces the risk of bias.
H9	AI automates the analysis of organisational structures to improve communication and reduce barriers to interaction between employees	Murugesan et al. (2023) explore how AI supports organisational network analysis by identifying key connections and removing communication barriers, thus facilitating data-driven communication between employees. This hypothesis is based on the potential of AI to improve organisational structure for better collaboration and interaction between employees.

Source: prepared on the basis of literature review

impact of AI on HRM, focusing on developing a framework that aligns innovation with the ethical norms and goals of the organisation.

2.3. Research Hypotheses

The results of the literature review have led to the formulation of nine hypotheses, each of which reflects a different aspect of AI-based adaptive HRM (see Table 1).

The hypotheses formulated in this study are closely interconnected and reflect different facets of a unified AI-based adaptive HRM model (Figure 1). The interrelation between these hypotheses (Table 2) establishes a comprehensive approach in which each hypothesis complements the other, creating a system capable of enhancing the efficiency, objectivity, and flexibility of HR processes in the face of dynamic changes. It is evident from the data that both H1 (recruiting efficiency) and H4 (reducing bias)

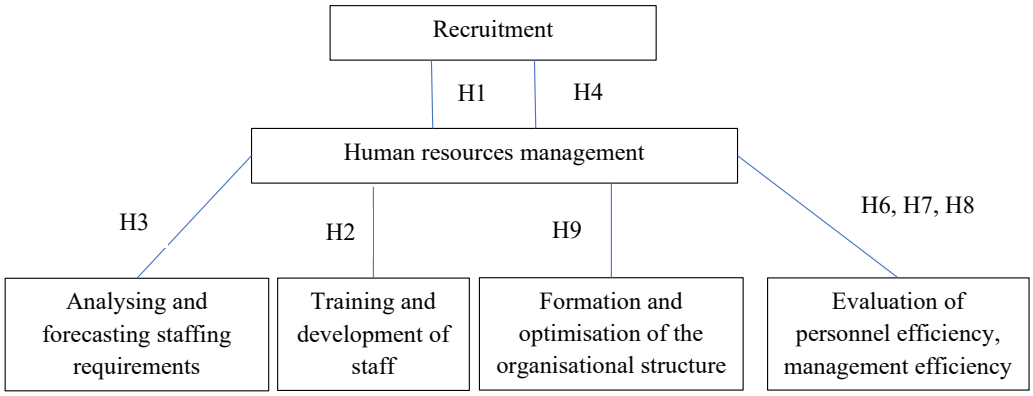

Figure 1. Proposed conceptual model of research

Source: developed on the basis of a literature review

Table 2

The interrelation between these hypotheses of the study

Hypothesis name	Nature of inter-relation-ship	Explanation of the interrelationship
H1. Hiring efficiency	↓	Depends on organisational adaptability (H3)
	↕	Interrelated with HRM sustainability (H6) to reduce time and costs in recruitment processes
H2. Personalised learning	↓	Supports AI assistants for individualised employee support (H5)
	↓	Connected to HRM sustainability (H6), allowing for customised development trajectories to increase productivity
H3. Organisational adaptability	↓	Enhances employee engagement through chatbots (H7), contributing to the digital transformation of HR
	↓	Requires communication automation (H9) to ensure a flexible communication structure
H4. Reducing bias	↔	Interacts with the reduction of subjectivity (H8) by ensuring transparency of assessment decisions
H5. AI assistants for support	↓	Supports the automation of communication (H9), which facilitates interaction between employees
	↕	Connected to personalised learning (H2) and engagement through chatbots (H7), which provides real-time support
H6. HRM sustainability	↕	Interlinked with personalised learning (H2) to support engagement
	↕	Shared basis with hiring efficiency (H1) to reduce costs and increase efficiency
H7. Chatbots for engagement	↓	Integrates with AI assistant support (H5) to improve the quality of employee work life
H8. Reduced subjectivity	↕	Relationship with bias (H4) by supporting objectivity and transparency of decisions in HR processes
H9. Communication automation	↓	Ensures organisational adaptability (Hypothesis 3) through automated communication tools
	↕	Depends on the support of AI assistants (Hypothesis 5) for integration into the internal structure of the organisation

Source: developed by authors

demonstrate a significant correlation between the optimisation of recruitment time and costs, and the assurance of ethical selection standards. The utilisation of AI-based automation in the recruitment process has been demonstrated to enhance both the efficiency and objectivity of the selection process. The employment of algorithms serves to mitigate the impact of human error on the outcomes of the selection process. It is evident that these hypotheses function synergistically, underscoring the notion that the implementation of recruitment automation not only fosters efficiency but also promotes transparency and fairness. These qualities are indispensable for cultivating trust within an organisation.

H2 (personalised learning) and H5 (AI assistants to support employees) are closely related, as personalised learning and real-time support help to increase employee engagement. Personalised AI-powered learning programmes enable employees to develop the skills they need to advance their careers and achieve the organisation's strategic goals. Real-time support from AI assistants increases employee convenience by providing access to the information and help they need right at their workstations. Together, these hypotheses create the conditions for effective and adaptive learning that increases employee satisfaction.

It is evident that H3 (adaptability through automation) and H9 (automation of communications) are interdependent in terms of their ability to respond quickly to change and provide feedback between employees and management. The automation of communications within an organisation can facilitate the expeditious identification of issues or opportunities for enhancement, enabling the organisation to make informed decisions. This enhances the organisation's ability to adapt quickly to external changes, which is consistent with the concept of contingency management, where the success of an organisation depends on its ability to adapt to situational factors. The aforementioned hypotheses reinforce each other, thereby ensuring not only responsiveness but also resilience to change, which forms the basis of adaptive management.

H4 (reducing bias) and H8 (reducing subjectivity) are complementary, as objectivity and transparency are key ethical aspects of HR management. Reducing subjectivity in employee appraisals through AI ensures that employees are treated fairly in all HR processes, especially performance appraisals. This helps to build a culture of trust in the organisation, as employees can be assured that their performance is being assessed fairly, without personal preference or bias. Taken together, these hypotheses support ethical standards in HR processes, which is vital to the organisation's culture.

H6 (resilience of HR processes in turbulent environments) and H7 (use of chatbots to interact with employees) have the common goal of providing reliable support to employees, especially in times of change or crisis. In turbulent environments, the capacity of the HR system to adapt expeditiously and maintain effective communication is paramount. Chatbots function as a front-line support tool, providing immediate assistance to employees even with limited resources. This has been demonstrated to increase the resilience of the HR system, as chatbots can provide continuous communication and feedback, thereby ensuring the continued operation of the organisation, even during periods of crisis.

The nine hypotheses under consideration form an integrated framework in which adaptability, flexibility, objectivity and automation work together to enhance AI-based HR management. The hypothesis posits that an integrated approach, underpinned by a series of interconnected propositions, can ensure an organisation's long-term sustainability and competitive advantage in an ever-changing environment.

2.4. Integrated Model of Adaptive HR Management Based on AI

These hypotheses are converging into an integrated model of AI-based adaptive HR management, which covers such key aspects as efficiency, objectivity, engagement, flexibility and automation. The model under discussion involves the use of AI to adapt HR processes to the needs of the organisation, provide personalised training and support to employees, and improve the objectivity of decision-making. This approach is especially pertinent in the context of contemporary market volatility, when companies are compelled to expeditiously adapt to evolving conditions, retain highly skilled employees and attract new talent. The integrated AI-based adaptive management model enables companies to increase efficiency while reducing costs and minimising risks associated with workforce shortages.

In order to integrate these hypotheses with the AI-based adaptive HR management theory, it is necessary to consider how each hypothesis reflects the core principles of this theory (see Table 3): adaptability, personalisation, objectivity, ethical decision-making and digital employee support.

These hypotheses include adaptability and flexibility in both recruitment and performance management, supporting the organisation's ability to respond to changing demands. Furthermore, the company places significant emphasis on tailoring training and support programmes to align with the specific requirements of each employee, with the objective of enhancing engagement and productivity. Objectivity and ethical decision-making are emphasised by reducing bias and subjectivity in HR processes to ensure fairness and transparency. The utilisation of AI assistants

Table 3

Interrelation of the research hypotheses with the basic principles of the theory of adaptive personnel management based on AI

Hypothesis name	Integration of hypotheses with theory
H1. Recruitment efficiency	Adaptive management requires reducing the time and costs associated with recruitment, which is achieved by automating processes and improving the accuracy of selection using AI. This is in line with the theory's emphasis on flexibility and cost-effectiveness in HR management.
H2. Personalized training	Personalised learning using artificial intelligence increases employee engagement and productivity, fostering talent development. This principle is in line with the theory that personalisation is necessary for an adaptive approach that allows for a more effective response to individual employee needs.
H3. Organizational adaptability	The use of AI-powered predictive models contributes to an organisation's agility by anticipating and responding to change. This is the basis of our theory, which emphasises the role of artificial intelligence in the rapid adaptation of HR processes to new market conditions.
H4. Bias reduction	The theory of adaptive management also includes an ethical aspect - objectivity and fairness in decision-making processes. AI helps reduce bias by making selection and management processes more transparent and ethical.
H5. AI assistants for employee support	This hypothesis reflects the need for ongoing employee support, which is a key component of adaptive management. AI assistants provide real-time support, increasing employee productivity and engagement.
H6. HRM resilience	Incorporating resilience into HR is a key element of the adaptive model. AI helps organisations not only adapt, but also withstand change, ensuring long-term effectiveness of HRM.
H7. Chatbots for engagement	Creating a digital environment for ongoing employee engagement meets the needs of an adaptive approach, helping an organisation to stay in touch with employees and respond to their needs in a timely manner, thereby increasing engagement.
H8. Reducing subjectivity	Adaptive management emphasises objectivity in evaluating employees and managing their performance. AI minimises subjective assessments, helping to create a fairer and more adaptive environment for employees.
H9. Communication automation	An agile organisation requires fast and efficient communication between departments and employees. Automating communications with AI creates a flexible structure that meets the demands of the digital environment and supports the speed of interaction.

Source: developed by authors

and chatbots in the context of digital support and engagement facilitates continuous interaction and support for employees.

Collectively, these hypotheses function as practical components of the proposed theory, thereby demonstrating its applicability in various aspects of HR management.

3. Methodology

The present study was designed as a mixed-methods enquiry, incorporating quantitative and qualitative methodologies, with the objective of achieving an in-depth comprehension of the utilisation of AI in the context of human resources within enterprises of varying dimensions. A series of online interviews were conducted with human resources representatives to explore their experiences and attitudes towards the use of artificial intelligence in human resources processes, including hiring, training, communication, and assessment. The interviews facilitated the collection of multidimensional data on AI adoption and support for each of the nine hypotheses. Following the collection of the data, mathematical processing of the results was conducted, with statistical and correlation analysis methods being utilised to confirm or reject the hypotheses.

The study involved 34 enterprises selected on the basis of their readiness to innovate and the scale of their operations. The sample consists of:

– 9 large enterprises, which ensures representation of large businesses with established processes;
– 20 medium-sized companies, which often demonstrate flexibility in implementing innovations;
– 5 small enterprises, which are usually less regulated and have a high potential for adaptation.

The sample includes companies with a low level of AI use, which allows for an assessment of the feasibility of implementation and its potential impact on HR processes in a resource-limited environment. The selection criteria also encompassed the willingness of companies to participate in online interviews and their openness to HR innovations.

The primary data collection instrument employed was structured online interviews, in which HR representatives were invited to respond to questions regarding the level of support for each of the nine hypotheses pertaining to the integration of AI within HR processes. The interview schedule encompassed questions pertaining to the following aspects:

– Utilisation of AI to hire and reduce recruitment costs;
– the level of personalisation of training using AI;
– the organisation's ability to adapt to change through automation;

– reduction of bias and increased objectivity in decision-making.

The collection of data was facilitated by the utilisation of video conferencing platforms, namely Zoom and Microsoft Teams. These platforms enabled the conduction of interviews in a comfortable environment for the participants. Each interview was conducted for a duration of approximately 50-60 minutes, during which the participants were afforded the opportunity to articulate their opinions in exhaustive detail. The data obtained from the online interviews were then structured for further analysis.

In order to analyse the data collected during the online interviews, a comprehensive mathematical model was developed. This model was used to determine the level of adaptability of companies based on hypothesis support and to explore the relationships between them. The model incorporates multiple stages of data processing, which are delineated below.

The initial step entailed the calculation of the mean support for each of the nine hypotheses for each group of companies (large, medium, and small businesses). The mean values for each hypothesis enable the determination of the overall level of adaptability of each group of companies with regard to supporting specific aspects of AI.

In order to assess the relationships between the hypotheses, correlation analysis was used to determine the strength and direction of the relationship between paired hypotheses. The correlation coefficient $r_{i,k}$ for the hypotheses H_i i H_k is calculated using Pearson's formula:

$$r_{i,k} = \frac{\sum_{j-1}^{n}\left(H_{i,j} - \overline{H_i}\right)\left(H_{k,j} - \overline{H_k}\right)}{\sqrt{\sum_{j-1}^{n}\left(H_{i,j} - \overline{H_i}\right)^2} \cdot \sqrt{\sum_{j-1}^{n}\left(H_{k,j} - \overline{H_k}\right)^2}} \quad (1)$$

Where:

$r_{i,k}$ – is the correlation coefficient between the hypotheses H_i and H_k;

$H_{i,j}$ and $H_{k,j}$ – are the support values of the hypotheses H_i and H_k for the *j* company;

$\overline{H_i}$ and $\overline{H_k}$ – are the average support values of the hypotheses H_i and H_k in the sample;

n – is the total number of companies.

The application of correlation analysis has been demonstrated to be a highly effective method of identifying strong relationships between hypotheses. For instance, the high correlation coefficient between H3 (adaptability through automation) and H9 (communication automation) suggests that companies that automate communications possess a more adaptable organisational structure.

At the next stage, a model was developed to assess the overall adaptability of the companies based on the average values of the hypotheses and taking into account correlations. The overall adaptability of *A* for the *G* group of companies is calculated by the formula:

$$A^G = \alpha\sum_{i=1}^{9}\overline{H_i^G} + \sum_{(j,k)\in C}\beta_{j,k}\cdot\overline{H_j^G}\cdot\overline{H_k^G} \quad (2)$$

where:

A^G – is the adaptability of the *G* group;

α – is the weighting coefficient that regulates the influence of the main sum of hypotheses;

$\overline{H_i^G}$ – is the average value of support for the hypothesis H_i for the *G* group;

$\sum_{i=1}^{9}\overline{H_i^G}$ – is the total level of support for all hypotheses for the *G* group;

C – is a set of hypothesis pairs that have a strong correlation between them;

$\beta_{j,k}$ – is the correlation coefficient for the pair of hypotheses H_j and H_k, that has a value above a certain threshold;

$\overline{H_j^G}$ and $\overline{H_k^G}$ – are the average support values of the correlated hypotheses H_j and H_k for the group *G*.

In order to ascertain the impact of each hypothesis on the company's overall adaptability, the partial derivatives of adaptability *A* under each hypothesis H_i were calculated. The partial derivative shows how adaptability changes *A* if the support for a particular hypothesis increases H_i:

$$\frac{\partial A}{\partial H_i} = \alpha + \sum_{k\neq i,(i,k)\in C}\beta_{i,k}\cdot\overline{H_k^G} \quad (3)$$

Where:

$\frac{\partial A}{\partial H_i}$ – is the partial derivative of adaptability *A* under the hypothesis H_i;

α – is the weighting coefficient of the main sum of hypotheses;

$\beta_{i,k}$ – is the correlation coefficient for the pairwise effect between hypotheses H_i and H_k;

$\overline{H_k^G}$ – is the average value of support for the hypothesis H_k for the group *G*.

Consequently, partial derivatives facilitate the evaluation of the relative significance of each hypothesis within the context of an organisation's adaptability. This method is especially beneficial for companies seeking to understand which aspects of AI adoption have the greatest impact on their adaptability.

Following the calculation of the mean values of the support and correlation components, the adaptability of each group of companies was calculated according to the overall adaptability formula. This enabled the acquisition of final adaptability scores A for companies of varying sizes, which can be utilised to compare the level of readiness of each group to implement AI in HR processes.

The reliability and validity of the results were assessed to ensure the reliability of the findings. T he representativeness of the sample confirms the validity of the conclusions, as the sample encompasses companies of different sizes with different levels of readiness to implement AI. The employment of mathematical processing methods, including correlation analysis and an adaptability model, serves to enhance the reliability of the results by providing an objective approach to hypothesis testing.

The validity of the study is confirmed by the systematic approach to data collection and processing, as well as the use of modern methods of mathematical processing, which allows obtaining reliable correlations between hypotheses. This approach is intended to ensure the adequacy of the study's findings and their practical applicability in assessing the readiness of organisations to implement AI-based adaptive management.

4. Results

The mean support values for each hypothesis were obtained from online interviews with representatives of HR departments of Ukrainian companies (see Table 4). These values are indicative of the level of integration and support for AI technologies in HR processes, contingent on the scale of the company in question.

The overall adaptability was calculated based on the methodology previously outlined, which incorporates the fundamental sum of hypothesis support with an additional correlation component for specific pairs of hypotheses. The basic adaptability A_{Basic} of each group of companies is calculated as the average support for the hypotheses using the weighting factor α. The overall adaptability $A_{Overall}$ also takes into account the correlation component $\beta_{i,k}$ for pairs of hypotheses that demonstrate significant relationships.

The findings of the adaptability calculations demonstrate that there are disparate levels of readiness among companies of varying sizes for implementing AI-based adaptive HRM.

For large enterprises, the basic adaptability level is 7.2, reflecting limited support for each hypothesis individually. This value underscores the common challenges faced by large companies in rapidly adapting to change, largely due to complex organisational structures and the high costs associated with adopting new technologies. However, the overall adaptability level, which reaches 14.02 when accounting for the interrelationships between hypotheses, highlights the potential for these enterprises to adapt through an integrated approach that leverages the synergies among various management processes.

Medium-sized businesses demonstrate an adaptability level of 10.8, indicating a balanced support for individual hypotheses and a relatively higher degree of flexibility. The overall adaptability score of 16.6 demonstrates their ability to harness interdependent processes effectively, allowing them to reinforce adaptability through a more interconnected framework that capitalises on the complementary effects between AI-driven management practices.

Small businesses have a base level of adaptability of 12.3, reflecting strong support for each hypothesis and a high degree of flexibility in adopting innovations. Their overall level of adaptability, the highest of the groups at 18.4, indicates a strong willingness to implement AI-based adaptive management. This is largely due to their simpler processes and flexible organisational structures, which

Table 4

Average values of hypothesis support and level of adaptability

Hypothesis	Large enterprises	Medium-sized businesses	Small businesses
H1. Recruitment efficiency	2.4	3.2	3.5
H2. Personalised training	2.5	3.4	3.7
H3. Organisational adaptability	2.4	3.1	3.6
H4. Bias reduction	2.2	3.0	3.5
H5. AI assistants for employee support	2.3	3.3	3.4
H6. HRM resilience	2.7	3.5	3.8
H7. Chatbots for engagement	2.5	3.2	3.6
H8. Reducing subjectivity	2.3	3.1	3.4
H9. Communication automation	2.4	3.3	3.5
Basic adaptability	**7.2**	**10.8**	**12.3**
Overall adaptability	**14.02**	**16.6**	**18.4**

Source: calculated by the authors based on the results of interviews

facilitate the integration of new technologies more seamlessly than in larger organisations.

Overall, the findings suggest that while large companies face certain adaptation challenges due to structural complexity, the integrated use of AI has the potential to significantly enhance their adaptability. Medium-sized companies show a higher baseline flexibility and benefit from the synergies between hypotheses, allowing them to effectively optimise the use of AI. Small companies are the most adaptive due to their inherent flexibility and readiness for technological integration, making them particularly well suited to AI-based adaptive management practices.

The subsequent correlation analysis enabled an assessment of the relationship between the level of support for each hypothesis (H1–H9) and overall adaptability within each group of companies (large enterprises, medium-sized, and small businesses). This approach facilitates the identification of hypotheses with the most significant impact on adaptability, and consequently, those that are most relevant for companies of different scales.

The level of support for hypothesis H1 (increasing recruitment efficiency through AI) was higher for small and medium enterprises (correlation with adaptability: high, 0.72 for medium enterprises and 0.68 for small enterprises). This suggests that these companies see significant potential in AI for efficient recruitment, unlike large companies where the level of support and correlation was lower.

Hypothesis H2 states that personalised training promotes employee productivity. According to the correlation analysis, medium and small enterprises showed high support for H2 (correlation with adaptability: 0.75 for medium enterprises and 0.80 for small enterprises), confirming the importance of a personalised approach in these groups. Large companies showed a lower correlation (0.50), indicating a need to adapt the personalisation approach.

Hypothesis H3 states that process automation in HR promotes organisational adaptability. Small companies showed a strong correlation (0.82), indicating high support and value of automation in improving adaptability. For medium-sized companies the correlation was 0.65 and for large companies it was 0.48, indicating a less pronounced effect.

Hypothesis H4 proposes that AI can reduce bias in HR decision-making. The correlation with adaptability was significant for medium and small companies (0.70 and 0.74 respectively), confirming the need for and effectiveness of such solutions. For large companies, the correlation was lower (0.45), which may be related to the challenges of implementing objective tools.

Hypothesis H5 states that AI assistants improve the quality of employee support. The level of correlation with adaptability for medium and small enterprises (0.78 and 0.81 respectively) indicates the high importance of this technology in flexible organisations. Large companies show a lower correlation (0.52), possibly due to the technical challenges of integration.

Hypothesis H6 suggests that the adoption of AI increases the resilience of HR processes. The high correlation of medium and small enterprises with adaptability (0.77 and 0.85 respectively) supports this hypothesis. For large companies, the correlation with adaptability was less pronounced (0.55), suggesting the need for specific approaches to integration.

Hypothesis H7 suggests that chatbots contribute to employee engagement. Small companies have the highest correlation with adaptability (0.79), confirming the effectiveness of chatbots in smaller organisations. Medium-sized companies have a correlation of 0.69, while large companies have a correlation of 0.51.

Hypothesis H8 proposes that AI can reduce subjectivity in employee appraisals. A high correlation for small and medium enterprises (0.75 and 0.73, respectively) indicates the effectiveness of AI in improving objectivity in evaluations. For large companies, the correlation was lower (0.49), indicating limited support for this hypothesis.

Hypothesis H9 states that communication automation improves HR processes. Small companies have a high correlation with adaptability (0.82), which confirms the significance of this hypothesis. Medium-sized companies have a correlation of 0.73, while large companies have a correlation of 0.53.

Correlation analysis suggests that hypotheses H1-H9 are particularly relevant for medium and small firms, where adaptability is highest and flexible structures allow more effective implementation of AI technology. Large firms, while showing lower correlations, have the potential for growth in adaptability but face organisational barriers.

Based on the research and correlation analysis conducted, it has been demonstrated that AI-based adaptive management enables companies to quickly adapt to market changes and improve the effectiveness of HR management.

The central tenet of this theory posits that the integration of AI technologies within the domain of human resources enables enterprises to expeditiously respond to both internal and external shifts by automating routine tasks, enhancing communication, and mitigating human bias (H1, H3, H5, H9). The hypotheses relating to recruitment automation, organisational adaptability, AI assistant support for employees, and communication automation have been confirmed to be valid. It can thus be concluded that the adoption of AI significantly increases the flexibility and ability of organisations to adapt to changing conditions.

The second important aspect of the theory is that AI enables personalised learning and support

processes that increase employee productivity and engagement. Correlation analysis confirmed that AI-based personalised learning and sustainability of HR processes have a positive impact on the overall adaptability of the organisation, especially in medium and small enterprises (H2, H6). Using AI to identify individual needs and create personalised development paths significantly improves HR efficiency and the quality of management decisions.

The third key aspect of AI-based adaptive HR management is related to ensuring the objectivity and transparency of employee selection and evaluation processes. AI reduces subjectivity in decision-making through the use of automated algorithms that help create objective selection and evaluation criteria (H4, H8). The hypotheses about reducing bias in HR decisions and minimising subjectivity in assessment were confirmed for medium and small companies, which indicates the effectiveness of AI in increasing transparency of processes.

The significance of the theory is further reinforced by the interrelationships among the hypotheses. Correlation analysis revealed that hypotheses such as personalised training and organisational adaptability (H2, H3), communication automation and bias reduction (H9, H4), as well as HRM resilience and employee engagement through chatbots (H6, H7), have mutually reinforcing effects, creating synergy among various elements of adaptive HRM. This suggests that an integrated approach to AI in HR enables companies to enhance not only individual processes but also the overall flexibility and resilience of the organisation.

The theoretical underpinnings of AI-driven adaptive management also encompass the cultivation of an open and inclusive organisational culture, wherein automated communications enhance the quality of interaction with employees, thereby augmenting their engagement and job satisfaction (H7, H9). This enables companies to cultivate sustainable relationships with employees, thereby fostering enhanced loyalty and motivation.

Overall, AI-based adaptive HR management offers many benefits to organisations, such as flexibility, resilience, process optimisation and cost reduction, as well as improved objectivity and employee engagement. By implementing AI, companies can adapt more quickly to market changes, maintain stability in turbulent conditions, reduce HR management costs by automating routine tasks, and minimise human bias while increasing employee satisfaction.

5. Discussion

The theory of AI-based adaptive HR management makes a significant extension to current HR research by introducing a new approach to integrating technology to increase flexibility, productivity, and objectivity. The present study lends support to the notion that the implementation of process automation, personalised learning methodologies, the integration of AI assistants, and the utilisation of automated communications engender a more flexible and adaptive environment. The existence of synergies between different aspects of management, such as recruitment efficiency (H1), organisational agility (H3), reducing subjectivity in assessment (H8) and automating communications (H9), has been demonstrated to increase the overall adaptability of an organisation. This suggests that integrating AI into HR not only optimises individual processes, but also transforms the overall approach to HRM, thereby providing companies with the tools to quickly adapt to market changes. The theory accentuates the significance of a holistic approach to HRM, wherein innovative technologies contribute to the efficacy of HR management, particularly in a volatile external environment.

It is important to note that this theory can form the basis of a strategic approach to HR management in modern organisations. The text goes beyond mere description of the practical possibilities of using AI in HR, but also formulates the concept of adaptive management, allowing businesses to implement AI at all stages of work with staff – from recruitment to assessment and development. Within this theoretical framework, adaptive management is conceptualised as a systemic approach, rather than a set of isolated innovative solutions. These solutions are designed to facilitate the creation of sustainable organisational structures capable of adapting and evolving in the face of rapid change.

The practical findings of this research emphasise the significant potential of AI technologies to improve HR management effectiveness, while highlighting the importance of creating the necessary conditions for their effective implementation. AI has the potential to enhance the flexibility and adaptability of SMEs to a considerable extent. This is attributable to the fact that AI adoption enables a more streamlined organisational structure, thereby facilitating the expeditious integration of novel technologies. However, such companies frequently encounter challenges, including the presence of under-qualified personnel and the absence of contemporary Human Resources departments. In many cases, human resources functions are limited to payroll management, which requires a shift to modern human resources practices. Investment in employee training and the development of a strategic approach to HR management are critical prerequisites for the full utilisation of the benefits of AI.

Large companies, despite their more complex organisational structure, can gain significant benefits from implementing AI. However, this requires properly optimised integration processes, adequate funding and investment in people development.

With sufficient resources and a structured approach, such organisations can realise the benefits of AI even in challenging environments.

The practical application of AI tools, such as personalised training, AI assistant support, automated recruitment and communication automation, positively impacts all stages of HR processes. This improves employee productivity, engagement and the efficiency of management decisions. In particular, personalised training fosters the professional growth of employees, ultimately increasing the overall effectiveness of the organisation.

The role of communication automation in the establishment of an inclusive and transparent workplace environment is indisputable. The utilisation of chatbots and AI assistants has been demonstrated to facilitate the expeditious resolution of employee concerns, thereby reducing the workload on human resources departments and ensuring the provision of uninterrupted support. This has been demonstrated to enhance a number of key employee metrics, including satisfaction, engagement, and willingness to collaborate, thereby contributing to overall organisational performance improvements.

The adoption of AI offers significant benefits to organisations of all sizes. However, achieving maximum impact requires creating the right conditions, such as investing in employee training, modernising HR functions and developing a strategic approach to integrating new technologies. These efforts will enable organisations to realise the full potential of AI while improving their competitiveness and efficiency.

Despite the positive results, this research has a number of limitations that should be taken into account when interpreting the findings. Firstly, the analysis is based on a virtual survey conducted among a limited number of companies. This may affect the representativeness of the data and limit the ability to generalise the results to a wider population of organisations. Future research could expand the sample to include more companies of different sizes and industries to get a more complete picture of the impact of AI on HR processes.

Secondly, it is important to acknowledge that the degree of AI integration within major corporations remains comparatively limited. This may result in an incomplete reflection of the potential impact of AI on the effectiveness of HR processes in large companies. It is imperative that future research explores the long-term effects of AI integration in order to provide a more profound understanding of how AI technologies can transform HR strategies and influence organisational culture over a wide time horizon.

6. Conclusions

The integration of AI into HRM is transforming traditional approaches to HR management, increasing the effectiveness of recruitment, personalised training, employee support and performance management. The utilisation of AI has been demonstrated to enhance objectivity in assessment processes, mitigate bias, and optimise communication methodologies. Concurrently, an adaptive approach to HRM, underpinned by AI, empowers organisations to expeditiously respond to market fluctuations, thereby mitigating operational risks and fostering flexibility within the organisational structure. The implementation of customised training and development programmes has been demonstrated to enhance employee engagement and boost productivity.

The findings of the research indicate that SMEs exhibit greater flexibility in implementing AI within the context of HRM, while large companies encounter organisational impediments. Simultaneously, the incorporation of AI has the potential to enhance the adaptability of large enterprises, provided that it is implemented with consideration for the intricacies of their organisational structure and management processes. Nevertheless, the ethical implications of AI implementation are of paramount importance, as the transparency of algorithms and the minimisation of human bias in HR processes necessitate the development of bespoke strategies and control mechanisms.

The practical results of the research confirm that the combination of adaptability, personalisation and automation in HRM allows the creation of sustainable organisational models that can function effectively in an unstable environment. Further research should focus on analysing the long-term effects of AI in HRM, including developing methods for integrating AI into corporate culture, assessing the impact on employee productivity, and investigating mechanisms for ensuring the ethics of AI solutions. Research on this topic is thus an important step towards building an efficient, technologically advanced and ethically balanced human resource management of the future.

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References:

Agustono, D., Nugroho, R., & Fianto, A. (2023). Artificial Intelligence in Human Resource Management Practices. Kne Social Sciences. DOI: https://doi.org/10.18502/kss.v8i9.13409

Alnsour, A., Kanaan, O., Salah, M., Alfayyad, L., Hijazi, Y., & Alsharif, D. (2024). The impact of implementing AI in recruitment on human resource management efficiency and organizational development effectiveness. *Journal of Infrastructure, Policy and Development*, 8, 6186. DOI: https://doi.org/10.24294/jipd.v8i8.6186

Alsaif, A., & Aksoy, M. (2023). AI-HRM: Artificial Intelligence in Human Resource Management: A Literature Review. *Journal of Computing and Communication*, 2(2), 1–7. DOI: https://doi.org/10.21608/jocc.2023.307053

Argyris, C., & Schon, D. (1978). Organizational learning: A theory of action perspective. Reading, MA: Addison-Wesley.

Baabdullah, A., Alalwan, A., Slade, E., Raman, R., & Khatatneh, K. (2021). SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices. *Industrial Marketing Management*, 98, 255–270. DOI: https://doi.org/10.1016/j.indmarman.2021.09.003

Baki, N. U., Rasdi, R. M., Krauss, S. E., & Omar, M. K. (2023). Integrating Artificial Intelligence in Human Resource Functions: Challenges and Opportunities. *International Journal of Academic Research in Business and Social Sciences*, 13(8), 1197–1211. DOI: https://doi.org/10.6007/ijarbss/v13-i8/18071

Böhmer, N., & Schinnenburg, H. (2023). Critical exploration of AI-driven HRM to build up organizational capabilities. *Employee Relations*, 45(5), 1057–82. DOI: https://doi.org/10.1108/ER-04-2022-0202

Osei-Assibey Bonsu, M., Wang, Y., & Guo, Y. (2023). Does fintech lead to better accounting practices? *Empirical evidence, Accounting Research Journal*, Vol. 36 No. 2/3, pp. 129–147. DOI: https://doi.org/10.1108/ARJ-07-2022-0178

Budhwar, P., Malik, A., De Silva, M. T., & Thevisuthan, P. (2022). Artificial intelligence–challenges and opportunities for international HRM: a review and research agenda. *The International Journal of Human Resource Management*, 33(6), 1065–1097. DOI: https://doi.org/10.1080/09585192.2022.2035161

Deepa, R., Sekar, S., Malik, A., Kumar, J., & Attri, R. (2024). Impact of AI-focussed technologies on social and technical competencies for HR managers – A systematic review and research agenda. *Technological Forecasting & Social Change* 202, 123301. DOI: https://doi.org/10.1016/j.techfore.2024.123301

Einola, K., & Khoreva, V. (2023). Best friend or broken tool? Exploring the co-existence of humans and artificial intelligence in the workplace ecosystem. *Human Resourse Management*, 62, 117–135. DOI: https://doi.org/10.1002/hrm.22147

Fenwick, A., Molnar, G., & Frangos, P. (2024) Revisiting the role of HR in the age of AI: bringing humans and machines closer together in the workplace. *Frontiers in Artificial Intelligence*, 6. DOI: https://doi.org/10.3389/frai.2023.1272823

Fiedler, F. (1967). A theory of leadership effectiveness. New York: McGraw-Hill.

Ganatra, N. (2023). The transformative impact of artificial intelligence on hr practices and employee experience: a review. *Journal of Management Research and Analysis*, 10(2), 106–111. DOI: https://doi.org/10.18231/j.jmra.2023.018

He, G., Liu, P., Zheng, X., Zheng, L., Hewlin, P., & Li, Y. (2023). Being proactive in the age of AI: exploring the effectiveness of leaders' AI symbolization in stimulating employee job crafting. *Management Decision*, 61(10), 2896–2919. DOI: https://doi.org/10.1108/md-10-2022-1390

Hunkenschroer, A., & Luetge, C. (2022). Ethics of ai-enabled recruiting and selection: a review and research agenda. *Journal of Business Ethics*, 178(4), 977–1007. DOI: https://doi.org/10.1007/s10551-022-05049-6

Indrasari, M. (2023). Enhancing employee performance through strategic initiatives. *Journal of Business Management and Economic Development*, 2(01), 383–396. DOI: https://doi.org/10.59653/jbmed.v2i01.548

Malik, A., Budhwar, P., Patel, C., & Srikanth, N. (2020). May the bots be with you! Delivering HR cost-effectiveness and individualised employee experiences in an MNE. *The International Journal of Human Resource Management*, 33(6), 1148–1178. DOI: https://doi.org/10.1080/09585192.2020.1859582

Mayo, E. (1933). The Human Problems of an Industrial Civilization. Pp. 194. New York: The Macmillan Company.

McGregor, D. (1960). The Human Side of Enterprise. McGraw-Hill Book Co., New York.

Murugesan, U., Subramanian, P., Srivastava, S., & Dwivedi, A. (2023). A study of Artificial Intelligence impacts on Human Resource Digitalization in Industry 4.0. *Decision Analytics Journal*, 7, 100249. DOI: https://doi.org/10.1016/j.dajour.2023.100249

Nankervis, A., Connell, J., Cameron, R., Montague, A., & Prikshat, V. (2019). 'Are we there yet?' Australian HR professionals and the Fourth Industrial Revolution. *Asia Pacific Journal of Human Resources*, 59(1), 3–19. DOI: https://doi.org/10.1111/1744-7941.12245

Nimmagadda, S., Surapaneni, R. K., & Potluri, R. M. (2024). Artificial Intelligence in HR: Employee Engagement Using Chatbots. Artificial Intelligence Enabled Management: An Emerging Economy Perspective, pp. 147–162. DOI: https://doi.org/10.1515/9783111172408-010

Nyathani, R. (2023). Ai in performance management: redefining performance appraisals in the digital age. Design of Single Chip Microcomputer Control System for Stepping Motor, 1–5. DOI: https://doi.org/10.47363/jaicc/2023(2)134

Kaur, M., & Gandolfi, F. (2023). Artificial Intelligence in Human Resource Management – Challenges and Future Research Recommendations. *Review of International Comparative Management*, 24. 382–393. DOI: https://doi.org/10.24818/RMCI.2023.3.382

Owais, A. (2018). Artificial Intelligence in HR. *International Journal of Research and Analytical Reviews.* V. 5, Is. 4. 971–978. DOI: https://doi.org/10.31221/osf.io/cfwvm

Panda, G., Dash, M. K., Samadhiya, A., Kumar, A. & Mulat-weldemeskel, E. (2024). Artificial intelligence as an enabler for achieving human resource resiliency: past literature, present debate and future research directions. *International Journal of Industrial Engineering and Operations Management*, Vol. 6 No. 4, pp. 326–347. DOI: https://doi.org/10.1108/IJIEOM-05-2023-0047

Penrose, E. (1959). The Theory of the Growth of the Firm. Basil Blackwell, Oxford.

Roche, C., Wall, P., & Lewis, D. (2022). Ethics and diversity in artificial intelligence policies, strategies and initiatives. *AI and Ethics*, 3(4), 1095–1115. DOI: https://doi.org/10.1007/s43681-022-00218-9

Sabil, S. (2023). Identification of HRM Improvement Strategy Using Artificial Intelligence in Modern Economic Development. *International Journal of Professional Business Review*, 8(6), e01835. DOI: https://doi.org/10.26668/businessreview/2023.v8i6.1835

Sakib, Md. N., Salehin, M., Younus, M., Al-Omari, M. A., Sahabuddin, M., Tabash, M. I. (2024). The ChatGPT and the future of HR: A critical review on the benefits and challenges of Al chatbots in human resource management. *Multidisciplinary Reviews*, 7(3). DOI: https://doi.org/10.31893/multirev.2024136

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. DOI: https://doi.org/10.1177/0008125619867910

Taylor, F. W. (1911). The principles of scientific management. Harper and Brothers.

Tian, X., Pavur, R., Han, H., & Zhang, L. (2023). A machine learning-based human resources recruitment system for business process management: using LSA, BERT and SVM. *Business Process Management Journal*, Vol. 29 No. 1, pp. 202–222. DOI: https://doi.org/10.1108/BPMJ-08-2022-0389

Wuisan, D. S. S., Sunardjo, R. A., Aini, Q., Yusuf, N. A., & Rahardja, U. (2023). Integrating Artificial Intelligence in Human Resource Management: A SmartPLS Approach for Entrepreneurial Success. *Aptisi Transactions on Technopreneurship* (Att), 5(3), 334–345. DOI: https://doi.org/10.34306/att.v5i3.355

Johnson, B., Coggburn, J., & Llorens, J. (2022). Artificial Intelligence and Public Human Resource Management: Questions for Research and Practice. *Public Personnel Management,* 51(4), 538–562. DOI: https://doi.org/10.1177/00910260221126498

Jia, X., & Hou, Y. (2024). Architecting the future: exploring the synergy of AI-driven sustainable HRM, conscientiousness, and employee engagement. Discov Sustain 5, 30. DOI: https://doi.org/10.1007/s43621-024-00214-5

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