ARTIFICIAL INTELLIGENCE APPLICATION IN HUMAN RESOURCES MANAGEMENT

Iskren Tairov[1],
Nadezhda Stefanova[2],
Aleksandrina Aleksandrova[3]

Abstract: In the contemporary landscape marked by the pervasive influence of artificial intelligence (AI), technological innovations continue to reshape conventional practices across various domains. Within the realm of human resources management, the intricate process of decision-making has long posed challenges in terms of analytical elucidation. However, the advent of AI technologies has ushered in a new era, offering unprecedented opportunities to augment and refine HR administration practices.

This paper delves into the transformative potential of AI applications within human resources management, shedding light on how diverse AI modalities, including narrow and general AI, are revolutionizing traditional approaches. Through a comprehensive review of literature sourced from esteemed databases such as Scopus and Google Scholar, this study identifies key advancements poised to drive future research endeavors.

Beyond the realm of recruitment, AI presents a myriad of possibilities spanning talent acquisition, employee training and development, performance assessment, compensation management, engagement initiatives, and even employee well-being programs. The synergy between human capabilities and AI integration emerges as a cornerstone for achieving enhanced outcomes, often serving as a determinant for competitive advantage within organizations while also impacting broader societal dynamics.

[1]Head Assistant Professor, Department of Business Informatics, D. A. Tsenov Academy of Economics, Svishtov, Bulgaria, e-mail: i.tairov@uni-svishtov.bg, ORCID:0000-0002-2971-5451

[2] Head Assistant Professor, Department of Management, D. A. Tsenov Academy of Economics, Svishtov, Bulgaria, e-mail: n.k.stefanova@uni-svishtov.bg, ORCID: 0000-0001-7577-8069

[3] Head Assistant Professor, Department of General Economic Theory, D. A. Tsenov Academy of Economics, Svishtov, Bulgaria, e-mail: a.alexandrova@uni-svishtov.bg, ORCID: 0000-0001-9533-1563

By exploring the symbiotic relationship between human ingenuity and AI capabilities, this research seeks to elucidate the pathways through which AI-driven innovations can foster organizational excellence and societal progress.

Keywords: Narrow artificial intelligence, General artificial intelligence, Human resources management

JEL: C45, C49, O15, O32, M12.

DOI: https://doi.org/10.58861/tae.bm.2024.3.05

Introduction

The supposed "Fourth Industrial Revolution" or "Industry 4.0" has introduced smart technologies such as artificial intelligence (Kong, 2021). "Artificial intelligence can be defined as a science that aims to reproduce aspects of human intelligence such as learning, reasoning, perception, critical thinking, etc. using computer programs that are guided from logic" (Vilani, 2018). Russell and Norvig (Vilani, 2018) describe artificial intelligence as an "intelligent agent" because machines can act intelligently by mimicking human intelligence and this is made possible by feeding the machines lots of data that is tested and train using machine learning models. Demis Hassabis, the founder and CEO of DeepMind, Google's AI division, defines AI as "the science of making machines smarter." Therefore, it means that AI should be used as a broad word for a variety of applications. However, there are other segments under this general heading, including deep learning and machine learning, which are relevant to real-world AI applications such as image identification, voice recognition, search suggestions and virtual assistants, and are classified as narrow or weak AI (Ahmed, 2015).

Other authors will define it as the system's ability to correctly understand input data in order to learn from it and apply it to achieve specific goals and objectives through adaptive performance. (Haenlein, 2019).

In general, artificial intelligence is the concept of giving machines the ability to learn and think (Kumari, 2020). This concept, which has been around for a long time and is a huge area of scientific research, has yet to find real-world applications. Though artificial intelligence is still in its infancy of progress, it has already demonstrated phenomenal achievements in a variety of sectors, attracting a great deal of interest and enthusiasm in the world of management. However, this enthusiasm and dedication hasn't turned into an overall comprehension of how the technology operates, what it genuinely implies and what AI's potential is in the commercial sector

(Shishmanov, 2021). As AI rapidly develops into an established tool and is utilized extensively across businesses, it is vital for enterprises with limited skills to be able to effectively utilize and maintain it (Petrova, 2022). Both businesses and people are beginning to understand the importance of artificial intelligence in work environments and economy, and this technology has the potential to revolutionize the nature of traditional management. Artificial intelligence has an impact on many aspects of business, including management. This technology has the ability to revolutionize even the most basic ways businesses interact with their people, and the impact on management is likely to be huge. As a result, in order to respond to the changes, studies and evaluations on the subject are needed.

Around the turn of the century, artificial intelligence (AI) platforms had already achieved several of the goals of the industry's passionate pioneers, such as algorithms that beat humans in various competitions, robotic contests, and the retailing of automated machinery for pleasure purposes. The advent of the artificially intelligent agent concept has enabled artificial intelligence (AI) systems to access the Internet (via internet search engines, directories, and referral systems), where they are being effectively deployed in industries like transportation, industrial robots, healthcare and data mining. The progress of AI systems since 2000 has been influenced by the extensive use of the World Wide Web in all aspects of society, the accessibility of very large amounts of data, the availability of inexpensive rapid computer systems, and the development of deep learning (Marinova, 2024).

In the development of artificial intelligence, three stages and corresponding types can be distinguished (Kumari, 2020): Stage 1: Machine learning: This stage of artificial intelligence is called Artificial Narrow Intelligence (ANI). This is the basic level of artificial intelligence that is programmed to perform a single task intelligently. In simple words, it is a set of algorithms used by the system to learn from past experience.

Narrow or Weak AI Narrow AI excels at specific duties and mainly deals with attaining rapid development in fields such as mental skills, picture identification, voice search understanding, forecasting, and employee and department diversity. It is one of the most common types of artificial intelligence that everybody witnesses in everyday life, such as website recommendation engines, spambots, suggested goods from online retailers like Amazon and Flipkart, Netflix's tailored leisure recommendations based on user's passions, etc. We can observe it in everyday life – speech recognition, chatbots, personal assistants and voice assistant are the most relevant examples. Stage 2: Machine Intelligence: This is an advanced set of

algorithms used by systems to learn from experience. This type of artificial intelligence is called Artificial General Intelligence (AGI). As the name suggests, it is designed for general purpose and continuous machine learning (Kumari, 2020). An artificial general intelligence, often known as a powerful AI, has the theoretical potential to perform whatever an intelligent being can do, possibly with more computer capability (Goertzel, 2014). Greater equals more than anyone can think, thanks to today's chips with the computational capacity to execute billions of computations in milliseconds. Considering the intricate nature of the human mind, as well as how less scientists understand about it, efforts toward developing artificial intelligence have so far been unsuccessful. As a result, powerful AI will not be addressed further in this study. This is due to the fact that strong AI does not make any real-world implications and so cannot be deployed directly on the data utilized in this research. Stage 3: Machine consciousness: This is the phase where the system learns itself from experience without any external input. This type of artificial intelligence is known as Artificial Super Intelligence (ASI). This particular level of artificial intelligence is much smarter, more sophisticated and relatively more powerful than human intelligence. It is believed that ASI can surpass natural intelligence. Extensive research is being done to achieve AGI, but this advanced level of artificial intelligence has not yet been reached (Kumari, 2020).

Artificial Narrow Intelligence (ANI) is the only form of artificial intelligence on the market right now (Georgievska, 2022). The application of artificial intelligence in a company improves the organization's management processes, making them more flexible and accurate, raising the bar for efficiency and productivity of HR procedures (Nankervis, 2021). The value of general or powerful artificial intelligence that greatly outperforms weak AI is yet to be accessible to commerce and deployed in the real world, which is why we focus on weak AI in this study.

The existing literature is robust and outlines some of the benefits of adopting AI, which include increasing business productivity by optimizing business operations and resources, transforming/reengineering business models, making decisions through predictive intelligence, reducing employee costs and improving of employee experience, job satisfaction and customer service. This is leading to an increasing penetration of AI-enabled solutions in sub-functional HRM areas such as talent acquisition, video interviewing, employee training and development, hiring assessment, talent forecasting and employee engagement (Chowdhury, 2023).

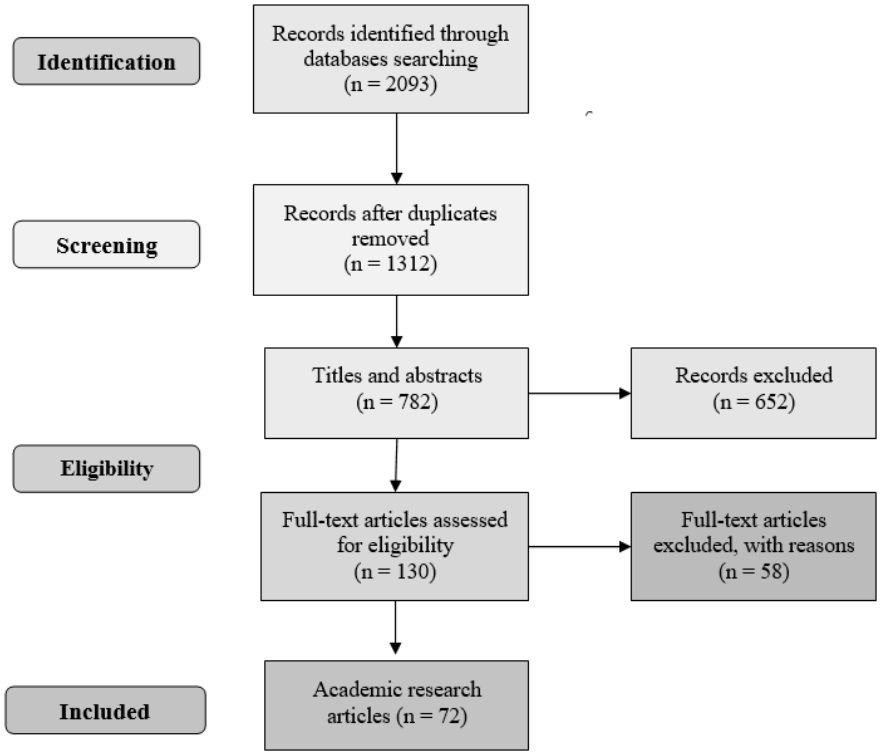
This study is part of a larger research project aimed at analyzing the effects of AI implementation on the economy. This particular paper is a

starting point for our major research. We focus on the areas: general artificial intelligence, narrow artificial intelligence, and artificial intelligence implementation in HR management as our main objective is to provide a comprehensive walk-through and to fill the gaps in the literature related to AI implementation in HR management from an economic perspective. This research focuses on the more important sub-functional areas related to human resources where artificial narrow intelligence and artificial general intelligence can be applied, as well as the advantages and potential benefits of their application in the HR sphere.

1. Methodology

To perform a thematic analysis, we searched the most popular databases Scopus and Google scholar for literature from 2019 to 2024. The author team chose these two databases because of their reliability and prominence in emerging technology research. The following subject areas have been included in the timeline: computer science; social sciences; economics, artificial intelligence and machine learning; management. The search string we used in the article was determined by the purpose of the study and its scope, and included the following keywords: Artificial Intelligence, Narrow Artificial Intelligence, General Artificial Management and HR Management, applied to the databases: “artificial AND intelligence AND management”; “general AND artificial AND intelligence”; “narrow AND artificial AND intelligence”; “artificial AND intelligence AND HR AND management”. The authors used broad search parameters and generic best-fit phrases to find a variety of sources. Subsequently, we manually compared, analyzed and contrasted the search results. On the next stage of our research, studies that were not aligned with the purpose of the review were eliminated from the search. In this way, items from previous searches were discarded. We obtained the most relevant search by utilizing a specific syntax, and then we narrowed it down to artificial intelligence application in human resources management. Following the research logic, in May 2024, the team selected 2093 relevant articles. Our team chose to implement the PRISMA search strategy, because it is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses (Moher et al., 2009). PRISMA primarily focuses on reporting reviews that assess the effects of interventions but can also serve as a foundation for reporting systematic reviews (PRISMA 2023). The authors believe it is a scientifically validated

method that will enhance the quality of this paper. Given the purpose of our study, we selected articles that explore artificial intelligence application in human resources management. We checked the aforementioned articles for duplicates and filtered the results using the inclusion/exclusion criteria, resulting in 130 articles assessed for eligibility. As a result of applying the PRISMA search strategy (preferred reporting elements for systematic reviews and meta-analysis), 72 literature sources were selected. Figure 1 presents the logical structure of the analysis, featuring a PRISMA diagram that details the selection process of the identified academic research articles.



Source: (Moher et al., 2009), authors' interpretation.

Figure 1. PRISMA diagram detailing the selection process of the academic research articles identified.

2. Literature review

2.1. Application of artificial intelligence in the HR sphere

The past ten years have seen significant scientific progress in the field of artificial intelligence, which is defined as "the ability of a system to correctly

interpret external data, learn from that data, and use that knowledge learned to achieve specific goals and tasks through flexible adaptation" (Haenlein & Kaplan, 2019).

As a result of these advances, management scholars have become increasingly intrigued by the potential of artificial intelligence to assist or transform firms (von Krogh, 2018).

Human resource management has become a strategic trend for organizations due to economic, political, social and especially technological changes (Jatoba, 2019). We can note that recent research shows the beneficial influence of artificial intelligence on the field of human resources.

In their research, Jia, Guo, Li, Chen, Garima, Vikram, Vinay, Thomas, George, Yawalkar, Vivek discuss the benefits of applying artificial intelligence in measuring HRM, which includes human relations management, recruitment and selection, compensation management, training and development, performance management and strategic human resource management. (Jia, 2018; Garima, 2020; Thomas, 2019; (Yawalkar, 2019). Specifically, Garima, Vikram and Vinay explore its utility for both employees and organizations and conclude that AI is seeing routine HR jobs replaced with less human intervention. While George and Thomas argue that humans cannot be replaced by artificial intelligence, authors such as Vivek and Yawalkar find how artificial intelligence helps reduce workload and enrich workplace efficiency (Garima, 2020; Yawalkar, 2019).

According to other researchers such as Abdeldayem., Aldulaimi, Nawaz, Qamar, Agrawal, Samad, Chiappetta Jabbour, Yahia, Hlel, Colomo-Palacios artificial intelligence finds application among specific areas such as: talent search and recruitment, training and development, performance analysis, career development, compensation and staff turnover (Abdeldayem, 2020; Nawaz, 2020; Qamar, 2021; Yahia, 2021).

3. Results

The role of artificial intelligence in an organization is to improve the effectiveness and efficiency of the HR function by carrying out various management processes flexibly and accurately (Nankervis, 2021). One of the key areas where AI can have a significant impact on HR is recruitment and talent acquisition (Nazri, 2019). AI-based algorithms can scan resumes and job applications to identify suitable candidates based on pre-qualified criteria, reducing the time and effort required for manual screening. AI can also

analyze applicant data to predict which candidates are most likely to succeed in a role, thereby improving the recruitment process. Artificial intelligence can also be used to improve employee training and development programs. By analyzing employee data, AI algorithms can identify knowledge gaps and recommend training programs to fill those gaps. (Masum, 2018). AI-powered learning platforms can personalize the learning experience to meet the individual needs of employees, thereby improving learning outcomes (Reddy, 2019).

Compensation management or payroll management is also a dynamic management process that defines, assigns and adjusts employee compensation principles, strategies, levels, structures and factors (Henderson, 2003). The application of artificial intelligence can help facilitate the management of fairness in compensation. VR neural network is a supervised artificial intelligence technology based on biology, neuroscience, psychology and statistics. It can mimic the nervous system of the human brain, establish a regular computer pattern, and integrate multiple neural network nodes (Richard, 1991). VR neural network can be used to design an intelligent system to support decision making in forming a fair wage evaluation system (Jia, 2018).

Another area where AI can play a critical role is employee engagement and retention. By analyzing employee data, AI algorithms can identify patterns and trends that may indicate low engagement or high turnover. This information can help HR professionals take proactive measures to address these issues, such as implementing training programs or improving workplace culture. (Kimseng, 2020)

Artificial intelligence can help automate time-consuming administrative tasks, freeing HR staff to focus on other aspects of their work (Petrova, 2022). This can lead to increased productivity for HR staff, allowing them to spend more time on tasks that require their expertise (Czarnitzki, 2022). Artificial intelligence can help measure employee productivity in a more objective way. Traditional methods of measuring employee performance, such as subjective ratings, can be biased and unreliable (Strohmeier, 2020). AI-powered systems can provide more objective measurements of employee performance, using data and analytics to make informed decisions (Chowdhury, 2022).

Artificial intelligence can also have a significant impact on performance management. (Bhardwaj, 2020) AI algorithms can analyze employee performance data to identify areas where improvements can be made. This information can be used to develop customized plans to improve the

performance of individual employees, which can improve overall performance and productivity (Oswald, 2020).

Artificial intelligence plays a critical role in ensuring workplace safety and compliance. By analyzing data from sensors and other devices, AI algorithms can identify potential safety hazards and recommend preventative measures to mitigate risks. This can help reduce workplace accidents and injuries, as well as ensure compliance with safety regulations (Priyanka, 2023; Tambe, 2019).

In turn, AGI, the pinnacle of artificial intelligence (Desai, 2023), is poised to revolutionize HR practices, reshaping the work landscape like never before. AGI's unmatched cognitive capabilities, powered by natural language processing and machine learning, will allow it to analyze resumes, conduct interviews and even assess candidates' soft skills with unparalleled accuracy. AGI's algorithms can analyze vast amounts of employee data, including performance metrics, skill assessments and career aspirations. Using this data, AGI can provide personalized recommendations for training and development programs, ensuring that employees receive targeted resources to improve their skills and knowledge. AGI-supported systems can collect and analyze data from a variety of sources, including project results, customer feedback and peer evaluations, to provide a comprehensive and unbiased view of employee performance. By combining quantitative and qualitative data, AGI can generate objective performance results and identify areas for improvement. AGI-powered chatbots and virtual assistants can provide personalized support to employees by answering their queries, providing guidance and even offering mental health resources. These virtual companions can use natural language processing to engage in meaningful conversations, offering emotional support and helping employees deal with work-related challenges. Additionally, AGI algorithms can analyze employee mood data to gauge engagement levels, identify potential issues and enable HR professionals to implement targeted interventions to improve employees' well-being and job satisfaction. AGI algorithms will reveal patterns and trends, allowing organizations to measure progress, identify opportunities for growth. AGI can play a vital role in promoting diversity and inclusion in organizations. By removing human bias from decision-making processes, AGI algorithms can ensure fair and equitable treatment in promotions, rewards and talent management. AGI-powered analytics can analyze employee data to identify diversity gaps, assess the impact of diversity initiatives, and develop targeted strategies to promote an inclusive work environment (Desai, 2023).

Against the background of what has been said so far, we find that the application of artificial intelligence in the field of human resources management is becoming increasingly important for business and its stability, given the digital transformation, which requires timely change and organizational adaptation. Undoubtedly, the improvement of processes and activities related to the management of human resources becomes a necessary condition for the future vision of the organization and its productivity.

4. Discussion

Human resource management refers to a series of human resource policies and related management activities of enterprises (Noe, 2006). In this regard, artificial intelligence will be able to play a greater role in human resources if it is decided what data to track, research, manage and protect (Ahmed, 2018).

Analyzing the application of artificial intelligence in the considered research area "human resource management", we find that the intelligent system manages to support and improve this process by creating a favorable, proactive business environment, promoting the potential of the human resource and its development. Part of the studied scientific articles put the research focus on modern artificial intelligence (ANI), which is used as an auxiliary system for solving a number of management issues related to workplace culture and human capital productivity, and other studies establish the future direction of general artificial intelligence (AGI) and its unrivaled cognitive capabilities for the HR sphere, predetermining workforce satisfaction and organizational progress.

By 2030, AI is predicted to create $13 trillion in economic activity globally, based on research. According to Richard Coombs, head of Deloitte's HR transformation practice, AI is expected to reduce behavioral and perceptual biases in human interactions.

As AI technology continues to grow and evolve over time, companies can expect to see more automation, personalization and data-driven decision-making in HR management. Artificial intelligence will continue to help improve HR practices, such as job postings, candidate screening and employee performance management.

By providing real-time data and insights, AI will also help HR professionals make smarter decisions.

In addition, HR must also anticipate the emergence of new positions and job functions in HR, such as AI ethics officers, who will ensure that AI algorithms are used in an ethical and fair manner. As AI becomes more woven into HR operations, these jobs will become increasingly key, and HR professionals must ensure that AI is used effectively and equitably. The application of artificial intelligence in the field of human resources management in itself also entails a number of risks such as burnout among employees, dehumanization of personal relationships, "techno-stress", etc. How to prevent such risks is a future topic on which we would focus our research interest.

Conclusion

As we conclude our exploration into the realm of Artificial Intelligence (AI) application in Human Resources Management, it becomes evident that the integration of AI technologies significantly shapes both current practices and future trajectories within businesses. Delving into key sub-functional areas such as recruitment, talent acquisition, training and development, performance management, compensation administration and employee well-being, we uncover a rich tapestry of opportunities where AI, whether in the form of narrow or general intelligence, holds substantial promise.

By harnessing the cognitive capabilities bestowed by AI, managers are empowered to make more informed and strategic decisions regarding human capital management. This, in turn, catalyzes productivity enhancements towards achieving organizational goals and objectives. Notably, the current landscape distinguishes between Artificial Narrow Intelligence (ANI), which strategically enhances HR processes, and the pinnacle of Artificial General Intelligence (AGI), which fosters inclusive work environments, thereby bolstering productivity and organizational satisfaction.

Although prognosticators foresee AI technologies surpassing human capabilities in various domains, it is imperative to heed the insights of scholars such as Wilson and Daugherty, who advocate for a collaborative future where AI serves as a supportive tool rather than a wholesale replacement for human ingenuity. This view is echoed by studies emphasizing the importance of symbiotic interactions between humans and machines, where machines predict outcomes while humans exercise judgment and take appropriate actions.

Indeed, the synergistic interplay between human potential and AI emerges as a linchpin for achieving superior outcomes, underpinning the competitive edge of businesses and fostering societal advancements. As we navigate the evolving landscape of AI in HR, it is this fusion of human creativity and technological innovation that propels us towards a future characterized by harmonious collaboration and enriched organizational performance.

References

Abdeldayem, M. M. (2020). Trends and opportunities of artificial intelligence in human resource management: Aspirations for public sector in Bahrain. *International Journal of Scientific and Technology Research 9 (1):3867–71.*

Ahmed, K. (2015, 09 16). *Google's Demis Hassabis – misuse of artificial intelligence 'could do harm'*. Available online: www.bbc.com: https://www.bbc.com/news/business-34266425

Ahmed, O. (2018). *ARTIFICIAL INTELLIGENCE IN HR, IJRAR1944797 International Journal of Research and Analytical Reviews,* Available online: www.ijrar.org.

Aldulaimi, S. e. (2020). Trends And Opportunities Of Artificial Intelligence In Human Resource Management*, INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, vol. 9.*

B. Garima, S. V. (2020). An Empirical Study Of Artificial Intelligence and its Impact on Human Resource Functions. *International Conference on Computation, Automation and Knowledge Management (ICCAKM) Amity University*.

Bhardwaj G., & S. S. (2020). An empirical study of artificial intelligence and its impact on human resource functions. *2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM), IEEE* .

Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology. Qualitative Research in Psychology* 3: pp.77–101. DOI: 10.1191/1478088706qp063oa.

Choudhary, S. S. (2013). Understanding Captcha: Text and Audio Based Captcha. *International Journal of Advanced Research in Computer Science and Software Engineering*, pp.106-115.

Chowdhury S., & B. P.-E. (2022). AI-employee collaboration and business performance: Integrating knowledge-based view, socio-technical systems and organisational socialisation framework. *J. Bus. Res., 144*.

Czarnitzki D., & F. G. (2022). Artificial intelligence and firm-level productivity. *ZEW-Centre for European Economic Research* .

Desai, K. (n.d.). *AGI & Beyond: Revolutionizing HR Practices for the Future World of Work*. Available online: https://www.linkedin.com/pulse/agi-beyond-revolutionizing-hr-practices-future-world-work-desai

Ford, M. (2018). *Architects of intelligence.* Packt.

George, B. (2015). *Artificial intelligence simplified: Understanding basic concepts.* Bettendorf: CSTrends LLP.

Georgievska, I. (2022). *How AI in HR and AI recruitment will revolutionize job markets.*

Goertzel, B. (2014). Artificial general intelligence: Concept, state of the art, and future prospects. *Journal of Artificial General Intelligence*, pp.1-48.

Grace, K. J. (2017). *"When Will AI Exceed Human Performance? Evidence from AI Experts, Available online:* http://arxiv.org/abs/1705.08807*.*

Haenlein, A. e. (2019, Jan. 01). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence pp., DOI: 10.1016. *Business Horizons, vol. 62, no. 1. Elsevier Ltd,*.

Haenlein, M., & Kaplan, A. (2019). A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. *Calif. Manag. Rev*., 61, pp5–14.

Henderson, R. I. (2003). *Compensation management in a knowledge-based world (10th ed.).* New Jersey: MA: Prentice Hall.

Itsquiz. (2017). *How AI Helps To Improve Performance Management | by Itsquiz | Medium,* Available online: *https://medium.com/@itsquiz15/how-ai-helps-to-improveperformance-management-2a7ef816d49b*

J. Wilson & P. Daugherty R. (2018). *How Humans and AI Are Working Together in 1,500 Companies,* Available online: *https://hbr.org/2018/07/collaborative-intelligence-humans-and-ai-arejoining-forces*

Jatobá, M. J. (2019). Evolution of Artificial Intelligence research in Human Resources. Evolution of Artificial Intelligence research in human resources. *Procedia Computer Science 164*: pp.137–42. DOI:10.1016/j.procs.2019.12.165.

Jeronimo, F. (2017, 11). *Mobile AI and the Future of Intelligent Devices.* Available online: https://cdn.rios.hu/dl/cnt/2017-12/142233/idc_white_paper.pdf

Jia Q., & G. Y. (2018). A conceptual artificial intelligence application framework in human resource management. *In Proceedings of The 18th International Conference on Electronic Business Guilin, China, December 2-6.*

Khemali, C. D. (2019). Solving Rubik's cube using graph theory: ICCI-2017. *Computational intelligence: Theories, applications and future directions-volume 1*, pp.301-317.

Kimseng T., & J. A. (2020). Applications of fuzzy logic to reconfigure human resource management practices for promoting product innovation in formal and non-formal RandD firms. *J. Open Innov.: Technol. Mark. Complex., 6 (2)* .

Kong, H. e. (2021). Influences of Artificial wareness on career competency and job burnout. *International Journal of Contemporary Hospitality Management 33 (2):717–34.* DOI:10.1108/IJCHM-07-2020-0789.

Kumari, A. H. (2020, Jily). A conceptual framework on artificial intelligence technologies in human resource management. *The International journal of analytical and experimental modal analysis, Volume XII, Issue VII*.

Kumari, A. H. (2020). A conceptual framework on artificial intelligence technologies in human resource management. *The International journal of analytical and experimental modal analysis*.

Laird, J. E. (2009). Claims and challenges in evaluating human-level intelligent systems. *Second Conference on Artificial GeneralIntelligence*, pp. 91-96.

Legg, S. (2013). An approximation of the universal intelligence measure. *Algorithmic Probability and Friends. Bayesian Prediction and Artificial Intelligence*, pp.236–249.

Littman, M. L.-V. (2021, 09). *Gathering Strength, Gathering Storms: The One Hundred Year Study on Artificial Intelligence (AI100) 2021 Study Panel Report.* Available online: https://www.stanford.edu: https://ai100.stanford.edu/sites/g/files/sbiybj18871/files/media/file/AI100Report_MT_10.pdf

Marinova N. (2024). *ADVANTAGES AND ETHICAL CONSIDERATIONS OF INDUSTRIAL IOT ARTIFICIAL INTELLIGENCE SOLUTIONS USAGE Business Management*, 2024 (2), pp. 43 - 58, DOI: 10.58861/tae.bm.2024.2.03

Marinova, N. (2014). *Artificial intelligence systems.* Svishtov: Tsenov Publishing House.

Marwala, T. (2017). *Artificial intelligence and economic theory: Skynet in the market.* Springer.

Masum A.K.M., & B. L. (2018). Intelligent human resource information system (i-HRIS): a holistic decision support framework for HR excellence. *Int. Arab J. Inf. Technol., 15 (1)* .

Mitchell, M. (2019). *Artificial intelligence: A guide for thinking humans.* New York: Farrar, Straus and Giroux.

Moher, D., Alessandro L., Jennifer T., & Douglas G. A. 2009. *The PRISMA Group (2009). Pre-ferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement.* PLoS Med 6: e1000097. DOI: 10.1371/journal.pmed1000097.

Moravec, H. P. (2000). *Robot: Mere machine to transcendent mind.* Oxford University Press.

Nankervis, A. C. (2021). 'Are we there yet?' Australian HR professionals and the Fourth Industrial Revolution. *Asia Pacific Journal of Human Resources*, 59(1), pp.3-19.

Nawaz, N. (2020). Artificial Intelligence applications for face recognition in recruitment process. . *Journal of Management Information and Decision Sciences 23*, pp.499–509.

Nazri M.Z.A., & G. R. (2019). Predicting academician publication performance using decision tree. *Int. J. Recent Technol. Eng., 8 (2)* .

Noe, R. H. (2006). *Human Resources Management: Gaining a Competitive Advantage.* New York,: MA: McGraw-Hill Education.

Oswald F.L., & B. T. (2020). Big data in industrial-organizational psychology and human resource management: Forward progress for organizational research and practice. *Annu. Rev. Organ. Psychol. Organ. Behav., 7* .

Petrova, M., Popova, P., Popov, V., Shishmanov, K., & Marinova, K. (2022). Digital Ecosystem: Nature, Types and Opportunities for Value Creation. In: Rodionov, D., Kudryavtseva, T., Skhvediani, A., Berawi, M.A. (eds) Innovations in Digital Economy*. SPBPU IDE 2021. Communications in Computer and Information Science, vol 1619. Springer, Cham.* DOI:10.1007/978-3-031-14985-6_5

Petrova, M., Popova, P., Popov, V., Shishmanov, K., & Marinova, K. (2022). Potential of big data analytics for managing value creation. *International Conference on Communications, Information, Electronic and Energy Systems, CIEES 2022 - Proceedings,* DOI:10.1109/CIEES55704.2022.9990882 F

Picard, R. W. (1995). *Advancing human wellbeing by developing new ways to communicate, understand, and respond to emotion.* Available online: https://www.media.mit.edu/: https://affect.media.mit.edu/pdfs/95.picard.pdf

Poole, D. L. (2017). *Artificial Intelligence: Foundations of computational agents.* Cambridge: Cambridge University Printing House.

PRISMA (2023) *Transparent Reporting of Systematic Reviews and Meta-Analyses*. Available online: http://prismastatement. org/

Priyanka R., & R. K. (2023). A fuzzy DEMATEL decision modeling framework for identifying key human resources challenges in start-up companies: Implications for sustainable development. *Decis. Anal. J., 6* .

Q. Jia, & Y. G. (2018). *A Conceptual Artificial Intelligence Application Framework in Human Resource Application Framework in Human Resource Management, Association for Information Systems AIS Electronic Library (AISeL). Guilin,China, Dec. 2018.* Available online: https://aisel.aisnet.org/iceb2018/91.

Qamar, Y. R. (2021). When technology meets people: The interplay of artificial intelligence and human resource management. *Journal of Enterprise Information Management 34 (5):1339–70,* DOI:10.1108/JEIM-11-2020-0436.

Reddy K., & K. P. (2019). Artificial Intelligence (AI) in learning and development: A conceptual paper. *J. Manag. Dev., 38 (1)*.

Richard, M. D. (1991). *Neural network classifiers estimate Bayesian a posteriori probabilities. Neural.*

Russel, S. &. (2021). *Pearson Education Limited.*

Russell, S. J. (2019). *Human compatible: Artificial intelligence and the problem of control.* New York: Viking.

S. Aldulaimi, & M. M. (2020). Trends And Opportunities Of Artificial Intelligence In Human Resource Management*, INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, vol. 9, [Online]. Available: www.ijstr.*

Shishmanov, K. T., Popov, V. D., & Popova, P. E. (2021, October). API Strategy for Enterprise Digital Ecosystem*. In 2021 IEEE 8th International Conference on Problems of Infocommunications, Science and Technology (PIC S&T),* pp. 129-134

Skil. (2020). *AI Recruiter Bot for Candidate Acquisition | Chatbots Life,* Available online: https://chatbotslife.com/ai-recruiter-bot-for-candidateacquisition-467812712262

Slyusar, V. (2019). *Artificial intelligence as the basis of future control networks.*

Soumyadeb Chowdhury, P. & D.-E.-E. (2023). Unlocking the value of artificial intelligence in human resource management through AI capability framework. *Human Resource Management Review Volume 33, Issue 1,*.

Stead, W. W. (2018). Clinical Implications and Challenges of Artificial Intelligence and Deep Learning*, JAMA,* vol. 320, no. 11, p. 1107, , DOI: 10.1001/jama.2018.11029.

Strohmeier, S. (2020). Smart HRM–a delphi study on the application and consequences of the Internet of Things in Human Resource Management. *Int. J. Hum. Resour. Manag., 31 (18)*.

Tambe P., & C. P. (2019). Artificial intelligence in human resources management: Challenges and a path forward. *Calif. Manage. Rev., 61 (4)* .

The Future of AI in HR: How AI is Transforming Revolutionize HR. (n.d.). Available online: https://www.linkedin.com/pulse/future-ai-hr-how-transforming-revolutionize-md-mizanur-rahman/

Thomas, G. G. (2019). Integration of Artificial Intelligence in Human Resource*. International Journal of Innovative Technology and Exploring Engineering,* DOI: 10.35940/ijitee.L3364.129219.

Vilani, C. (2018). *WHAT IS ARTIFICIAL INTELLIGENCE? Villani mission on artificial intelligence.*

von Krogh, G. (2018). Artificial Intelligence in Organizations: New Opportunities for Phenomenon-Based Theorizing. *Acad. Manag. Discov*., 4, pp.404–409.

Wallach, W. (2009). *Moral machines: Teaching robots right from wrong.* Oxford University Press.

Wilson, D. H. (2011). *Robopocalypse.* New York: Doubleday.

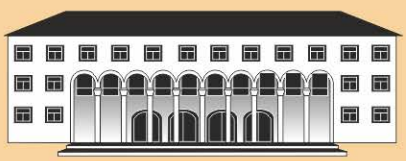
Yahia, N. B.-P. (2021). From Big Data to Deep Data to Support People Analytics for Employee Attrition Prediction. *IEEE Access 9:60447–58.* DOI:10.1109/ACCESS.2021.3074559.

Yawalkar, M. V. (2019). A Study of Artificial Intelligence and its role in Human Resource Management. *IJRAR19UP004 International Journal of Research and Analytical Reviews*

Acknowledgement: This research was funded by The Bulgarian National Science Fund at the Bulgarian Ministry of Education and Science, Funding Competition for financial support for projects of junior researchers and postdocs—2022, Funding number: КП-06-М65/2 from 12.12.2022, Project title: “Artificial intelligence in the economic perspective”, Project coordinator: Aleksandrina Aleksandrova, PhD.

ISSN 0861 - 6604
ISSN 2534 - 8396

BUSINESS management



PUBLISHED BY
D. A. TSENOV ACADEMY
OF ECONOMICS - SVISHTOV

3/2024

BUSINESS management 3/2024

The printing of the issue 1-2024 is funded with a grand from the Scientific Research Fund, Contract KP-06-NP5/42/30.11.2023 by the competition "Bulgarian Scientific Periodicals - 2024".

Submitted for publishinq on 12.09.2024, published on 16.09.2024,
format 70x100/16, total print 80

BUSINESS management

D. A. Tsenov Academy of Economics, Svishtov

Year XXXIV * Book 3, 2024

CONTENTS