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The Convergence of Human Resource Management and Artificial Intelligence: Practical Applications and Ethical Dilemmas

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ABSTRACT

The application of artificial intelligence (AI) has become one of the most significant innovations in human resource management (HRM) today, fundamentally transforming the practices of recruitment, performance management, employee experience, and knowledge management. The aim of this study is to explore the organizational, technological, and psychological factors involved in the integration of AI into HR processes and to examine the attitudes and perceptions of managers, HR, and IT experts. The research was conducted using a mixed-methods approach: quantitative analysis using Spearman correlations identified significant relationships between the perceived effects of AI, while qualitative, semi-structured interviews provided deeper insight into the practical challenges of implementation. According to the results, respondents primarily associate the use of AI with improvements in efficiency, innovation, and work-life balance, while expressing particular concern about data security, ethical use, and employee trust. Based on interviews with managers and IT experts, the key to successful implementation is gradual integration, employee training and involvement, and a reliable technological infrastructure. The novelty of the research lies in its interdisciplinary approach, which combines technological, human, and organizational perspectives. The results contribute to the scientific and practical foundation for the ethical and sustainable implementation of AI-based HR systems.

Keywords: human resource digitalization, psychosocial attitudes, organizational adaptation, ethical and data protection challenges, AI-based decision support

INTRODUCTION

The rise of artificial intelligence (AI) in the last decade has fundamentally transformed various areas of economic and social functioning, including education, healthcare, industry, and business services. Advances in AI technologies—particularly in machine learning, deep learning, and natural language processing—have enabled the automation and support of tasks that previously required human intelligence. One of the most dynamically changing areas of application is human resource management (HRM), where the use of AI is generating not only technological but also strategic and cultural changes. AI-based solutions are already present in the recruitment and selection process, in supporting employee training and development, and in optimizing performance management systems. At the same time, the rapid introduction of this technology raises a number of questions: how does AI affect the role of HR professionals, how does it transform the relationship between employees and the organization, and what ethical, privacy, and social dilemmas does the mechanization of decision-making raise? Although there is a growing body of international research on the intersection of AI and HRM, there is still limited empirical data available among Hungarian companies on the real effects and acceptance of AI applications (Kurucz et al., 2025; Berde et al., 2025; Szabó-Szentgróti et al., 2025; Juhász et al., 2022; Kálmán et al., 2024a).

The aim of this study is to explore the role and potential impacts of artificial intelligence in human resource management, with a particular focus on three key areas: recruitment, performance management, and employee training. The research uses a mixed-method approach to examine, on the one hand, employees' attitudes and knowledge of AI and, on the other hand, the experiences and expectations of HR, IT, and management professionals regarding the integration of AI systems into HR processes. The aim of the empirical study is to contribute to the expansion of the domestic literature and to formulate practical recommendations on the possibilities, limitations, and ethical framework of AI application in the field of human resource management.

LITERATURE REVIEW

The Concept and Technological Development of Artificial Intelligence

Artificial intelligence (AI) is one of the fastest-growing areas of technology, with the goal of developing systems capable of performing tasks characteristic of human intelligence, such as learning, reasoning, and problem solving. One of the earliest definitions is attributed to John McCarthy (1956), who defined AI as "the science of intelligent machines, especially intelligent computer programs."

The history of AI development can be divided into stages: the classic beginnings are marked by the 1956 Dartmouth Conference, followed by an optimistic wave of research in the 1960s and 1970s. The 1980s were characterized by the so-called "AI winter" due to technological and funding challenges. The modern era can be dated from the 1990s, thanks to the breakthroughs in big data, cloud computing, increasing computing capacity, machine learning, and deep learning (Gold, 2023).

Artificial intelligence can be understood on three levels:

- **Hardware level**: AI chips (e.g., GPU, TPU) that enable efficient processing of large data sets (Regunath, 2021).
- **Algorithmic level**: this includes machine learning (ML) and deep learning (DL) algorithms that are capable of learning from data and drawing conclusions.
- **Application level**: This includes facial recognition, speech and text synthesis, machine translation, self-driving vehicles, and robotic solutions.

The goal of machine learning (ML) is for the system to learn from data and recognize new patterns without human intervention. The three most common ML tasks are classification (e.g., spam filtering), regression (estimating continuous values), and clustering (grouping data without labels).

Deep learning (DL) is a special branch of ML that uses multilayer neural networks, similar to how the human brain works. These are particularly effective at processing complex data such as images, sounds, and text. Natural language processing (NLP) enables machines to interact with human language. Its applications include text comprehension, machine translation, sentiment analysis, and text generation. Although today's models, such as generative language models (e.g., GPT), are already achieving impressive results, truly understanding high-level semantic meaning remains a challenge (Huawei Technologies Co., Ltd., 2023).

Business applications of Artificial Intelligence

Artificial intelligence has become one of the main drivers of business transformation. Organizations use the technology in various ways, such as data analysis, personalizing customer interactions, and increasing operational efficiency (Monideepa Beath & Ross, 2019). Companies use AI-based systems to analyze large data sets, enabling them to make immediate, predictive, and data-driven decisions. These analyses can identify market trends and customer preferences, as well as provide opportunities to optimize costs and fine-tune marketing strategies (Joseph, 2024; Gyurián Nagy, 2025; Kálmán et al., 2024b). Artificial intelligence contributes to the automation of repetitive tasks (e.g., data entry, invoicing, reporting). It can extract data from images and PDFs or make route optimization suggestions based on customer profiles and market trends (Joseph, 2024). Through the use of virtual assistants (chatbots, voice-based systems), AI helps to provide faster and more efficient customer service. These are able to recognize user intentions and provide personalized responses based on data from back-end systems. Banks and financial service providers use AI-based systems to detect suspicious transactions. Through real-time monitoring, AI identifies unusual patterns and can automatically block potentially dangerous operations.
One of the basic conditions for sustainable technological development is the availability of well-trained, healthy, and adaptable human resources. Quality education and healthcare are essential for this. In a rapidly changing world, education systems are often unable to keep up with new competency requirements. This is why the concept of lifelong learning (LLL) has become particularly important (Asztalos, 2018). The development of vocational training systems and the digitization of higher education can help Hungary—and other countries—keep pace with AI-based economic transformation. Technological tools only become truly valuable when combined with human competencies such as problem solving, collaboration, and critical thinking.

The relationship between artificial intelligence and HRM

Artificial intelligence (AI) is gradually redefining the role, toolkit, and strategic logic of human resource management (HRM). The application of this technology in a number of HR functions enables increased time and cost efficiency, data-driven decision-making, and the personalization of the employee experience (Joseph, 2024). Below, we examine the role of artificial intelligence in three key HR areas: recruitment and selection, training and development, and performance management.

AI-based recruitment and selection solutions

The digitization of recruitment is one of the most dynamically developing areas, where AI offers opportunities in two fundamental approaches. Custom-developed AI tools are fully customized systems that can be deeply integrated with corporate databases and HR strategies, enabling the automation of resume screening, pre-interviews, interview scheduling, and candidate communication. Although these systems involve high development and maintenance costs, they provide a strategic advantage in the long term (Joseph, 2024).
AI point solutions with a lower entry threshold, such as chatbots or CV analyzers, provide targeted support for specific phases of recruitment. They can be implemented quickly, require minimal IT investment to operate, and are particularly beneficial for companies that want to achieve scalable results quickly. Advanced systems such as ZBrain enable the integration of generative AI into recruitment platforms, supporting data-driven decision-making and talent management (Akash, 2024).

Training, development, and AI-based learning support

Artificial intelligence plays a role not only in automating training, but also in personalizing the learning experience. AI-powered coaching systems can analyze learner behavior, answer questions, and even provide real-time feedback during the learning process (Veldsman & Onasi, 2024; Darabos et al., 2024). Developments that reflect generational characteristics, such as Dextego and Wondder, help develop soft skills, empathy, collaboration, and DEIB (diversity, equity, inclusion, belonging) competencies through a gamified learning experience. The AI-based business coach introduced by LinkedIn Learning offers users the opportunity to receive context-specific advice on their career development or current workplace challenges. This type of intelligent support makes learning more effective, measurable, and accessible at all organizational levels.

Performance management and feedback with AI

One of the biggest advantages of AI-based performance management systems is their ability to support a culture of continuous, real-time feedback. As Adobe has emphasized, traditional annual reviews are being replaced by

data-driven, iterative interactions that increase employee engagement and reduce the risk of losing talented employees (Myers, 2024). AI can identify employees who are performing exceptionally well or who need support based on key performance indicators (KPIs). Two-way communication channels, whether AI chatbots or digital assessment platforms, enable rapid responses, thereby preventing the long-term negative consequences of underperformance or turnover (Buck & Morrow, 2018). AI is not just a tool, but can also work with HR as a strategic partner. With its help, HR departments can operate more agilely, predictively, and objectively, while the employee experience becomes more personalized and inclusive.

The benefits of Artificial Intelligence in Human Resource Management

The use of artificial intelligence (AI) in human resource management (HRM) opens up new opportunities for operational efficiency, cost savings, and decision support. Automation can simplify routine tasks and make administrative and strategic processes faster and more accurate, while enabling organizations to adapt to labor market challenges and digital transformation (Vats, Kirilenko & Novak, 2024). The integration of AI creates opportunities for the creation of new jobs and the redefinition of existing roles. In addition, targeted training and skills development for employees is becoming crucial, particularly in the areas of data awareness, technological affinity, and critical thinking (Noureddine, 2023). It has become essential for HR professionals to acquire competencies that enable them to use AI-driven systems ethically, consciously, and effectively. AI-based HR systems can respond to employee needs, predict risks of engagement or attrition, and support personalized interventions. This not only makes companies more competitive, but also allows them to respond more flexibly to crisis situations, such as labor shortages, turnover, or economic uncertainty (Bukhtueva, 2024).

However, it is important to emphasize that AI does not replace but complements the human factor. Empathy, interpersonal skills, and value-based communication remain essential to the success of HR roles. Artificial intelligence can act as an assistant, supporting HR staff in focusing on strategic tasks and making decisions that take into account both individual and organizational perspectives (Vats et al., 2024). The outstanding advantages of this technology include scalability and the ability to operate non-stop. For example, chatbots and automated customer service systems can significantly reduce labor costs while being able to handle large volumes of inquiries quickly and efficiently. AI-driven analytical tools help identify market trends, customer preferences, and internal operational deficiencies, improving predictive accuracy and the quality of operational decisions (Bukhtueva, 2024).

At the same time, ethical and legal issues are also on the agenda, focusing on the protection of personal data, the transparency of algorithmic decisions, and ensuring impartiality. It is therefore essential that the ethical use of AI is regulated and monitored within the organizational framework of HRM, and that employees are kept informed about technological developments (Noureddine, 2023).

Overall, artificial intelligence is driving not only technological innovation but also structural and cultural transformation in key areas of HRM, which in the long term can increase the resilience, flexibility, and sustainable operation of organizations (Happ & Nemes, 2025).

METHODOLOGY

The aim of this study is to explore the application of artificial intelligence (AI) in human resource management (HRM), with a particular focus on three key areas: recruitment, performance management, and employee training. The research examines, on the one hand, the general public's knowledge and attitudes toward AI and, on the other hand, the experiences and expectations of professionals—HR, IT, and business management experts—regarding the integration of AI into HR processes.

The research used a mixed methodological approach, combining quantitative and qualitative data collection techniques. This allowed us to gain a broader insight into the awareness, acceptance, and practical application possibilities of AI technology in Hungary. Quantitative data collection was carried out using an online questionnaire, which was distributed using a snowball sampling technique. The form was created using Google Forms and distributed primarily among employees in Hungary. The purpose of the questionnaire was to map general knowledge and opinions about AI, with a particular focus on its application in HR processes. A total of 185 responses were received, all of which were evaluated and processed anonymously. The questionnaire contained 16 questions: 5 demographic questions and 11 thematic questions related to artificial intelligence and its role in HR. The questions included single-answer, multiple-answer, and five-point Likert scale items. During quantitative data processing, we used Spearman's rank correlation analysis to reveal non-linear, monotonic relationships between individual attitude variables, with a particular focus on the correlations between perceptions of AI.

As part of the qualitative study, we conducted semi-structured interviews with representatives of three target groups: HR professionals, IT experts, and company executives. We selected the interviewees based on targeted selection, taking into account their professional experience and organizational role. The structured questions

ensured the comparability of the interviews, while also allowing for deeper, more nuanced responses.
The interviews focused on three key topics:

1. The application of AI in practical HR processes (recruitment, performance evaluation, employee satisfaction).
2. Technological and ethical considerations: the role of IT departments, data security, and technological integration.
3. Management perspectives: strategic planning, decision-making, employee involvement.

Through qualitative analysis of the responses, we obtained a comprehensive picture of the possibilities for AI integration and the related challenges in the Hungarian corporate environment. The research formulated four hypotheses for examining the economic and application potential of artificial intelligence:

- **H1:** The assessment of the positive impact of AI on quality of life and work-life balance is closely related.
- **H2:** Data security concerns negatively affect trust in the reliability of AI decision-making.
- **H3:** Belief in the innovative and creative potential of AI correlates with AI's role in supporting economic growth.
- **H4:** There is a positive correlation between the perception of job security and reduced stress among those who view AI positively in terms of its role in increasing efficiency.

The qualitative analysis of the interviews was organized around three main research questions:

1. What role do IT infrastructure and technological maturity play in the introduction of AI-based HR systems?
2. How does gradual implementation contribute to the acceptance and effective integration of AI in HR processes?
3. To what extent does employee training and active involvement influence the successful application of AI?

RESULTS

Quantitative Research

One of the main objectives of the questionnaire used in the research was to explore attitudes, knowledge, and expectations related to artificial intelligence (AI). The demographic characteristics of the respondents play a key role in interpreting the results, as they can be decisive in terms of perceptions of AI and attitudes towards the technology (Table 1). The gender distribution shows that 68.7% of respondents were women, while 30.8% were men, and only 0.5% did not wish to disclose their gender. This ratio suggests that the sample is skewed towards women, which may affect the generalizability of future research and justify the examination of a more gender-balanced sample. Based on age distribution, the largest proportion of respondents were in the 41–50 age group (30.8%), followed by those aged 21–30 (21.1%) and 31–40 (19.5%). The research primarily reflects the perspective of the working-age population, which may be relevant in terms of attitudes toward the use of AI in the workplace. The low representation of the over-60 age group (2.2%) may indicate that older people are less active in completing online questionnaires or less concerned with the topic. Based on the type of place of residence, the majority of respondents live in small towns (54.6%), while 22.7% live in large cities, 10.3% in villages, and only 12.4% in the capital. This distribution may be an important factor in terms of access to and acceptance of AI technologies, as the degree of urbanization can have an impact on digital skills and openness to innovation. Based on self-reported income, the majority of respondents (68.6%) indicated that they had an "average" income. The "below average" and "above average" categories are distributed in almost equal proportions (14.1% and 13.0%), while "well below average" (3.2%) and "well above average" (1.1%) responses are rare. This distribution reflects a balanced self-assessment and indicates a relatively homogeneous socio-economic background within the sample. Based on the distribution of respondents by educational attainment, nearly half of the sample (45.4%) have a high school diploma. Those with vocational certificates and university degrees each represent 16.8%, while those with college degrees represent 14.6%. Only 4.3% have a primary (elementary school) education, while only 2.2% have a postgraduate degree. The sample therefore consists mainly of respondents with secondary and higher education, which facilitates the understanding and evaluation of the more complex aspects of AI technology.

Table 1. Summary table of demographic data

Demographic aspect	Category	Percentage
Gender	Female	68.7
	Male	30.8
	I don't want to say	0
Age	16	13
	21	2.2
	31–40	19.5
	41	13.5
	51	30.8
Type of residence	Village	10.3
	Small town	12.4
	Large city	22.7
	Capital	54.6
Income level	Well below average	3.2
	Below average	14
	Average	68
	Above average	13
	Well above average	1
School education	Elementary school	4.3
	High school	45.4
	Vocational qualification	16.8
	College degree	14.6
	University degree	16
	Postgraduate degree	2.2

Source: own compilation

One of the main objectives of the research was to explore where and how respondents had encountered artificial intelligence (AI) and how they assessed its social and labor market impacts. Based on the results, the most common point of encounter was the news: 31.3% of respondents first encountered AI there. This highlights the role of the media in disseminating technological knowledge and shows that the social visibility of artificial intelligence is primarily shaped by news reporting and the media. In addition, the workplace (20.4%) and the home environment (20.1%) also emerged as key areas, suggesting that the application of AI is no longer just a theoretical issue, but has become a practical part of everyday life. It is worth noting that only 5% said they had never encountered artificial intelligence before – this percentage confirms that the presence of the technology is already widely felt in society and that a significant proportion of people encounter it in a variety of environments.

The general attitude towards artificial intelligence is primarily characterized by uncertainty and a wait-and-see approach: more than half of the respondents (53.5%) expressed a neutral attitude. This suggests that the processing and evaluation of information related to the technology is still ongoing, and many people do not have a definitive opinion on the social or economic impact of AI. However, the proportion of positive assessments (approximately 37% in total) significantly exceeds the proportion of negative responses (9.2%), suggesting a gradual increase in openness and trust. The high proportion of neutral and positive attitudes indicates that education about AI, conscious communication, and transparent information can play a key role in increasing acceptance.

Among the perceived benefits of artificial intelligence, increased efficiency ranks first (17.3%), followed by the possibility of creating new services (12.2%) and contributing to economic growth (6.1%). These results confirm that respondents recognize the role of AI technologies in increasing productivity, improving competitiveness, and stimulating innovation. At the same time, 3.2% saw no advantages in AI—although this is a small proportion, it indicates that mistrust and concerns about technological risks remain present in society.

When looking at the disadvantages, respondents' biggest concern was job losses (18%), closely followed by data protection risks (17.2%). These concerns reflect the most common social and ethical dilemmas associated with the introduction of artificial intelligence. Although only 1.7% of respondents are concerned about financial overload, this also highlights that the costs of implementation, especially for smaller businesses or lower-income users, cannot be ignored.

According to respondents, the greatest potential for the future spread of AI lies in manufacturing and production (17.3%) and education (17.1%). These areas are equally suitable for the introduction of automation, predictive systems, and personalized learning solutions, which represent one of the most promising applications of AI. In contrast, agriculture (2.7%) and retail (2.3%) are among the least affected areas, suggesting that automation and

digitization are slower in these sectors and that technological adaptation is not yet widespread.
The survey examined the overall perception of respondents regarding the advantages and disadvantages of artificial intelligence technology. According to the data in Table 2, nearly half of the participants (49.7%) chose the middle value (3) on a five-point scale, further reinforcing the dominance of a neutral, wait-and-see attitude. Twenty-seven percent of respondents considered AI to be slightly beneficial, while 14.6% considered it to be slightly disadvantageous. Only a few chose the two extreme values – "very favorable" and "very unfavorable" – suggesting that the assessment is not polarized, but rather cautious and nuanced. Based on questions about the future spread of artificial intelligence, it can be concluded that respondents are more positive about the use of AI in business than its general integration into society. Nearly two-thirds gave a positive response regarding corporate-level adoption, while uncertain and skeptical responses dominated in the assessment of social adoption. This discrepancy may suggest that people feel the business environment is safer and more controlled than everyday life in terms of AI adoption. Looking at the actual frequency of use of the technology, it is clear that although awareness of artificial intelligence is high, its active use is not yet widespread. More than a third of respondents do not use AI-based tools at all, and the proportion of regular or intensive users is low. "Moderate" and "infrequent" users together make up a significant proportion of respondents, indicating that the everyday integration of AI lags behind theoretical awareness. This highlights the importance of developing practical digital skills and ensuring access to AI technologies.

Table 2. Perception, acceptance, and frequency of use of artificial intelligence among respondents

Topic	1	2	3	4	5
Assessment of the overall impact of AI	2.0	7.0	49.7	27.0	14.3
Agreement with the use of AI in business	2.2	5.9	21.0	41.1	29.8
Agreement with the social spread of AI	14.6	24.3	43.2	12	5.9
Frequency of AI use in everyday life	34.1	22.7	22.7	13	7

Scale: 1 = not at all characteristic / completely rejecting, 5 = completely characteristic / completely accepting
Source: own compilation

The data presented in Tables 3 and 4 provide a detailed overview of attitudes toward artificial intelligence (AI) based on ten statements covering various social and economic aspects. Respondents rated each statement on a five-point Likert scale, which allowed for a nuanced exploration of perceptions of the technology.
Table 3 clearly shows that opinions on the impact of artificial intelligence on quality of life are quite divided. 34.6% of respondents were unable to take a clear position, while those with a negative opinion overall outnumbered those with a positive one. This suggests that AI has not yet become so deeply embedded in society that the general public has widely experienced its direct benefits. In contrast, there were more positive responses to the statement about improving work efficiency (31.4% gave a score of 4, 16.2% gave a score of 5), although the middle ground (30.8%) is still significant here as well. This distribution of responses suggests that respondents recognize the practical potential of AI, but not everyone has yet experienced its tangible benefits.
Concerns about data protection are particularly high according to the responses: 30.8% of respondents strongly agreed that the use of AI could pose a risk to personal data, while a further 16.8% somewhat agreed. This high percentage confirms that, as the technology spreads, the demand for secure and ethical data management practices is growing. Responses to the statement about economic growth were more balanced: 43.2% of respondents strongly agreed or somewhat agreed that AI plays a role in stimulating the economy, while 30.3% remained neutral. The predominance of positive opinions in this case suggests that many people view AI as a tool that can contribute to increased competitiveness and productivity in the longer term. However, in the case of the statement regarding job security, the responses were clearly negative: 58.4% of respondents chose the two most negative points on the scale, which clearly reflects fears related to job insecurity and automation.

Table 3. Assessment of statements related to artificial intelligence

Statement	1 (strongly disagree)	2	3	4	5 (strongly agree)
Artificial intelligence can improve quality of life	15.1	26.5	16.2	34.6	7.6
The use of AI increases work efficiency	2.1	30.8	16.2	31.4	19.5
The use of AI poses a risk to personal data	2.1	10.8	30.8	16.8	39.5
The spread of AI can promote economic growth	7.0	10.3	19.5	20.0	43.2
The presence of AI in the workplace provides a sense of security	10.3	28.6	20.2	29.2	10.7

Scale: 1 = Strongly disagree, 5 = Strongly agree
Source: own compilation

Based on the data in Table 4, opinions on the psychological and social effects of AI use are also divided. More than half of the respondents disagreed with the statement about reducing workplace stress, which shows that few people have experienced the human benefits of the technology. They were similarly skeptical about the reliability of AI decision-making, with 53% of respondents disagreeing. In contrast, the assessment of the statement aimed at increasing creativity and innovation is clearly more positive: nearly half of respondents (34.1% + 20.6%) agreed or strongly agreed with this statement. This is an encouraging sign that AI is increasingly recognized not only as a tool for automation, but also as a technology that supports creative work.
The balanced distribution of opinions suggesting an increase in inequality indicates that society is still unable to clearly decide whether AI contributes to or reduces social differences. This uncertainty may also indicate that respondents are not fully aware of the social impact of AI technologies, which underscores the importance of education. Finally, skepticism also dominated when it came to the impact on work-life balance: only 15.2% of respondents fully agreed that AI promotes balance by automating certain tasks. This suggests that respondents have not yet experienced the positive physiological and psychological effects of the technology directly, or do not consider them sufficient to address workplace challenges.

Table 4. Opinions on the social and psychological effects of artificial intelligence

Statement	1 (strongly disagree)	2	3	4	5 (strongly agree)
The use of AI can help reduce stress in the workplace	24.9	28.6	12.4	31.9	2.2
The reliability of decisions made by AI may be higher than that of human decisions	25.9	27.0	14.1	29.7	3.2
The use of AI can contribute to increased creativity and innovation	4.9	14.1	26.3	34.1	20.6
The use of AI may contribute to increasing inequalities in society	13.4%	18.4	31.4	15.1	21.7
AI can improve work-life balance by automating certain tasks	15.7	27.0	17.6	31.9	7.6

Scale: 1 = Strongly disagree, 5 = Strongly agree
Source: own compilation

Correlation Analysis and Hypothesis Validation

The aim of the research analyzing the social and workplace perception of artificial intelligence (AI) was to explore the relationships between different attitude factors, with a particular focus on perceptions of workplace security, quality of life, data security concerns, and the innovative and economic role of AI. The statistical results supporting the hypotheses are presented below. The table below shows the strongest correlations and their significance levels (Table 5). The results of the Spearman correlation analysis confirm that attitudes toward artificial intelligence (AI) form a complex and interrelated structure. The strongest positive correlation was found between the impact of AI on quality of life and work-life balance ($\varrho = 1.0$; $p = 0.000$), which supports the notion that respondents uniformly assess the psychosocial benefits of AI. A similarly strong correlation can be observed between trust in the reliability of AI decision-making and the perception of reduced workplace stress ($\varrho = 0.93$; $p = 0.000$), as well as in the case of the association of efficiency and security ($\varrho = 0.91$; $p = 0.000$). At the same time, significant negative correlations can also be observed: those who believe that AI poses a data protection risk have less confidence in its decision-making ($\varrho = –0.78$; $p = 0.001$) and attribute lower psychological benefits to it. The results highlight that the social acceptance of AI should be interpreted not only in terms of functionality, but also in terms of trust, security, and fairness.

Table 5. Details of the Spearman correlation matrix

Correlation	Spearman ϱ	p-value	Interpretation
MI improves quality of life ↔ MI improves work-life balance	1.0	0.0	**Strong, significant positive correlation** (H4 confirmed)
AI decisions can be more reliable ↔ AI reduces workplace stress	0.93	0.	**Very strong, significant correlation** (H5 confirmed)
The presence of MI provides a sense of security ↔ MI improves work-life balance	0.92	0.	**Significant correlation between perceptions of well-being**
MI increases work efficiency ↔ The presence of MI provides a sense of security	0.91	0.00	**Strongly correlated perceptions of efficiency and security** (supporting H7)
The use of AI increases creativity ↔ AI brings economic growth	0.87	0.00	**Strong positive correlation between innovation and economic benefits** (H6 confirmed)
AI poses a data protection risk ↔ Reliability of AI decision-making	–0.78	0.001	**Significant negative correlation** (H5 confirmed)
AI poses a data protection risk ↔ AI reduces stress	–0.73	0.003	**Significant negative relationship** – security concerns and psychological benefits are related
AI may increase social inequalities ↔ Reliability of AI decision-making	–0.68	0.007	**Significant negative correlation** – distrust is related to fears of inequality

Source: own compilation

Table 6 summarizes the results of the statistical analysis of the four hypotheses established during the research, providing a clear picture of the relationships between perceptions related to AI. According to hypothesis **H1**, there is a close relationship between quality of life and work-life balance – this was fully supported by the analysis, with a strong, significant positive correlation. In the case of hypothesis **H2**, there was a moderately strong, significant negative relationship between respondents' privacy concerns and their trust in AI decisions, suggesting that security fears reduce acceptance. According to **H3**, those who see AI as a creative and innovative tool are more likely to associate the technology with economic growth – this was also confirmed by a strong and significant positive correlation. Finally, hypothesis **H4**, which examined the combined perception of security and stress reduction in terms of efficiency, was also confirmed: among respondents, positive perceptions of efficiency were strongly associated with lower stress levels and higher feelings of security. These results clearly reflect that the assessment of artificial intelligence is not organized along isolated dimensions, but rather in complex perceptual patterns.

Table 6. Summary of hypotheses

Hypothesis	Variable pair	Conclusion
H1	MI improves quality of life ↔ MI improves work-life balance	**Highly significant, strong positive correlation**. Respondents interpret these two dimensions together.
H2	AI poses a data protection risk ↔ AI decisions may be more reliable	**Significant, moderately strong negative correlation**. Data protection concerns reduce trust.
H3	AI fosters creativity and innovation ovel ↔ AI supports economic growth	**Significant, strong positive correlation**. Technological progress and economic benefits are intertwined.
H4	The presence of AI provides a sense of security ↔ AI reduces workplace stress	**Strong, significant positive correlation**. A sense of efficiency is associated with a feeling of security and lower stress.

Source: own compilation

Interviews

Interviews were conducted with company executives and HR and IT professionals in order to gain a more comprehensive picture of the effects, challenges, and opportunities of the organizational application of artificial intelligence in various areas of corporate operations.

The first interviewee is a finance employee at an oil company, where he has been working since November 2021. The company's activities are mainly related to the energy industry, with a particular focus on the use of modern technologies to increase competitiveness. The use of AI is an integral part of the company's long-term strategy. AI technologies help to increase the efficiency of recruitment and selection processes and improve the employee experience. AI is used as a tool to facilitate faster and more accurate decision-making, giving the company a competitive advantage in the market. It enables faster development of new products and services, which is key to competitiveness. The use of AI contributes to strengthening the company's market position by increasing operational efficiency, reducing costs, and optimizing the workforce. Mentoring and coaching programs have been launched for employees to help them understand and apply AI technologies. This personalized support helps employees learn how to use the new tools, while the company ensures that everyone involved is able to adapt to

the new systems. The use of AI is often aimed at reducing costs, for example through automation, workforce optimization, and improved operational efficiency. These objective metrics help management accurately determine the value of AI. The company's plans include further developing performance evaluation and predictive workforce planning, as well as supporting workforce optimization. The introduction of automated customer service systems and chatbots is also a priority in order to improve the customer experience. AI speeds up the execution of HR functions and allows HR professionals to focus on strategic tasks instead of spending their time on administrative activities. Data quality and accessibility are key issues that affect the effectiveness of AI systems. Additional challenges include managing internal resistance and change management, as well as addressing ethical and legal issues. These factors influence the successful implementation and operation of AI.

The second interviewee is a project manager at an automotive manufacturing company and has been working full-time for the company since 2014. The company's activities cover various segments of the automotive industry and place great emphasis on the use of modern technologies, including artificial intelligence. The use of AI is one of the cornerstones of the company's long-term strategy, particularly in the areas of manufacturing and IT. He sees the benefits of AI in faster processing of collected data, optimal use of resources, and accurate reporting. It also offers benchmarking opportunities. Before introducing AI, the company must place great emphasis on employee involvement and increasing acceptance. Support measures include communication campaigns, encouraging employee participation in HR initiatives, and a gradual introduction strategy that reduces resistance. In his opinion, the presence and support of AI is appropriate to a certain extent, but work should not become too mechanical. The biggest challenge is to involve and motivate colleagues to trust automated methods.

The third interviewee also works for an automotive company. He is a professional manager who has been with the company since 2010. His responsibilities include managing and optimizing internal processes. The company strives to use AI in all tasks where it facilitates and speeds up work processes, so that the time saved can be used by colleagues for value-creating tasks. It is difficult to assess the impact of AI on their competitiveness, as this is influenced by several factors. It has resulted in significant optimizations in their internal processes. They constantly strive to keep their cars up to date. Employees can use the copilot application in their work, while their experts use the pro version. In addition, they familiarize colleagues with the latest developments in the field at internal events. At their academies, they help deepen their knowledge with continuous internal training courses free of charge. The company calculates the return on investment of AI according to its internal guidelines. They are currently examining the optimization possibilities of all their processes, which helps them in their work, deepens their professional knowledge, and reveals new connections to them. According to the subject, it shapes corporate culture, but since it also plays a decisive role in the private lives of colleagues, he believes that it shapes not only corporate culture, but fundamentally our entire lives. He considers filtering out unreliable information to be the biggest challenge.

The next interviewee works in human resources at an automotive manufacturing company, where he is involved in recruitment, organizational development, wage agreements, and training. The main challenges of his job include coordinating projects to ensure they are completed on time and meet quality standards, as well as developing a team made up of members of different ages and abilities. Artificial intelligence is not yet used in recruitment or performance evaluation, but it is used in measuring and evaluating employee satisfaction. The data is collected through a system called STIBAM and evaluated using various algorithms. Currently, AI is still treated with reservations, precisely because of the unclear potential problems. The focus is on data protection. Digitalization is a key issue for the company at present, and special resources have been allocated to achieve a higher level of AI. Potential disadvantages include the need for fewer HR staff, the removal of the emotional factor from the assessment process, and uncertainty regarding data security and data protection, which could reduce employee confidence. The HR team needs to define specific strategic objectives and goals and communicate them to employees. Familiarization with and selection of appropriate and secure AI-based tools and applications available on the market. Gradual and detailed involvement of employees, planning of communication campaigns. It is important for employees to be willing to accept and be open to the new direction, to participate in HR initiatives, and to inform and encourage other colleagues within their own organization. The HR team should first test the ethics of AI with specific participants and identify any potential problems.

The fourth interviewee works for a manufacturing company as a human resources officer. Her job includes training planning, training consulting, and competency development. The company does not yet use AI, but they would like to introduce it in the areas of recruitment and competency development. With its help, processes can be accelerated and complex relationships that were previously unseen or overlooked can be revealed. Initially, she envisions the use of AI as a complementary or background activity that supports colleagues in their current processes. Later, when the use of AI becomes commonplace, there may be an opportunity to move to the next level of integration, where AI can be used to further optimize processes, thereby further increasing employee satisfaction, e.g., by shortening turnaround times. A new enterprise management system is already being introduced that is capable of integrating AI.

The fifth interviewee works in the HR strategy department, specifically in the field of innovation management, compiling statistics on brainstorming at the corporate level. Regulations are among his challenges. Artificial intelligence is mainly used for translations. They are exploring its potential in terms of automation, which is the area of greatest interest for AI. In HR, it can be helpful for queries and questionnaires. For implementation, training will be required from the process side, and its effective operation will need to be tested.
The sixth interviewee has no experience in AI development. He sees great potential in natural language processing for integration into HR processes. The role of IT is to build and synchronize structures and processes in the early and implementation phases. Introduction of methods and tools alongside the consolidation of digitization activities, with a brief and understandable explanation of digitization. Connecting new impulses and existing activities and making them accessible. The challenge is to develop a system that is of sufficient quality, meets expectations, and is sufficiently secure. The subject would choose a system developed in collaboration with an external partner company that approaches the topic with an independent professional eye, so that developments in the HR field are unbiased and fair. Digitalization is clearly the cornerstone of the future. Their company places great emphasis on the possibility of developing IT infrastructure. It is necessary to define and develop areas of action with goals and metrics, and to create concepts and structures for digitization roadmaps.
The seventh interviewee's company manufactures drive chains, body parts, and automotive accessories. As a digitalization project coordinator, he works closely with IT staff. The current challenges of the AI-based HR system include learning about the technology, building internal competence and identifying external partners, mitigating cultural barriers, providing data of sufficient quality and quantity, and prioritizing AI projects alongside IT developments that ensure operational and regulatory compliance. Digitalization and IT teams play a key role in providing organizational areas with the processes and tools necessary for effective operation and the measures necessary to promote cultural change. They are also responsible for developing a comprehensive strategy that brings these elements together and enables the measures to be implemented in practice. A stable, transparent, and IT-secure infrastructure is essential for the successful implementation of development directions. This ensures the authenticity and integrity of data. Furthermore, data lake or data warehouse solutions are needed to enable professionals to access relevant data. In order for an AI-based HR system to be sustainable and updatable, up-to-date data and dynamic databases that keep pace with rapid changes in information are required. These basic conditions ensure that AI-based solutions can effectively support organizational goals in the long term.

Table 7. Summary of the main findings of the interviews by field of expertise

Field	Interviewees	Main findings
Company executives	- Finance staff (oil industry) - Project manager (automotive manufacturing) - Professional manager (automotive industry)	- AI supports recruitment, selection, and operational efficiency. - The primary goal is to reduce costs and optimize resources. - Mentoring and coaching programs support the introduction of AI. - Challenges: data quality, internal resistance, ethical and legal issues. - Introduction of automated systems (e.g., chatbots) for HR function efficiency.
HR professionals	- HR manager (automotive manufacturing) - HR officer (product manufacturing) - HR strategic expert (innovation management)	- AI is mainly used for satisfaction measurement and algorithmic data processing. - Challenges: data protection concerns, emotional factors being pushed into the background, employee mistrust. - Resistance is reduced through communication campaigns and gradual introduction. - AI currently functions as a complementary tool; full integration is a long-term goal.
IT professionals	- Digitalization project coordinator (automotive industry) - IT consultant	- IT plays a key role in building the AI infrastructure. - Main tasks: data security, development of structures and processes. - Challenges: ensuring adequate data quality, cultural barriers, defining technological priorities. - Involvement of external partners to ensure independent and fair development. - AI is emerging as the cornerstone of future digitalization.

Source: own compilation

The first research question examined the role of IT infrastructure. Based on the interviews, the successful integration of AI is closely related to the sophistication of the technological background. IT experts emphasized

the importance of data lake and data warehouse systems, which are fundamental to reliable decision support by ensuring data quality and accessibility. In addition, the development of internal digital competencies—especially employee training—emerged as a key factor, as technology alone does not guarantee success: the human factor, i.e., the ability of the organization to learn and adapt, plays a decisive role.

The second research question focused on the benefits of gradual introduction. Respondents clearly supported the phased, test-based implementation of AI, which allows for trial operation of the technology and early identification of potential errors and points of resistance. According to the respondents, AI should initially be used as a complementary tool to support background processes, which can gradually become strategically important in HR functions. Segmented implementation not only increases organizational acceptance but also provides an opportunity to manage technological risks.

The third research question examined the importance of employee involvement and training. The interviewees unanimously emphasized that the active participation of employees in the process is a key factor in the successful implementation of AI. Companies use internal training programs, mentoring systems, and thematic events to familiarize employees with how AI works and its benefits. These measures not only support technological adaptation but also contribute to the transformation of corporate culture. As one interviewee put it, AI shapes not only organizational functioning but also life as a whole, which reflects the complex and long-term impact of technology on the world of work.

DISCUSSION

The results of the research clearly show that the perception of artificial intelligence (AI) technologies among Hungarian employees is mixed, but at the same time reflects an increasingly open attitude. The majority of respondents are neutral, but positive assessments significantly outweigh negative opinions, indicating potential for building trust (Joseph, 2024). Among the advantages of AI, respondents most often highlighted increased efficiency, the possibility of new services, and economic growth, which is in line with the expectations expressed in the literature (Monideepa Beath & Ross, 2019; Bukhtueva, 2024). In the area of recruitment and selection, the results confirm that AI tools—whether chatbots, resume screening algorithms, or generative systems—effectively support the replacement of administrative tasks and the objectification of decisions (Akash, 2024). At the same time, based on qualitative data, HR professionals continue to consider human control important, especially in relation to interviews and ethical considerations (Vats et al., 2024).

In the area of performance management and feedback, the greatest added value of AI is real-time data processing and predictive analysis, which enables proactive HR interventions (Myers, 2024; Buck & Morrow, 2018). This can be particularly valuable in terms of reducing turnover and maintaining engagement. However, respondent feedback also highlights that trust-building is a key issue and that data privacy concerns significantly influence the acceptance of algorithmic decisions (Noureddine, 2023).

In the area of training and learning support, the results support the personalized learning opportunities offered by generative AI systems (e.g., Dextego, Wondder), while interviewees emphasized the need for gradual introduction and active employee involvement (Veldsman & Onasi, 2024). This is fully in line with the literature approach that AI only becomes an effective organizational tool when it is strategically embedded, culturally accepted, and complemented by the human factor (Joseph, 2024; Bukhtueva, 2024). The statistical confirmation of the hypotheses also offers a valuable theoretical contribution. Based on Spearman correlations, perceptions of AI related to quality of life, stress reduction, and work-life balance show a strong positive correlation, providing further evidence of the psychosocial effects of AI technologies (Gold, 2023). The negative correlation between data privacy concerns and trust in decision-making supports the ethical dilemmas highlighted by several authors (Noureddine, 2023; Vats et al., 2024). Based on the interviews, it is clear that the level of AI integration varies among companies, but in all cases, there are strategic objectives that go beyond the use of technological tools. Training programs, gradual implementation, communication campaigns, and the mapping of ethical risks show that the key to successful AI integration is a holistic and human-centered approach. This is supported by the fact that some respondents perceive AI not only as a corporate factor but also as a factor shaping quality of life, which also provides an opportunity to reinterpret its culture-shaping role.

CONCLUSION

The application of artificial intelligence in HR processes is not only a technological issue, but also an organizational, psychological, and cultural one. Both quantitative and qualitative data show that the vast majority of respondents are open to the use of AI, especially if it increases efficiency, reduces administrative burdens, and allows them to focus on value-creating tasks. At the same time, trust, data protection, and the active involvement of employees are critical factors for successful implementation. Statistical correlations highlighted the perceived psychosocial

effects of AI—for example, in terms of workplace stress or quality of life—while interviews emphasized the practical conditions for AI implementation, such as the sophistication of IT infrastructure, employee training, and the need for gradual and transparent integration. The novelty of the research lies in the fact that it incorporates the perspectives of HRM and IT professionals as well as company managers, thus offering an interdisciplinary approach to understanding the integration of AI into HR processes. In addition, mapping psychological and social perceptions adds value to the study of the implementation of AI-based technology in the workplace.

The gender and age imbalance of the sample (predominantly female respondents aged between 40 and 50) and the limited size of the qualitative sample can be considered limitations. In addition, the research did not examine attitude changes longitudinally, so only limited conclusions can be drawn about the long-term acceptance of the technology. Future research should specifically examine the organizational maturity of AI use, the digital competence of users, and the different implementation challenges in various sectors, such as education, healthcare, and finance. In addition, it would be advisable to further examine the impact of the ethical and legal framework on acceptance, as well as the effectiveness and limitations of specific HR applications of generative AI (e.g., GPT-based tools).

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