Analysis of the Attitude of Hungarian HR Professionals to Artificial Intelligence

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Abstract

Human resource (HR) management is one of an organisation's most important core activities. As new technologies and software applications spread, it is important to recognise that human resource management must also mature and, to this end, must apply new technological guidelines. Artificial intelligence (AI) is one such promising technology trend that is likely to change the existing methods of HR management. This paper examines the attitudes that AI evokes among practicing HR professionals and assesses the potential for the practical application of these technologies. A survey, in the form of a questionnaire, was conducted among Hungarian HR managers, which allowed the collection of first-hand data. The survey was conducted in winter 2021 using the snowball method sampling procedure. The questionnaire mainly contained Likert-scale questions. The results of the research show that survey participants have mixed emotions about AI. The respondents largely agreed that the tools provided by AI are effective and their use helps HR management. The main limitation of the research is that it is limited to just one country, since the COVID-19 pandemic made it difficult to find and involve respondents in the research.

Introduction

Human resource (HR) management focuses on a series of human resource policies and HR management activities in organizations. These activities primarily include the definition of corporate HR strategies, the recruitment and selection of employees, their training and development, performance management, incentive management, employee relations and activities that promote employees' health and safety. The use of artificial intelligence (AI) in the process of HR management can bring economic benefits, hence in the last decade, the use of AI has become a trend in HR management.

Whether or not the outcome of technological progress has a positive or negative impact on us, one thing that is certain is that it is independent of us, therefore it is inevitable. Advances in technology have recently become an integral part of everyday life. Nowadays it is hard to imagine doing our day-to-day tasks without the help of a smartphone or laptop. From the outset, the introduction of new technologies has always been accompanied by many changes and a resulting sense of fear. It is still highly questionable as to whether or not the use of AI in

HR management will be useful in the future, and, thinking even further ahead, whether humans will be replaced. Proponents of AI hope for endless possibilities. Nevertheless, we cannot be entirely sure what the consequences of AI will be for business and society in the distant future. According to Brynjolfsson and Mitchell (2017), a large portion of the adult population in the USA is fearful of the growing prevalence of AI, since they feel 'stressed by it because its rise could jeopardize their jobs.'

Zielinski (2017) wrote on the dangers and opportunities of AI in his work. In his view, this technology is definitely promising, however, he also pointed out that there are cases where companies use AI as an advertising ploy to attract new customers or investors 'by exaggerating the role of AI in their product.'

Although the research carried out by author of this study primarily focuses on surveying the attitudes and views of Hungarian HR professionals in relation to AI, another important element was to describe the current practical application of AI in HR management.

Literature Review

In 1950, the British mathematician Alan Turing described the relationship between computing and intelligence, in which he first assumed that machines could actually think. He devised a simple way to test his hypothesis: can a computer talk and answer questions in a way that makes a person think that a computer is actually a human without blood? The resulting 'Turing test' has since been used in research on AI. Since Turing, AI has evolved considerably and nowadays the availability of big data, the expansion of Cloud computing, related computing, storage capacities, and machine learning (ML) have significantly increased the performance and impact of AI. Today it has become natural to use AI in many areas of our daily lives, such as in self-driving vehicles, robotics, computer vision and even language learning (Ved et al., 2016).

HR management has undergone vigorous development since the 1960s. In recent decades, the functions of HR management have changed rapidly, from document fund management and employer branding to the acquisition of talented employees (Bouchard and Wassell, 2020). Technology and HR management are becoming increasingly integrated. Terms such as e-HR or digital HR, for example, have been prevalent in HR since the 2000s. The merging of technology and HR management results in more efficient human management processes and enables better quality services (Bondarouk and Rüel, 2009).

With the rise in digitalisation, emerging generations have completely different attitudes, qualifications, behaviour and expectations than previous generations (Prensky, 2001). It is clear that HR management needs to adapt its strategies and activities to these new employees (Elia and Margherita, 2015).

The use of AI in HR management is a relatively recent concept that is still in its early stages (Sheila et al., 2018). AI is an interdisciplinary discipline that explores how human abilities and intellectual behaviour can be artificially reproduced. According to Elaine Rich, 'artificial intelligence uses computers for things in which people are even better now, but even that may change in the future' (Rich, 1983). By simulating the information process of human awareness and thinking, AI can quickly extract from its own database the information that directly and reasonably provides the best answer to the questions asked.

In the future, there may be completely new forms of AI that can simulate human emotions or even be self-conscious (Hintze, 2016).

AI is intelligence manifested by a machine, programme or artificially created consciousness, while machine learning (ML) is a branch of AI that includes systems capable of learning (Wilkinson et al., 2017). ML represents the latest techniques in statistical analysis, pattern recognition and predictive analysis (Theodoridis, 2015).

AI can also be defined as a system that can adapt on its own. This means that AI-driven programmes are able to create algorithms, observe patterns and combine data accordingly (Dennis, 2018). A key feature of such a system is its ability to learn and perform without having been previously programmed how to respond to in a given situation (Scherer, 2017). In order to be able to perform such complex operations, AI must have a large amount of data. In existing literature, AI programmes are often described as machines with human intelligence (McCarthy, 2007). Although machines have human intelligence, they do not replace humans because machines are unable to understand the context of a given situation (Ross, 2018).

AI first appeared in HR management in the development of the computer science background. Computer software to help automate HR management is called a Human Resource Information System (HRIS). These information systems also automate recruitment processes, documentation and other human management activities,

According to Iqbal et al. (2018), e-HRM (electronic human resource management) has a positive effect on 'improving the work productivity of managers.' In addition, e-HRM

influences the quality of HR services and helps managers make day-to-day decisions. Bhadoriya et al. (2017) pointed out that a number of factors might influence the effectiveness of e-HRM, such as management support and environmental characteristics. Neither should be neglected, as both can affect an organisation's technological perception and its subsequent performance. Bhadoriya recommends that the organisation's IT department and HR department work together to successfully implement e-HRM. According to Ruël and van der Kaap (2012), the value of e-HRM depends on three factors: efficiency, effectiveness and the quality of HR service. In their work, the authors further explain that efficiency actually means the proper handling of any form of HR documentation and personal data.

Marler (2016) argues that the main goal of e-HRM is to 'automate and replace low-value administrative tasks with higher-value HR tasks.' Marler stressed in his study that the time that HR professionals no longer waste on solving routine tasks on a day-to-day basis might otherwise be spent developing HR policies and strategically planning business relationships.

Despite the benefits described above, opinions differ in judging AI. According to Kauzo (2017), with the rise of automation and AI, HR professionals face another challenge, as they need to find a place within the organisation that already exists and has been freed up due to technological advances, such as retraining or redeploying these employees.

Over the past decade, there has been a heated debate among professionals in the field of labour economics about the substitutability of the human workforce with AI and robots. Frey and Osborne (2017) estimate that about 47% of all jobs in the USA are threatened by advances in technology, such as the rise of robotics and AI. However, automation and technological development do not lead to the devaluation of human labour. In fact, automation and human work complement each other, especially in creative and solution-oriented workplaces where people will continue to be an important factor. Based on historical experience since the Industrial Revolution, Mokyr et al. (2015) state that computers and robots will bring new products and services with them and that these innovations will result in new jobs.

There is an ongoing debate among researchers about the practical applicability of AI. However, keeping in mind the field of HR management, it can be said that AI will certainly have a significant impact on the future of HR management. One of the main benefits of AI is the simultaneous management of large amounts of data, which make it easier and more efficient to track and analyse organisational data.

Below, the author has provided an overview of the current

known applications of AI in HR management for each HR function.

1. Selection – AI modernises and automates monotonous tasks in recruitment processes (Das et al., 2018). AI tools are being increasingly used in the selection process of candidates, which can help to speed up and make the processes more objective at an early stage in the first steps of the selection process (Allen et al., 2007). It is often a challenge for human practitioners to select the right candidate from a large pool of candidates within a tight timeframe. AI software scans, evaluates and possibly rejects applicants who do not meet the selection criteria (Florentine, 2016). AI software is also capable of conducting digital interviews, using video and audio techniques to assess the fit of the candidate's speech, vocabulary and body language to the position offered. The selected candidates are then informed by an AI-supported chat-bot about the status and schedule of their application, and candidates also have the opportunity to ask the chat-bot questions. Thus, it is conceivable that in a fully automated selection process, the candidate will not have any contact with a 'real' HR professional until they have successfully passed through the 'machines' (Jain, 2018).

2. Workforce development and career planning – human resources undergo continuous development throughout their lives. The development of knowledge and skills required for work has accelerated with the spread of AI. The first AI-compatible intelligent education systems appeared in the 1980s in colleges and military education in the USA (Lesgold et al., 1988). Nowadays, videos, learning programmes and other software support the learning processes within an organisation, providing personalised learning. In addition, continuous data collection is carried out about employees and their development, which also supports training (Marler et al., 2006). AI is also able to monitor and measure the interests of employees and the pace of their development, thus it can be of great help in career planning. For example, a person seeking a subordinate leadership position may use AI algorithms to search for patterns and make suggestions for the requirements to be met (e.g. the need for additional training, strengthening work experience, developing certain professional skills, etc.) that should be acquired before applying for the desired position (Wellers et al., 2017).

3. Performance appraisal and incentive management – assessing workforce performance is one of the cornerstones of HR management, in many cases based on subjective rather than actually achieved results, which can cause controversy and consequently more rapid employee turnover (Wei, 2013). The use of AI in performance appraisal and closely related incentive management can strengthen

objectivity. AI programmes continuously measure and send feedback to employees about the quantity and quality of the tasks performed.

4. Labour retention – an increasing number of organisations have recently been faced with the negative fact that there is a real struggle in the labour market to acquire talented workers (McNulty, 2018). Thus, the retention of talented employees within an organisation has increased in value in the recent period (Sexton et al., 2005). AI is able to measure and analyse employee satisfaction and compare work-life balance. Algorithms (or even predictive models built into more advanced versions of Excel) can 'predict' which employees may leave the organisation in the future. In their day-to-day work and behaviour, employees give a number of signals about their intentions, allowing organisations to predict employee intentions using predictive statistical models. Using this information, the manager (or AI itself) can intervene in time to prevent the emigration of talented workers (Grillo, 2015).

The term AI often evokes fear in ordinary people, in many cases imagining a world controlled by 'robots'. Fear and anxiety are not only related to mass job losses but also stem from ominous stereotypes that humanity will eventually be made extinct by robots driven by AI. This fear is also reflected in Martin Ford's book Rising Robots, which depicts the near future as AI robots take the place of humans in the world (Ford, 2015).

Today, AI clearly goes beyond robotics, incorporating a number of basic technological elements that include automating repetitive human tasks. The business environment is evolving, with a greater emphasis on quality-based activities. Under such circumstances, it is inevitable that some functions of HR management will not be taken over by AI, as has been illustrated in various literature. AI tools will become an integral part of organisations and it will be inevitable that employees will adapt to changing circumstances. Companies' expectations of employees are constantly increasing and future employees will have to meet these changing job requirements otherwise they may face a number of obstacles.

Methodology

The author of this study conducted a survey among managers working in the field of HR management. The respondents were selected using the snowball method. The essence of the method is that the questionnaire was sent first and foremost to people who belong to the target population and they were asked to provide the contact details of other people they know who belong to the defined population.

Additional respondents were consequently suggested. The questionnaires were sent out in two forms – on paper and online – between November and December 2021, and a total of 191 evaluable questionnaires were collected during this period.

When compiling the questionnaire and considering the recommendations in the literature, 25 questions were identified. These were, for the most part, Likert scale-type, closed-ended questions, but there was also an open-ended, self-explanatory question that respondents did not have to answer if they chose not to. In the first phase of the preparation of the questionnaire, the author conducted pilot research in order to include the most understandable and as relevant as possible questions in the final form of the questionnaire. In the pilot research, the author involved graduate students in management organisation.

The data obtained were comprehensively analysed, categorised, coded and evaluated using the SPSS.21 statistical analysis software. In terms of the structure of the questionnaire, the first part related to demographic data, the second part assesses attitudes and opinions relating to AI, while the last part contains questions about the practical application of AI in Hungarian HR management.

Based on the literature, the author supposed 2 hypotheses:

H1: There is a significant relationship between the use of AI and the fear of losing one's job.

One of the most frequently recurring negative elements in existing literature about AI and new technologies is that in the long run these technologies threaten the very existence of people's work (Bruun and Duka, 2018; Chelliah, 2017).

H2: There is a significant relationship between AI and the positive perception of its use in HR management.

The use of AI can significantly improve the efficiency of HR management, thanks to fast and precise technologies (Zang and Ye, 2015; Sheila et al., 2018).

Results and Discussion

Before presenting the main results of the research, the author illustrated the demographic data of the respondents in the questionnaire using Table 1. According to the data in the table, 77% of those who completed the questionnaire were men and 23% were women. In terms of age, those aged 35-50 accounted for the largest proportion (44%),

followed by those aged 50-65 (25.7%) with those aged over 65 accounting for the smallest percentage (3.7%). In terms of the distribution of educational attainment, university graduates accounted for the highest proportion (85.3%) among the respondents, followed by secondary education (12%), while only 2.6% had a PhD degree.

Table 1
Demographic characteristics of respondents

	Frequency	Percent
Gender		
Male	147	77.0
Female	44	23.0
Age		
18-25	14	7.3
25-35	37	19.4
35-50	84	44.0
50-65	49	25.7
over 65 years	7	3.7
Educational level		
University degree	163	85.3
Secondary school	23	12.0
PhD	5	2.6

Source: Author's own research

In terms of sectorial distribution, the evaluated HR managers were mainly active in the industrial sector (104 people), while 81 work in the service sector civil service and six in agriculture (Figure 1).
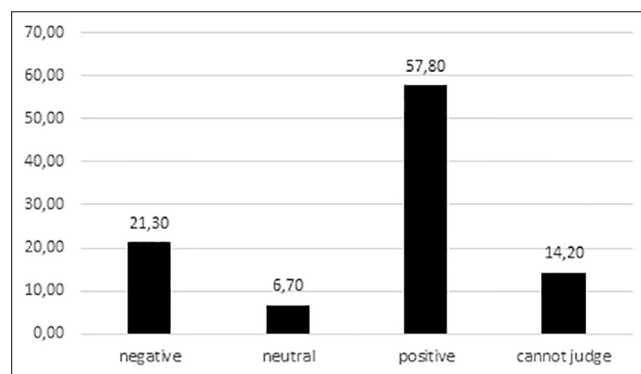
Figure 1
Sectorial distribution of the respondents
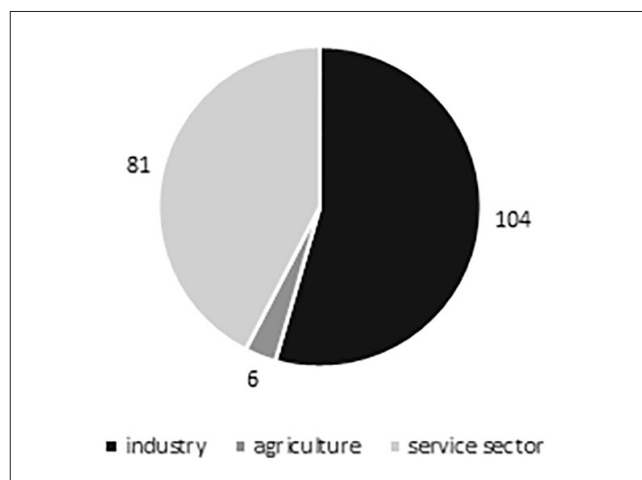
Source: Author's own research

The respondents' general perception of AI was as follows: 21.3% of HR professionals surveyed said the proliferation of these technologies had a negative impact on employees, 57.8% said they had a positive impact, 6.7% said they were neutral about their perception of these technologies, and 14.2% of respondents chose the option 'cannot judge' (Figure 2). Based on these results, it can be concluded that the HR professionals surveyed are mostly positive about these technologies. By analysing this issue further, the conclusion can be reached that those working in different fields have different opinions, while those in the automotive industry and technical services are positive about AI, HR professionals in tourism, hospitality and other service sectors have negative opinions of new and modern technologies, including AI. This finding relates to the results of scientific research in which the researchers found a strong link between the using of AI and the field of activity (Tubaro and Casilli, 2019; Rahmanifard and Plaksina, 2018).

Figure 2
*Use of AI for employees (in %)*

Source: Author's own research

Figure 3 below illustrates the most commonly used AI-based technologies that respondents encounter in practice. According to the data, the respondents most often encounter decision support and expert systems (25%) in practice, including, for example, AI-based algorithms and software used in recruitment and selection as well as in training and performance evaluation. This is followed by automation (16%), robotics (13%), Big Data analysis (12%), data mining (11%), use of chat-bots (9%), and finally, machine learning (8%).

In the questionnaire survey, the author also analysed what competencies the respondents said new employees will need in the future to be able to successfully meet the challenges posed by AI and technological development. The survey participants were asked to choose from several competencies, the most common among which are illustrated in Figure 4. Looking to the future, one of the most important competencies expected of employees by the HR professionals surveyed is digital skills (chosen by 87), followed by data analysis and interpretation (84), while creative thinking and a tendency

to innovate (79) will also be an important competence in the future. In the mid-range, competencies such as the need for continuous improvement (69), risk management skills (66) and adaptability (62) were also included. Among the classic competencies, cooperation skills (59), leadership skills (55) and emotional intelligence (53) closed the line.

Figure 3
AI-based technologies used in practice (in %)
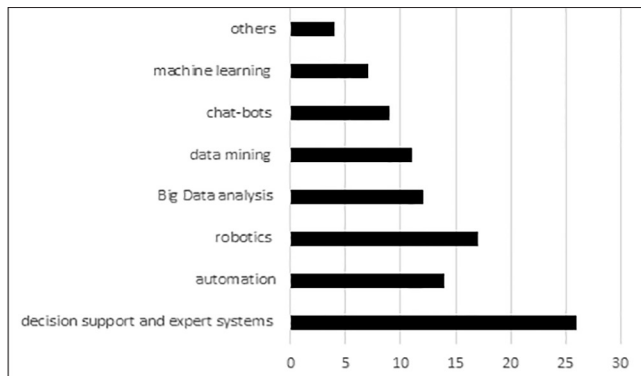
Source: Author's own research

Figure 4
Competence expectations and frequency for future employees
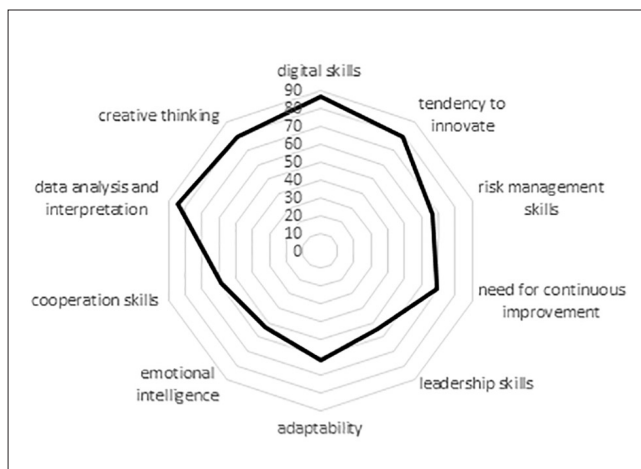
Source: Author's own research

Table 2
In the selection of the new workforce, AI is more objective than human intelligence

	Value					Summary
	1	2	3	4	5	
HR professionals' opinion	17	22	57	82	13	191

Note: 1 = strongly disagree, 2 = strongly disagree, 3 = strongly agree, 4 = strongly agree, 5 = cannot judge
Source: Author's own research

The author also examined the opinion of HR professionals about the use of AI in the selection of a new workforce. Table 2 shows that respondents believe that AI is more objective than human intelligence in, for example, the analysis of CVs.

According to the responses received, most of the HR managers in the survey stated that they agree with the statement. Among the respondents, 82 HR managers fully agreed with the statement that AI is more objective in the new workforce in making decisions than a human. This result is confirmed by several international publications (Tambe et al., 2019; Blinnikova and Ying, 2020; Iqbal, 2018), which state that AI may play a major role in HR management in the future (Chelliah, 2017).

To verify the hypotheses set up in the material and methodology part of this study, the author performed correlation calculations, the results of which are summarised in Table 3 below. In the correlation calculation, the perception of AI was examined using variables such as AI and a fear of job loss, and a positive perception of AI and its role in HR management.

The question of the impact of AI and robotics in the workplace has been repeatedly raised in both domestic and international literature. To this end, the author sought out the views of HR professionals. Based on the results obtained, there was no significant relationship between these two variables, therefore the study did not meet the criteria ($p > 0.01$). Therefore, the link between the use of AI and the fear of losing a job was not proven based on the results of the survey. The H1 hypothesis is rejected.

The H2 hypothesis is accepted, which suggests a significant relationship between AI and the assessment of its positive role in HR management, because there was a significant relationship between these two variables, and the Pearson correlation coefficient was 0.341, which assumes a medium relationship between the two factors. Based on this result, it can be said that the HR professionals surveyed have a positive attitude towards the use of AI in the field of HR management.

The author next performed an in-depth evaluation of the use of AI and its impact on HR practice in Hungarian enterprises in order to prove the hypothesis. In the model the positive role of AI in HR management was the independent variable and AI the dependent variable. The regression analysis (Table 4) indicates that using AI has a considerable positive impact on the HR management practice of Hungarian enterprises.

Table 3

Results of correlation analysis   **Correlations**

		AI plays a positive role in HRM	Fear of job loss	AI
AI plays a positive role in HRM	Pearson Correlation	1	0.063	**0.341****
	Sig. (2-tailed)		0.387	0.000
	N	191	191	191
Fear of job loss	Pearson Correlation	0.063	1	0.069
	Sig. (2-tailed)	0.387		0.346
	N	191	191	191
AI	Pearson Correlation	**0.341****	0.069	1
	Sig. (2-tailed)	0.000	0.346	
	N	191	191	191

**Correlation is significant at a level of 0.01 level (2-tailed)
Source: Author's own research

Table 4

Result of regression analysis   **Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.341a	0.116	0.111	1.236	1.671

a. Predictors: (Constant), positive role of AI in HRM

b. Dependent Variable: AI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.885	1	37.885	24.814	0.000b
	Residual	288.555	189	1.527		
	Total	326.440	190			

a. Predictors: (Constant), positive role of AI in HRM

b. Dependent Variable: AI

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	1.407	0.182		7.714	0.000
	positive role of AI in HRM	0.450	0.090	0.341	4.981	0.000

a. Dependent Variable: AI

Source: Author's own research

As the Model Summary section of Table 4 shows, the R-value is 0.341. The R-value represents the correlation value between AI and the positive role of AI in HR management. The R Square value is 0.116 and the Adjusted R Square value is 0.111. Since the Adjusted R Square value is 0.116, it can be concluded that the independent variable accounts for nearly 12% of the variation in the dependent variable. The ANOVA section of Table 4 illustrates that the F value is 24.814. Since the F statistic is significant at 0.000 it can be said that AI plays a positive role in HR management practice in Hungarian enterprises. The Beta value is 0.341 at a significance level of 0.000. This indicates that AI contributes significantly to HR management. As the p-value is lower than 0.05 it can be concluded that the independent variable reliability predicts the variation in the dependent variable and the relationship between them is significant. This clearly indicates that AI has a positive impact on HR management practice in Hungarian enterprises, thereby supporting the author's hypothesis.

Conclusion

In this study the author analysed the attitudes of HR practitioners and trainees towards AI. The analysis was conducted on 191 individuals, all of whom were HR managers.

Based on the results of the author's research, it can be said that the attitude of HR professionals in the survey towards AI is mostly supportive and its role in HR management is considered positive.

Based on the results obtained, there is no evidence of a general fear that AI intelligence would jeopardise jobs in the future. The analysis of the data did not confirm the author's assumption in this regard, therefore it cannot be clearly stated that the employment situation of the surveyed professionals would be negatively affected by the spread of AI.

The adaptability and competitiveness of organisations need to move forward with the times, and the modernisation of old technologies in HR management is also a clear priority. In the author's opinion, AI in domestic workplaces will not be able to replace human professionals entirely, however, it will transform traditional methods of HR management into more modern, advanced versions, while at the same time continuing to require new professionals. Therefore, it is very important that managers prepare employees for these changes in a timely manner. To do this, first and foremost, organisations need to understand the anxiety and internal resistance of their employees to the use of AI and help them overcome it as quickly as possible. To achieve this, it is important to communicate the organisation's current strategy to subordinates in an understandable and concrete way. Thus, the goal would be to create an open and constructive atmosphere in organisations where the experiences and ideas of employees are automatically incorporated into the system.

Effective leadership is one of the most essential tools for an organisation to sustain its business in the face of problems caused by the global economic environment. Successful leaders can influence and motivate their employees, thus strengthening organisational performance. Effective leadership has a unique way of integrating employees with the organisation to achieve its vision or goals.

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Analiza odnosa madžarskih strokovnjakov za kadre do umetne inteligence

Izvleček

Upravljanje človeških virov (HRM) je ena najpomembnejših temeljnih dejavnosti organizacije. S širjenjem novih tehnologij in programskih aplikacij se je treba zavedati, da mora tudi upravljanje človeških virov postati zrelejše in v ta namen uporabljati nove tehnološke smernice. Umetna inteligenca (UI) je eden od takšnih obetavnih tehnoloških trendov, ki bo verjetno spremenil obstoječe metode upravljanja človeških virov. Ta članek preučuje stališča, ki jih umetna inteligenca vzbuja med kadrovskimi strokovnjaki iz prakse, in ocenjuje možnosti za praktično uporabo teh tehnologij. Raziskava v obliki vprašalnika je bila izvedena med madžarskimi strokovnjaki za kadre, kar je omogočilo zbiranje podatkov iz prve roke. Raziskava je bila izvedena pozimi leta 2021 z uporabo postopka vzorčenja po metodi snežne kepe. Vprašalnik je vseboval predvsem vprašanja z Likertovo lestvico. Rezultati raziskave kažejo, da imajo udeleženci raziskave glede umetne inteligence mešane občutke. Anketiranci so se večinoma strinjali, da so orodja, ki jih zagotavlja UI, učinkovita, in da njihova uporaba pomaga pri upravljanju človeških virov. Glavna omejitev raziskave je, da je omejena le na eno državo, saj je bilo zaradi pandemije COVID-19 težko najti in vključiti anketirance v raziskavo.

Ključne besede: odnos, umetna inteligenca, upravljanje človeških virov, strojno učenje, madžarska podjetja