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HR DIGITISATION BEFORE AND DURING COVID-19 IN VISEGRAD GROUP COUNTRIES

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ABSTRACT

Purpose: *This paper aims to provide new insights into the digitisation of human resources in the Visegrad Group. The authors examined the evaluation of HR digitisation before and during the COVID-19 pandemic.*

Need for the study: *The digitisation of human resource management in the Visegrad Group countries is an emerging phenomenon that influences how organisations in these regions manage their human resources.*

Methodology: *The survey included the following sample sizes: 500 respondents in Poland, 832 respondents in the Czech Republic, 384 respondents in Slovakia, and 377 respondents in Hungary. The Shapiro-Wilk normality test, F-test for equal variance, and paired t-test were utilised for the investigation. Additionally, the authors conducted a one-way ANOVA to compare the mean digitisation scores among Visegrad Group countries before and during COVID-19.*

Findings: *The data presented in the paper show that HR digitisation is consistently ranked as one of the less challenging HR activities in the Visegrad Group countries, both before and during the COVID-19 pandemic. The results indicate that while country-specific differences in HR digitisation challenges were significant both before and during COVID-19, the pandemic exacerbated these differences. Hungary consistently faced the greatest challenges, while Poland encountered the fewest. The pandemic heightened the overall difficulty of HR digitisation, as evidenced by higher mean scores and greater variability.*

Practical Implications: *The paper emphasises the urgent need for targeted strategies to promote digital transformation, especially in countries facing significant challenges, during crises and beyond.*

Keywords: HR digitisation, HRM, Visegrad Group, COVID-19, pandemic, AI

Jel codes: M15; M54; O33; J24; I15

1. INTRODUCTION

In the current era, we can confidently state that the development of technology has never been as dynamic and intense as it has been over the past 20 to 30 years. Historically, important inventions have accelerated in their development throughout human existence, but never before have so many fundamental inventions emerged in a single generation to advance humanity significantly. We can

certainly consider the Internet and the development of computer technology as significant inventions that enable us to connect knowledge across the world. Thanks to these advances, we can solve problems more quickly and effectively, leading us to the fourth industrial revolution. In Industry 4.0, entirely new manufacturing landscapes are emerging, where robots have become a key element and conventional human skills and thinking are routinely outperformed (Hitka et al., 2025). While the concept of Industry 5.0 is increasingly coming to the forefront, there is an even greater connection between humanity and technology. This concept no longer focuses solely on enhancing the efficiency and flexibility of production, but instead emphasises the significance of research and innovation with an emphasis on sustainability and social justice. Concepts such as focusing on people's needs and their interactions with machines, biotechnology and smart materials, real-time simulations, secure data transmission, storage and analysis, technologies that ensure energy efficiency, and artificial intelligence (AI) are gaining importance (Zolotová et al., 2021).

Technological developments significantly impact human resources (HR) management. HR functions in the Visegrad Group (V4) countries (the Czech Republic, Hungary, Poland, and Slovakia)-whose economies have traditionally excelled in manufacturing and are now rapidly digitising- have had to adapt. Automation, AI, and widespread digital transformation are changing how organisations recruit, hire, manage employees, support teleworking, and analyse workforce data (Eger & Žižka, 2024). Automation and AI have transformed recruitment, onboarding, and employee management, fundamentally altering how HR operates - illustrated by chatbots interviewing candidates in the Czech Republic and AI customised for job roles in Poland. The COVID-19 crisis acted as a test bed for telework technologies, fast-tracking the shift to digital HR tools and highlighting the importance of a digitally agile HR function (Poór et al, 2024). While challenges such as cost, cultural resistance, and skills gaps remain, there is clear momentum in the region to overcome these barriers. Organisations are increasingly aware that effective use of digital tools in HR can improve efficiency, decision-making, and employee experience, all of which contribute to competitive advantage in a tight labour market. They are also learning that digital transformation is not just a technical effort but a human effort, requiring training, managerial buy-in, and a focus on employee-centred implementation (Pubali & Bidyut, 2023).

The study focuses on the digital transformation of HR practices. An understanding of these processes sheds light on how organisations can maintain operational continuity during crises, which became particularly salient during the pandemic (Ruitao, 2023). The HR sector has traditionally been seen as a conservative field; however, the pandemic, along with subsequent crises and geopolitical changes, catalysed an urgent shift towards digitisation, demonstrating the need for HR to adapt quickly and agilely to changing circumstances (Ajayi-Nifise et al., 2024). The experiences of the Visegrad countries highlight the common challenges organisations face in integrating digital technologies into HRM systems. These challenges range from the need to train employees in digital literacy to building a culture that embraces change (Ajayi-Nifise et al., 2024). The COVID-19 pandemic underscored the critical capabilities of HR departments to effectively manage transitions and leverage digital tools to facilitate communication and collaboration (Ruitao, 2023).

Despite the growing importance of digital transformation in HR, the adoption of digital tools varies significantly across countries due to structural, economic, and cultural factors. In the Visegrad Group, organisations face distinct challenges in implementing HR digitisation. While some firms in Poland have been more adaptable due to pre-existing digital infrastructure, companies in Hungary have encountered greater difficulties, often owing to limited technological readiness and resistance to change. Similarly, disparities in investment in AI-driven HR solutions, digital literacy, and governmental support further shape how HR digitisation progresses across different national contexts. These variations underscore the need for a tailored approach to digital transformation in HRM, especially during crises such as the COVID-19 pandemic. Therefore, the aim of this paper is to gain new insights into the digitisation of HR before and during the COVID-19 pandemic in the Visegrad Group.

2. LITERATURE REVIEW

Technological progress affects labour demand in two ways. On one hand, it reduces the demand for work in activities that can be automated; on the other hand, lowering production costs increases the

income of the population and creates demand for new jobs. However, jobs with a predominance of routine manual and non-manual activities are also at risk. Frey and Osborne (2013) quantified the probability of being threatened by computerisation based on a forecast of machine learning and mobile robotics and an analysis of work activities across 702 job types. Jobs where human labour can be effectively replaced by computers within a relatively short period (1–2 decades) include those in transportation and logistics, administrative support positions, most operational roles in manufacturing, positions in personal and household services, and employment in sales and construction. On the other side of the spectrum are positions that require a high degree of originality, social perceptiveness, or a desire to help and care for others. These jobs include most managerial roles, as well as positions in education, healthcare, media, science, and engineering.

Nedelkoska and Quintini (2018) used these findings to assess the threat to the labour market from automation in individual OECD countries. Of the 32 countries assessed, they identified Slovakia as the country most at risk of automation, with up to 33% of jobs in high risk (14% across all assessed countries, with Norway being the least at risk at only 6%). Half of all positions in Slovakia have more than a 67% probability of being threatened by automation, which is also the worst result among all the assessed countries. Consequently, the workforce will need to undergo a significant change in the skills available in the medium term.

However, the changes are unlikely to affect everyone equally. Several economists (Goos & Manning 2007; Coelli & Borland, 2016; Salvatori & Manfredi, 2019) suggest that the jobs of employees with secondary education and middle incomes, which primarily involve professional manual work and clerical positions, will be most at risk due to automation.

Ultimately, automation can deliver not only benefits in terms of increased economic performance but also contribute to rising income inequality, which can lead to social unrest and create pressure to slow the adoption of new technologies. Digital transformation in companies offers advantages such as flexibility and improved team collaboration, which are essential for streamlining processes (Boateng & Olexová, 2025). Stacho et al. (2023) point out that, although all organisations recognise the need for digitisation to remain competitive, larger ones are more active in implementing innovations than smaller ones.

On the other hand, some Slovak companies recognise the importance of modern HRM tools only after implementation, which leads to broader adoption. However, firms that do not use these tools fail to recognise their future relevance (Stacho et al., 2022). Frey (2019), therefore, emphasises the need for preventive measures, such as promoting retraining and lifelong learning, removing barriers to career change, and encouraging employee mobility. Integrating AI tools into decision-making processes can enhance the quality and speed of managerial decisions, leading to improved organisational performance (Isoe, 2024). These measures require not only changes in the relevant legislation but also the active support of companies. Kucera and de Mattos (2020) argue that automation not only replaces human labour but can also improve working conditions and, ultimately, employee remuneration. The COVID-19 crisis has also contributed to the current situation by accelerating automation, as companies sought to reduce their dependence on human labour and limit mutual contact between employees.

According to the OECD (2021), policymakers must anticipate the skills required of employees in light of automation trends. AI applications in knowledge management facilitate the creation, integration, and distribution of knowledge, enhancing organisational competitiveness (Alghanemi & Mubarak, 2024). In addition, the OECD (2021) points to the declining opportunities for young people to enter the labour market through low-skilled jobs and emphasises the need to adapt the skills of younger workers to meet the demands of the labour market.

Technological progress is not only reshaping the labour market but also transforming how human resource management (HRM) operates. AI has the potential to revolutionise HRM practices by automating mundane tasks, streamlining processes, and providing customised solutions for HR managers (El-Ghoul et al. 2024). Integrating AI into HRM offers opportunities to enhance decision-making processes, from recruitment to employee development, by automating tasks and providing data-driven insights. However, this technological shift also raises questions about the evolving role of HR professionals and the need for continuous adaptation to new digital tools. Like any new technology, AI brings numerous benefits and risks. It is up to us to choose our approach to this technology and determine how we can leverage it to our advantage. AI offers many opportunities to enhance societal efficiency, foster prosperity where it is lacking, and address problems that have been challenging to

resolve so far. However, it also presents possibilities for the misuse of this technology through various unfair and dangerous practices.

A study conducted by Grace et al. (2018) states that more advanced AI will have a 25% probability of having a positive impact on humanity and a 20% probability of a very positive impact. On the other hand, a group of scientists involved in this study assessed only a 10% probability that such technology would have a negative impact, while they attributed just a 5% probability to catastrophic consequences.

The V4 countries had already begun the process of digitising HRM before the COVID-19 pandemic. Digital workforce onboarding processes have become increasingly popular as they facilitate the effective integration of new employees into organisations (Sani et al., 2022). These online solutions provided companies with the opportunity to manage a geographically dispersed workforce effectively and ensure the smooth integration of new employees into organisational culture and work processes. However, the pandemic has accelerated this process and brought significant changes to HR practices. During the COVID-19 pandemic, organisational adaptability and the need for flexible HRM underwent major changes, driven largely by public health measures and teleworking requirements (Borawski, Duda & Biercewicz, 2021). Transitioning to digital platforms became essential to sustain operations amid lockdowns and social distancing protocols (Podolchak et al., 2024; Wiścicka-Fernando, 2021). In Hungary, similar to the Visegrad countries, HR functions adapted rapidly by integrating teleworking tools and digital management systems (Piwowar-Sulej et al., 2023). This digital shift not only addressed immediate operational needs but also represented a broader digital transformation strategy that many organisations had previously been reluctant to adopt.

The pandemic served as a critical stimulus for increased investment in training and development of digital tools in the V4 countries (Tomé et al., 2023). AI-driven tools streamline candidate sourcing, screening, and selection processes, leading to more accurate and unbiased hiring decisions (El-Ghoul et al., 2024). Organisations that had already invested in digital capabilities before the pandemic were better positioned to embrace digital learning environments and virtual collaboration. Some research suggests that in Hungary, many companies have adopted online training and development initiatives that enable them to maintain and develop employees' skills during teleworking periods. This time has highlighted the importance of digital competencies in HRM, underlining the trend toward sustainable human resource development (S-HRD), which is likely to continue after the epidemic.

The rapid adaptation and securitisation of digitisation tasks have enabled companies to adjust to new circumstances. Those that already implemented advanced IT solutions were better positioned to respond to emerging challenges. Unsurprisingly, the biggest winners included e-commerce and IT companies, as they had previously embraced best practices in their operations. At the same time, digitisation poses a challenge for less agile firms, as it is not limited to a single business process but permeates the entire organisation: it involves the digitisation of business models, customer relationships, primary and managerial processes, and products/services (Móricz, 2019). Even aside from the pandemic, the implementation of Industry 4.0 has presented a significant challenge for companies. Industry 4.0, a specific branch of digitisation, refers to the digitisation and automation of the business environment; however, in this transformation, fear of change, lack of motivation, and issues with employee engagement and retention have created barriers for both managers and the workforce (Obermayer et al., 2021). COVID-19 has significantly accelerated the digitisation process, requiring companies to be innovative, adaptive, and secure (Otti et al., 2021). By 2025, AI will fundamentally change organisational structures by facilitating the symbiotic relationship between human intelligence and artificial intelligence (Mollick, 2024).

Furthermore, the pandemic highlighted the role of digital technology in supporting HRM practices. Technology facilitated effective communication, recruitment, and performance management, enabling organisations to maintain operational efficiency and employee engagement (Widiastuti, 2021). Empirical studies in the V4 region emphasise the key role of digital tools in HRM toolkits, such as managing in hybrid work environments (Piwowar-Sulej et al., 2023). The integration of these technologies is expected to continue, enhancing the quality and accessibility of HR services beyond the immediate context of the pandemic.

The digitisation of HR in the Visegrad countries before and during COVID-19 was a significant and rapid transition, driven by necessity and innovative opportunities. Although pre-pandemic practices laid the foundation, the urgency of the health crisis accelerated the adoption and integration of digital HRM practices. A forward-looking perspective highlights the ongoing commitment to digital tools that

support and expand HRM functions, signalling a strategic opportunity for the sector's continued evolution and sustainability.

3. METHODOLOGY

3.1. Participants

Participants were randomly selected to ensure a representative sample of the target population. The survey achieved the following sample sizes across the V4 countries: Poland – 500 respondents, the Czech Republic – 832 respondents, Slovakia – 384 respondents, and Hungary – 377 respondents. These sample sizes were deemed adequate for conducting robust statistical analyses and drawing valid conclusions. In total, the research sample comprised 2093 organisations.

In Poland, the majority of organisations (83.60%) had less than 10 employees, 7.40% had 10–49 employees, 3.40% had 50–249 employees, and 5.60% had more than 250 employees. In Slovakia, 22.92% of enterprises had less than 10 employees, 33.85% had 10–49 employees, 22.66% had 50–249 employees, and 20.57% had more than 250 employees. In the Czech Republic, the distribution of employees was more balanced: 28.00% had less than 10 employees, 28.73% had 10–49 employees, 22.24% had 50–249 employees, and 21.03% had more than 250 employees. In Hungary, 37.98% of enterprises had less than 10 employees, 24.70% had 10–49 employees, 18.25% had 50–249 employees, and 19.06% had more than 250 employees.

In Poland, 84.80% of organisations had an annual turnover of €2,000,000 or less, 6.60% earned less than €10,000,000, 5.00% earned less than €50,000,000, and 3.60% earned €50,000,000 or more. In Slovakia, 47.40% earned €2,000,000 or less, 23.70% earned less than €10,000,000, 14.58% earned less than €50,000,000, and 14.32% earned €50,000,000 or more. In the Czech Republic, 36.30% earned €2,000,000 or less, 23.80% earned less than €10,000,000, 18.87% earned less than €50,000,000, and 21.03% earned €50,000,000 or more. In Hungary, 48.02% earned €2,000,000 or less, 19.97% earned less than €10,000,000, 15.96% earned less than €50,000,000, and 16.05% earned €50,000,000 or more.

In Poland, 85.00% of organisations were private, while 15.00% were public. In Slovakia, 86.46% were private, while 13.54% were public. In the Czech Republic, 84.62% were private, and 15.38% were public. In Hungary, 85.71% were private, and 14.29% were public.

In Poland, 6.40% of organisations had been in existence for less than 1 year, 14.80% for 1–3 years, 24.20% for 3–10 years, 19.00% for 10–15 years, and 35.60% for more than 15 years. In Slovakia, 2.08% of organisations had been operating for less than 1 year, 5.621% for 1–3 years, 21.09% for 3–10 years, 16.93% for 10–15 years, and 54.69% for more than 15 years. In the Czech Republic, 0.96% of organisations had been operating for less than 1 year, 5.53% for 1–3 years, 18.99% for 3–10 years, 15.50% for 10–15 years, and 59.01% for more than 15 years. In Hungary, 2.39% of organisations had been in existence for less than 1 year, 7.36% for 1–3 years, 19.88% for 3–10 years, 16.44% for 10–15 years, and 53.94% for more than 15 years.

3.2. Research Protocol and Stimuli

The research methodology employed in this study involved a questionnaire survey designed to gather data on specific variables in the Visegrad Group countries: Poland, Slovakia, the Czech Republic, and Hungary. The data collection period spanned from March to August 2023. A mixed-method approach was adopted, using both online and paper-based questionnaires. Participants were invited to complete the questionnaire either online or on paper, based on their accessibility and preference. Online questionnaires were distributed through digital platforms, while paper questionnaires were handed out in person or sent by post. This dual approach aimed to maximize response rates and ensure inclusivity. The study adhered to ethical research standards, ensuring the confidentiality of responses and allowing participants to withdraw from the study at any time without penalty.

As part of the research, respondents were asked to rate the level of difficulty they encountered in managing various HR tasks and functions before and during COVID-19. The assessment concentrated on areas such as workforce management, workforce planning, recruitment and selection, retention, and labour shortages. It also included maintaining employee engagement, managing home-based and hybrid teams, ensuring health and safety compliance, providing training and development, and facilitating effective organisational communication. Respondents were also asked to assess challenges related to

HR digitisation and industrial relations. Their ratings were recorded on a five-point Likert scale, with higher ratings indicating greater perceived difficulty. This method aimed to identify the most pressing HR challenges and provide insights into areas needing strategic focus, particularly in the evolving workplace landscape.

3.3. Research Apparatus

This paper aims to gain new insights into HR digitisation before and during the COVID-19 pandemic in the V4 countries. Two conceptual frameworks were developed for the study (Figure 1 and 2). According to conceptual framework I, the authors examined the assessment of HR digitisation before and during the COVID-19 pandemic, considering the country in which the business activity is conducted. The Shapiro-Wilk normality test, F-test for equal variance, and paired t-test were utilised for the investigation.

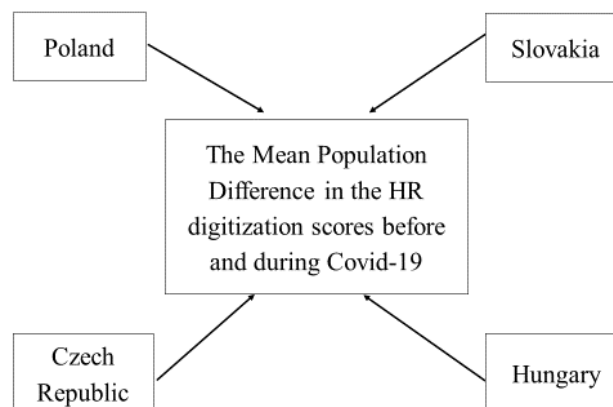


Figure 1. Conceptual framework I

Source: own elaboration.

A t-test was conducted to compare the mean population difference in HR digitisation scores before and during COVID-19 in the V4 countries. Therefore, the hypotheses formulated are:

H_{01} : The mean of HR digitisation scores before and during COVID-19 in Poland is equal.

H_{a1} : The mean of HR digitisation scores before and during COVID-19 in Poland is not equal.

H_{02} : The mean of HR digitisation scores before and during COVID-19 in Slovakia is equal.

H_{a2} : The mean of HR digitisation scores before and during COVID-19 in Slovakia is not equal.

H_{03} : The mean of HR digitisation scores before and during COVID-19 in the Czech Republic is equal.

H_{a3} : The mean of HR digitisation scores before and during COVID-19 in the Czech Republic is not equal.

H_{04} : The mean of HR digitisation scores before and during COVID-19 in Hungary is equal.

H_{a4} : The mean of HR digitisation scores before and during COVID-19 in Hungary is not equal.

The authors also conducted a one-way ANOVA to compare the mean digitisation scores among the four analysed V4 countries before and during COVID-19, as shown in conceptual framework II (Figure 2).

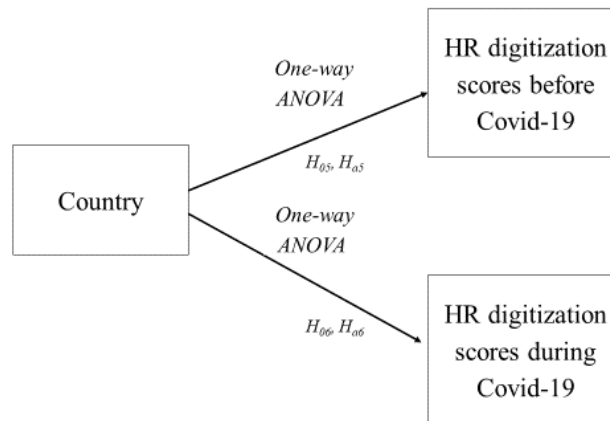


Figure 2. Conceptual framework II

Source: own elaboration.

Subsequent hypotheses are as follows:

H₀₅: The population means of HR digitisation scores before COVID-19 are equal across the four countries.

H_{a5}: At least two population means of HR digitisation scores before COVID-19 are not equal.

H₀₆: The population means of HR digitisation scores during COVID-19 are equal across the four countries.

H_{a6}: At least two population means of HR digitisation scores during COVID-19 are not equal.

3.4. Analysis of Measurement Data

The ranking of HR challenges before and during the COVID-19 pandemic highlights varying priorities across the Visegrad Group countries. While HR digitisation is considered a significant challenge, it ranked lower compared to other HR activities, indicating that it was not viewed as the most pressing issue prior to the pandemic. With an average score of 2.46, HR digitisation in Poland ranked 9th out of the 11 activities assessed. Challenges such as employee retention, recruitment, and selection were considered more critical in the pre-pandemic context. In the Czech Republic, HR digitisation scored 2.53, placing it 5th overall. However, recruitment, selection, and labour shortages were perceived as more pressing challenges. With a score of 2.63, Slovakia also ranked 5th for HR digitisation, similar to the Czech Republic. However, priorities such as recruitment and selection and labour shortages were ranked higher. In Hungary, HR digitisation was considered a lower priority, ranking 10th with a score of 3.27, well behind challenges such as employee retention, maintaining engagement, and recruitment and selection. Across the V4 countries, HR digitisation had an average score of 2.66, placing it in 8th place. This indicates that while it was recognised as a challenge, other activities such as recruitment, selection, and retention were deemed more critical.

The ranking of HR challenges during the COVID-19 pandemic reflects a shift in priorities across the Visegrad Group countries. While HR digitisation remains a recognised challenge, it continues to rank lower compared to more immediate and operational HR activities. The data underscores how the pandemic exacerbated existing challenges while introducing new complexities, such as health and safety compliance and remote work management. HR digitisation ranked lowest in Poland, with an average challenge score of 2.50. This suggests that Polish organisations were more focused on addressing critical issues such as employee retention, workforce management, and planning. With a score of 2.86, HR digitisation in the Czech Republic ranks 8th, indicating a moderate challenge. However, other activities, such as workforce management, planning, and recruitment and selection, were viewed as more pressing. In Slovakia, HR digitisation received a score of 2.95, placing it 8th. While recognised as a challenge, activities such as workforce management, planning, recruitment, and selection took precedence. In Hungary, HR digitisation ranked 7th with a score of 4.00, reflecting a higher perceived challenge compared to other V4 countries. However, it still lagged behind challenges such as health and safety compliance and organisational communication. Across the V4 countries, HR digitisation had an average

challenge score of 3.00, placing it 10th overall. This highlights that while HR digitisation was recognised as an important issue, it was not prioritised as highly as operational or pandemic challenges. Although HR digitisation was considered a challenge during the COVID-19 pandemic, its relative ranking in the V4 countries suggests that it was not deemed a critical priority compared to challenges directly related to pandemic disruptions, such as workforce management, recruitment, and health and safety compliance. This reflects the immediate need for organisations to address operational and security concerns, relegating longer-term strategic transformations like digitisation to a secondary focus.

Despite its relatively low ranking among HR challenges in both periods, HR digitisation remains a critical area for long-term organisational resilience and adaptability. The pandemic underscored the necessity of digital tools for remote work, communication, and workforce management, illustrating that digital transformation is not merely a strategic goal but a fundamental enabler of other HR functions. Investing in HR digitisation can streamline processes, enhance decision-making through data analytics, and boost employee engagement, positioning organisations to navigate future disruptions more effectively. Thus, proactively addressing this area can provide a competitive advantage and ensure sustainable growth in an increasingly digital world. Therefore, the authors conducted further analyses, such as a paired t-test or one-way ANOVA.

4. RESULTS

4.1. Paired t-test

The preliminary conditions should be fulfilled in order to run the paired t-test. Accordingly, the sample data should come from a normal distribution, and the variances of the paired samples should demonstrate homogeneity. Therefore, the researchers conducted the Shapiro-Wilk test to assess the normality of the distributions and the F-test to evaluate the homogeneity of variances.

The Shapiro-Wilk test was performed to examine the normality of the HR digitisation scores before and during the COVID-19 pandemic. According to the Shapiro-Wilk test, the data did not come from a normal distribution (Table 1).

Table 1. Shapiro-Wilk normality test

Country	Distribution – HR digitisation scores	Sample Size (n)	W	p-value	Assumption
Poland	before the COVID-19	500	0.88	0.00	Sample data do not come from a population that is normally distributed
	during the COVID-19	500	0.89	0.00	
Czech Republic	before the COVID-19	832	0.89	0.00	
	during the COVID-19	832	0.91	0.00	
Slovakia	before the COVID-19	384	0.91	0.00	
	during the COVID-19	384	0.91	0.00	
Hungary	before the COVID-19	384	0.91	0.00	
	during the COVID-19	384	0.79	0.00	

Source: own elaboration.

However, according to the central limit theorem, because of the large sample size (sample size > 30), the conclusion of the Shapiro-Wilk test can be omitted. Therefore, based on the large sample size and the established practices of the central limit theorem, the authors assumed that the data came from normal distributions.

Next, the authors carried out an F-test for equal variance. The results are shown in Table 2.

The analysis of HR digitisation ratings before and during the COVID-19 pandemic included an F-test to assess equal variances across the V4 countries. The results are summarised in Table 2, which displays the sample size, degrees of freedom, p-values, confidence intervals (CI), and the ratio of variances for each country. The sample in Poland consisted of 500 organisations for each time period (before and during the pandemic). The F-test result showed a p-value of 0.831 and a confidence interval (95% CI) of 0.82 to 1.12, with a variance ratio of 0.98. These results indicate that the variances between the two time periods were equal, which meets the assumption of homogeneity. In the case of the Czech

Republic, the sample consisted of 832 organisations for each time period. The F-test yielded a p-value of less than 0.05, which, combined with the confidence interval of 0.71 to 0.94 and a variance ratio of 0.82, indicated that the variances were not equal. This suggests greater variability in HR digitisation ratings during the pandemic than prior. With a sample size of 384 organisations for each time period in Slovakia, the F-test yielded a p-value of 0.092 and a confidence interval of 0.69 to 1.09, along with a variance ratio of 0.84. These results indicate that the variances were equal, which aligns with the assumption of homogeneity. The sample in Hungary included 384 organisations for each time period. The F-test yielded a p-value of 0.148, a confidence interval from 0.70 to 1.05, and a variance ratio of 0.86. These results indicate that the variances between the two time periods were equal, supporting the assumption of homogeneity. Overall, the F-test results indicate that while most countries had equal variances in HR digitisation scores before and during the pandemic, the Czech Republic displayed significant differences, underscoring the variability in responses between the two periods. According to the F-test results (Table 2), only the Czech Republic shows non-homogeneity of the variances. Consequently, the paired t-test was conducted for the Czech Republic under the conditions of non-homogeneity of variance.

Table 2. F-test for equal variance

Country	Distribution – HR digitisation scores	Sample Size (n)	df	p-value	95 % CI	Ratio of variances	Assumptions
Poland	before the COVID-19	500	499	0.831	0.82 – 1.12	0.98	Variances are equal
	during the COVID-19	500	499				
Czech Republic	before the COVID-19	832	831	0.004	0.71 – 0.94	0.82	Variances are not equal
	during the COVID-19	832	831				
Slovakia	before the COVID-19	384	383	0.092	0.69 – 1.09	0.84	Variances are equal
	during the COVID-19	384	383				
Hungary	before the COVID-19	384	383	0.148	0.70 – 1.05	0.86	Variances are equal
	during the COVID-19	384	383				

Source: authors' compilation.

The paired t-test results shown in Table 3 aim to assess whether the mean scores of the HR digitisation ratings before and during the COVID-19 pandemic differ significantly within each V4 country. The test evaluates whether the observed differences in scores indicate true changes in the population or are merely due to random variation.

Table 3. Paired t-test

Country	Distribution – HR digitisation scores	t	df	p-value	95 % CI	Mean difference	Decision
Poland	before the COVID-19	-0.82	499	0.41	-0.16, 0.07	-0.05	Population means are equal
	during the COVID-19						
Czech Republic	before the COVID-19	-9.33	831	0.00	-0.39, -0.26	-0.33	Population means are not equal
	during the COVID-19						
Slovakia	before the COVID-19	-4.89	383	0.00	-0.46, -0.19	-0.32	Population means are not equal
	during the COVID-19						
Hungary	before the COVID-19	-14.18	383	0.00	-0.86, -0.65	-0.75	Population means are not equal
	during the COVID-19						

Source: own elaboration.

This analysis highlights changes in the perception of HR digitisation challenges across the V4 countries, helping to identify trends and differences in organisational priorities. The p-value in Poland (0.41) indicates no significant difference in HR digitisation ratings before and during COVID-19. This means that the perception of HR digitisation challenges remained consistent (fail to reject H_{01}). In Slovakia, a significant difference is observed ($p < 0.001$) with a mean difference of -0.32 , indicating a

similar trend of reduced perceived challenges during the pandemic (reject H_{02}). The p-value in the Czech Republic (<0.001) indicates a significant difference, with a mean difference of -0.33 (reject H_{03}). This suggests that HR digitisation challenges were perceived as less important during COVID-19 than before. In Hungary, the largest mean difference of -0.75 , coupled with a significant p-value (<0.001), demonstrates a significant decrease in the perception of HR digitisation challenges during COVID-19 compared to the pre-pandemic period (reject H_{04}). The significant decrease in ratings across most countries suggests that organisations adapted their HR practices or that digitisation became less of a concern compared to other pandemic-related issues. However, the lack of significant change in Poland warrants further investigation to understand the unique dynamics of that market.

4.2. One-way ANOVA

The preliminary conditions must be met to conduct the one-way ANOVA. Accordingly, the sample data should originate from a normal distribution, and the variances of the sample groups should show homogeneity. Thus, the researchers performed the Shapiro-Wilk test to assess the normality of the distributions and Levene's test for Homogeneity of Variance. According to Table 1, the sample data does not come from a normal distribution. However, based on the large sample size and the accepted practices of the central limit theorem, the researchers assumed the data came from normal distributions. According to Levene's test, the variances do not demonstrate the homogeneity conditions in the before-COVID-19 scenario ($df = 3$, $F\text{-value} = 4.29$, $p\text{-value} = 0.00$). Thus, the authors conducted Welch's ANOVA. According to the Welch's ANOVA test ($F = 45.42$, $\text{num } df = 3$, $\text{denom } df = 990$, and $p\text{-value} = 0.00$), the null hypothesis H_{05} can be rejected ($p\text{-value} < 0.05$). This indicates that HR digitisation scores of at least two populations before COVID-19 are not equal.

Furthermore, a one-way ANOVA test was conducted to assess whether the HR digitisation scores before COVID-19 varied significantly among the four V4 countries, as illustrated in Tables 4 and 5.

Table 4. Country versus HR digitisation scores before COVID-19

Country	Count	Sum	Average	Variance
Poland	500	1228	2.46	1.56
Czech Republic	832	2107	2.53	1.36
Slovakia	384	1008	2.62	1.28
Hungary	384	1249	3.25	1.19

Source: own elaboration.

Table 4 presents descriptive statistics, including count, sum, mean, and variance for each country analysed. Mean HR digitisation scores ranged from 2.46 (Poland) to 3.25 (Hungary), indicating potential differences in perceptions of HR digitisation challenges across countries. The variances were relatively similar, suggesting homogeneity of variance.

Table 5. Summary of the one-way ANOVA test – H_{05} testing

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	169,65	3	56,55	41,59	0.00	2,61
Within Groups	2849,65	2096	1,359			
Total	3019,3	2099				

Source: own elaboration.

The results of the one-way ANOVA are summarised in Table 5. The analysis revealed a significant effect of country on the HR digitisation score before COVID-19 ($F(3, 2096) = 41.59$, $p < .001$). The F-statistic exceeds the critical value (2.61), and the p-value is much smaller than the conventional significance level of .05, leading to the rejection of the null hypothesis (reject H_{05}). The sum of squares for the between-groups variation is 169.65, indicating substantial differences in HR digitisation scores attributable to the country factor. The within-groups sum of squares was 2849.65, indicating variability within country scores. The between-groups mean square was 56.55, and the within-groups mean square was 1.36.

To further analyse the significant differences identified by the one-way ANOVA test, Tukey's HSD (honestly significant difference) test was conducted to compare the mean HR digitisation scores across countries (Table 6). This test provides pairwise comparisons along with confidence intervals and adjusted p-values, ensuring control of the family-wise error rate.

Table 6. Tukey's Multiple Comparisons of Means before the pandemic

Comparisons	Diff	lwr	upr	p adj
Hungary - Czech Republic	0.72	0.54	0.91	0
Poland - Czech Republic	-0.08	-0.25	0.09	0.65
Slovakia - Czech Republic	0.09	-0.09	0.28	0.57
Poland - Hungary	-0.8	-1	-0.59	0
Slovakia - Hungary	-0.63	-0.84	-0.41	0
Slovakia - Poland	0.17	-0.03	0.37	0.14

Source: own elaboration.

The mean HR digitisation score in Hungary was significantly higher than in the Czech Republic (mean difference = 0.72, 95% CI [0.54, 0.91], $p < .001$), confirming a notable disparity in digitisation challenges between these countries (not equal population mean). The mean difference between Poland and the Czech Republic was not statistically significant (mean difference = -0.08, 95% CI [-0.25, 0.09], $p = .65$), suggesting comparable levels of difficulty in HR digitisation. A similar outcome was observed when comparing Slovakia and the Czech Republic, with a non-significant mean difference (mean difference = 0.09, 95% CI [-0.09, 0.28], $p = .57$). A notable disparity appeared in the HR digitisation scores reported by Hungary and Poland, with the former exhibiting significantly higher scores (mean difference = -0.80, 95% CI [-1.00, -0.59], $p < .001$). This finding indicates substantial variations in the perceived challenges associated with HR digitisation between the two nations (unequal population mean). A similar trend was observed when comparing Hungary's scores to those of Slovakia, which exhibited a significantly higher mean difference of -0.63 (95% CI [-0.84, -0.41], $p < .001$) (not equal population mean). The difference between Slovakia and Poland was not statistically significant (mean difference = 0.17, 95% CI [-0.03, 0.37], $p = .14$), indicating relatively similar levels of perceived HR digitisation challenges.

The same calculations were carried out for the scenario of the evaluations that refer to the digitisation of HR during the pandemic. According to Levene's test, the variances demonstrate the homogeneity conditions in the during-COVID-19 scenario ($df = 3$, F-value = 2.06, p-value = 0.1). Thus, another one-way ANOVA test was performed to explore the association between the analysed V4 countries and HR digitisation scores during COVID-19, as shown in Tables 7 and 8.

Table 7. Country versus HR digitisation scores during COVID-19

Country	Count	Sum	Average	Variance
Poland	500	1252	2,5	1.58
Czech Republic	832	2379	2,86	1.66
Slovakia	384	1133	2,95	1.52
Hungary	384	1539	4,01	1.38

Source: own elaboration.

Table 7 summarises the descriptive statistics, including the count, sum, mean, and variance of the HR digitisation challenge scores for each country during COVID-19. The mean scores reveal variability in perceptions, with Hungary reporting the highest mean score (4.01), indicating that HR digitisation was perceived as more challenging compared to Poland (2.5), the Czech Republic (2.86), and Slovakia (2.95). Variance scores are comparable across countries, suggesting homogeneity of variance.

Table 8. Summary of the one-way ANOVA test – H_{06} testing

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	530.42	3	176.81	113.1	0.00	2.61
Within Groups	3276.58	2096	1.56			
Total	3806.99	2099				

Source: own elaboration.

The results of the one-way ANOVA are presented in Table 8. The analysis revealed a statistically significant effect of country on HR digitisation challenge scores during COVID-19 ($F(3, 2096) = 113.1$, $p < .001$). The F-statistic is well above the critical value (2.61), and the p-value is well below the conventional threshold of .05, leading to the rejection of the null hypothesis (reject H_{06}). The between-groups sum of squares was 530.42, indicating significant variability in HR digitisation scores due to differences between countries. The within-group sum of squares was 3276.58, indicating additional variability within scores by country. The between-groups mean square was 176.81, and the within-groups mean square was 1.56.

To further investigate the significant differences identified by the one-way ANOVA test for HR digitisation scores during the COVID-19 pandemic, Tukey's HSD test was conducted (Table 9). This analysis provided pairwise comparisons of mean differences between countries, along with confidence intervals and adjusted p-values to ensure robust control over multiple testing errors.

Table 9. Tukey's Multiple Comparisons of Means during the pandemic

Comparisons	diff	lwr	upr	p adj
Hungary - Czech Republic	1.15	0.95	1.35	0
Poland - Czech Republic	-0.36	-0.54	-0.17	0
Slovakia - Czech Republic	0.09	-0.11	0.29	0.64
Poland - Hungary	-1.5	-1.72	-1.29	0
Slovakia - Hungary	-1.06	-1.29	-0.83	0
Slovakia - Poland	0.45	0.23	0.66	0

Source: own elaboration.

Hungary's HR digitisation scores were significantly higher than those of the Czech Republic (mean difference = 1.15, 95% CI [0.95, 1.35], $p < .001$), highlighting a substantial disparity in perceived HR digitisation challenges (not equal population mean). The mean score in Poland was significantly lower than that in the Czech Republic (mean difference = -0.36, 95% CI [-0.54, -0.17], $p < .001$), suggesting a reduced perception of HR digitisation challenges in Poland (not equal population mean). The difference between Slovakia and the Czech Republic was not statistically significant (mean difference = 0.09, 95% CI [-0.11, 0.29], $p = .64$), indicating similar levels of perceived difficulty (not equal population mean). Hungary's scores were significantly higher than those of Poland (mean difference = -1.5, 95% CI [-1.72, -1.29], $p < .001$), reflecting notable differences in HR digitisation challenges during the pandemic (not equal population mean). Hungary also reported significantly higher scores compared to Slovakia (mean difference = -1.06, 95% CI [-1.29, -0.83], $p < .001$), confirming its unique position in facing greater HR digitisation challenges (not equal population mean). Slovakia's scores were significantly higher than Poland's (mean difference = 0.45, 95% CI [0.23, 0.66], $p < .001$), indicating a noticeable, albeit smaller, difference in the perception of HR digitisation challenges (not equal population mean).

5. DISCUSSION

The data presented in the paper shows that HR digitisation is consistently ranked as one of the less challenging HR activities in the Visegrad Group countries, both before and during the COVID-19 pandemic. However, there are notable differences in its relative importance between the two periods. Prior to COVID-19, HR digitisation ranked 8th overall in the V4 countries, with scores indicating a

moderate level of challenge. While it was not a top priority, its rank suggests that organisations were already addressing digital transformation as part of broader strategic goals. This phenomenon is corroborated by the findings of Nikpour and Semushkina (2021), which document substantial investments in HR software and cloud services by prominent companies in BRICS nations. These investments signify a growing cognisance of the significance of efficacious digital HR systems. This commitment to digital transformation in HR aligns with the findings of Kumar and Kapoor (2021), who suggest that the COVID-19 epidemic actually served to accelerate the integration of digital HR practices across various sectors. In COVID-19, despite the accelerated shift to digital solutions necessitated by the pandemic, HR digitisation ranked 10th overall in the Visegrad Group, with a slightly higher average score (3.00). The ranking suggests that while digitisation has gained some traction, it has been overshadowed by more immediate challenges such as health and safety compliance, workforce management, and organisational communication (Al-Alawi et al., 2023; Budd et al., 2020). In this context, integrating AI-based tools with HR practices is a promising direction for the development of intelligent management. As part of a broader digital transformation effort, AI can support data-driven decision-making, process automation, and personalised employee experiences.

The paired t-test results highlight different dynamics in the perception of HR digitisation challenges across the V4 countries during the COVID-19 pandemic. A range of responses to the digitisation challenges can be attributed to specific contextual factors. The integration and effectiveness of HR technologies, including IT systems for HRM and AI, are pivotal to the transformation of digital care organisations (Amalia, 2024). While the Czech Republic, Slovakia, and Hungary exhibited significant decreases in ratings, indicating that HR digitisation became less challenging during the pandemic, Poland showed no significant change. This suggests that Polish organisations may have experienced more consistent conditions or unique obstacles compared to their V4 counterparts. These findings highlight the differential impact of the pandemic on HR practices and underscore the importance of context-specific strategies in addressing HR digitisation challenges. AI tools that are part of such strategies provide the opportunity to customise HR functions to the specific context of the organisation and country. By leveraging machine learning and analytics, companies can more effectively tailor their approach to recruitment, retention, and workforce planning. AI tools integrated into these strategies enable the customisation of HR functions to the specific context of the organisation and country. Utilising machine learning and analytics allows companies to more accurately refine their approach to recruiting, retaining, and planning their workforce. The intricacies inherent in the process of digital conversion extend far beyond the technological aspect itself, being inextricably linked to socioeconomic factors and the organisational preparations that are in place (Esses et al., 2021). This assertion is supported by the observation that established practices within certain domains may hinder the integration of digital technology, despite the prevailing external pressures associated with the pandemic (Mahapa et al., 2023).

The significant results suggest that the mean pre-COVID-19 HR digitisation challenge scores differed in at least two of the countries analysed. Hungary stands out with a significantly higher mean score (3.25) compared to the other countries, indicating that organisations in Hungary perceived HR digitisation as more challenging before the pandemic. This finding may reflect differences in technology adoption, organisational readiness, or contextual factors such as government support or cultural attitudes toward digitisation (Jewapatarakul & Ueasangkomsate, 2024; Bansal et al., 2023). Other significant findings indicate that the scores for HR digitisation challenges during COVID-19 differed in at least two of the countries analysed. Hungary stands out with the highest mean score (4.01), suggesting that organisations in this country faced more pronounced challenges in implementing HR digitisation during the pandemic. This finding may reflect factors such as differences in infrastructure, pre-existing technological readiness, or varying organisational responses to pandemic-related disruptions (Taganoviq et al., 2023). The differences among the other countries, while less pronounced, also point to the influence of contextual factors on HR digitisation efforts. These findings underscore the importance of tailoring digitisation strategies to the unique challenges faced by organisations in specific countries, especially in times of crisis (Vu et al., 2022).

When comparing the results of the two situations, before and after the pandemic, both similarities and differences emerge. There are three main similarities. First, both analyses revealed statistically significant differences in HR digitisation scores among the V4 countries, indicating that country-specific factors consistently influenced perceptions of HR digitisation. Next, Hungary reported the highest mean

scores in both periods, suggesting that HR digitisation posed greater challenges there than in the other countries. Finally, Poland consistently had the lowest mean scores for HR digitisation challenges, both before (2.46) and during COVID-19 (2.50), reflecting a relatively lower level of difficulty perceived by organisations. Among the differences, the F-statistic increased significantly during COVID-19 (113.10) compared to the pre-COVID period (41.59), suggesting that differences in HR digitisation challenges across countries became more pronounced during the pandemic. Second, in all countries, the average HR digitisation challenge scores were higher during COVID-19 than before, reflecting the increased importance and difficulty of digitisation due to pandemic-related disruptions. For example, Hungary's mean rose from 3.25 to 4.0, while Slovakia's mean rose from 2.63 to 2.95. It should also be emphasised that while the variances of HR digitisation scores were relatively similar before COVID-19, they increased during the pandemic. For example, in the Czech Republic, the variance increased from 1.36 to 1.66, indicating more variability in perceptions of HR digitisation challenges during COVID-19, while Poland's variance also increased slightly from 1.56 to 1.59. The results of the study highlight the significance of understanding the specific motivations of organisations and the environmental factors that drive digital transformation. This assertion is further corroborated by Montasser et al. (2023), who stipulate the necessity for organisations to implement technology readiness and to encourage cultural transformation in order to cultivate the landscape effectively.

Tukey's HSD test indicates that Hungary consistently faced significantly more substantial obstacles in the realm of HR digitisation compared to its Visegrad counterparts. Before COVID-19, Poland, the Czech Republic, and Slovakia displayed more comparable levels of difficulty. While Slovakia and the Czech Republic had relatively similar perceptions of difficulty during COVID-19, Poland reported notably lower scores, reflecting a less challenging experience with HR digitisation. These outcomes underscore Hungary's distinctive stance in facing increased obstacles to HR digital transformation before the pandemic. The findings also emphasise the growing variability between countries during the pandemic, particularly the notable gap between Hungary and the other V4 nations. From a strategic standpoint, these findings underscore the imperative for organisations, particularly within the context of Hungary, to prioritise enhancing their digital capabilities and organisational readiness to alleviate the challenges posed by such crises (Johan et al., 2023; Wen et al., 2021). In this regard, ongoing assessments and adjustments to organisational strategies for the digitisation of HR are essential, particularly as the world grapples with both the immediate and long-term repercussions of pandemics.

Our results suggest that HR digitisation was a less significant challenge during the COVID-19 pandemic compared to other priorities, such as job security, workforce management, and organisational communication. This supports the analysis of Frey and Osborne (2013), who argue that technological advances and automation will have a major impact on different industries and jobs, with some jobs being more at risk of automation than others. They further highlight that jobs requiring lower levels of education and wage rates are more susceptible to computer automation, suggesting that organisations should tailor their digitisation strategies to the contextual challenges of specific countries. In this context, the use of AI in HR can help companies better align their strategic goals with local conditions, particularly through predictive analytics and intelligent automation. These tools allow for improved predictability of management actions and facilitate more flexible, fact-based decision-making. The significant differences in HR digitisation scores between Hungary and other countries may indicate variations in technological readiness, infrastructure, and government support. Furthermore, the findings of Nedelkoska and Quintini (2018) highlight the importance of social and cognitive intelligence as factors that are difficult to automate, suggesting that organisations should pay increased attention to developing these skills. This is also in line with the findings of Stachová et al. (2024), who argue that while digital innovations in HRM improve efficiency and data-driven decision-making, their direct impact on employee engagement is limited and influenced by other factors. Organisations should therefore combine technological advances with appropriate managerial and cultural approaches to fully exploit their potential.

6. CONCLUSION

The aim of this paper was to gain new insights into the digitisation of HR before and during the COVID-19 pandemic in the Visegrad Group countries. Although the pandemic highlighted the need for digital

transformation, organisations in the V4 countries were more focused on crisis-related and operational issues. This suggests that HR digitisation, while increasingly relevant, was perceived as less critical compared to the urgent demands of managing workforce disruption and ensuring employee well-being during the pandemic.

The analysis highlights significant differences in how HR digitisation challenges were perceived before and during COVID-19 in three of the four countries analysed: the Czech Republic, Slovakia, and Hungary. These findings suggest that the pandemic prompted organisations in these countries to reevaluate or adapt their HR digitisation strategies, likely due to the immediate need for remote work, hybrid teams, and technology integration. In contrast, the lack of a significant difference in Poland may indicate that organisations there either maintained consistent digitisation efforts or faced structural or cultural barriers to change during the pandemic. It is possible that pre-existing digital infrastructure, organisational readiness, or policy constraints influenced this outcome. The observed differences between countries may also reflect varying levels of economic development, technology adoption, and policy support for digital transformation during the pandemic. These findings underscore the importance of contextual factors in shaping organisational responses to global disruptions such as COVID-19.

Tukey's multiple comparisons of means underscore several significant similarities and differences in HR digitisation challenges across the Visegrad countries before and during the pandemic. In both periods, Hungary exhibited notably higher HR digitisation scores compared to the other countries, highlighting its unique position in facing more substantial challenges. Conversely, the differences in HR digitisation scores between Slovakia and the Czech Republic were not statistically significant before and during the pandemic, suggesting a uniform perception of challenges in these two countries. Before the pandemic, Poland's scores were statistically similar to those of the Czech Republic and Slovakia. However, during the pandemic, Poland reported significantly lower scores compared to both countries, indicating a divergence in perceived challenges. The pandemic amplified the disparities between Hungary and the other countries. The mean differences between Hungary and the other V4 countries increased during the pandemic, indicating heightened variability in HR digitisation challenges.

Potential limitations of the study include its reliance on self-reported data, which may be subject to biases such as social desirability or recall bias. In summary, the survey methodology used in this study was carefully designed and implemented to collect reliable and valid data across the V4 countries, with a total sample of 2,093 organisations providing a solid basis for subsequent analysis and conclusions.

While certain patterns in the challenges related to the digital transformation of HR have remained constant over time, the pandemic has precipitated significant shifts, particularly regarding Poland's relative position and the widening disparity between Hungary and the other V4 countries. These findings suggest that the pandemic has exerted a differential influence on the perception and management of HR digitisation challenges throughout the region.

The findings presented in this paper emphasise that country-specific factors significantly influence perceptions of HR digitisation challenges, underscoring the importance of tailoring digital transformation strategies to the local context. The results indicate that while country-specific differences in HR digitisation challenges were significant both before and during COVID-19, the pandemic exacerbated these differences. Hungary consistently faced the most significant challenges, while Poland encountered the least. The pandemic increased the overall difficulty of HR digitisation across the board, as evidenced by higher mean scores and increased variability. These findings underscore the critical need for targeted strategies to support digital transformation, especially in countries experiencing greater difficulties, during crises and beyond.

The pandemic created an unexpected crisis that most companies were not adequately prepared for. However, some organisations managed to leverage the situation as an opportunity to accelerate the development of HR digitisation. While many firms faced significant challenges, others successfully transformed their HR strategies and adapted to new conditions through digital tools. This suggests that the introduction of AI-based tools can serve as a catalyst for intelligent management, enabling the use of adaptive learning systems, strategic workforce analytics, and real-time feedback mechanisms. Such capabilities can enhance an organisation's resilience to future disruptions.

Moreover, the study findings indicate an emerging opportunity to incorporate AI tools within intelligent HR management systems. In contexts where such technologies were adopted, AI-supported solutions—such as predictive analytics for workforce planning, automated performance evaluations, and AI-powered chatbots for candidate screening—contributed to greater efficiency and more informed

decision-making. Although the levels of adoption varied across V4 countries, organisations that integrated AI into their HR digitisation efforts were better positioned to manage complexity and respond to crisis-induced challenges. These applications underscore the growing relevance of intelligent, data-driven systems in futureproofing HRM strategies.

Future research should therefore analyse the mediating role of HR digitisation in key HR challenges, such as recruitment, employee retention, performance management, and employee engagement. Additionally, it would be beneficial to test whether HR digitisation can alleviate these challenges and act as a facilitator of more effective human resource management.

Such research could help identify the factors that determine the success of digital transformation in HR and demonstrate how digitisation not only enhances operational processes but also contributes to the long-term resilience and competitiveness of organisations.

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