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DIGITAL TRANSFORMATION OF HUMAN RESOURCE MANAGEMENT PROCESSES AND PRACTICES: A STUDY OF SLOVAK ENTERPRISES*

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Abstract. Digital transformation is currently essential for effective human resource (HR) management within organisations. This topic is particularly relevant in the context of the Fourth Industrial Revolution, which introduces new challenges and opportunities for HR processes while also emphasising the responsibility for sustainable development. Implementing digital tools in HR can enhance the efficient use of HR, reduce negative environmental impacts, and promote corporate social responsibility. This research aims to explore the current level of digital transformation in HR processes within Slovak organisations, focusing on the potential of digital technologies to contribute to sustainable and responsible business practices. The study was conducted through a quantitative survey distributed to 743 respondents from Slovak companies. The analysis focused on evaluating the degree of digital tool implementation in areas such as recruitment, training, onboarding, and employee evaluation. The survey results revealed that recruitment and selection processes are the most digitised, emphasising social media and employer branding. In the area of learning and development, online training and employee reskilling are predominant. However, many organisations still rely on basic digital tools, with less frequent implementation of innovative technologies such as AI or gamification. The findings of this study provide valuable insights into the state of HR digital transformation in Slovak organisations and highlight areas requiring further development and investment, particularly with a focus on enhancing sustainability and responsibility in HR management.

Keywords: digital transformation; digitization; human resource management; HR; sustainability

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1. Introduction

Digitisation has become one of the key values for businesses today. Digital technologies significantly influence how companies create and deliver value to customers (Gburova & Matusikova, 2016; Shen et al., 2022). Additionally, businesses must create and transform traditional business models by integrating technologies into their internal organisation, management, processes, and strategies. A central aspect of digital transformation is the rapid development of technologies such as artificial intelligence (Trocin et al., 2021), the Internet of Things (Darbandi et al., 2022), cloud computing (Koman et al., 2024), and Big Data (Almeida, 2022).

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However, within this transformation, companies should not overlook sustainable development, which is becoming an increasingly important aspect of business (Koman & Bubeliny, 2020; Holubčík et al., 2023). The integration of digital technologies can support sustainability by optimising processes, reducing resource consumption, and minimising negative environmental impacts (Lukac & Mihalik, 2018; Gregori & Holzmann, 2020; Juričková et al., 2020). Technologies like Big Data enable companies to manage resources more effectively, improve energy efficiency, and predict environmental risks, thereby contributing to long-term sustainability (Koman et al., 2022). Beyond environmental benefits, digital innovations can also enhance social sustainability by fostering fairer and more inclusive working conditions, such as through flexible work arrangements and improved access to education (Deloitte, 2018; Baek & Kim, 2021).

In Slovakia, digital transformation has become a priority of state policy and a significant part of strategic plans, such as the Digital Transformation Strategy of Slovakia 2030 (Ministry of Investment, Regional Development and Informatization of the Slovak Republic, 2019), and the Recovery and Resilience Plan. These initiatives emphasise modernising digital infrastructure, enhancing the digital skills of the population, and fostering innovation within businesses. Special attention is given to adapting the workforce to new market conditions, where an increased demand for IT specialists and workers with technological expertise is anticipated.

The business sector in Slovakia is already experiencing a significant shift towards digitalisation. Many companies are implementing smart technologies to enhance the efficiency of production processes, optimise logistics, and improve customer services (Stacho et al., 2023). Digital transformation is also fundamentally changing how human resources (HR) departments operate, impacting all aspects of people management—from recruitment to employee development and talent management (Kucharcikova et al., 2024). Modern technologies such as artificial intelligence (AI), big data, cloud solutions, and automation offer new opportunities to streamline processes, improve decision-making, and increase employee satisfaction (Kucharcikova & Miciak, 2018; Tumova, 2019; Fraij, 2021; Balakrishnan & Parivara, 2023).

2. Review of literature

Digital transformation results from technological advancement and represents a process that drives change across various levels of organisations (Plekhanov et al., 2023). This process not only involves the implementation of digital technologies to optimise existing business processes but also explores new digital innovations that have the potential to transform business models (Correani et al., 2020). Digital innovations are defined as the integration of digital technologies and physical components to create new digital products (Yoo et al., 2010). (Demirkan et al., 2016) expand on the concept of digital transformation, viewing it as an accelerator for transforming business activities, processes, competencies, and models. Its objective is to fully harness the changes and opportunities brought by digital technologies and their strategic impact on society.

Digital people management in the era of Industry 4.0 is characterised by fast, team-oriented, and collaborative leadership focused on innovation (Staffenova et al., 2024). To understand the level of HR digital transformation, a 4-level assessment scale—typology of digital HR in enterprises—was developed (Strohmeier, 2007):

- Analogue Organization (Non-Application): Represents organisations that do not utilise digital technologies, with processes remaining entirely analogue and manual.
- Digital Organization 1 (Operational Application): Includes organisations that use digital technologies to support and improve operational processes, but without a strategic impact.
- Digital Organization 2 (Strategic Alignment): Organisations align digital technologies with their strategic goals, enabling these technologies to support the implementation of business strategies.
- Digital Organization 3 (Strategic Integration): Digital technologies are fully integrated into business strategy development, facilitating the creation of new opportunities and innovations.

One of the key areas of digital HR transformation is recruitment automation. AI and specialised software tools enable the rapid analysis of large volumes of resumes, identification of the most suitable candidates based on predefined criteria, and prediction of their success in each position. Chatbots integrated into the recruitment

process can answer candidates' questions in real-time, saving HR teams time and enhancing the candidate experience (Alamro et al., 2018; Aljuaid, 2021).

In the area of employee development and training, transformation brings personalised online learning platforms that allow employees to access relevant courses and training tailored to their needs. These platforms often use AI to recommend educational content based on the individual needs and goals of employees. Additionally, virtual and augmented reality (VR/AR) are becoming popular tools for practical training, especially in industries where simulating real-life situations is essential (Derouin et al., 2005; Nof et al., 2015).

Performance and employee satisfaction management is becoming more efficient and transparent through digitalisation. Cloud platforms enable tracking goals and outcomes in real-time, providing managers with insights into team performance. Modern tools for collecting feedback, such as anonymous surveys or mobile apps, help HR departments regularly monitor employee satisfaction and engagement (Rondeau, 2018).

Digital transformation also plays a significant role in personnel administration. Electronic signatures, cloud-based document management systems, and automated payroll processes minimise bureaucracy and eliminate errors. Digitalisation thus reduces administrative burdens, allowing HR specialists to focus on more strategic tasks (Gecíková & Papcunová, 2014; Alkhodary, 2021; Kusnirova et al., 2024).

However, digital transformation also brings challenges. Implementing new technologies requires investment, employee adaptation to new systems, and ensuring cybersecurity to protect sensitive data (Kim & Pae, 2007; Özsungur, 2021; Mohammed & Ahmad, 2025).

The success of this transformation depends on the ability of HR departments not only to adopt new technologies but also to use them in a way that aligns with the company's culture and strategy. Therefore, digital transformation in HR is not just about technology; it is also about changing the approach to working with people and creating an environment that fosters innovation, flexibility, and employee satisfaction.

3. Methodology

This study aims to examine the current level of digital transformation in HR processes within Slovak organisations. Based on this objective and theoretical background, two research questions were defined:

- Q₁: What is the current level of digital transformation of HR processes in Slovak organisations?
- Q₂: Which HR practices in Slovak organisations are currently most supported by digital technologies?

To answer these research questions, a quantitative data collection method was used, which allows for statistically evaluating respondents' answers and identifying patterns, trends, and relationships between variables. Specifically, a questionnaire survey technique was employed, which is one of the most used methods in social and behavioural sciences, as well as in commercial research.

A purposive sampling technique was used to gather data from a specific target group defined by criteria. This technique was chosen for several reasons related to the nature and objectives of the research:

- The goal was to obtain qualified responses that provided valuable and practically applicable insights. Random sampling could have resulted in including respondents who lack the necessary knowledge or experience to answer the research questions effectively.
- Due to time and financial constraints, it was more efficient to directly approach relevant respondents rather than relying on a broad distribution, which might include an irrelevant sample.
- The research required data from a specific group of people, making purposive selection a logical step in achieving precise and useful outcomes.

As part of the research, a questionnaire was designed and distributed to a total of 743 respondents. The data collection took place from January 2024 to March 2024. The distribution was carried out electronically via Google Forms. After the data collection was completed, a total of 245 responses were received, representing a

gross response rate of approximately 33%. This value was calculated as the ratio of the total number of responses (245) to the total number of respondents approached (743):

$$\text{Response Rate} = \frac{\text{Number of Responses}}{\text{Number of Respondents Contacted}} \times 100 = \frac{245}{743} \times 100 \approx 33\%$$

After processing the responses, we proceeded with a thorough review and data cleaning. During this process, the following were identified and excluded:

- Incomplete responses – questionnaires containing missing key data necessary for analysis.
- Duplicates – responses that were repeated by the same respondent, likely due to multiple submissions of the form.

After excluding 7 invalid responses, the final number of relevant responses was 238. This step was crucial to ensure data quality and minimise bias in the results.

4. Results

For basic respondent characterisation, their job position within the organisation was surveyed, with only HR department representatives or HR department directors being considered relevant. Based on the collected data, it can be stated that 83% of respondents belonged to the category of HR department employees, while HR department directors represented 17%.

The level of education attained by the respondents was also analysed. A master's degree was reported by 68% of respondents, while 13% held a bachelor's degree, and 15% had a high school education. The smallest group consisted of respondents with a doctoral degree, representing 4%.

The study also examined whether the focus of the respondents' education was related to the HR field. The results indicated that more than half of the respondents (64%) did not have an education linked to the HR field, while 36% indicated that their education was focused on this area.

In the analysis, the number of employees in companies was assessed, and based on this, companies were classified according to the European Commission Recommendation No. 2003/361/EC into micro-enterprises, small enterprises, medium-sized enterprises, and large enterprises. The largest group was made up of large enterprises, accounting for 40%, followed by medium-sized enterprises at nearly 40%. Small enterprises represented 21%, and micro-enterprises made up 4%, which classifies them as the least represented entities.

Regarding the sector of activity, businesses were categorised into manufacturing, service-providing companies, organisations and associations, and others. The largest share of respondents (40%) came from service-providing companies, followed by manufacturing businesses at 31%. The "other" category represented 26%, while organisations and associations made up only 3% of the respondents.

The level of HR digital transformation

The questionnaire focused on the degree of digitisation in HR management, analysing the stages of digital transformation in HR based on the model presented by (Strohmeier, 2007). Respondents were asked to select one of the four levels of digital transformation: 1) Analogue organisation (no use of technologies), 2) Digital organisation 1 (operational use of technologies), 3) Digital organisation 2 (strategic alignment of technologies), 4) Digital organisation 3 (strategic integration of technologies).

The results showed that 13% of respondents reported working with analogue data without using digital technologies in their HR department. 34% of organisations indicated that they had implemented digital technologies at the operational level in HR, corresponding to Digital Organization 1. Similarly, 34% of businesses reported reaching Digital Organization 2, which involves integrating digital technologies into the creation and execution of HR strategy. The highest level, Digital Organization 3, where digital technologies are

strategically integrated into the formulation and implementation of HR strategy, was chosen by 19% of companies.

The next part of the survey focused on analysing HR practices in the context of digital HR transformation. The goal was to explore how digital technologies impact various aspects of HR management and what innovations are being implemented at the operational, strategic, and integrative levels. Respondents were asked about the use of digital tools in the following areas: 1) recruitment and employee selection, 2) employee onboarding, 3) employee training and development, and 4) employee evaluation and compensation.

Recruitment and Employee Selection

Table 1 provides an overview of the practices used in recruitment and employee selection within the context of digital transformation. It considers various ways digital tools and technologies are applied in the recruitment process. The practices are organised according to their overall ranking, with the average values and mode displayed to reflect the preferences of the respondents.

Table 1. Recruitment and Employee Selection in the Context of Digital Transformation

Rank	Practice Name	Average Value	Mode
1	Use of social media for candidate search	2.94	4
2	Employer branding	2.83	3
3	Use of visual elements to attract candidates	2.61	2
4	Referral programs	2.59	4
5	Interviews conducted via online platforms	2.54	2
6	Automated CV screening	1.76	1
7	Use of innovative technologies with AI elements	1.74	1
8	Use of gamification elements	1.51	1
9	Recording online interviews	1.33	1

Source: Own processing, 2024

The table shows that the most used practice is the use of social media for candidate search, which received the highest average rating. This is followed by employer branding, which is considered an important tool for attracting candidates. Other practices, such as the use of visual elements and referral programs, also rank highly. In contrast, practices like automated CV screening, the use of innovative technologies with AI elements, gamification, and recording online interviews are less frequently utilised by the respondents.

Employee Onboarding

Table 2 provides an overview of the practices used in employee onboarding within the context of digital transformation. It focuses on different approaches to utilising digital technologies and tools during the employee onboarding process. The practices are ranked in order, and the average values along with the mode give an overview of the respondents' preferences in these processes.

Table 2. Employee Onboarding in the Context of Digital Transformation

Rank	Practice Name	Average Value	Mode
1	Online introductory training	2.48	2
2	Individual and team introduction of the new employee online	2.37	1
3	Presentation of company videos online	2.31	2
4	Use of innovative technologies with AI elements	1.63	1
5	Use of gamification elements	1.50	1
6	Virtual workplace tour	1.47	1

Source: Own processing, 2024

The table shows that the most used practice in employee onboarding is online introductory training, which received the highest average rating. This is followed by the individual and team introduction of the new employee online, an important tool for integrating new employees into the company culture. Other practices,

such as the presentation of company videos online, also rank highly. In contrast, practices like the use of innovative technologies with AI elements, gamification, and virtual workplace tours are less frequently utilised by the respondents.

Employee Training and Development

Table 3 provides an overview of the practices used in employee training and development within the context of digital transformation. It considers various ways digital tools and technologies are applied in the process of employee training and development. The practices are ranked according to their overall position, with average values and modes reflecting the respondents' preferences in these processes.

Table 3. Employee Training and Development in the Context of Digital Transformation

Rank	Practice Name	Average Value	Mode
1	Reskilling and upskilling employees	2.97	3
2	Supporting continuous employee education	2.89	3
3	Online training sessions	2.89	3
4	Personalised employee learning	2.82	3
5	Providing coaching	2.32	2
6	Providing mentoring programs	2.26	2
7	Using digital technologies for talent management	2.11	1
8	Using innovative technologies with AI elements	1.61	1
9	Using gamification elements	1.59	1

Source: Own processing, 2024

The table shows that the most used practices in employee training and development are reskilling and upskilling employees, supporting continuous education, and online training sessions. These practices received the highest average ratings and are considered key for ensuring employee growth in the context of digital transformation. Other highly ranked practices include personalised employee learning, coaching, and mentoring programs. In contrast, practices such as the use of digital technologies for talent management, innovative technologies with AI elements, and gamification are less frequently utilised.

Employee Evaluation and Compensation

Table 4 provides an overview of the practices used in employee evaluation and compensation within the context of digital transformation. It examines various approaches to implementing digital tools and technologies in employee evaluation and compensation processes. The practices are ranked according to their overall position, with average values and modes reflecting the respondents' preferences in these processes.

Table 4. Employee Evaluation and Compensation in the Context of Digital Transformation

Rank	Practice Name	Average Value	Mode
1	Performance-based employee compensation	2.91	3
2	Providing immediate feedback during the evaluation	2.75	3
3	Differentiated (personalised) compensation	2.68	2
4	Employee participation in the total compensation structure	2.40	2
5	Online monitoring mechanisms for performance tracking	2.13	1
6	Use of innovative technologies with AI elements	1.55	1

Source: Own processing, 2024

The table shows that the most used practices in employee evaluation and compensation are performance-based compensation and providing immediate feedback during evaluation. These practices received the highest average ratings and are considered key to employee motivation. Other practices include personalised (differentiated) compensation and employee participation in the overall compensation structure. Less frequently used practices are online monitoring mechanisms for performance tracking and the use of innovative technologies with AI elements.

In addition to identifying the most used practices in various HR processes, respondents also provided feedback on the effectiveness of these processes. The results of these evaluations are shown in Figure 1.

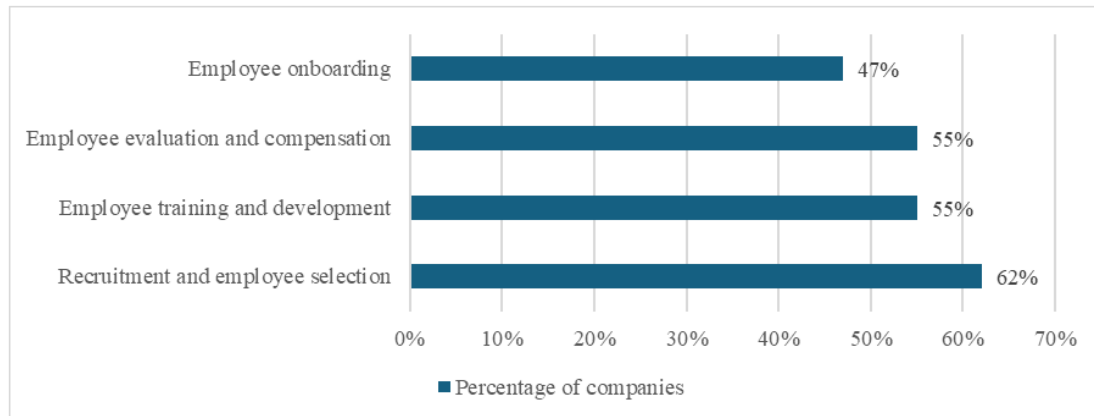


Figure 1. Measuring the Effectiveness of HR Functions Performance

Source: Own processing, 2024

The results indicate that the greatest focus was placed on measuring the effectiveness of recruitment and employee selection, followed by employee training and development, as well as employee evaluation and compensation processes. In contrast, the measurement of effectiveness in employee onboarding is less frequently conducted. These findings reflect the varying priorities of organisations in optimising their HR processes.

5. Discussion

Various international surveys in recent years have focused on the digitalisation of HR management processes and their impact on the effectiveness and sustainable development of organisations. In addition to research conducted in Slovakia (Staffenova et al., 2024), studies in countries such as Germany, Russia, and Bangladesh have shown that the digitalisation of HR processes, especially in areas such as employee evaluation and development, plays a critical role in increasing productivity and competitiveness.

A survey focusing on German businesses (Chugunova & Danilov, 2023) reveals that most surveyed companies have already digitalised their core HR processes and store data digitally, which is a prerequisite for implementing advanced technologies. Respondents positively assessed the benefits of digital tools in HR management, particularly in terms of increased speed, efficiency, and the facilitation of talent acquisition. These technologies also contribute to sustainability, for example, by reducing paper consumption and improving the transparency of decision-making processes, which can decrease an organisation's ecological footprint. The main barriers include the lack of HR professionals with IT skills, high costs, and concerns about employee monitoring. Despite these challenges, there is strong optimism that companies will continue to expand the use of digital tools in HR, provided barriers to adoption are removed.

A similar study was conducted in Russia (Fedorova et al., 2019), where it was found that digitalisation of HR processes enables the elimination of routine tasks, reduces the risk of human error, and frees up HR professionals' time to focus on more strategic issues, thereby increasing effectiveness in addressing business challenges. In large Russian organisations, digital technologies are actively used to build HR branding, though information about employers is mainly obtained through social networks and personal recommendations rather than through digital applications and career websites. Digitalisation of work also has a positive impact on employee motivation, supporting their efforts to improve performance and gain professional recognition. In the context of sustainable development, digitalisation can promote inclusivity and equality of opportunity within organisations, contributing to the creation of a fairer work environment.

An interesting survey from Bangladesh (Haque & Nishat, 2022) highlights that digitalised HRM practices, such as e-compensation management and e-career management, have a positive impact on employee performance beyond basic job duties. On the other hand, e-performance evaluation had a significant positive effect on fulfilling core job tasks. Other digitalised practices, such as e-recruitment, e-training, and e-communication, did not show a significant impact on employee performance. These findings suggest that the implementation of selected digitalised HRM practices can contribute to improving the overall performance of employees and organisations while also supporting sustainable and responsible approaches to HR management.

6. Conclusions

The findings of this article provide a detailed view of the current state of digital transformation in HR management processes in Slovak organisations. Respondents, primarily HR department representatives, show significant interest in the implementation of digital tools and technologies. In the analysis of individual HR practices, technologies are most frequently used in recruitment and selection, where tools such as the use of social media and employer branding are preferred. On the other hand, advanced technologies like automated CV screening or the use of AI elements are less widespread among respondents, which may indicate still-existing barriers to the adoption of these tools.

In the area of employee adaptation, online onboarding training and online employee introductions dominate, suggesting a positive trend in the implementation of digital solutions in this process. A similar trend is observed around employee education and development, where practices such as reskilling and online training are most preferred. These results highlight a growing interest in continuous employee education, which is crucial for adapting to the digital environment. This aspect is inseparable from sustainable development because organisations that invest in their employees' development contribute not only to the long-term sustainability of their businesses but also to the broader economic and social environment.

Digitalising education not only enables flexibility and more efficient processes but also provides access to real-time learning, thus reducing the need for physical training sessions, which leads to lower resource consumption and a reduced environmental footprint.

In the field of employee evaluation and remuneration, the most used practices are performance-based compensation and providing immediate feedback, reflecting the need for quick responses and motivation in the digital age. Based on the results of this study, it can be concluded that Slovak organisations are at various stages of digital transformation in their HR processes, with most respondents being at the operational level of technology use or the level of strategic alignment.

Progress in adopting digital tools is evident, but there are still areas where further improvements are needed, particularly in the adoption of advanced technologies such as AI or automation. It is expected that, in the future, when barriers such as the lack of expertise or high costs are overcome, organisations will continue to expand their digital transformation efforts, contributing to higher efficiency and competitiveness in the market.

The research provides new insights into the state of digital transformation in Slovak enterprises, focusing on specific companies selected based on predefined criteria. The findings reveal that digital technologies are most widely adopted in HR practices, such as recruitment, onboarding, and employee training, while the implementation of advanced tools like AI and automation remains limited. These insights serve as a foundation for future research and practical recommendations for Slovak businesses aiming to enhance their digital strategies.

However, certain limitations must be acknowledged. Since the study is based on data collected from a selected group of Slovak enterprises, the findings may not be fully representative of all organisations in the country. Additionally, the reliance on self-reported data carries the risk of subjective responses, as participants may interpret questions differently or provide answers influenced by personal perceptions. Despite these constraints,

the results offer a valuable perspective on the current trends and challenges of digital transformation in HR practices within Slovak companies.

References

- Alamro, S., Dogan, H., Cetinkaya, D., Jiang, N., & Phalp, K. (2018). Conceptualising and Modelling E-Recruitment Process for Enterprises through a Problem Oriented Approach. *Information*, 9(11), Article 11. <https://doi.org/10.3390/info9110269>
- Aljuaid, A. (2021). AI based e-recruitment system [Thesis, Brunel University London]. <http://bura.brunel.ac.uk/handle/2438/24663>
- Alkhodary, D. (2021). The impact of E-HRM on corporates` sustainability: a study on the SMEs in Jordan. *International Journal of Entrepreneurship*, 25(6), 14. <https://www.abacademies.org/articles/the-impact-of-ehrm-on-corporates-sustainability-a-study-on-the-smes-in-jordan-11185.html>
- Almeida, F. (2022). Foresights for big data across industries. *Foresight*, 25(3), 334–348. <https://doi.org/10.1108/FS-02-2021-0059>
- Baek, P., & Kim, T. (2021). Socially responsible HR in action: learning from corporations listed on the Dow Jones Sustainability Index World 2018/2019. *Sustainability*, 13(6), 3237. <https://doi.org/10.3390/su13063237>
- Balakrishnan, B., & Parivara, S. A. (2023). E-HRM: Learning approaches, applications and the role of artificial intelligence. *The Scientific Temper*, 14(04), Article 04. <https://doi.org/10.58414/SCIENTIFICTEMPER.2023.14.4.45>
- Correani, A., De Massis, A., Frattini, F., Petruzzelli, A. M., & Natalicchio, A. (2020). Implementing a digital strategy: learning from the experience of three digital transformation projects. *California Management Review*, 62(4), 37–56. <https://doi.org/10.1177/0008125620934864>
- Darbandi, M., Alrasheedi, A. F., Alnowibet, K. A., Javaheri, D., & Mehbodniya, A. (2022). Integration of cloud computing with the Internet of things for the treatment and management of the COVID-19 pandemic. *Information Systems and E-Business Management*. <https://doi.org/10.1007/s10257-022-00580-5>
- Deloitte. (2018). The rise of the social enterprise: 2018 Deloitte global human capital trends. https://www2.deloitte.com/content/dam/insights/us/articles/HCTrends2018/2018-HCTrends_Rise-of-the-social-enterprise.pdf
- Demirkan, H., Spohrer, J. C., & Welser, J. J. (2016). Digital innovation and strategic transformation. *IT Professional*, 18(6), 14–18. IT Professional. <https://doi.org/10.1109/MITP.2016.115>
- Derouin, R. E., Fritzsche, B. A., & Salas, E. (2005). E-learning in organisations. *Journal of Management*, 31(6), 920–940. <https://doi.org/10.1177/0149206305279815>
- Fraij, J. (2021). E-HRM to overcome hrm challenges in the pandemic. *SEA – Practical Application of Science*, IX(25), 41–49. https://seaopenresearch.eu/Journals/articles/SPAS_25_5.pdf
- Gbuova, J., & Matusikova, D. (2016). Potential influence of new trends in marketing on consumer purchasing behavior. In K. S. Soliman (Ed.), *Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth*, VOLS I-VI (pp. 2369-+). Int Business Information Management Assoc-Ibima. <https://www.webofscience.com/wos/woscc/full-record/WOS:000381172301053>
- Gecíková, I., & Papcunová, V. (2014). Using of strategic management tools in conditions of local self-government in Slovakia. *Procedia - Social and Behavioral Sciences*, 110, 969–978. <https://doi.org/10.1016/j.sbspro.2013.12.943>
- Gregori, P., & Holzmann, P. (2020). Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation. *Journal of Cleaner Production*, 272, 122817. <https://doi.org/10.1016/j.jclepro.2020.122817>
- Holubčík, M., Soviar, J., & Lendel, V. (2023). Through synergy in cooperation towards sustainable business strategy management. *Sustainability*, 15(1), Article 1. <https://doi.org/10.3390/su15010525>
- Juríčková, Z., Lušňáková, Z., Hallová, M., Horská, E., & Hudáková, M. (2020). Environmental Impacts and Attitudes of Agricultural Enterprises for Environmental Protection and Sustainable Development. *Agriculture*, 10(10), Article 10. <https://doi.org/10.3390/agriculture10100440>
- Kim, N., & Pae, J. H. (2007). Utilisation of new technologies: Organisational adaptation to business environments. *Journal of the Academy of Marketing Science*, 35(2), 259–269. <https://doi.org/10.1007/s11747-007-0032-6>

Koman, G., & Bubeliny, O. (2020). Building Enterprise Reputation by Doing Sustainable Socially Responsible Business. In K. S. Soliman (Ed.), *Education Excellence and Innovation Management: A 2025 Vision to Sustain Economic Development During Global Challenges* (pp. 7109–7118). Int Business Information Management Assoc-Ibima. <https://www.webofscience.com/wos/woscc/full-record/WOS:000661127407054>

Koman, G., Bubeliny, O., Tumová, D., & Jankal, R. (2022). Sustainable transport within the context of smart cities in the Slovak republic. *Entrepreneurship and Sustainability Issues*, 10(1), 175–199. [https://doi.org/10.9770/jesi.2022.10.1\(9\)](https://doi.org/10.9770/jesi.2022.10.1(9))

Koman, G., Toman, D., Jankal, R., & Krúpová, S. (2024). Public transport infrastructure with electromobility elements at the smart city level to support sustainability. *Sustainability*, 16(3), Article 3. <https://doi.org/10.3390/su16031091>

Kucharcikova, A., Durisova, M., & Staffenova, N. (2024). Implementation of the human capital management concept: An empirical study of small trading company. *Humanities and Social Sciences Communications*, 11(1), 1–14. <https://doi.org/10.1057/s41599-024-03946-x>

Kucharcikova, A., & Miciak, M. (2018). Human Capital Management in Transport Enterprises with the Acceptance of Sustainable Development in the Slovak Republic. *Sustainability*, 10(7), 2530. <https://doi.org/10.3390/su10072530>

Kusnirova, D., Durisova, M., & Bubeliny, O. (2024). Enhancing Stakeholder Value: Managerial Activities in the Value Creation Process for Suppliers and Buyer—Evidence from Slovak Enterprises. *Administrative Sciences*, 14(8), Article 8. <https://doi.org/10.3390/admsci14080186>

Lukac, M., & Mihalik, J. (2018). Data Envelopment Analysis—A Key to the Museums’ “Secret Chamber” of Marketing? *Communication Today*, 9(2), 106–116.

Ministerstvo investícií, regionálneho rozvoja a informatizácie Slovenskej Republiky. (2019). Strategia digitalnej transformácie Slovenska 2030. Mirri.Gov.Sk. <https://mirri.gov.sk/wp-content/uploads/2019/06/Strategia-digitalnej-transformacie-Slovenska-2030.pdf>

Mohammed, A., & Ahmad, S. A. (2025). Development of AI in the Caribbean: algorithms, challenges and recommendations. *Insights into Regional Development*, 7(1), 40–57. <https://doi.org/10.70132/w9385223236>

Nof, S. Y., Ceroni, J., Jeong, W., & Moghaddam, M. (2015). E-Learning and e-Training. In S. Y. Nof, J. Ceroni, W. Jeong, & M. Moghaddam (Eds.), *Revolutionizing Collaboration through e-Work, e-Business, and e-Service* (pp. 357–390). Springer. https://doi.org/10.1007/978-3-662-45777-1_10

Özsungur, F. (2021). Business Management and Strategy in Cybersecurity for Digital Transformation. In *Handbook of Research on Advancing Cybersecurity for Digital Transformation* (pp. 144–162). IGI Global Scientific Publishing. <https://doi.org/10.4018/978-1-7998-6975-7.ch008>

Plekhanov, D., Franke, H., & Netland, T. H. (2023). Digital transformation: A review and research agenda. *European Management Journal*, 41(6), 821–844. <https://doi.org/10.1016/j.emj.2022.09.007>

Rondeau, K. (2018). E-Performance and reward management. e-HRM. Edition 1st Edition. First Published 2018. Imprint Routledge Pages 18 eBook ISBN 9781315172729

Shen, L., Zhang, X., & Liu, H. (2022). Digital technology adoption, digital dynamic capability, and digital transformation performance of textile industry: Moderating role of digital innovation orientation. *Managerial and Decision Economics*, 43(6), 2038–2054. <https://doi.org/10.1002/mde.3507>

Stacho, Z., Stachová, K., Lukáč, M., Kupec, V., & Petrů, N. (2023). Management reflections on innovations in digitalisation, with an emphasis on degree of work autonomy. *E a M: Ekonomie a Management*, 26(1), 78–93. Scopus. <https://doi.org/10.15240/TUL/001/2023-1-005>

Staffenova, N., Kucharcikova, A., & Tokarcikova, E. (2024). Approaches Towards Human Capital Management in SMEs. *Entrepreneurship and Sustainability Issues*, 12(1), 36–50. [https://doi.org/10.9770/jesi.2024.12.1\(3\)](https://doi.org/10.9770/jesi.2024.12.1(3))

Strohmeier, S. (2007). Research in E-HRM: Review and Implications. *Human Resource Management Review*, 17(1), 19–37. <https://doi.org/10.1016/j.hrmr.2006.11.002>

Trocin, C., Hovland, I. V., Mikalef, P., & Dremel, C. (2021). How Artificial Intelligence affords digital innovation: A cross-case analysis of Scandinavian companies. *Technological Forecasting and Social Change*, 173, 121081. <https://doi.org/10.1016/j.techfore.2021.121081>

Tumova, D. (2019). Social Policy of University Based on Decision Making on Academic Staff Motivation. In T. Loster, J. Langhamrova, & J. Vrabcova (Eds.), *Reproduction of Human Capital—Mutual Links and Connections*. 12th International Scientific Conference on

Reproduction of Human Capital - Mutual Links and Connections (RELIK) (pp. 442–452). Oeconomica Publishing House. <https://www.webofscience.com/wos/woscc/full-record/WOS:000630167900039>

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research Commentary—The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research. *Information Systems Research*, 21(4), 724–735. <https://doi.org/10.1287/isre.1100.0322>

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