



THE GROWING ROLE OF VR AND AI INDUSTRY TO TRANSFORM SOFT SKILLS DEVELOPMENT

K. Dimitrov*

Department of Industrial Business, Business Faculty, University of National and World Economy, Sofia, Bulgaria

ABSTRACT

This review article explores the potential of the virtual reality (VR) and artificial intelligence (AI) industry to transform soft skills development. These innovative technologies create opportunities for new approaches of learning, training, education and transfer knowledge. As technological advancements automate several tasks, there is a growing opportunity for people to look beyond technical skills and drive value creation through their capabilities. With VR and AI, organizations can offer immersive learning experiences to help people develop their human capabilities. The objectives of this study are to identify and analyze the significance, importance and key soft skills for predicting and enhancing future success of employees within the paradigm of Industry 5.0. The research uses a qualitative approach. The practical implication is that the business organizations should recognize the growing role of VR and AI as immersive learning methods and their potential for enhance of soft skills development for their employees. The conclusion highlights the need for further research on the specific transformation of soft skills through VR and AI.

Keywords: soft skills, VR, AI, industry 5.0, immersive learning, immersive training

INTRODUCTION

In order to understand the complexities of soft skills development, it is crucial to examine the integration of virtual reality (VR) and artificial intelligence (AI) and how is profoundly impacting the domain of training, leading to the development of immersive, interactive environments that have the potential to enhance learning experiences across a wide range of disciplines. These technologies empower users to engage in realistic simulations, thereby facilitating opportunities for practice and skill development devoid of real-world consequences. This transformation is evident in fields such as education, healthcare, and vocational training, where VR and Generative AI offer innovative solutions to traditional training and development workforce challenges.

The main purpose of this study is to shed light on the emergence of job skills for Industry 5.0.

To achieve this, the research uses a qualitative approach - the desk research method was conducted on the topic, which included a systematic review and analysis of relevant sources from recent years. The objectives of this study are to identify and analyze the significance, importance and key soft skills for predicting and enhancing future success of employees within the paradigm of Industry 5.0. The results show the role of VR and AI in immersive learning methods and their potential for enhance of soft skills development. The conclusion highlights the need for further research on the specific role of VR and AI in this soft skills transformation.

THE EMERGENCE OF JOB SKILLS FOR INDUSTRY 5.0

The advent of Industry 5.0 has precipitated not only advancements in technology but also a reevaluation of the equilibrium between human creativity and machine efficiency. In contemporary business organizations, employees are extensively utilizing digital technologies. This era is not characterized by the replacement of human labor with artificial intelligence; rather, it is marked by the

**Correspondence to: Kaloyan, Dimitrov,
Department of Industrial Business, Business
Faculty, University of national and world economy,
Sofia, 1700, Student District, No.19 December 8th
st., e-mail: kdimittrov@unwe.bg, phone +359 886
100 620*

integration of human values with intelligent systems. The objective of this integration is to enhance work, well-being, and social impact (1).

Industry 5.0 has compelled stakeholders to reevaluate the leadership of the human factor, transcending conventional objectives and embracing a goal-oriented approach that integrates success with a profound social impact. The nature of work and the content of work processes are undergoing significant changes, thereby necessitating a distinct set of skills from employees in the workplace (2).

In this context, a recent annual survey “Job Skills Report 2025”, which is based on data from over 5 million enterprise learners, presents significant implications for the future of work and learning. The report serves as a guide for understanding skills needed to thrive in 2025, aiming to unite stakeholders in ensuring everyone can learn, adapt, and succeed in the face of rapid technological change. Collectively, these trends imply a rapid transformation in the skills required for the workforce of 2025. This necessitates proactive measures from individuals, educational institutions, and organizations to adapt and thrive in this evolving landscape. In general, the following observations can be made (3):

- **An urgent need for skills related to Generative AI.** The 866% year-over-year surge in GenAI course enrolment signifies a pivotal demand for these competencies across various sectors. This surge indicates a pressing need for professionals to swiftly acquire new skills in order to maintain competitiveness in the job market.
- **A shift in the global talent landscape.** A significant proportion of GenAI course enrollments, amounting to 54%, are originating from India, Colombia, and Mexico, indicating a plausible redistribution of high-demand skills to emerging markets. This phenomenon has the potential to precipitate alterations in global hiring practices and outsourcing trends.
- **The emphasis on responsible AI use.** The mounting emphasis on risk management, cybersecurity, and data ethics aptitudes underscores the escalating significance of

ethical considerations in the implementation of AI (4). To ensure the responsible and secure use of AI technologies, organizations must prioritize these skills.

- **Cybersecurity of the utmost importance.** The proliferation of skills related to cybersecurity is indicative of an expanding threat landscape. A 75% surge in cyberattacks during the third quarter of 2024 underscores the imperative for organizations to prioritize the cultivation of cybersecurity competencies to safeguard their digital assets.
- **Data literacy and ethics as core competencies.** The mounting emphasis on data ethics, particularly among employees and students, signifies that competent data management is evolving into a pivotal skill set for individuals in various roles.
- **The evolving role of HR.** The increasing prevalence of HR technology skills indicates a paradigm shift in organizational workforce management, underscoring the imperative for HR professionals to possess technological proficiencies.
- **Increasing demand for skills in the field of sustainability.** The emphasis on sustainability competencies, notably among the student population, corresponds with mounting environmental concerns, thereby indicating a transition towards more sustainable business practices.

The Job Skills Report 2025 also identifies several essential skills that are crucial in the context of Industry 5.0, as shown in **Table 1**.

A synthesis of the extant literature reveals a consensus that the development of a sustainable economy and industry is contingent upon the provision of the requisite competencies for the digital age to citizens and employees. The challenges posed by this period of turbulence extend beyond mere survival; they necessitate a reevaluation of future prospects within the context of a dynamic economic landscape. Therefore, it is imperative to recognize the present circumstances as a valuable opportunity to strategically prepare our workforce for the imminent expansion into new global market sectors.

Table 1. *The essential types of skills in modern business organizations*

	Skill category	Types of skills	Description of activity
1	Business	Human Resources (HR) Technology	Technology should be used to manage people and HR tasks.
2	Business	Risk Mitigation & Control	Risks to your business should be identified and reduced.
3	Business	Workplace Technologies	Tools should be used to improve business processes.
4	Business	Stakeholder Communications	Effectively communicate with those interested
5	Business	Workforce Development	Train and develop employees' skills to help them grow and thrive in their roles.
6	Data Science	Data Ethics	Responsible and ethical use of data is essential.
7	Data Science	Data Visualization	Data can be used to create visuals that tell stories.
8	Data Science	Business Analytics	Use data to make better business decisions and improve company's overall performance.
9	Data Science	Data Access	The storage and access of data must be managed.
10	Data Science	Data Governance	Maintain the accuracy and security of business data.
11	Tech	Incident Management & Response	Address and resolve any IT-related issues that come up.
12	Tech	Threat Management & Modeling	Identify and neutralize software threats.
13	Tech	Security Information & Event Mgmt. (SIEM)	Software threats must be identified and neutralized.
14	Tech	Computer Security	Ensure the security of digital information and systems.
15	Tech	Vulnerability Management	Security weaknesses in systems and software must be found and fixed.

Note. Adapted from “Job Skills Report 2025”,

THE TRANSFORMATIVE POWER OF SOFT SKILLS IN THE MODERN WORKFORCE

Business organizations must ensure that their workforce possesses the technical skills necessary to maintain competitiveness in the labor market. Technological advances are occurring at an accelerating rate. The capacity of employees in various roles, including information technology (IT), operations, marketing, and customer service, to utilize novel tools, platforms, and digital systems can exert a direct influence on an organization's agility and performance. For those in leadership roles within organizations, the cultivation of a culture that fosters continuous learning and professional growth is paramount to ensuring that employees remain at the forefront of technological advancements.

The increasing importance of human capabilities is a subject that has been the focus of much recent discussion. As automation

increasingly assumes responsibility for technical tasks, there is an emerging imperative for workers to cultivate human capabilities such as creative thinking, problem-solving, and effective communication. This shift underscores the significance of allocating resources to the cultivation of “soft skills” among the workforce.

The Significance of Soft Skills in the Workplace

In the contemporary digital era, soft skills are frequently underestimated in comparison to digital skills, which are widely regarded as indispensable. This perception may engender reluctance to allocate resources to the measurement and evaluation of soft skills within organizations. The term “soft skills” refers to a certain level of cognitive ability and contextual understanding that machines are currently incapable of replicating. This characteristic renders them more challenging to quantify and assess objectively in comparison

to technical and digital skills. Soft skills, including communication, creativity, and emotional intelligence, are frequently subjective and can be influenced by cultural and social factors. The development of standardized, reliable, and valid assessment methods for these skills may present significant challenges.

The study of Poláková et. al. (2023) emphasizes the significance of aligning human reasoning with machine intelligence. While machines excel in certain areas, humans possess unique cognitive abilities that are difficult to replicate, underscoring the value of soft skills. The findings suggest that to thrive in a future characterized by technological advancements, individuals must possess balanced proficiency in both soft and digital skills. This has implications for workforce development strategies and individual career planning. These implications highlight the need for a shift in how we approach skill development, education, and workforce preparation in the era of Industry 5.0, emphasizing the critical role of soft skills alongside technological proficiency (5). Therefore, the rapid pace of technological change may necessitate continuous updating of soft skill assessment methods to ensure their relevance and alignment with evolving job requirements and work environments.

The company PwC (2020) conducted a survey to ascertain whether VR soft-skills training is more efficacious than traditional learning methods in terms of learning and cost. It has published the results of a large-scale virtual reality study. The study examined the impact of using VR to train and improve diversity and inclusion behaviors. This has been an integral component of mandatory unconscious bias training, which is instrumental in the cultivation of business leaders (6). Furthermore, Riches and Kaleva (2024) describe the merits of VR-based training and argue that this training can be adapted and delivered across various industries, allowing for both practical and interpersonal learning processes (7).

The Importance of Soft Skills Development

According to Cook et. al (2020), the report “*A new approach to soft skill development*” presents a compelling case for the utilization of immersive learning technologies, particularly augmented and virtual reality (AR/VR), in the development of human capabilities, otherwise

referred to as “soft skills” within the workforce. The arguments collectively indicate a future in which immersive learning technologies play a significant role in workforce development, particularly with regard to human capabilities that are becoming increasingly crucial in the age of automation. The primary significance of the survey of Deloitte Insights is as follows (8):

- **The potential of immersive learning:** The integration of AR/VR and AI-driven avatars presents a significant opportunity to deliver customized, scalable training for human capabilities. These technologies have the capacity to establish secure and low-risk environments conducive to the practice of complex interpersonal scenarios, thereby potentially facilitating more effective skill development.
- **The cost-effectiveness at scale:** While the initial investment in high-quality immersive learning experiences can be substantial; these investments can become cost-effective when implemented across a large workforce. This finding suggests that larger organizations may derive greater benefit from the adoption of these technologies.
- **The technological advancements:** The continuous advancements in the domain of VR hardware and software are rendering immersive learning more accessible and economical for business enterprises. This trend suggests that immersive learning may become increasingly prevalent in corporate training programs.
- **The ethical considerations:** As immersive learning experiences become increasingly realistic and collect more personal data, significant ethical considerations emerge concerning data privacy, inclusive design, and feedback delivery. It is imperative for organizations to deliberate upon these aspects when implementing immersive learning programs.
- **The adaptability as a key outcome:** Investing in human capabilities through immersive learning is ultimately about fostering adaptability in the workforce. This suggests that organizations that adopt this perspective in regard to soft skills training may gain a competitive advantage in rapidly changing business environments.

In the context of Industry 5 can be identify several key soft skills that are crucial for business organizations, as shown in the following table (9-13).

Table 3. Key soft skills and the effects of their application

	Skill category	Types of skills	Effects of application
1	Soft skills	Communication	Employees who possess strong verbal and written communication skills are able to articulate ideas with clarity and precision, thereby minimizing misunderstandings and fostering a collaborative environment among colleagues.
2	Soft skills	Adaptability and Resilience	Individuals who possess the capacity to effectively adapt to change and swiftly maneuver in response to novel challenges frequently exhibit resilience, maintaining composure in tumultuous circumstances. The ability to apply pressure and to solve problems is an essential skill for success in this field.
3	Soft skills	Creativity and Flexibility	Importance of creativity, the ability to think differently and generate new ideas, as well as flexibility, the capacity to adapt quickly to change
4	Soft skills	Leadership and Emotional Intelligence	The ability to inspire teams is an essential component of effective leadership. Inspiring teams requires leaders to build trust, offer constructive feedback, and manage conflicts effectively and diplomatically. Employees with high emotional intelligence can contribute to better team dynamics, conflict resolution, and overall employee well-being, ultimately enhancing organizational performance and resilience.
5	Soft skills	Analytical and Critical Thinking	The skill to critically analyze information, identify strengths and weaknesses, and make informed decisions is crucial. Employees with these abilities can provide valuable insights, assess performance, and implement corrective actions, contributing to more effective decision-making and organizational improvements
6	Soft skills	Mediation and Team Conflicts	Using active listening and mediation skills, the team manager identify common goals, align differing perspectives, and guide the team toward a unified strategy. This fosters collaboration and ensures the work process.
7	Soft skills	Problem-Solving Skills	The capacity to analyze information, use logic, and address issues through innovative thinking is emphasized as a critical soft skill. Employees with strong problem-solving abilities can help organizations navigate complex challenges, adapt to changes, and develop creative solutions, ultimately enhancing the organization's competitiveness.
8	Soft skills	Listening, reading and interacting	Better management of individual emotions as anxiety, empathy and other. The successful execution of these activities depends on possessing and demonstrating soft skills.

Note. Prepared by the author of this study based on the literature review

The implementation of these key soft skills in business organizations can yield numerous favorable outcomes, including enhanced collaboration, augmented problem-solving capabilities, elevated innovation and adaptability, and fortified employee engagement and well-being. The development and integration of these soft skills can facilitate organizations' navigation of the complex and rapidly changing environment of Industry 5.0.

CONCLUSION

In summary, in the contemporary professional landscape in industries, employee career

success is contingent not solely on job performance but also on the capacity to adeptly navigate interpersonal dynamics. Strong soft skills are especially vital for leadership, where motivating teams, resolving conflicts, and driving innovation are key. Investing in these competencies ensures that professionals are adequately prepared for both current responsibilities and future challenges.

The main takeaway from the findings is that soft skills are crucial for employability and adaptability in the rapidly changing job market. They enable individuals to navigate complex situations, work effectively in teams, and adapt

to new technologies and work environments. Moreover, it can be assumed that there is a growing need for educational institutions and organizations to focus on developing soft skills alongside technical skills. This has implications for curriculum design, training programs, and lifelong learning initiatives.

The results indicate that the future of employee learning and development is characterized by the convergence of artificial intelligence and virtual reality to deliver personalized, immersive, and self-paced training experiences. The integration of advanced AI-driven customization with realistic VR environments has the potential to transform the development of soft skills among employees. In addition, this innovative approach encompasses a wide range of activities, including the enhancement of soft skills, the practice of high-stakes scenarios, and the fostering of team collaboration. The combination of these elements holds the promise of a paradigm shift in the way soft skills are cultivated within organizational settings. Finally, the need for further research on the specific impact of the VR and AI integration in this transformation of employees' soft skills should be emphasized.

ACKNOWLEDGEMENT

The author acknowledges with gratitude funding provided by the Bulgarian National Research Fund under administrative contract KP-06-H65/5 of 12.12.2022

REFERENCES

1. Saniuk, S., & Grabowska, S., Skills and competencies of industrial employees in the industry 5.0 environment. In International Conference on Intelligent Systems in Production Engineering and Maintenance (pp. 251-264). Cham: Springer Nature Switzerland, 2023
2. Oeij, P., Lenaerts, K., Dhondt, S., Van Dijk, W., Schartering, D., Sorko, S., & Warhurst, C., A conceptual framework for workforce skills for Industry 5.0: Implications for research, policy and practice. *Journal of Innovation Management*, 12(1), pp. 205-233, 2024
3. Job Skills of 2025 Report. White paper, 2025 Available at: <https://www.coursera.org/skills-reports/global>
4. Milev, P., & Tabov, Y., From Unstructured Data to Insights: Understanding the Role of ChatGPT in the Rising Trend of AI Chatbots in Web Publications. *Godishnik na UNSS*, 1, pp. 17-29, 2023
5. Poláková, M., Suleimanová, J. H., Madzík, P., Copuš, L., Molnárová, I., & Polednová, J., Soft skills and their importance in the labour market under the conditions of Industry 5.0. *Heliyon*, 9(8), 2023
6. Eckert, D. and Mower, A., The effectiveness of virtual reality soft skills training in the enterprise: a study. PwC Public Report, 2020
7. Riches, S., Kaleva, I. Virtual Reality Training as Enhanced Experiential Learning. *J. technol. behav. sci.*, 2025
8. Cook, A. V., Griffiths, M., Anderson, S., Kusumoto, L., & Harr, C., A new approach to soft skill development. Immersive learning for human capabilities, 2020 Available at: <https://www2.deloitte.com/global/en/insights/topics/emerging-technologies/immersive-technologies-soft-skill-training.html>
9. Nihal, K.S., Pallavi, L., Raj, R., Babu, C.M. and Mishra, B., Enhancing soft skill development with ChatGPT and VR: An exploratory study. In 2023 International Conference on Research Methodologies in Knowledge Management, Artificial Intelligence and Telecommunication Engineering (RMKMATE), pp. 1-6, IEEE, 2023
10. Boland, B., Extended reality vocational training's ability to improve soft skills development and increase equity in the workforce. *AI, Computer Science and Robotics Technology*, (13), 2023
11. Dolev, N., & Itzkovich, Y. In the AI era, soft skills are the new hard skills. *Artificial intelligence and its impact on business*, 55, 2020
12. Burgues, M., Goujet, R. and Zarak, J., Learning soft skills with an ai-based simulation role-play: a literature review. *EDULEARN24 Proceedings*, pp.6285-6293, 2024
13. AlAfnan, M. A., Dishari, S., & MohdZuki, S. F., Developing soft skills in the artificial intelligence era: Communication, business writing, and composition skills. *Journal of Artificial Intelligence and Technology*, 4(4), pp. 305-317, 2024