

DIGITAL TRANSFORMATION IN THE DEVELOPMENT SERVICES INDUSTRY IN POLAND

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Purpose: Characteristics of digital transformation in the development services industry in Poland. Addressing the questions: Does digitalization exist in the industry, and to what extent? What is the demand for digital competencies among educators and trainers? What is the potential scenario for the development of the industry taking into account the application of modern technological solutions?

Methodology: The author's analysis of twelve webinars (presentations by experts) available on the website of the Council for the Competence of the Development Services Sector, and the analysis of the report of the 1st edition of the survey of the development services industry within Human Industry Capital Balance.

Findings: Digitalization contributes to a paradigm shift in providing development services which are increasingly offered in remote or hybrid form. Despite the fact that the digital competence of educators and trainers is increasing in such areas as designing and creating remote development services, or creating educational situations in digital reality, the majority of employers in the development services industry in Poland do not apply innovative solutions and they anticipate the need for only basic digital skills. Digital transformation in the surveyed industry towards the widespread use of modern technologies and advanced skills in the use of microlearning, virtual and/or mixed reality, artificial intelligence, educational games, online simulation and/or videolearning requires significant financial investment and awareness.

Research limitations/implications: The analysis was based on secondary sources of information. Future research should involve deepening the research fields on digital transformation in the development services industry in Poland and conducting qualitative research (e.g. interviews with company representatives, case studies).

Practical implications: The results obtained from the research may be useful for owners of training companies and consulting firms in Poland, educators and trainers, and other players interested in developing human capital by means of modern technologies.

Social implications: Creating awareness of the level of digitalization in the development services industry in Poland.

Originality/value The article has research value for developing knowledge of management and quality, in the area of management and human capital development.

Keywords: digital transformation, development services industry, digital education, digital competence, training courses, human capital.

Category of the paper: Research paper.

1. Introduction

Companies operating in today's labour market are currently undergoing a digital transformation, which requires changes in employees' competencies. The COVID-19 pandemic has accelerated the digitalization processes in many organizations and the implementation of new technologies such as machine learning, artificial intelligence, blockchain or automation. That implies the need for changes in companies' training policies (see Piwowar-Sulej, 2022, pp. 85-94). Technology, along with globalization and demographic changes, is one of the "mega trends" affecting training practices on a micro as well as macro level (Cascio, 2019, pp. 284-297), which implies the need for a paradigm shift and search for solutions to better understand digitalization (doing versus being digital) (Harney, Collings, 2021). Previous traditional training activities may also be eroding in the context of the gig economy and working through digital platforms (McDonnell, Carbery, Burgess, Sherman, 2021).

Some aspects of technological innovation in learning appear in the latest editions of textbooks (see Poell, Kessels, 2021; Winnicka-Wejs, 2020), and digital transformation is discussed at scientific conferences in the context of human capital development (Digital Transformation..., 19-21.05.2022). An entire issue of a trade magazine is even devoted to this topic this year (e.g., *Personnel Plus*, 2022). E-learning, as it is known and used in organizations, is being transformed into digital learning, an intelligent system that provides access to required knowledge quickly and on demand, in a specific context. The way digital training tools and the entire learning environment are used continues to evolve and change, although it should be noted that organizations are distinguished by varying levels of digital learning maturity (more in Machalska, 2022, pp. 26-32). Virtual reality (e.g. Metaverse, the Microsoft Mesh) is slowly beginning to be present in employees' development processes, changing the effectiveness of training and the perception of its participants (cf. Domeradзка, Marszałik, Zaborek, 2022, pp. 21-22).

The current digital reality is forcing changes in the proficiency of educators in the use of new technologies. The popularization of remote education and the presence of multimedia require a high level of digital competence (Hałas, 2022, p. 43).

In view of the above, digital transformation in the development services industry in Poland seems to be an interesting topic to consider in this publication. The article is aimed at answering the following research questions:

- Does digitalization exist in the development services industry in Poland, and to what extent?
- What is the demand for digital competencies in the development services industry in Poland?
- What is the potential scenario for the development services industry in Poland, taking into account the application of modern technological solutions?

For the purpose of the article, the analysis of the results of the first edition of the research in the sector was carried out, so was the author's analysis of webinars available on the website of the Development Services Sector Competence Council. Due to the volume limitations of the text and focusing exclusively on digital transformation, the author of the article refers to selected sources of definitions of the basic concepts included in the article functioning in the studied industry: development services industry (entities – Worek, 2022, p. 4); development service (art. 2, para. 8 of the Act of 22.12.2015 on the Integrated Qualification System); the Council for the Competence of the Development Services Sector (rada.pifs.org.pl, 2022).

2. Digitalization in the development services industry in Poland

Up-to-date knowledge on digital transformation is provided by webinars available on the website of the Council for the Competence of the Development Services Sector. The analysis of all twelve widely available webinars from the period 2021-2022 (as of 25.09.2022) has shown that digitalization is the dominant topic in the talks of experts from the development services industry in Poland.

The main aspects in this area concerned key trends and developments in the sector related to the digitalization of education; the development of educators' digital competencies; the design, creation, delivery of remote development services, validation methods and certification in the digital world (see Table 1).

Table 1.

Digitalization issues that came up in the statements of experts from the development services industry in Poland – results of the analysis of webinars from 2021-2022

No	Title of webinar	Author	Date, duration	Digitalization issues that came up during the webinar
1	'Key trends and developments in the development services sector.'	Piotr Piasecki	18.11.2021 (1:15:01)	Study of the digitalization needs of the sector (digital competencies, set of good practices for remote services, standard for remote services); Hybridity inducing digital fatigue; The digital burden on educators; Digital environment providing classroom challenges; Remote environment generating different conditions for learners; Digitalization of customers (digitalization trend of enterprises); On-line and off-line education; Hybridization of learning; Digitalization of the development services (transferring classes to the digital world); Strengths of the digital learning environment; Digital learners' divisibility of attention; Validation methods and certification in the digital world(self-administerd assessment): adaptive

				learning, digital simulation, performance recording tools, gamification, digital field journals and “facilitated assessment”: e.g. expert panels, presentation enhancements).
2	‘Designing and creating a remote development service’	Renata Marciniak, Sławomir Łais, Piotr Maczuga	26.11.2021 (1:43:54)	S. Łais: Attitude towards the implementation of remote development services – Digital Learning Mindset (“De-Analogize Thinking”); Digital Learning Experience (Self Paced, Asynchronous, Synchronous); Methods of designing a remote development service; The practice of engaging; Digital Learning Checklist R. Marciniak: Basic elements of remote development service design; Features of the remote service; Designing a remote development service; Legal aspects of designing remote development services; ADDIE model in e-learning course/training projects (analyze, design, development, implementation, evaluation)
3	‘Providing remote development service’	Renata Marciniak, Sławomir Łais, Piotr Maczuga	26.11.2021 (2:09:39)	R. Marciniak: Typical forms of remote development service delivery; Implementation team (roles, tasks, competencies); SAMR model for diagnosing digital competencies; Errors and distortions S. Łais: Development methods, Practice methodology P. Maczuga: Creating content with a smartphone; Investment in necessary equipment
4	‘Managing remote development service’	Renata Marciniak, Sławomir Łais, Piotr Maczuga	26.11.2021 (2:02:21)	R. Marciniak: The process of implementing a remote development service (initiation, preparation, implementation, evaluation, termination); Quality and benchmarking, legal aspects S. Łais: Business models - The Business Model Canvas
5	‘Selected challenges in designing development services’	Piotr Piasecki	05.04.2022 (45:38)	Three postulates in designing: Learning journey, Adaptive Learning, Learning on demand; Strengths of digital learning; Learning support technology; Producers - designers, implementers
6	‘Conducting and implementing development services- method and technological innovation’	Tomasz Radkiewicz	05.04.2022 (49:48)	Managing attentiveness during a remote development service; Technological innovations - an overview of tools
7	‘Creating an educational situation - are we facing a	Piotr Piasecki and guests: Jacek Jakubowski, Monika Mardas-	22.04.2022 (1:57:28)	The evolution of paradigms in education; Life Long / Wide Learning; Integration of humans and machines; Changes in the area of learners’ needs and new demands on educators

	new paradigm in education'	Brzezińska, Oktawia Gorzeńska, Magda Jelonek, Cezary Krawczyński		
8	'What does the sector need? Development of the competence of educators and trainers'	Tomasz Radkiewicz	26.05.2022 (48:53)	Market development and development of coaching competencies in the context of the increasing importance of online training - results from interviews with representatives of coaching schools and surveys among educators; Recommendations of the Council for the Competence of the Development Services Sector - discussion
9	'Creating an educational situation - implications for educators' competence developers'	Piotr Piasecki and guests: Dorota Szczepan Jakubowska, Iwona Sołtysińska, Tomasz Matuszewski, Witold Machlarz	27.05.2022 (1:55:00)	Extending the educators' competence to prepare them for work in a digital environment
10	'Qualification Creating an educational situation' – sector consultations'	Tomasz Radkiewicz, Piotr Piasecki with the participation of members of the Council for the Competence of the Development Services Sector	24.06.2022 (1:59:44)	An insight into qualification in terms of its use in designed development programmes for educators – building consensus in the community on cooperation in implementing the idea of a modern approach to education and promoting good practice in professional education of educators' development.
11	'The sector in numbers - the condition of the sector based on data obtained by the Council'	Barbara Worek Piotr Piasecki	21.07.2022 (1:31:39)	Number of entities, dynamics of change in the sector, condition assessment, personnel, services, innovation, future - digital competence
12	'Development needs of the sector on the basis of the Council's recommendations and the analysis of trend challenges'	Piotr Piasecki	04.08.2022 (56:33)	Identifying sector development needs: adjustment to providing remote development services when companies do not have adequate software to provide development services remotely; Digitalization and Extraordinary Recommendation; Digitalization of education – Codification of Good Practices for Remote Learning Services, Sector Qualification Framework for Development Services, Standard for Remote Learning Services.

Source: own elaboration based on content analysis of webinars available on YouTube, the Council for Competence of the Development Services Sector <https://www.youtube.com/channel/UChfuxnLz9zUrRtDFhANRcNw>, 19-25.09.2022.

It should be noted that the Council for the Competence of the Development Services Sector has paid a lot of attention to the category of digitalization in the industry. Thanks to its efforts, among other things, the extraordinary recommendation *Digitalization* and *the Codification of Good Practices for Remote Services, Remote Services Standard* (2022) were adopted.

3. Creating a digital learning situation - results of webinar content analysis

A detailed analysis of the content of the webinars increases the knowledge of creating a digital educational situation (see Table 1). In one of the presentations, P. Piasecki pointed out that digitalization is strongly affecting and will continue to affect work in the development services industry in Poland: "I'm talking about the digitalization of our clients, i.e. companies are increasingly succumbing to the digitalization trend. For the time being, most companies are still in the phase before what is commonly known as the digital tsunami. What does this mean for us? It means that it's just a warm-up which translates into the demand for digitalization of employees in companies, their digital competencies as well as certain processes leading to new ways of providing services. In other words, entire companies will undergo a change based on digital competencies and technologies. Our role will increasingly be related to the fact that we will directly or indirectly support this digital transformation" (Piasecki, *Key trends...*, 18.11.2021). As a result, online training will prevail, and onsite training will become intimate and elitist: 'Hybrids and the era of trainers proficient in two learning environments await us' (Piasecki, *Selected challenges...*, 05.04.2022).

In turn, S. Lais stressed that in digital education 'you have to unlearn analogue education.' The digital education situation is: Self Paced (video, article, e-book, e-training, quiz, test, training app, simulation), Asynchronous (forum, Q&A, implementation task, team project), Synchronous (webinar, online seminar, consultation, some games). In the education under discussion 'size matters', which is pertinent to Atomization, Bite-Sized, Re-usability - dividing content into small, independent and compatible parts, and applying the concept of microlearning - very short, few-minute forms focused on one topic, solving one problem (Lais, *Designing and creating...*, 26.11.2021).

In the industry under study, in the context of increasing digitalization, the concept of remote development service is emerging, where the word "remote" means that this acquisition, maintenance or growth of knowledge is performed through the Internet, which is the main means of communication and knowledge distribution. The characteristics of a remote service are as follows: instructor-participant separation; autonomy in learning; instructor/tutor support; digital learning materials; communication through communication tools (synchronous, asynchronous); and technological support. When designing e-learning courses/training, it is worth using the ADDIE model - analyze, design, develop, implement, evaluate (Marciniak, *Designing and creating a remote development service*, 26.11.2021).

Methods of designing a remote development service are of great significance. They involve communities of practitioners, checklists, feedback, shared resources, knowledge bases, search engines, content curation, as well as the practice of engaging (e.g., Octalysis model - engagement with Gamedave: meaning, empowerment, social influence, unpredictability, avoidance, scarcity, ownership, accomplishment) (Lais, *Designing and creating...*, 26.11.2021).

Typical forms of delivering a remote development service include: asynchronous e-learning: e-training, mobile courses, video-based courses, podcasts and audio; synchronous e-learning: webinars, online workshops, 1:1 sessions (Marciniak, *Providing...*, 26.11.2021). The SAMR model for diagnosing digital competencies presented by R. Marciniak is worth mentioning. It defines different levels of technology integration in the education process (see Table 2), and the Business Model Canvas is useful for managing remote development services (Łais, *Managing...*, 26.11.2021).

Table 2.
SAMR model for diagnosing digital competencies

S	SUBSTITUTION	There is no functional change: we do some things traditionally, but with a computer.
A	AUGUMENTATION	Replacement with functional change: thanks to technologies, we do some things more easily and efficiently.
M	MODIFIACON	Redesigning tasks: thanks to technologies, we do some things more easily and efficiently.
R	REDEFINITION	New tasks previously unavailable: thanks to technologies, we can do something new.

Source: R. Marciniak, *Providing remote development services*, 26.11.2021.

Experts in the development services industry recognize the advantages of digital learning, such as the power of switching between being synchro and asynchro, faster and diversified pre- and post-training activities (boosting), the power of links - in presentations, scripts, other materials, the power of non-linearity giving freedom to move through the content and programme. Besides, "digital time" is not real time - you can get through 30 days in a few hours. The digital world accelerates learning by making certain technologies into so-called "total immersion," i.e. allowing for intensifying the learner's work and reducing the time of activity in the learning process. Key solutions are course management systems /LMS XAPI; training development systems, pacing tools, online games, virtual reality (VR), mixed reality (AR), artificial intelligence (AI), and manufacturers - designers, implementers: Instructional Designer, Trainer/Instructor, Coach/Mentor, Learning Business Partner, Programme Manager, Project Manager, LMS Administrator, Learning Experience Designer, Content Curator, Marketing/Storytelling, Learning Technologist/Scientist, Data Analyst (Piasecki, *Selected issues...*, 05.04.2022).

Research conducted among representatives of training schools showed that in view of the increased importance of online training the development of trainer competencies will be related to the ability to use real-time remote training tools at an advanced level, the ability to select appropriate tools for online training, the ability to build short forms of remote training and combine them with desktop training, the ability to work with the participants' attentiveness during remote education. In turn, research done among educators showed that the greatest need for competence development is in the areas of creating educational audio and video materials, tools for real-time remote training, managing group dynamics, selling and offering development services, and raising external funds to finance training. The possible lack of original e-learning offers is due to the fact that educators need to extend their competence in this area. Preparing

e-learning content is time consuming, and the cost barrier to creating/renting an e-learning platform cannot be ignored, either. (Radkiewicz, *What...*, 26.05.2022).

As a result, industry experts are discussing recommendations in the following areas: creating educational audio-video materials, tools for delivering a real-time remote development service, managing group dynamics in real-time remote services, obtaining external funding for development projects, building a personal brand, conducting hybrid development projects, and strengthening an educator's mental resources (Radkiewicz, *What...*, 26.05.2022).

As B. Worek points out, "digital competencies count here and now, and will become increasingly important in the future. Digital competencies in many key positions, such as an individual coach, lecturer, e-learning methodologist/scriptwriter, e-learning developer, or sales and marketing specialist are identified as competencies in short supply, and at the same time they are recognized as competencies of increasing importance " (Worek, *The sector...*, 21.07.2022). However, it should be borne in mind that "the transition to digitized services requires 'digital thinking' and is not about simply moving content to the Internet" (Piasecki, *Development needs...*, 04.08.2022).

4. The demand for digital competencies in the development services industry in Poland

Research conducted among employers in the development services industry in 2021, as part of the Industry Human Capital Balance (2022), showed interesting results regarding the demand for employees' digital competencies, which include basic digital skills (use of available technologies and digital tools) as well as more advanced skills related to the use of microlearning and virtual and/or mixed reality, artificial intelligence, educational games or online simulations and/or video learning (*Industry Human Capital Balance II – Development Services Industry*, 2022, p. 29).

Thus, in the next 3 years employers in the development services industry anticipate the greatest demand for basic digital skills only (40%). For other competencies, the dominant response was "medium increase in demand." This answer was indicated by one in three entrepreneurs in the industry with regard to such skills as the use of microlearning, educational games, online simulation and videolearning as well as virtual and mixed reality (VR, AR). It should be added that about 20-25% of employers do not predict any changes in the demand for the above-mentioned skills within the next 3 years (*Industry Human Capital Balance II – development services industry*, 2022, pp. 29-30).

Currently, besides the traditional model of providing development services, in practice they most often use e-learning - education using electronic communication (34%), blended-learning - a method of education combining traditional methods of learning with activities conducted remotely via computer (27%), and educational games (19%). However, it should be noted that

more than half of the entities do not implement and do not plan to implement services in the above-mentioned forms, and most companies do not plan to use artificial intelligence (AI) or solutions derived from neurodidactics. It turns out that new technologies are not commonly used in the sector Industry (more in: *Human Capital Balance II - the development services industry*, 2022, pp. 29-31).

The high relevance of digital competencies is noted by employers in areas related to digitalization: in designing, providing development services and their sales and promotion. In the positions of a trainer, individual coach, instructor and lecturer, they predict an increase in the importance of competencies allowing for providing development services remotely. A major role in the context of exploiting information technology is played by two positions, i.e. e-learning methodologist/scriptwriter and e-learning content developer (*Industry Human Capital Balance II - development services industry*, 2022, p. 69).

The results of a Delphi research conducted among industry experts, which identified hypothetical development trends is also worth mentioning. According to the research, the most deferred development will be the spread of the phenomena described by two theses: one stating that the progress of robotization and the rise of artificial intelligence will result in the spread of development services involving avatars and simulators, and the other one according to which the spread of remote forms (including massive open online/MOOC courses, avatars) will make services delivered directly by a human (e.g., a trainer, a coach, an instructor) exclusive. However, it should be emphasized that the evaluation of the first thesis divided respondents most strongly by type i.e. entrepreneurs, industry experts, and educators. It was quite surprising for the Author of the article to hear university representatives and non-formal human resources education providers question the possibility of ousting from the market those companies that provide mainly stationary services (see *Industry Human Capital Balance II - development services industry*, 2022, p. 104). This kind of attitude is indeed surprising considering that the pandemic has led to a redefinition of the fundamentals of many areas of socio-economic life, including the broad entry of universities into cyberspace (Tomanek, 2020), and good practices in this area have been available for some time (see *Council on Higher Education*, 2014).

Unfortunately, the analysis of educational offers for industry employees has shown that the issues related to the acquisition of digital competencies are treated marginally or even ignored in the improvement programmes for the industry's personnel. It is, therefore, important to prepare educational offers for the development of these competencies and their continuous improvement (*Industry Human Capital Balance II - Development Services Industry*, 2022, p. 121). Such a recommendation for the industry is justified considering that 64% of training companies and consulting firms are not taking any action on innovative solutions, including digital ones (Sacharczuk, 2022).

The Polish Chamber of Training Companies (PIFS) has recently organized the "Educational Innovation of the Year" competition (Educational Innovation of the Year Competition, 2022) (since 2019 with a two-year break due to the Covid-19 pandemic).

It supports and promotes the most innovative, creative and modern solutions. Good practices in digital education can also be drawn from the European Digital Education Hub (2022). However, there is still a lot to be done in the Polish development services industry in terms of raising the level of competence of digital educators and implementing innovative methods of human capital development (see Mikołajczyk, 2020, pp. 175-190).

5. Progress scenarios for the development services industry in Poland

Taking into account two key factors: (1) the exploitation of modern technological solutions in the service delivery process (widespread use vs lack of use), (2) professionalization of the service delivery process (services of verified quality i.e. previously diagnosed, evaluated, validated, and certified vs. services of unverified quality i.e. undiagnosed, not evaluated, not validated, not certified), potential scenarios for the progress of the development services industry in Poland were outlined (Figure 1).

High level of professionalization of the service delivery process			
Low application of modern technological solutions in the process of providing a service	Scenario III Luxury boutique with services	Scenario I Services laboratory	Widespread application of modern technological solutions in the process of providing a service
	Scenario IV Service factories	Scenario II Discount store with services	
Low level of professionalization of the service delivery process			

Figure 1. Potential progress scenarios for the development services industry in Poland.

Source: *Industry Human Capital Balance II - development services industry*, 2022, p. 107.

Table 3 shows the characteristics of potential progress scenarios for the development services industry in Poland.

Table 3.*Characteristics of the progress scenarios of the development services industry in Poland*

Scenario name	Level of professionalization of the service delivery process	Application of modern technological solutions	Characteristics
Services laboratory	High	widespread	Widespread use of modern technology, Widespread use of artificial intelligence solutions using avatars and virtual and augmented reality simulators and augmented reality, The remote service delivery formula model, with premium services for direct contact with the trainer, Vital importance of digital competence.
Discount store with services	Low	widespread	Use of technology that allows for more flexible forms of communication and content delivery (apps and learning support platforms), Educational solutions are not targeted at ensuring the quality of the service delivery process.
Luxury boutique with services	High	sparse	Offering highly specialized services provided by trainers – specialists in a particular speciality, Prevalent stationary form in the service delivery process.
Service factories	Low	sparse	Low-quality development services Lack of investment in creating services exploiting modern solutions; Stationary form as the most cost-effective and suitable for the customers' preferences

Source: own elaboration based on: *Industry Human Capital Balance II - development services industry*, 2022, pp. 107-111.

In the "Services Laboratory" digital competencies are of vital importance. They allow, among other things, for designing and implementing services remotely, involving Industry 4.0 solutions. A key prerequisite for this scenario to materialize is the need for large financial resources. In both this scenario and the "Discount store with services," development service providers are undergoing a transformation towards the widespread use of modern technologies. The need to adapt to the new educational situation, triggered by remote learning needs reinforces the demand for digital competencies and contributes to the digital transformation in the development services industry. In case of lack of investment, or the inability to implement modern solutions, the transformation will not happen. Thus it is likely that "Luxury boutique with services" or "Service factories" scenarios will become a reality (see *Industry Human Capital Balance II - development services industry*, 2022, pp. 107-111).

In the context of digital transformation, the progress of the development services industry according to Scenario I "Service Laboratory" was most beneficial. If this happens, there will be an increase in the importance of professional roles related to, among other things designing, providing development services online; managing the educational infrastructure necessary to provide development services in a digital environment; programming and creating digital content and applying technological solutions in the process that draw on the concept of Industry 4.0; marketing and selling remote services; cybersecurity and ensuring the protection of data and digital information; designing development services that incorporate solutions involving

information and communication technologies (more in: *Industry Human Capital Balance II - development services industry*, 2022, pp. 111-113).

However, it seems that progress in the development services industry in Poland is taking place in a diversified manner. On the one hand, there are entities in the market that implement simple and ready-made digital tools (e.g., in the cloud); on the other hand, there are also entities that invest heavily in modern tools (e.g., VR, AR, AI). In the author's opinion, the scale of digital transformation depends largely on current and future technological trends, among others: advancement in robotization, orientation toward innovation and the knowledge-based economy, or the spread of remote communication tools. Currently, it is difficult to determine which scenario pertaining to the future of education, and affecting the development services industry: "Hyperpersonalized education", "Technologized humanism", "Reactive adaptation", or "Inclusive innovation" (more in: *Future of Education, Scenarios 2046*, 2021, pp. 100-153).

6. Summary

In conclusion, we are currently witnessing a digital transformation, a paradigm shift in providing development services; we are learning how to create an educational situation in digital reality. The analysis of the material presented shows that experts in the development services industry in Poland are aware of the growing importance of technology and digital competence. There is potential for applying innovative digital solutions which require significant financial resources, increasing awareness in this area and learning about good practices.

The analysis of available research results has shown that the majority of entities in the development services industry do not yet recognize the need for all employees to be digitally competent as required in the context of modern technologies. In Poland, we have a situation in which entrepreneurs appreciate the importance of digital transformation, but most of them do not plan to increase spending on this purpose or to hire specialists (Sacharczuk, 2022). According to the author of the article, this situation also applies to companies in the development services industry. However, in order to strengthen their competitiveness as well as their resilience (cf. Tarapata, Wozniak, 2022), players in this industry will have to bet on digital technologies and digitalization. The entire education system must be ready for the technological world (debate in the series Business Insider TRENDS 2022: M. Kawecki, J. Orłowska, M. Bobiński, M. Kanownik, 2022).

The changes observed today on the international development services market show that with the development of remote work, digital technologies will become increasingly important in the future in terms of the development of new approaches, methods and tools in order to support the learning process. The key feature of the process of transforming the traditional

development service into a remote service will be the need for hiring employees with digital competencies (*Industry Human Capital Balance II - Development Services Industry*, 2022, p. 29). Abroad, attention is paid to the increasing market of online learning and e-learning services due to the shift to a remote learning model for school and work; the shift in service delivery and the move to a subscription system with microcourses (e.g. *Coursera*, *Udemy*), utilizing immersion learning technologies with virtual and augmented reality (e.g. *VirtualSpeech*, *Labster*, *VR Expedition* applications); employing artificial intelligence and automation to provide more personalized forms of education or distance learning (e.g., *Altitude Learning*); and nano-learning allowing for instant and modular knowledge transfer (Marr, 2022). Technavio, an international research agency, estimates that the VR-assisted education market will grow at a 60 percent rate through 2024 (Ulanowska, 2021).

We must be aware that also in Poland, the advantage of e-learning solutions over traditional forms of learning in the development services sector will steadily grow, and tools including virtual reality and artificial intelligence will play an increasingly important role in the industry. The role of using various tools from the EdTech (educational technology) area will increase. However, the lack of readiness to develop competencies related to the digitalization process is worrisome, especially micro and small companies in the development services sector are not taking full advantage of the opportunities offered by digitalization and new technologies. Besides, there is a widening gap between the digital potential of training companies in Poland and the market leaders in Europe, particularly from Scandinavian countries, where the level of digitalization is high (more in: Kowalski, 2022).

It should be emphasized that EU funds under the new 2021-2027 budget will have great importance in increasing the level of digitalization of the development services sector in Poland. The vast majority of European Social Fund (ESF) resources planned in regional programmes or the European Funds for Social Development (FERS) are to be allocated to the development of digital competencies and digitalization. Basically, further digital transformation and the development of human capital e-competence will depend on these investments as well as the mindset shift in the development services industry in Poland (see Winnicka-Wejs, 2021, pp. 90-103).

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